



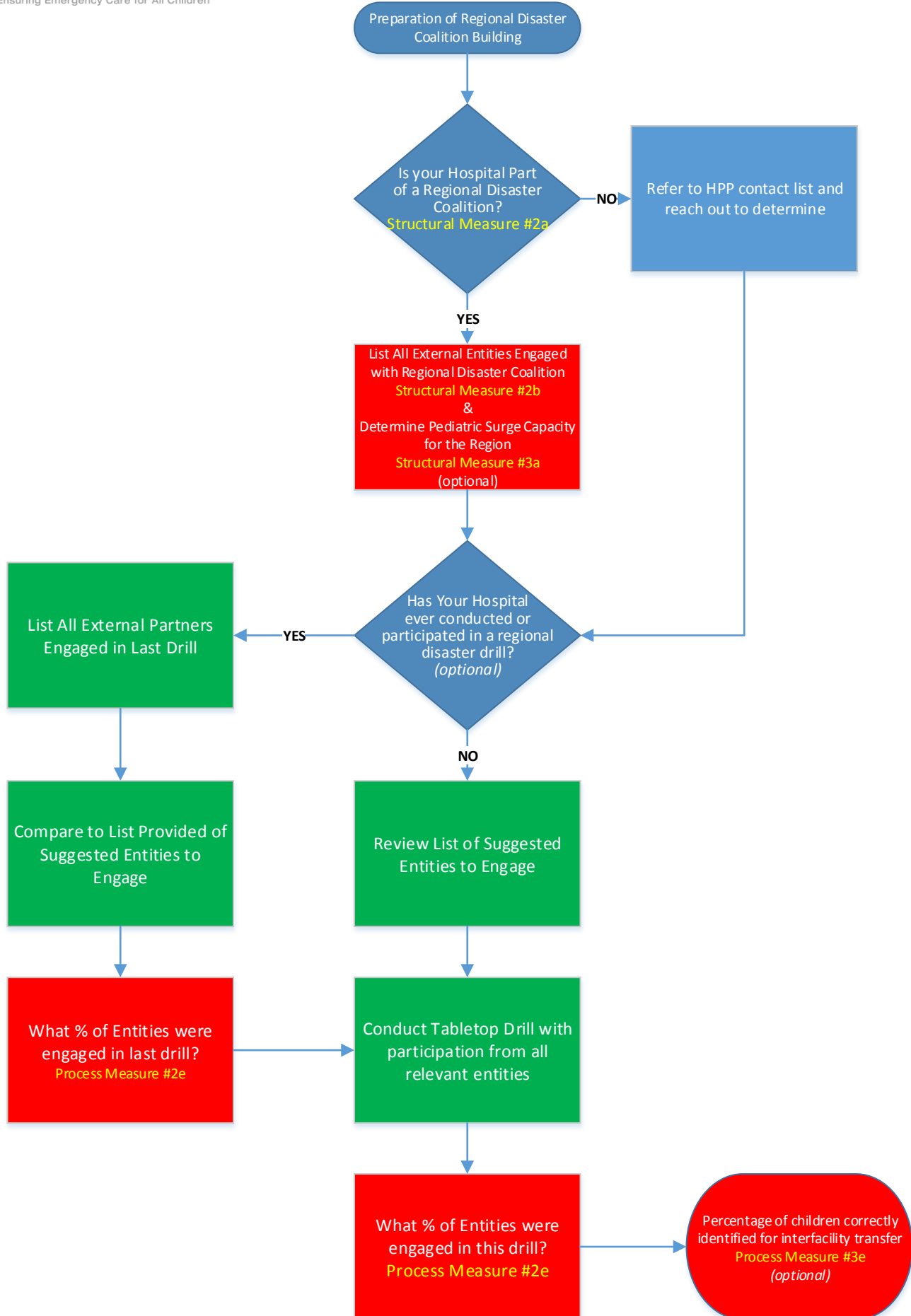
PRQC DISASTER BUNDLE - DISASTER DOMAIN 2, 3

Regional Coalition Building and Pediatric Surge

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PRQC DISASTER BUNDLE - DISASTER DOMAIN 2,3 Coalition Building and Pediatric Surge (Regional)





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Building Health Care System Capacity to Respond to Disasters: Successes and Challenges of Disaster Preparedness Health Care Coalitions

Lauren Walsh, MPH; Hillary Craddock, MPH; Kelly Gulley, BA; Kandra Strauss-Riggs, MPH; Kenneth W. Schor, DO, MPH

National Center for Disaster Medicine and Public Health, Uniformed Services University of the Health Sciences, Rockville, Maryland USA

Correspondence:

Kenneth Schor, DO, MPH
National Center for Disaster Medicine and Public Health
11300 Rockville Pike
Suite 1000
Rockville, Maryland 20852 USA
E-mail: kenneth.schor@usuhs.edu

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Keywords: capacity building; disasters; health care coalitions; learning

Abbreviations:

ASPR: Office of the Assistant Secretary for Preparedness and Response
CDC: Centers for Disease Control and Prevention
EMS: Emergency Medical Services
HCC: health care coalition
HHS: US Department of Health and Human Services
HPP: Hospital Preparedness Program
MMRS: Metropolitan Medical Response System
MOU: memorandum of understanding
PHEP: Public Health Emergency Preparedness Program

Abstract

Introduction: This research aimed to learn from the experiences of leaders of well-developed, disaster preparedness-focused health care coalitions (HCCs), both the challenges and the successes, for the purposes of identifying common areas for improvement and sharing “promising practices.”

Hypothesis/Problem: Little data have been collected regarding the successes and challenges of disaster preparedness-focused HCCs in augmenting health care system preparedness for disasters.

Methods: Semi-structured interviews were conducted with a sample of nine HCC leaders. Transcripts were analyzed qualitatively.

Results: The commonly noted benefits of HCCs were: community-wide and regional partnership building, providing an impartial forum for capacity building, sharing of education and training opportunities, staff- and resource-sharing, incentivizing the participation of clinical partners in preparedness activities, better communication with the public, and the ability to surge. Frequently noted challenges included: stakeholder engagement, staffing, funding, rural needs, cross-border partnerships, education and training, and grant requirements. Promising practices addressed: stakeholder engagement, communicating value and purpose, simplifying processes, formalizing connections, and incentivizing participation.

Conclusions: Strengthening HCCs and their underlying systems could lead to improved national resilience to disasters. However, despite many successes, coalition leaders are faced with obstacles that may preclude optimal system functioning. Additional research could: provide further insight regarding the benefit of HCCs to local communities, uncover obstacles that prohibit local disaster-response capacity building, and identify opportunities for an improved system capacity to respond to, and recover from, disasters.

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Background

Recent disasters have illustrated the need for preparedness and response capability within the health care workforce.¹⁻⁴ To address this need, health care organizations, and their respective public and private sector response partners, have come together in networks known as health care coalitions (HCCs).⁵ Health care coalitions vary in the scope of services they provide,⁶ and some, but not all, focus on promoting disaster resilience within their communities. While all HCCs leverage their collective size and resources to influence the cost, quality, and access to health care services in a particular community or region,^{6,7} disaster preparedness-focused HCCs specifically seek to prepare for, and respond to, mass-casualty and catastrophic events in their community; they are often comprised of hospitals, public health departments, emergency management agencies, and other health care entities.¹

Historically, health care preparedness coalitions have been sustained primarily through the allocation of federal funding. Federal programs to support collaboration and resource

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sharing within localities include: (1) the Department of Homeland Security-funded (Washington DC, USA) Metropolitan Medical Response System (MMRS), now part of the State Homeland Security Program, which was first funded in 1996; and (2) the Urban Areas Security Initiative, which began in 2003. In 2002, the Department of Health and Human Services (HHS; Washington DC, USA) began funding the National Bioterrorism Hospital Preparedness Program under the Health Resources and Services Administration (Rockville, Maryland USA), and in 2006, this program became the Hospital Preparedness Program (HPP) that is now administered by the Office of the Assistant Secretary for Preparedness and Response (ASPR; Washington DC, USA). Also in 2002, the Public Health Emergency Preparedness Program (PHEP) was funded under the Centers for Disease Control and Prevention (CDC; Atlanta, Georgia USA). In 2004, the CDC additionally funded the City Readiness Initiative, which has grown to include 72 high-risk metropolitan statistical areas.⁸

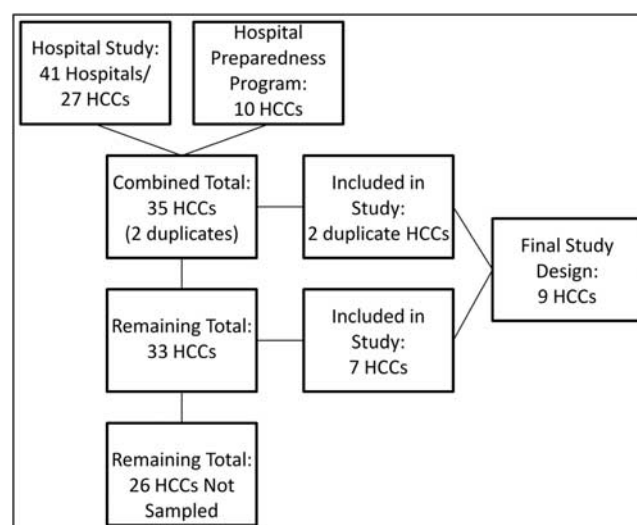
Generally speaking, federal funding for preparedness programs has declined over the last decade.⁸ In the face of decreasing federal support, coalitions have developed creative solutions to long-term sustainability,⁸ and many have become increasingly reliant on in-kind and monetary contributions from the private sector.⁹ Whereas many coalitions began as partnerships among hospitals, increased understanding of the interconnectedness of the health system, evolving grant guidance and accreditation requirements,⁵ and ongoing pressure toward non-grant-funded methods of sustainability have incentivized greater diversification of partners. In a recent survey, just 12% of interviewed coalitions included only hospitals. Additional stakeholders frequently included public health agencies, Emergency Medical Services (EMS), and emergency management offices, while primary care providers, physician's practices, and state medical societies played a role in a smaller subset of HCCs.⁵ As coalitions evolve to include more partners, non-hospital-affiliated health care providers, police, firefighters, coroners, and school systems may be added.²

Health care coalitions have demonstrated the capacity to increase a community's health resilience in all phases of a disaster;¹⁰ so, gaining additional insight into how America's most successful HCCs operate may be instrumental in increasing national health security in other parts of the country. Prior studies have noted a need for more data regarding HCCs,^{5,11} but there is a paucity of literature focused specifically on the HCC structure and how it has improved the resilience of local health care systems to disasters. The overarching goal of this qualitative study was to learn from the experiences of leaders of well-developed HCCs to describe the structure and history of the HCCs sampled, the perceived added value of HCCs to the communities in which they reside, commonly encountered challenges to increasing health care preparedness capability, and "promising practices" to be shared with more nascent coalitions. The study was intended to be exploratory and to drive hypothesis generation for future data collection on this topic. A companion publication from the authors focuses on the development of human capital through the HCC structure, and it will be published separately.¹²

Methods

Identification of Subjects

The source population of HCCs was limited to those whose primary mission is to foster and promote health care system



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Figure 1. Study Sample Selection Methodology.

Abbreviation: HCC, health care coalition.

preparedness for disasters, and did not include coalitions that may address preparedness, but whose mission is broader in scope. A purposive sampling strategy was used to preferentially target well-developed and active HCCs, as they would assumedly be positioned better to share comprehensive histories with the research team due to lengthier institutional knowledge. The study sample size was limited to no more than nine research subjects, as pursuant to the requirements set forth by the Paperwork Reduction Act.¹³

Figure 1 illustrates the 3-stage methodology that was used to identify well-established, preparedness-focused HCCs using the best available data. First, data were extracted from a hospital-based coalition study⁵ that scored coalition member hospitals on 14 possible characteristics that indicated various attributes of preparedness. To establish a high benchmark for inclusion, hospitals with a score of either 13 or 14 were considered for inclusion in this study. In this manner, a total of 41 hospitals were identified. Each of the 41 hospitals were then linked to their respective coalitions. Coalitions without an online presence or accessible contact information were then excluded, resulting in 27 eligible HCCs from this data source.

Second, data provided by the ASPR were used to identify "mature" coalitions from among those funded by the HPP. A subset of questions from an existing program evaluation survey was adapted to create search parameters focused on coalition longevity, capacity for education and training, and overall coalition performance. Using these search criteria, a total of 10 HCCs were identified from among the HPP grantees.

The two lists were reconciled, yielding a combined total of 35 unique health care preparedness coalitions. Two coalitions were identified in both datasets and were therefore included as interview sites for this study. The remaining seven coalitions were chosen from among the 33 remaining coalitions using convenience sampling, though efforts were made to select coalitions from urban, suburban, and rural locations, as well as from different parts of the country.

The final study design included nine coalitions, located in the states of California, Colorado, Massachusetts, Michigan,

Minnesota, Kansas, Kentucky, Texas, and Washington (USA). Due to confidentiality agreements under the Institutional Review Board approval, individual HCCs will not be named, and instead, they will be identified by the state in which they exist.

Survey Instrument and Data Collection

A semi-structured interview guide was used to conduct face-to-face interviews with the coalition leadership in each of the nine HCCs. Institutional Review Board approval was obtained from the Uniformed Services University of the Health Sciences Office of Research (Rockville, Maryland USA), under protocol #381802-5.

Major topical areas covered in the interview guide included: the establishment and history of the coalition; strengths and weaknesses of the HCC structure; specific challenges encountered in improving health care systems preparedness capabilities; and “promising practices” to be shared with other coalition leaders. Questions regarding hospital- and public-health-preparedness capabilities were derived from HPP and PHEP grant materials, and input on the questionnaire was sought and obtained from the ASPR National Health Care Preparedness Programs. The final survey was also pilot tested with a local HCC leader who was not a respondent in this study. Additional questions regarding perceived disaster-health education and training needs, education and training barriers, and opportunities and advantages for additional disaster-health education and training through HCCs were also included in the guide, but are reported elsewhere.¹²

Data Analysis

The audio recordings were transcribed by an online transcription service, and transcripts were analyzed qualitatively using QSR NVivo 10 qualitative analysis software (QSR International Pty Ltd; Doncaster, Victoria, Australia). Three research personnel independently coded each interview, and a standard of 80% intercoder agreement¹⁴ was followed. The methodology for thematic analysis was influenced by grounded theory,¹⁵ but because interviews were conducted with predetermined questions, predetermined theme areas were covered in every interview. A structured approach to coding was utilized,¹⁵ and a list of codes was determined prior to the analysis. Codes were then analyzed by hand to uncover and establish themes and trends from among the research sites. Both anticipated and emergent themes were considered, and findings are presented here according to the guidelines for communicating descriptive, qualitative analyses.¹⁶

Findings

Health care coalition leaders were very forthcoming, and were enthusiastic to share both positive and negative experiences. Substantial amounts of data were collected regarding: the establishment and structure of HCCs, the perceived contribution of health care preparedness coalitions to the resilience of local communities, the challenges that have been encountered in the course of establishing and sustaining coalitions, and promising practices to be shared with others.

History, Membership, and Leadership

The terrorist attacks of September 11, 2001 (USA) were the initial motivating events for the establishment of each of the coalitions surveyed. While one coalition was established prior to 9/11, the attacks spurred more motivated and widespread interest

and involvement, and membership attendance became more robust in the years following.

Today, most of the surveyed coalitions receive funding from multiple sources, including federal, state, and private grants and donations (Table 1). Many of the coalitions also employ staff sharing, in which member organizations donate staff time to assist in the coordination and execution of coalition-level activities and tasks.

While many of the coalitions began as hospital-centric partnerships, the largest coalitions now have hundreds of individual institutions represented. Most coalitions cover very large, multi-county regions and incorporate multiple hospitals, EMS agencies, health departments, emergency management offices, and fire and police jurisdictions. In addition, the most developed coalitions actively involve long-term care facilities, freestanding clinics, local universities, public schools, medical societies, and military installations. Partnerships with the private sector are increasing as well.

Value of Health Care Coalitions

The most commonly shared value-add of HCCs was community and regional partnership building. Coalitions provide a forum for like-minded professionals with varying backgrounds to come together and plan for the mitigation of poor health outcomes in a disaster. Because coalitions are not “owned” by any one entity, they provide an impartial forum for building capacity throughout the health care system. This partnership building has: enabled interoperability among agencies and organizations involved in planning, response, and recovery; promoted the sharing of resources and information; and improved communication among agencies and with the general public.

We started out with two separate systems, and public health was doing all these things, and there really was not an integration with [the first responder] system that already existed. And so [the coalition is] trying to bridge that gap now.

[CITY] Public Health has a hazmat response crew. Well, so does the fire department. And then there's the Civil Support Team who could respond to larger events. If they all showed up at the same white powder situation, they needed to know [each other], because each comes from a different background: fire, military, public health. So they started communicating [through the coalition]... Now they know each other.

Coalitions also allow for education and training opportunities in disaster-cycle services to be shared with professions or segments of the population that may not have access or funding, but who would be expected to play a role in disasters. Emergency Medical Services was frequently cited as an example.

No one looks out for EMS. So hospitals may get funding through ASPR, right? They're regulated by [the Joint Commission], so [the Joint Commission] will tell them they have to do some things. You know, fire gets money through [the Federal Emergency Management Agency], through the assistance of firefighter grants, or through Homeland Security grants. Almost no money is available, or no incentive is available to EMS to exercise, to upgrade their equipment. So we [the coalition] involve EMS.

Staff- and resource-sharing agreements among partner institutions in the coalitions allow preparedness funding to be more equitably shared across the entire health care system.

...Another positive for our coalition: [the HPP and MMRS coordinators both] sat at the table, so when HPP grant dollars either, A) came up short, or B) were restricted to the point of useless, MMRS's coordinator would thumb through their documents. And it was a wonderful way to share money, because we were touching the same people.

Furthermore, the coalition structure has incentivized the clinical health sector to engage regularly with emergency management, the private sector, and public health in ways that were largely unprecedented.¹⁷⁻¹⁹ This has allowed a shared vision of community vulnerabilities and "false planning assumptions," and has built a diverse pool of professionals to brainstorm solutions together.

When we first started doing the [coalition] stuff, some of these providers had no idea that there was another facility just down the street. Some of the long-term care-ers were thinking, okay, if something bad happens, I'm off-loading my patients to the hospital. [If you asked] that same hospital, what are you going to do with your patients? [They say] I'm going to off-load them to long-term care. So you have this vision of ambulances transporting patients, passing each other on the street. And so I think one of the biggest things we've been able to accomplish with [the coalition] is just getting these people [to] meet each other and learn what those false planning assumptions are.

Coalitions also support better communication with the public. In health care disasters, all organizations in the coalition provide a unified voice and are able to share a consistent message. They are able to show that they are working together for the benefit of the community, which ultimately improves public opinion. Additionally, the cumulative presence of so many organizations lends credibility and power when working with vendors to get what they need for preparedness activities.⁸

Surge Capacity

Another unique benefit of coalition building was the ability to increase capacity of the health care system, or to "surge." All coalitions were involved actively in facility- and community-level surge exercises and used these as opportunities to identify additional areas for improvement of their surge plans. Many have used grant dollars over the years to stock up on supplies and equipment, and the majority of respondents are able to set up alternate care facilities with the resources they have. Furthermore, because many facilities are running at capacity every day, they are largely comfortable with the idea of shifting and transferring patients.

As a result, the most advanced coalitions no longer focus on the quantity of surge patients they can handle, but are rather working toward identifying which patients "truly break the system." In other words, each new surge exercise introduces a patient type that is not often seen in the day-to-day operations of the health care system (eg, chemically contaminated patients, severe burn patients, or unaccompanied minors). Coalitions have also started to shift from diverting or moving patients from one hospital to increasing bed capacity within the facility the patient

is already in. These augmented surge plans often include: the training and staffing of additional volunteers (eg, through Community Emergency Response Teams and Medical Reserve Corps); identifying the assets required for high-acuity patients to be transferred in and out of specialty-care centers; and how to sustain facility surge for an extended period of time.

It's a lot easier to serve the facility than try to build a facility. And it's a lot easier to move staff than it is patients.

To assist in surge capacity planning, bed tracking systems are also used consistently in the coalition hospitals. Some coalitions even use advanced bed tracking systems that allow specific matching of patients to beds based on gender, age, monitoring status, and psychiatric condition. Others have introduced bed tracking systems into nursing homes and long-term care facilities in their region.

Challenges for Health Care Coalitions

The following six topics were identified as challenges to health care system resilience and capacity building by at least half of the respondents: (1) staffing; (2) stakeholder engagement; (3) funding; (4) education and training; (5) jurisdictional restrictions and scope of practice; and (6) federal grant guidance. The topic of education and training is discussed in depth in a companion report by the authors,¹² and therefore, it will not be discussed in this report.

Stakeholder Engagement—Stakeholder engagement was the most frequently cited challenge for HCCs. Because HCCs often have few full-time staff members, and because their attention is prioritized generally toward completion of the grant deliverables, little time is left over for recruiting, managing, and retaining coalition partners. As a result, tasks and responsibilities are often delegated out, leading to decentralization of leadership and frequent duplication of efforts among coalition partners.

Furthermore, gaining and sustaining buy-in from health care leadership, specifically hospital executives, and the private sector is a significant challenge.

So trying to convince our hospitals and our hospital administration, given all of the other burdens that they have to comply with now with the Affordable Care Act, trying to get them to be able to be willing to spend a lot of resources and time around preparing for something that has never happened; it's hard to get them to prioritize this in many cases. Some get it, some don't.

There were also issues of territorialism and instances in which members of the coalition and leaders in the community were "not playing nicely." This was evident across sectors (eg, between emergency management and public health) as well as within sectors (eg, among competing hospitals).

Obviously, emergency management involvement and overall capability management is huge[ly necessary]. The emergency managers are supposed to be the go-to men and women to make sure that everything gets done, [but] they don't play well in the sandbox.

So, I think that there's a lot of strength in the coalition and it's a struggle because you have to work on consensus and you can't just strong arm people ...And what has not worked [for us] is [managing] this conflict or territorialism around roles.

Member retention also was cited frequently as a challenge related to stakeholder engagement. Coalition leaders stated that because representation within coalitions is so diverse, it is often difficult to keep information, education and training, and activities relevant to all partners.

As the breadth of our partnership expands, the relevancy becomes more difficult to obtain on an individual basis. And so we just try to keep it mixed up and varied as much as possible, understanding that people will opt in or opt out to particular meetings as they find it relevant.

Staffing—Almost all of the respondents indicated that they did not have enough staff to perform all the activities needed to build and sustain a high-functioning HCC. Due to the ongoing refinement of grant requirements and simultaneous budget cuts, coalition workload has increased without a parallel increase in funding or the ability to hire staff. Furthermore, grant reporting requirements are often particularly burdensome for hospital partners, making it difficult for hospital leadership to support the coalition. As a result, coalition staff was often being “borrowed” from other organizations, leading to employees “wearing multiple hats,” and being “spread too thin.” Of the nine coalitions surveyed, one was run entirely on volunteer time and the donation of staff time by HCC member organizations; three had a single, full-time equivalent coordinator and the in-kind support of committee representatives; and the remaining five had additional paid staff, supported either full-time or part-time by grants or part-time through staff-sharing agreements.

All the hospitals are understaffed in emergency management. So all of the people that we work with as our partners within a facility are usually wearing about ten hats... It can be a barrier to making progress when those people aren't available to commit their time to our program.

So, looking at ways to sustain a coordinator or a coordinator and a half position [is a priority] because It's more than a full time job, to do it well. You're bringing everybody together. You're assisting with [Hazard Vulnerability Analyses] and there's just a lot of work to be done. You're system exercise planning, and plan writing and testing those plans. And when you can do it right, it's more than a full time job.

Funding—Funding was also among the top challenges identified by HCC leaders. Simply stated, “there is not enough.” Health care coalitions are struggling continually to find resources for hiring and retaining staff, providing education and training opportunities and exercises, and finding and purchasing resources. Prioritization of spending is made difficult due to federal or state restrictions on grant spending, the need to meet grant deliverables, or the inability to achieve consensus on financial decisions. Additionally, some coalition leaders struggle to reconcile the disparate allocation of federal funds in their jurisdictions.

I can't spend any money for a program that's not supported by [Hazard Vulnerability Analyses or After Action Reports] that tells me that it was required. But for some reason, emergency management has been insulated from that perspective, and they're spending lots and lots of money.

Furthermore, coalitions fear that continuous cuts in funding may result in the loss of capacity that has already been attained by the coalition, and may prohibit the coalitions from maintaining the equilibrium necessary to sustain their developed capabilities.

If we do not receive federal funding, these communities will not exercise. I understand that your dollars are tight and you have to make hard decisions, but if we cut this... the state's not going to fund it, it's just going to stop happening... and we will lose our capabilities.

Rural Needs, Cross-border Partnerships, and Licensure—More than half of the respondents reported that differences in needs from urban to rural partners were a significant challenge in effectively leading their HCC and meeting grant requirements. Rural coalitions often feel isolated from their more urban in-state counterparts, and generally find greater value in exchanging information with rural coalitions from bordering states than with urban coalitions in their own state. This introduced the related challenge of cross-border licensure and the relative inability to utilize licensed professionals from other states in resource-sharing agreements. One-third of coalitions indicated that cross-border licensure is a major impediment to operating under altered standards of care.

There should be a national credential, if you submit to this, and you have been fingerprinted and the background check and keep your credentials up, you are immediately deployable anywhere in this region.... Borders hinder us from doing anything – not within our coalition, but as we think about helping across borders.

There's a need from the federal level for a better, more clear understanding and definition of the legal issues around response. An example is medical licensure. And nobody really still has a clear understanding around medical licensure from [our city] to [bordering state]. We're that close together, but if our nurses go to help, they can't be nurses. How can that process be simplified so that we know how to plan for it and address it?

Adding another layer of complexity, facilities in the same region may have different privileging processes, so that a provider in one medical system is unable to practice in another.

Well, [there are] two different issues. One really is just the legality of the licensure from across county lines, or state lines, or whatever. And then there's the facility credentialing ... I may get to [our border states] and my home state license might be good, but [the receiving facility] still isn't going to let me in the door to practice until I go through their credentialing process.

Going beyond this is the issue of tribal sovereign nations within coalition regional boundaries, as well as foreign countries (Canada or Mexico) which may border the coalition's state lines.

Grant Requirements—Finally, there were instances in which the grant guidance and funding requirements hindered preparedness planning and activities. Coalition building requires many different capabilities, but coalitions can often only afford one full-time staff person. Further complicating the matter is that some of the grant deliverables go beyond the scope of the coalition, and touch state and jurisdictional policy beyond the coalition's control.

I think some of [the grant deliverables] were beyond the control of the coalition and probably need to be looked at. I think they're more of jurisdictional policies, maybe, or state policies. And I understand they put those broadly because – the coalition may be the entire state, and they have the ability to make state law and whatever changes to get that done. But when you're talking about big regions like [ours], where we don't have jurisdictional authority and we don't have the ability to pass legislation; it makes it difficult to get those things done.

In addition, many coalitions described a disconnect between the actual preparedness needs of the community and the stipulations required for grant funding. This was evident especially in rural areas, where many grant requirements must be altered or adapted to be more relevant to their needs.

You know, we'll work really hard to try to help [grant deliverables] match the needs [of the region]. [But] I had heard from rural public health that her job is comprised of 95% of the stuff that they don't need and 5% of the stuff that her jurisdiction does need. And so the emergency manager said, well, then don't take the money... But if they don't take the money and they don't do [the deliverables], then that position just goes away.

If you have a grant that says you shall do “blah, blah, blah,” and whatever that is has very little relevance to your partnering agencies, you have to be very cognizant about how you try to meet that deliverable. If you have to do it, let them know, I have to do it... maybe try to get the most value out of it ... and make it as relevant as you can, but I really try to avoid wasting anybody's time.

Furthermore, differences in the construction and execution of grant requirements under the different federal programs often result in an inconsistent or unrealistic understanding of requirements and the inability to coordinate across federal grantees in the same region.

So [the state] was telling public health something that, in some cases, they have no authority to make happen, instead of bringing in an emergency manager and saying, is this even practical, because the people who are designing these deliverables have no concept of what an emergency manager is. And [that] strains the local jurisdiction's relationship.

Similarly, because other federal grant programs focused on preparedness may have pre-existed in the community, or currently coexist in the community, coalitions must take care to “not recreate the wheel” when establishing partnerships, agreements, and plans, because they may have already been done by other programs. While the recent HPP/PHEP program alignment has helped bring federal grantees together, it does not yet take into consideration the full range of federal preparedness grants, such as non-HHS federal grants.

We've learned a ton from [Department of Homeland Security grantees] and we've stepped on toes, as well. I personally have done it. Because here's my deliverable ... So all right, I go do that thing, not realizing that that thing had already been done like ten years ago by somebody....

Hospital Preparedness Program and Public Health Emergency Preparedness Program Alignment

By and large, the alignment of HPP and PHEP capabilities and grant structure has been well-received among coalition leaders, including among those that do not receive direct funding from either program.

The nice thing about the alignment of capabilities is that instead of each program trying to figure out what their training exercises are, it's kind of dawned on us that you can kill two birds with one stone in so many areas, and that wasn't really apparent to us before.

While some HHS-funded coalitions are still figuring out how to formalize the alignment, others have been doing it all along.

It's been overwhelming to try and work at the public health facilities and try to manage those also with the hospital capabilities.

We've always kind of worked very closely with our public health partners in that we've always taken whatever grant is out there. We've already been aligning all those things across, and making sure that whatever are the strictest guidelines; those are the ones that are met.

Coalitions that do not receive funding under the HPP or PHEP programs also have utilized the capabilities alignment to augment their understanding of requirements requested of their public health and medical partners.

So, now, we use Department of Homeland Security Core Capabilities. But, we have to look very closely at the public health and medical capabilities... depending on what we're after and what we're trying to accomplish. But, it's not the same. And, so, I'll bounce back and forth just because one [set of capabilities] tends to have more detail.

Promising Practices and Coalition-developed Solutions to Challenges

The interviewed coalitions were among the most developed in the country. As such, they were able to provide a multitude of potential solutions to the problems that they, and others, have faced. The following five “promising practices” can be utilized by more nascent coalitions, policy makers, and educators to address existing and emergent issues within a coalition.

Stakeholder Engagement—With funds decreasing, monetary incentives are no longer the primary driver for participation in a coalition; although, a handful of coalitions continue to use equipment reimbursements and education and training grants to gain and sustain buy-in. In the absence of plentiful financial incentives, coalitions are reliant increasingly upon meaningful and sustained no-cost engagement with partners. Many highlighted the importance of writing a multi-year charter or a strategic plan early in the process of building the coalition. This serves the dual function of establishing longevity and articulating the collectively identified goals of all involved stakeholders. Getting hospital leadership and other high-level decision makers to contribute to the strategic plan from the beginning was emphasized, as it builds ownership and accountability. Some coalitions have even developed materials to share with executive leadership to help

describe the coalition purpose, function, and the potential return on investment for participating.

And when we bring a new hospital in, we have a welcome packet. So we go out and meet with the hospital [Chief Executive Officer], visit the chief nursing officer, whoever their emergency management coordinator is, anybody else that they want to bring in. And we basically have the packet that goes with us. And it's their binder and it gives them an overview of: here's the alphabet soup and this is what this all means, and this is how you get into here, and here's your request forms and all of that stuff.

The number and type of stakeholders invited to participate in the coalition was also identified as important. All coalitions suggested integrating many partners to have access to both medical and non-medical resources. When thinking about who to include, a number of coalitions used a thought exercise that imagined all the personnel and equipment necessary to support a mass-casualty incident. Such preparedness exercises also helped to identify any potential insufficiency or redundancy in response capability, or when the closest assets were across state lines.

So, we really started to transition away from just hospitals to including how we surge beyond hospitals and how do we include our partners. And the term "partners" became very broad at that point in time, and I think we're still trying to define what that means as you start to look at who really are your partners when you're looking at a large-scale mass-casualty event.

The MMRS was cited frequently as a model for engagement, and including current or former MMRS representatives in the coalition leadership team was a common strategy among coalitions.

The good thing about the MMRS grant was that it was, essentially, if you did it right, a planning grant. And it was about bringing everybody together, going over plans, establishing things as needed, revising old ones, exercising... So now that the Health and Human Services part is coming around saying we need health care coalitions, if you follow the MMRS guidelines, you actually end up with a health care coalition.

The private sector was also identified as valuable, as they can often supply expertise, equipment, and supplies in an emergency; they also have the ability and incentive to provide monetary and in-kind donations throughout the year.

We had a water main break and [department representative] goes down to the [emergency operations center] and people started calling – we need ice, we need water – he picks up the phone and calls [major national chain] and says, I'm the Health Department, can you get us some water? And they say, yeah. Well, it's, kind of strange, because the Water Company couldn't do it. They said, we can't help you right now. So [the chain] is big and they've got the distribution system down pat.

Other potential partners for coalition building included: local military installations; local, state, and/or regional emergency management; tribal nations; non-hospital-based specialty-care providers; local institutes of higher education; hospital owned,

non-affiliated, and federally-funded clinics; Medical Reserve Corps (Rockville, Maryland USA); animal control and rescue; American Red Cross (Washington DC, USA); local offices for the Federal Bureau of Investigation (Washington DC, USA); airports; long-term care facilities; faith-based organizations; and state hospital associations.

Communicating Value and Purpose—Leaders agreed that maintaining focus on the underlying mission is essential, as is being open and transparent about short- and long-term goals. With so many partners and so many individual interests, the "big picture" can get lost.

[My best advice is to] make every effort to clearly communicate your mission objectives. One of the biggest criticisms that we receive is not being transparent on what we're trying to accomplish.

Most people are quite surprised, when we go to other places in the state, of how we can all sit in a room and we can actually talk to each other like civil individuals and actually get things done. Rule number one is your ego stays at the door because this is not about ego. This is about being prepared.

Furthermore, explaining how supporting the coalition's mission has the dual benefit of also supporting day-to-day operations can also be a strong motivator for partners, especially executives. Continuity of operations planning can be used as an example of the intersection between systems preparedness and the financial "bottom line."

Where we started going was business resiliency, continuity of operations. Because without that, if we don't have our partners up and running to some level, ...we've lost a critical piece. And there's double benefit to that, quite honestly. There's obviously the benefit as it stands in and of itself, but as a health care coalition, part of our long-term sustainability vision has to be somewhat independent of [grant] dollars. So unless we can clearly demonstrate value for participation and affecting [health care business'] bottom line, it's going to be very difficult to get them to pay-to-play...

Simplifying the Process—Leaders also strove to make participating in the coalition "painless" for members by streamlining practices, simplifying forms, and carrying the brunt of the workload for health care professionals that are already "wearing multiple hats." While coalition meetings were held at regular intervals (monthly, bimonthly, or quarterly), frequency was minimized to the absolute essential number needed to keep people engaged over time; they were also held at a time of day that didn't conflict with regular work hours. It was stressed that meetings must be kept timely and relevant, and education opportunities should be offered at each gathering. If possible, remote meeting technology can also be used to support participation. Recorded meetings and presentations also enable members to watch or listen to archived materials on their own time.

Being able to use technology so that people don't have to leave their office to still participate ... it's enormously improved the amount of input we get from the regional

partners outside of [the] County.Which never replaces face to face, but they don't do face to face because [there are] not enough hours in the day.

When planning drills and exercises, in many cases, coalition leaders collaborated with other facilities with annual exercise requirements (eg, airports, Office of Veteran's Affairs (Washington DC, USA) facilities, fire departments, hospitals, and long-term care facilities) in order to reduce redundancy and "get more bang for your buck." They also used these more "visual" activities as opportunities to get sectors, or people, that were not otherwise involved regularly in the HCC, but who would be likely to respond in an event, more excited about being involved on a regular basis.

Finally, most successful coalition leaders understood their roles as a resource rather than as an imposed demand on their existing or potential members. Each made very practical efforts to help members solve their planning issues and understand and alleviate their concerns.

I think [our biggest value is] having our board, our coalition; the volunteers in it and the staff that's able to support [hospitals] so that they're not carrying the entire burden. Hospital [Emergency Management Coordinators] have a lot to do... It's not a revenue-generating department at a hospital. And so, again, you have to make it as painless as possible, and they have to be able to see some kind of benefit for their return of investing those personnel into it.

Contractual Agreements versus Informal Connections—For many, contracts among partners were inhibitory to moving forward. More successful strategies for a formalized continued engagement were memorandum of understanding (MOU) and compact agreements. While such agreements were usually between the coalition and the participating partner organization, some coalition leaders also found it useful to assist mission-similar facilities within the coalition in drafting a resource-sharing agreement to: (1) facilitate transfer of staff and resources among themselves, and (2) identify pervasive needs among the facilities that the coalition may be able to fill. In one case, National Incident Management System training was used as an opportunity to talk about the local compact agreements and how to leverage staff and resources, if needed.

However, while formal agreements (such as MOUs and compact agreements) were often essential to the productivity of the coalition, nothing was emphasized more than the importance of informal and personal engagement with partners, leadership, and steering committees. Getting to know people personally was identified repeatedly as a best practice.

And a lot of those gaps were bridged in coffee shops, and people laugh at me when I say that, but just going and drinking coffee with the emergency manager and buying him a donut will make a big difference. I've always encouraged all my hospitals to invite those people in once a month just for coffee and donuts.

Incentivizing Participation—To better foster long-term sustainability, a handful of coalitions have moved toward a participation-driven reimbursement model that rewards members proportionately with their unique contributions to the coalition. For example, one coalition has derived a points system in which each

member organization can "earn" points for participating in activities and providing certain deliverables. Funding reimbursements are allocated based on how many points have been attained.

So we get our funding and we take what we need to sustain [and meet our capabilities requirements]. Then [with the remaining] money, we go back to the hospitals and we look at what their participation has been in this coalition. Are they attending their meetings? Do they do their bed reports? Do they do their surveys that go out? Do they attend the symposium? Have they participated in the exercise? And each of those have point values to them. And so then the amount of money they get is based upon how many points they have. And the more that they participate, the more they're rewarded with funding.

Other coalitions encourage more sustainable practices by providing reimbursements for member-driven education and training. Rather than hiring outside trainers to provide a course, coalitions will pay for facility leaders to be trained in a train-the-trainer format, so they are available year after year to provide support at a one-time cost.

I would rather have a trainer in your hospital [than hire one each year] so that next year, you just do the training. If you always have to wait for funding – I mean, it's just not sustainable.

Ongoing Efforts to Address Challenges

As shown in the previous section, coalitions are working actively on solving their issues and reaching smart and sustainable solutions to maximize health care system preparedness. While they've come a long way in addressing many of the identified challenges, others will require investment and support from outside stakeholders (eg, in the case of funding, licensure, and grant requirements). Other challenges may be solvable within coalitions, but haven't fully been figured out yet. The following two examples are issues that were identified as challenges that may require coalition-to-coalition or state/federal support for effective resolution.

Long-term Sustainability—Long-term sustainability was at the forefront of each of the interviewee's minds. Ultimately, the majority of coalition leaders see the need to become completely independent financially from federal-level support, but few have truly figured out how to do so. The "pay-to-play" model, in which the coalition is supported financially by the contributions of its members, is becoming increasingly desirable, but few coalitions have implemented it successfully. As a result, most of the coalitions are looking for guidance on how to replicate these models in their jurisdictions.

But as a health care coalition, part of our long-term sustainability vision has to be somewhat independent of [federal grant] dollars. But most of us have never gone down that path of pay-to-play. We entice them to come to the table by offering them dollars, and it's just not an option anymore, and it will be less of an option.

Resource Sharing—Resource sharing among coalitions is currently inconsistent and ad hoc. Coalitions are frustrated with spending a

lot of time devising solutions to problems that other coalitions have already encountered and solved. They see a lot of value in coming together at conferences and workshops, as these are opportunities to share ideas and learn from their colleagues. The concept of an online resource repository was also suggested by about half the participants as a potential solution to the resource sharing issue, but none felt they could implement the solution alone.

[There are] a lot of resources out there, but they're all in different places, so nobody knows where to look. Not everybody has access to the same systems, [so maybe someone should] do a clearinghouse kind of concept.

Discussion

While there is currently no consistent way to measure the impact of HCCs on community health care system capacity for providing disaster-cycle services, the information gathered in this research suggests a marked improvement in community-level health care systems preparedness over the last 10-15 years. The coalitions sampled were among the most robust in the nation, and had much to share regarding successful practices and overcoming obstacles. Value-adds of health care preparedness coalitions to community preparedness include: stronger and broader partnerships, improved interoperability and communication between health and non-health partners, the removal of "false planning assumptions," maturation of the disaster-response workforce through easier access to education and training opportunities, and an increased capacity to surge the health care system.

This and previous studies suggest that strengthening HCCs and their underlying systems could lead to improved national resilience to disasters.^{3,5,9,20} However, coalition leaders are faced with obstacles that may preclude optimal system functioning. First, the majority of existing coalitions are dependent largely on federal grant funds that are, for the most part, decreasing. There was a shared fear of "losing what has been gained," and coalition leaders emphasized the need for continued federal and state support until other options could be identified and implemented. Existing grant requirements were also inhibitory to optimal functioning. And, while efforts are being made at the federal and local levels to align public health, medical, and emergency management systems to improve preparedness planning,^{2,21} this is not yet a reality in most regions.

Long-term sustainability of HCCs will require the support of many stakeholders. Most proximal to the coalitions are the leadership of health care agencies in their communities. However, many of the interviewed coalitions described a reticence on the part of health care executives to take part in, and fund, preparedness activities. Coalition leaders are looking for ways to "sell" the coalition concept, and the concept of preparedness in general, to executives that are not necessarily concerned with low-probability events, but rather with how investments in preparedness would affect their "bottom line."²² Like other prevention programs, it can be difficult to quantify the return on investment of preparing for health care disasters; but, more research in this area is dually imperative, as the buy-in of these executives is critical to coalition functioning and the knowledge level of decision-making health care executives can influence health outcomes in a disaster.

Beyond the executives, coalitions are also challenged to include a diverse subset of health care partners who currently have little

motivation or funding to focus on preparedness. Greater engagement in a wider variety of health care entities may be incentivized by proposed legislation from the Centers for Medicare and Medicaid Services (Baltimore, Maryland USA) that would require health care institutions receiving Medicare and Medicaid reimbursements to undertake certain preparedness actions,²³ but this rule has yet to come to fruition. Additionally, non-health care partners and the private sector may have a lot to contribute before, during, and after a disaster, but may have little knowledge, expertise, or experience in the area. While some coalitions have made progress toward better integrating these partners, others have yet to fully leverage this source of potential support.

A remaining challenge for optimal coalition functioning is cross-jurisdictional and cross-border engagement. Many of the interviewed coalitions shared borders with neighboring states, Canada or Mexico, or tribal sovereign nations. These coalitions unanimously expressed frustration over the difficulty in planning for staff- and resource-sharing across borders, as the current legal system and process of health care professional licensure and facility privileging do not support it. Rural partners were burdened particularly by this reality, since the nearest neighboring medical facility was often across state lines. There is a need for improved state- and national-level systems to better support licensing and credentialing in disasters.

Limitations

Due to the small study sample size, these findings may not be generalizable to all preparedness-focused HCCs. Additionally, because mature coalitions were sampled purposefully, the viewpoint and experience of more nascent coalitions are not represented. Furthermore, because HCC structure, funding requirements, and specific regional characteristics are unique and varied, the design of this study precludes robust cross-coalition comparisons within the sample.

While participants were very forthcoming in their responses to the interview questions, response bias is often inherent in self-report interviews. The researchers attempted to prevent such biases to the extent practicable by offering confidentiality and anonymity to the respondents, but the potential impacts of such biases on the data are difficult to measure.

Conclusion

This study was novel in its approach within the existing body of literature surrounding disaster preparedness-focused HCCs and can be used to inform future research that samples larger numbers of coalitions. To the research group's knowledge, little evaluative data exist to inform the improved structure and function of HCCs and to assess the added value of preparedness coalitions in communities. This study combined the best available data from existing sources and built upon it to advance knowledge and information gathering in an understudied topic. The research group hopes this adds to the other work being done in academic and federal spaces, all with the goal of advancing community health care preparedness through building and supporting HCCs.

Supplementary material

To view supplementary material for this article, please visit <http://dx.doi.org/10.1017/S1049023X14001459>

References

1. Courtney B, Toner E, Waldhorn R, et al. Health care coalitions: the new foundation for national health care preparedness and response for catastrophic health emergencies. *Biosecur Bioterror*. 2009;7(2):153-163.
2. Carrier E, Yee T, Cross D, Samuel D. Emergency preparedness and community coalitions: opportunities and challenges. *Res Brief*. 2012;(24):1-9.
3. Hick JL, Hanfling D, Burstein JL, et al. Health care facility and community strategies for patient care surge capacity. *Ann Emerg Med*. 2004;44(3):253-261.
4. The White House. The President's Climate Action Plan; June 2013. <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>. Accessed May 16, 2014.
5. Rambhia KJ, Waldhorn RE, Selck F, Mehta AK, Franco C, Toner ES. A survey of hospitals to determine the prevalence and characteristics of health care coalitions for emergency preparedness and response. *Biosecur Bioterror*. 2012;10(3):1-10.
6. What is a Health Care Coalition? Employers Health Web site. http://www.ehpc.com/what_is_EHCO.html. Accessed July 10, 2014.
7. National Health Care Coalition Resource Center Web site. <http://healthcarecoalitions.org/>. Accessed July 10, 2014.
8. Pines JM, Pilkington WF, Seabury S. Improving emergency preparedness financing by building on health systems capacity and sustainable alternative methods. White paper for the forum on Medical and Public Health Preparedness for Catastrophic Events. National Academy of Science, Institute of Medicine. Washington DC, USA. October 2013.
9. Hanfling D. Role of regional health care coalitions in managing and coordinating disaster response. White paper for the workshop on National Response to an Improvised Nuclear Attack. National Academy of Science, Institute of Medicine. Washington DC, USA. January 2013.
10. Toner E, Waldhorn R, Franco C, et al. Hospitals rising to the challenge: the first five years of the US Hospital Preparedness Program and priorities going forward. Prepared by the Center for Biosecurity of UPMC for the US Department of Health and Human Services under Contract No. HHSO100200700038C. Washington DC, USA. 2009.
11. Lathan DM. Helping coalitions work better: attributes of effective coalitions. Presented at the 2nd meeting of the National Health Care Coalition Preparedness Conference. New Orleans, Louisiana USA. December 2013.
12. Walsh L, Craddock H, Strauss-Riggs K, Schor KW, Gulley K. Building health care system capacity: training health care professionals in disaster-preparedness health care coalitions. *Prehosp Disaster Med*. In press.
13. "Paperwork Reduction Act." *US Code 1980 Ed*. Title 44, Sec. 35, 3501-3521.
14. Miles MB, Huberman AM. *Qualitative Data Analysis*. 2nd edition. Thousand Oaks, California USA: Sage Publications; 1994.
15. Phillips BD. *Qualitative Disaster Research: Understanding Qualitative Research*. New York, New York USA: Oxford University Press; 2013.
16. Knafl KA, Howard MJ. Interpreting and reporting qualitative research. *Res Nurs Health*. 1984;7:17-24.
17. US Department of Health and Human Services. Office of the Assistant Secretary for Preparedness and Response. *From Hospitals to Health Care Coalitions: Transforming Health Preparedness and Response in Our Communities*. Washington DC, USA. 2009.
18. Centers for Disease Control and Prevention. Hospital Preparedness Program and Public Health Emergency Preparedness Cooperative Agreements. CDC-RFA-TP12-1201. Atlanta, Georgia USA. 2011.
19. US Department of Health and Human Services. Office of the Assistant Secretary for Preparedness and Response. *FY11 Hospital Preparedness Program (HPP) Guidance*. Washington DC, USA. 2011.
20. Toner E, Adalja AA. "Preparing hospitals for large-scale infectious disease emergencies." In: *Center for Biosecurity of UPMC. A Crossroads to Biosecurity: Steps to Strengthen US Preparedness*. Baltimore, Maryland USA. 2011:29-31.
21. Ginter PM, Rucks AC, Duncan WJ, et al. Southeastern regional pediatric disaster surge network: a public health partnership. *Public Health Rep*. 2010;125(suppl 5): 117-126.
22. Barbera JA, Yeatts DJ, Macintyre AG. Challenge of hospital emergency preparedness: analysis and recommendations. *Disaster Med Public Health Prep*. 2009;3(suppl 1):S74-S82.
23. Department of Health and Human Services. Medicare and Medicaid programs; emergency preparedness requirements for Medicare and Medicaid participating providers and suppliers: proposed rule. *Federal Register*. December 27, 2013.

Site No.	HPP	PHEP	State-level Funds	Non-UASI DHS	In-kind Contributions of Staff	CRI	UASI	Private Grants	Other HHS	Private Donations
1	●	●	●	●		●	●			
2	◇	◇	●	●	●	◇				
3	●									
4	●	●			●	●	●	●	●	
5	●		●	●				●		●
6	●	●	●	●						
7	●		●		●					
8	●	◇	◇	●		◇	◇			
9	●	●			●					

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Table 1. Funding Sources of the Interviewed HCCs

Abbreviations: HCC, health care coalition; Hospital Preparedness Program (HPP); Public Health Emergency Preparedness (PHEP); Dept. of Homeland Security (DHS); City Readiness Initiative (CRI); Urban Areas Security Initiative (UASI); Health and Human Services (HHS).

●HCC receives funds from this source.

◇HCC partners, but not the HCC itself, receive funds from this source.

Southeastern Regional Pediatric Disaster Surge Network: A Public Health Partnership

PETER M. GINTER, PhD^a
ANDREW C. RUCKS, PhD^a
W. JACK DUNCAN, PhD^a
MARTHA S. WINGATE, DRPH^a
S. KENN BEEMAN, MD, FACS^b
JANE REEVES, RN^c
MAURY A. WEST, LGSW^d

SYNOPSIS

In the event of a natural or man-made disaster involving large numbers of children, resources in the Southeastern U.S. are extremely limited. This article chronicles the efforts of the Alabama Department of Public Health, the Mississippi State Department of Health, and the South Central Center for Public Health Preparedness in conjunction with more than 40 organizations to develop a voluntary network of health-care providers, public health departments, volunteers, and emergency responders from Alabama, Florida, Louisiana, Mississippi, and Tennessee. The purpose of the Southeastern Regional Pediatric Disaster Surge Network (the Network) is to improve the pediatric preparedness response strategies of public health, emergency response, and pediatric providers in the event of large-scale emergencies or disasters that overwhelm local or state pediatric resources.

The planning and development of the Network is proceeding through three general phases—information sharing, mutual goal setting and collective action, and long-term formal linkages. In Phase 1, critical planning tasks to be undertaken in the development of the Network were identified. In Phase 2, the agencies developed a draft operational handbook that served as the basis for a formal memorandum of understanding. In Phase 3, participants will engage in exercises and evaluations that will further identify and work out logistical and operational details.

^aSouth Central Center for Public Health Preparedness, School of Public Health, University of Alabama at Birmingham, Birmingham, AL

^bOffice of Emergency Planning and Response, Mississippi State Department of Health, Jackson, MS

^cCenter for Emergency Preparedness, Alabama Department of Public Health, Montgomery, AL

^dSocial Work Division, Alabama Department of Public Health, Montgomery, AL

Address correspondence to: Peter M. Ginter, PhD, South Central Center for Public Health Preparedness, School of Public Health, University of Alabama at Birmingham, RPHB 330, 1530 3rd Ave. S, Birmingham, AL 35294-0022; tel. 205-975-8970; fax 205-934-3347; e-mail <pginter@uab.edu>.

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During the past five years, the South Central Center for Public Health Preparedness (SCCPHP) has worked in conjunction with the Alabama Department of Public Health (ADPH), the Mississippi State Department of Health (MSDH), and more than 40 agencies and institutions to improve the pediatric preparedness response strategies of public health, emergency responders, and pediatric providers in the Southeastern United States. Disasters such as Hurricane Katrina, the earthquakes in Haiti and Chile, and other emergencies have illustrated the need for a coordinated and collective response to the needs of children, as children are among the most vulnerable to injury, disease, and exploitation in any emergency.¹ Immediate response is needed not only to ensure child survival and protection, but also to restore some sense of normalcy to the lives of children.

The Southeastern U.S. lacks pediatric surge capacity because of the relatively small number of pediatric facilities, limited public health resources, high rates of poverty, and other adverse factors specifically related to children. As a result, the ability to respond effectively to large-scale pediatric emergencies and disasters is often beyond the capacity and capability of a single organization, institution, or health department. The challenge of accommodating pediatric surge becomes more daunting given the increased number and consequences of large-scale disasters, and the number of agencies and organizations that must be organized, coordinated, and managed during a disaster response.^{2,3}

Through their emergency and disaster experiences, ADPH, MSDH, and pediatric providers learned that traditional approaches and local health systems, by themselves, were not always effective in addressing the complex, multi-institutional, and multijurisdictional nature of regional pediatric surge.⁴⁻⁸ Further, they realized that the continuing challenges of limited pediatric resources and the unique physiological, mental, and social issues of children would require a focus on leading, organizing, and managing numerous government and private sector organizations to eliminate multiple chains of command, reduce duplicative efforts, and prevent agencies from working at cross purposes. Effective pediatric emergency and disaster response in the Southeast would require a collaborative network of agencies and organizations—a new type of organization called a high-reliability network (HRN).⁹

This article chronicles the efforts of more than 40 organizations to develop an HRN, specifically the Southeastern Regional Pediatric Disaster Surge Network (the Network), a voluntary network of health-care providers, public health departments, volunteers, and emergency responders from Alabama, Florida, Loui-

siana, Mississippi, and Tennessee. The purpose of the Network is to provide pediatric care and mutual aid at the time of an emergency or disaster.

Previous efforts by national and regional groups have illustrated methods for addressing surge capacity through general mutual aid agreements and limited emergency-response resources related to children.¹⁰ These efforts, however, are generally clinically focused, intrastate, and not specific to the Southeastern U.S. In contrast, Network organizers envisioned the solution to limited pediatric surge capacity as regional in nature and as a managerial and organizational issue rather than strictly clinical. Therefore, drawing upon the high-reliability organization (HRO) literature, Network partners attempted to create, maintain, and operate a collaborative, pediatric-surge HRN. The aim was to create a network that would (1) be highly reliable and (2) exhibit an extremely high degree of inter-organizational/agency collaboration. Additionally, this first-of-its-kind regional network would have to operate in cooperation with existing response systems as described in the National Response Framework.¹¹

METHODS

Theoretical framework

Organizations that operate successfully in uncertain settings where the potential for disasters is ever present but fewer disasters occur than are expected are termed HROs. Examples of HROs include power-grid dispatching centers, aircraft-carrier operations, air-traffic control systems, nuclear power generation, wildfire management, U.S. Army combat maneuver groups, high-density theme parks, prison inmate transport operations, and emergency medical treatment. The best of these organizations rarely fail, even though they encounter numerous unexpected events.

During the past 20 years, there has been considerable research on HROs and the strategies they pursue in addressing complex, large-scale logistical problems and in avoiding accidents and cascading events that would otherwise result in significant losses.¹²⁻¹⁹ Although various authors have listed an array of characteristics of HROs, three primary characteristics are most often cited:

1. HROs aggressively seek to know what they do not know. To this end, they devote care and attention to systems design and to extensive training and exercises. In addition, operational personnel participate in system design and process development.
2. HROs emphasize high reliability and, as new

insights emerge, redesign and improve all aspects of prevention, detection, response, and recovery.

3. HROs consistently communicate the big picture to everyone. HROs focus on ensuring that all members understand the overarching goals and mission of the organization and that organizational goals are the same as public goals.^{13,20}

HROs have been studied extensively; however, the lessons learned in managing HROs have not been systematically applied to the management and operation of multiple government and private sector organization networks required to respond to large-scale disasters. These lessons focus on the network organization, management, and leadership.

The Network organizers understood that a network could not be expected to adopt HRO attributes overnight. Rather, the Network would have to incorporate HRO characteristics as interagency collaboration and the Network itself developed. Figure 1 shows the three phases of the collaborative network developmental process.²¹ Phase 1 is termed “exchange network” because it is the period during which the members of the network exchange information, usually through interpersonal interactions among members. In Phase 2, members form “action networks” in which agencies collaborate to establish mutual goals and take collective action. In short, action network members engage in projects and network development, and establish goals to be achieved by a set of undertakings that involve assignment of tasks and accompanying accountability. Phase 3, “systemic network,” sees the formulation and exchange of formal documents creating formal agreements among network members.

Development of the Network

In an effort to create an effective HRN to address a specialized emergency and preparedness need within the region, ADPH and MSDH partnered with SCCPHP to sponsor the creation of the Network. This

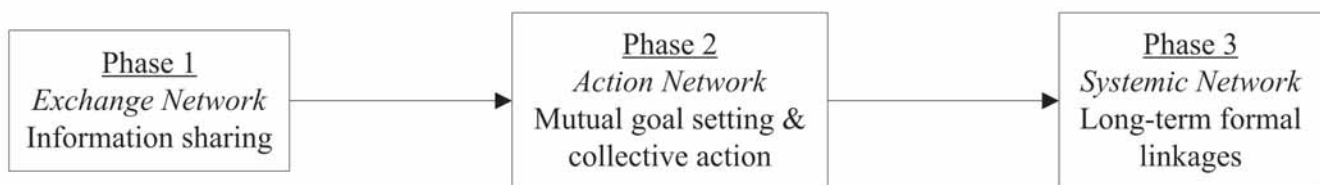
voluntary Network representing health-care providers, public health departments, volunteers, and emergency responders from five states will serve as a source for pediatric resources in the event of an emergency or disaster in any one or all of the five states. When there is no emergency or disaster, SCCPHP maintains the Network and coordinates its activities.

For the purposes of the Network, a pediatric emergency or disaster is defined as an overwhelming incident that exceeds the effective response capability or resources of impacted pediatric health-care facilities. An incident of this magnitude will almost always involve a broad range of health-care providers and emergency responders from a variety of jurisdictions. Only a broad systems solution such as an HRN can deal with patient surge issues of such magnitude.

During a response to an emergency, the Network will operate within the prescriptions of the National Response Framework¹¹ as a resource for operational support through an Emergency Operations Center (EOC) appropriate for the incident.²² In essence, the local incident command will request support from a state EOC and, if appropriate, from one state EOC to another state EOC. The visibility of Network resources will be through the Essential Support Function 8 (Public Health and Medical Services [ESF 8]²²) representative at the state-level EOC. During a response that involves a gubernatorial or Presidential declaration of emergency, the sharing of resources across state boundaries will be governed by the Emergency Management Assistance Compact (EMAC) enacted by Congress and approved by all states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands.²³ For emergencies that are not of sufficient scale to achieve a declaration of emergency, resource sharing will be achieved through mutual aid understandings separate from EMAC.²⁴ The Network will function with a memorandum of understanding (MOU) signed by all Network participants and additional mutual aid agreements that exist among many of the Network participants.

In planning and developing the Network, we had an

Figure 1. Phases of network formation and influencing constructs of interagency collaboration^a used in planning and developing the Southeastern Regional Pediatric Disaster Surge Network



^aAdapted from: Alter C, Hage J. Organizations working together. Newbury Park (CA): Sage Publications; 1993.

advantage compared with efforts to develop other types of networks. This advantage concerned the nature of the participants and the agreement to aggressively seek what “we did not know.” Because the Network comprised health-care institutions, the individuals involved possessed a similar type of training and experience (e.g., physicians, nurses, and health administrators). As the management scholar Henry Mintzberg observed, such participants can be more easily coordinated because they possess a “standardization of skills,” which they acquired through comparatively similar training.²⁵ In addition, the participants understood the ultimate goals of effectiveness and reliability (doing the right things) as well as the reality of efficiency (doing things right) as they applied to the Network. Therefore, they understood the big picture and were insistent on developing the Network with people who understood the nature of emergency response. In addition, participants insisted on maintaining the individual autonomy of each participating organization, but willingly committed to yielding to the common goal of Network effectiveness and reliability.

RESULTS

The planning and development of the Network is proceeding through three general phases—information sharing, mutual goal setting and collective action, and long-term formal linkages, as introduced in Figure 1. This model, drawn from the interagency collaboration literature, was adopted by SCCPHP to provide developmental guidance and to serve as a format for documentation of Network activities. Figure 2 shows the three phases of Network development, the actual and proposed associated activities of the Network, and HRO characteristics that will aid in moving the Network to an HRN. Figure 2 can serve as a starting point or model for those wanting to develop a broad collaborative network.

Phase 1—exchange network: information sharing

In early 2005, a conference hosted by the Children’s Hospital of Alabama and convened by SCCPHP was held for regional pediatric providers, public health representatives, and other responders to address the lack of pediatric surge capacity. As shown in Figure 2, in the meeting, critical pre-event planning tasks were identified that would have to be undertaken in the development of a regional pediatric medical surge network, including network organization planning, financial agreement planning, and operational/medical staff protocol planning.⁸ The critical planning

tasks identified by the working group are shown in Figure 3.

Phase 2—action network:

mutual goal setting and collective action

In October 2008, ADPH contacted SCCPHP regarding a U.S. Department of Homeland Security grant to improve emergency preparedness in Alabama, specifically to advance the planning of the pediatric surge network and create a functioning HRN. The centerpiece of the project was a series of participatory meetings of pediatric-preparedness stakeholders to formalize a regional pediatric disaster surge network using a modified Delphi methodology.^{26,27}

The project plan consisted of five Phase 2 stages (Figure 2):

- Stage 1—Further recruit participants for the planning process.
- Stage 2—Conduct seven face-to-face planning workshops to formalize a plan for network coordination, network finances, credentialing, operations (roles and responsibilities of network participants), logistics, and public information.
- Stage 3—Draft and edit a formal plan (including goals) for the Network (evolved into the Network Handbook and, ultimately, the formal MOU).
- Stage 4—Conduct a face-to-face workshop to finalize the formal plan, Network Handbook, and MOU.
- Stage 5—Distribute these materials to the stakeholders for acceptance and commitment.

The Planning Steering Committee comprised 11 members (two from MSDH, one from the University of Mississippi School of Medicine, four from ADPH, and four from SCCPHP). The Planning Steering Committee met three times via teleconference to review progress in the recruitment of participants for the face-to-face workshops and to establish a schedule and agenda for the workshops.

The first workshop, in March 2009, is best described as a “proof of concept” exercise. SCCPHP investigators outlined the project, reviewed the project plan, and facilitated the first information-gathering exercise in the subject areas of (1) network coordination, (2) finance, (3) medical staff/personnel, (4) operations, (5) planning, (6) logistics, and (7) public information. The information collected during the workshop became the input for the first draft of the Network Handbook, developed by SCCPHP.

Prior to the second workshop, SCCPHP distributed the draft Network Handbook to attendees of the first workshop and those who had registered for the second

Figure 2. Phases of network formation, network activity, and high-reliability network building blocks used in planning and developing the Southeastern Regional Pediatric Disaster Surge Network



MOU = memorandum of understanding

HRN = high reliability network

Figure 3. Critical issues identified in the planning and development of the Southeastern Regional Pediatric Disaster Surge Network^a

<i>Disaster network creation issues^b</i>	<i>Pre-event planning requirements</i>
Network organization planning	
Determine the appropriate region	Geography, topology, population density, and potential disaster threats will be a major input to the appropriate region size. Also, established institutional relationships and partnerships will provide basis for initial discussions.
Identify principal institutions	Major children's hospitals in geographic area, health departments, and large pediatric clinics.
Identify stakeholders	FBI, state and local law enforcement, private MDs, Homeland Security, FEMA, schools, Governor's Office, EMA, and public health agencies.
Determine disaster trigger points	Network institutions must determine criteria for a disaster and who initiates network disaster plans.
Use common terminology— standardized code language	Stakeholders and network institutions must reach consensus on terminology and code language to be implemented in all network hospitals.
Profession licensing/credentialing across state lines	Licensing agencies in a region should establish protocols that allow licensing and credentialing to cross state boundaries, given an event that initiates network disaster plans.
Hazard vulnerability analysis	All hazards do not have an equal probability within a region, depending upon geography, types of high-risk technologies, materials handled within the region, and terrorist threat. Therefore, risk analysis by hazard category must be undertaken.
Communication plans/alternatives	Multiple methods for communication must be developed and contact information between parties should be exchanged prior to an event and updated as needed. This information would include cell phone numbers, e-mail addresses, ham radio, and other means of contact.
MIS data—archived and recent information	The availability of relevant care information would be dictated by the decision to send acute patients (those affected by the disaster) or long-term care patients to other facilities. For disaster victims, only the relevant information would have to be sent and could be done in paper form. For long-term care patients, information related to chemotherapy regimens, dialysis, or other procedures would have to be included.
Special-needs patients	Adequate planning and resources for special-needs populations (e.g., children on dialysis) must be included in the planning.
Adult hospital overflow	Adult hospitals in close proximity to pediatric hospitals may be called upon to meet pediatric needs.
Staff/victim transportation	Network institutions must decide when staff or victims need to be moved. Institutions should have set means to transfer noncritical victims.
Supplies inventory availability	Institutions should have up-to-date inventories of supplies that are easily accessible and can be communicated quickly to network partners.
Incident command Drills and exercises	Plans developed should outline incident command for the organization and the network. Periodic drills on high-probability hazards should be planned and conducted.
Financial agreement planning	
Reimbursement—member, physician, hospital	Network institutions should communicate with Medicaid, HMOs, and PPOs on issues related to reimbursement when crossing state boundaries.
Medical malpractice issues—liability and insurance	Liability and insurance issues would be dictated by patient and/or personnel movement across state boundaries. These issues would need to be resolved during the development process.
Memorandum of understanding—staff, equipment, and facilities	Network institutions should develop standards of practice and use for staff, equipment, and facilities.
Operational/medical staff protocol planning	
Institutional standardized matrix	Each participating hospital or agency should have an incident command system in place. As part of the development of the network, a standardized matrix identifying responsible personnel for certain areas and activities should be created and shared between partners.
Identification of volunteers and deployment team	Staff and volunteers who would be able to travel or provide care to children outside of their institution or state should be identified and given instructions on how to respond given an event.

continued on p. 123

Figure 3 (continued). Critical issues identified in the planning and development of the Southeastern Regional Pediatric Disaster Surge Network^a

<i>Disaster network creation issues^b</i>	<i>Pre-event planning requirements</i>
Facility leaders	Each institution should identify a leader and assure that network partners are familiar with this person.
Triage standardized	Network institutions should reach consensus on a standard triage system and ensure that all employees are aware of the standard.
Joint institution training	Staff who will be working at other network institutions should have some introduction to their counterparts at other institutions. Training these individuals together may be necessary.
Adoption of best practices	While it is difficult to plan for every disaster situation, incorporating the pediatric network into drills (national, regional, statewide, and local) will assist partners in developing best practices.

^aAdapted from: Ginter PM, Wingate MS, Rucks AC, Vásconez RD, McCormick L, Baldwin S, et al. Creating a regional pediatric medical disaster preparedness network: imperatives and issues. *Matern Child Health J* 2006;10:391-6.

^bIssues were identified at the Pediatric Disaster Preparedness meeting, February 15, 2005. Organizations with representatives in attendance included the American Academy of Pediatrics; Alabama Department of Health Center for Emergency Preparedness; Children's Hospital of Atlanta; Children's Hospital of Alabama; Le Bonheur Children's Hospital; Tulane University Medical Center; University of Alabama at Birmingham, School of Public Health, South Central Center for Public Health Preparedness; University of South Alabama Medical School; and Vanderbilt Children's Hospital.

FBI = Federal Bureau of Investigation

MD = doctor of medicine

FEMA = Federal Emergency Management Agency

EMA = emergency management agency

MIS = management information system

HMO = health maintenance organization

PPO = preferred provider organization

workshop. The draft had six sections: (1) introduction, (2) purpose, (3) network activation, (4) operations and logistics, (5) medical staff and personnel development, and (6) finance. In preparation for the second workshop, SCCPHP investigators developed a list of topics and worksheets to gather data about the topics. The 38 participants were organized into six workgroups to collect data on the first 12 topics shown in Figure 4. The workgroups presented their findings in a plenary session, with the SCCPHP investigators serving as facilitators. Before the second workshop concluded, data were collected on each of the 12 topics.

Using the data, SCCPHP investigators expanded the draft of the Network Handbook and distributed it to all previous workshop attendees and third workshop registrants. The third workshop was designed similarly to the second workshop and, in addition, there was a plenary session to review and edit the draft of the Network Handbook. The workgroups were assigned topics 13 through 19 from Figure 4, with topics 17 through 19 combined into one topic dealing with network financing.

In the workshop, the issue was raised as to whether Network efforts were duplicating plans previously developed by the state emergency management agencies. A consensus was reached that pediatric-focused resources

were neither well-defined nor well-represented in the response processes coordinated by the emergency agencies. Therefore, it was also established that the Network would be represented in the participating states' EOCs by state public health agencies that fill the ESF 8 "seat" in the EOC during disaster response activations.

A Handbook Editing Committee was formed from participants in the third workshop plus others from the previous workshops nominated by the project's sponsors. The formation of the Handbook Editing Committee was a major breakthrough in the fourth workshop meeting, not only in the contents of the Network Handbook, but also, and more importantly, in the ownership of the process. To this point, the Network Handbook and the organizational direction of the project had been largely "owned" by the SCCPHP investigators, who argued that as long as the project was not led by the representatives of the Network partners, it would be more difficult, and likely impossible, to bring it to fruition. During the meeting of the Handbook Editing Committee, ownership was transferred from the SCCPHP investigators to the Network participants. In addition, it was concluded that participating institutions, at best, would only commit to broad participation and to provide pediatric resources to the "best of their

ability” in a formal Network agreement. Detailed and specific procedures for credentialing, patient transfer, and financing could not always be anticipated, and regulations varied considerably from state to state. Network participants would not commit to an agreement that could jeopardize their own operation or potentially incur crippling financial costs.

Participants attending the fourth workshop identified the need for and created two task forces. The Common Systems and Acronyms Task Force met via teleconference and focused on identifying systems that exist in each state to monitor the hospital resources and to define the variations of common acronyms used in the various partner states. The Resource Typing Task Force focused on defining pediatric-focused resources that can be added to the Federal Emergency Management Agency’s Public Health and Medical Services resource definitions.^{28,29} The pediatric resources defined by the Resource Typing Task Force included physicians (e.g., general pediatrician, pediatric critical care, and anesthesiologist), registered nurses, respiratory therapists, mental health professionals, social workers, pharmacists, and paramedics, among others.

Workshops 5 through 7 featured reports from the Common Systems and Acronyms Task Force and the Resource Typing Task Force. Additionally, Network development had reached a point at which further development and movement to Phase 3 (Figure 2) would not be possible without executive-level com-

mitment by the participating institutions. Therefore, drawing upon the Network Handbook, an MOU was drafted, edited, and submitted to key Network participants for vetting, final revisions, and signatures.

In addition, during workshop 7 it was recognized that the activities associated with day-to-day maintenance of the Network (e.g., maintaining Network participant points-of-contact information, convening Network participants, and planning and conducting exercises and drills) would have to be the responsibility of one organization that could keep it as a high priority. SCCPHP accepted this responsibility as it fit with the Center’s fundamental mission and goals. Successful completion and signing of the MOU by Network participants and the establishment of the SCCPHP to facilitate Network maintenance would signify the end of Phase 2 and the beginning of Phase 3 of Network development.

Phase 3—systemic network: long-term formal linkages

As of this writing, the Network has entered Phase 3 of Network development (Figure 2). The final phase of Network development will engage participants in exercises and evaluations of the Network. Through these activities, additional logistical details will be identified and integrated into the Network Handbook. An important challenge confronting Network participants is to test the effectiveness of the conversion from a virtual to an actual operating Network. To date, all efforts have centered on organizing and developing the guidelines for implementing the Network, but the effectiveness of the effort has not been evaluated.

An important element of Network maintenance is the design, delivery, and evaluation of drills and exercises. Drills are scheduled quarterly for the purpose of verifying the Network Participant Primary-Point-of-Contact (Primary POC) list. The drill will involve the SCCPHP placing a telephone call and sending an e-mail message to every Primary POC and recording whether the contact is successful. A log of these drills will be maintained and reported regularly at each Network conference. On an annual basis, the Network will conduct at least two Homeland Security Exercise and Evaluation Program (HSEEP) compliant exercises.³⁰ Both discussion-based and field exercises will be conducted. The exercises may be broad in scope to evaluate the integration and coordination of many aspects of the Network, or they may be functional to evaluate a particular function—e.g., an interstate request for support during a non-declared emergency.

The exercises will be robust in nature and incorporate the three suggestions of Bullard and colleagues:³¹

Figure 4. Topics for workgroup discussion and data generation during the planning and development of the Southeastern Regional Pediatric Disaster Surge Network

1. Activation and deactivation
2. Maintenance of situational awareness
3. Network incident command
4. Unified command
5. Role of adult hospitals
6. Role of volunteers
7. Institutional communication outside of an event
8. Procurement procedure and authority
9. Assessment of resource availability
10. Determination of need for nongovernmental agency assistance
11. Assessment of need for support functions
12. Identification of agency planning partners
13. Support and medical staff
14. Licensing and credentialing
15. Common language and coding
16. Release of personnel
17. Funding
18. Monitoring multiple sources of funds
19. Financial controls

(a) ensure that legal issues are considered in the development and conduct of state and local legal preparedness exercises; (b) identify and promote awareness of key legal and operational issues and challenges faced by healthcare providers and facilities in an emergency; and (c) test healthcare provider and facility emergency response plans to ensure effectiveness and integration with other local emergency preparedness efforts.³¹

An important part of the HSEEP process is the detailed documentation of exercises in the form of planning documents and the writing of after-action reports and improvement plans (AAR/IPs). The AAR/IPs will be used to improve Network performance and to identify training and educational needs.

DISCUSSION

The Network participants engaged in a series of meetings from 2005 throughout 2010 to develop a voluntary pediatric surge network. Details have culminated in the development of a Network Handbook and broad MOU outlining the essential character of the Network. Although testing and evaluating the effectiveness of the Network remains the primary challenge, plans are in place to test the proposed system.

Development of the Network has been an interesting and often challenging process, and we learned some important lessons that will be of benefit for future Network development projects.

1. Keep the time between the developmental phases as short as possible. We let too much time elapse between Phase 1 and Phase 2 and lost some momentum.
2. Developmental participants should be knowledgeable about surge problems and issues, as well as emergency and disaster preparedness operations and response systems. We had knowledgeable participants from a variety of agencies and organizations who could consider practical operational and response issues.
3. In Phase 2, institutional executives must become involved to formally commit their agency or organization to Network membership and participation. Although we were able to develop a plan, it had to be translated into a formal MOU that the institutions could commit to and adopt before we could have a “real” surge mutual aid network that we could engage in an exercise.
4. One organization had to take primary responsibility for moving the developmental process

along—convening, facilitating, and documenting the work of the Network participants. SCCPHP was able to fulfill this role with the support of ADPH and MSDH.

5. Similarly, an organization or individual must have responsibility for the maintenance of the Network on an ongoing basis. Network participants typically are busy with competing priorities, and Network maintenance would likely not receive the attention necessary to keep it viable. Therefore, SCCPHP agreed to perform the maintenance function.
6. Multistate, multijurisdictional mutual aid networks are a practical solution to emergency and disaster response; however, they are much more complicated than intrastate mutual aid pacts. We spent hours discussing financing, credentialing, transporting of patients across state lines, and incident command authority issues, as well as state regulatory differences and other difficulties with multiple state agreements. As a result, our initial MOU is more general than we would have anticipated (or wanted), and we now realize that many of the operational and logistical issues will have to be worked out through interstate exercises.
7. The process of convening providers, public health organizations, and the responder community to discuss issues concerning pediatric emergencies or disasters that would overwhelm local or state response capabilities was a great benefit and instructive in itself. The process alerted everyone to the problem, personally connected people who may ultimately have to work together, opened lines of communication, and provided a foundation for the development of closer relationships.
8. In a process such as this, one must get started before one knows how to do it. We had a good idea of what we wanted to accomplish and a reasonable plan for achieving it. However, as the process unfolded, we had to rethink and change the process itself as we proceeded. For example, the model or “map” shown in Figures 1 and 2 was established well into the process as we tried to understand the interagency collaborative process. The model then provided a way to document our developmental activities and help us think through how to incorporate HRO characteristics.

CONCLUSION

Exercises and subsequent evaluation of the Network will yield new insights into the development and operation of regional mutual aid networks. However, the real test of the Network will come in an actual emergency or disaster. If the initial reality test for the Network comes in the form of a localized emergency that impacts only one or relatively few participants, the Network is expected to function as envisioned. The ultimate test of the Network will be in an actual widespread emergency where all participants will face a difficult choice—should we look out for our own self-interest or participate altruistically as members of the Network? We think the Network will be collaborative and highly reliable and the relationships established through its development will provide vital regional pediatric surge capacity.

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REFERENCES

1. Becker BM. Children and disaster. In: Ciotto GR, editor. *Disaster medicine*. 3rd ed. Philadelphia: Mosby Elsevier; 2006. p. 51-8.
2. Coleman L. Frequency of man-made disasters in the 20th century. *J Contingencies and Crisis Manag* 2006;14:3-11.
3. Arnold M, Chen R, Diechmann U, Dilley M, Lerner-Lam A, Pullen R, et al., editors. *Natural disaster hotspots case studies*. Washington: The World Bank; 2006.
4. McAndrews L. Children's hospitals meeting the challenge together. *Pediatrics* 2006;117(5 Pt 3):S357-8.
5. Spedale SB. Opening our doors for all newborns: caring for displaced neonates: intrastate. *Pediatrics* 2006;117(5 Pt 3):S389-95.
6. Baldwin S, Robinson A, Barlow P, Fargason CA Jr. Moving hospitalized children all over the southeast: interstate transfer of pediatric patients during Hurricane Katrina. *Pediatrics* 2006;117(5 Pt 3):S416-20.
7. Johnston C, Redlener I. Critical concepts for children in disasters identified by hands-on professionals: summary of issues demanding solutions before the next one. *Pediatrics* 2006;117(5 Pt 3):S458-60.
8. Ginter PM, Wingate MS, Rucks AC, Vascenez RD, McCormick L, Baldwin S, et al. Creating a regional pediatric medical disaster preparedness network: imperatives and issues. *Matern Child Health J* 2006;10:391-6.
9. Ginter PM, Duncan WJ, McCormick LC, Rucks AC, Wingate MS, Abdolrasulnia M. Effective response to large-scale disasters: the need for high-reliability preparedness networks. *Int J Mass Emergencies and Disasters* 2006;24:331-49.
10. Boyer EW, Fitch J, Shannon M. Pediatric hospital surge capacity in public health emergencies. Pub. No. 09-0014. Rockville (MD): Agency for Healthcare Research and Quality (US); 2009.
11. Federal Emergency Management Agency (US). NRF resource center: national response framework [cited 2009 Oct 7]. Available from: URL: <http://www.fema.gov/emergency/nrf>
12. Perrow C. *Normal accidents: living with high risk technologies*. New York: Basic Books; 1984.
13. Roberts KH. Some characteristics of one type of high reliability organization. *Organization Science* 1990;1:160-76.
14. Roberts KH, Stout SK, Halpern JJ. Decision dynamics in two high reliability military organizations. *Management Science* 1994;40:614-24.
15. Roberts KH, Bea R. Must accidents happen? Lessons from high-reliability organizations. *Acad Manag Exec* 2001;15:70-8.
16. La Porte T, Consolini P. Theoretical and operational challenges of "high-reliability organizations": air-traffic control and aircraft carriers. *Int J Public Admin* 1998;21:847-52.
17. Klein RL, Bigley GA, Roberts KH. Organizational culture in high reliability organizations: an extension. *Human Relations* 1995;48:771-93.
18. Bigley GA, Roberts KH. The incident command system: high-reliability organizing for complex and volatile task environments. *Acad Manag J* 2001;44:1281-99.
19. Bierly PE III, Spender JC. Culture and high reliability organizations: the case of the nuclear submarine. *J Manag* 1995;21:639-56.
20. Grabowski M, Roberts KH. Risk mitigation in virtual organizations. *Organization Science* 1999;10:704-21.
21. Alter C, Hage J. *Organizations working together*. Newbury Park (CA): Sage Publications; 1993.
22. Department of Homeland Security (US). National Incident Management System. December 2008 [cited 2009 Oct 7]. Available from: URL: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf
23. Public Law 104-321, 110 Stat. 3887.
24. Stier DD, Goodman RA. Mutual aid agreements: essential legal tools for public health preparedness and response. *Am J Public Health* 2007;97(Suppl 1):S62-8.
25. Mintzberg H. *The structuring of organizations*. Englewood Cliffs (NJ): Prentice-Hall; 1979.
26. Ginter PM, Duncan WJ, Abdolrasulnia M. Hospital strategic preparedness planning: the new imperative. *Prehosp Disaster Med* 2007;22:529-36.
27. Rucks AC, Ginter PM, Duncan WJ. fCOOP: an efficient and effective process for continuity of operations planning. Presented at the 4th Annual Public Health Preparedness Summit; 2009 Feb 18-20; San Diego.
28. Federal Emergency Management Agency (US). NIMS resource center: resource typing [cited 2009 Oct 7]. Available from: URL <http://www.fema.gov/emergency/nims/ResourceMngmnt.shtm#item4>
29. Federal Emergency Management Agency (US). Typed resource definitions: medical and public health resources [cited 2009 Oct 7]. Available from: URL: <http://www.fema.gov/emergency/nims/ResourceMngmnt.shtm#item4>
30. Federal Emergency Management Agency (US). Homeland Security Exercise and Evaluation Program: about HSEEP [cited 2010 Mar 31]. Available from: URL: https://hseep.dhs.gov/pages/1001_About.aspx#HSEEPOverview
31. Bullard CH, Hogan RD, Penn MS, Ferris J, Cleland J, Stier D, et al. Improving cross-sectoral and cross-jurisdictional coordination for public health emergency legal preparedness. *J Law Med Ethics* 2008;36:57-63.

CMS Emergency Preparedness Rule

Top 10 Things to Know

1. Intent of the rule, as described by CMS, is to “**establish national emergency preparedness requirements**” for all hazards for 17 different providers and suppliers participating in Medicare and Medicaid programs.
2. The rule has been in development for over two years – a draft rule was released in December 2013 for public comment. Over 400 comments were adjudicated in the [final rule that was released on September 8, 2016](#).
3. Key Dates:
 - **September 16, 2016:** Final rule published
 - **November 16, 2016:** Rule goes into effect
 - **November 16, 2017:** Regulations must be implemented by affected entities
4. The rule requires affected groups to implement four component standards, [defined by CMS](#) as:
 - **Emergency plan:** Develop an emergency plan using an all-hazards approach and based on a risk assessment
 - **Policies and procedures:** Develop and implement needed policies and procedures based on the emergency plan and risk assessment.
 - **Communication plan:** Develop and maintain a communication plan that includes provisions for coordinating patient care the facility, across health care providers, and with State and local public health departments and emergency systems.
 - **Training and testing program:** Develop and maintain training and testing programs, including initial and annual trainings, and conduct drills and exercises or participate in an actual incident that tests the plan.
5. Rule applies to [17 different provider and Supplier Types](#), including outpatient surgery, home health agencies, physical therapy offices, and others. CMS has created a [quick reference guide](#) outlining requirements by provider type
6. [ASPR/TRACIE](#) is regularly updating its [CMS Resources at Your Fingertips](#) document and [CMS](#) is routinely updating answers to [Frequently Asked Questions \(FAQs\)](#) on the rule.
7. [Interpretive Guidelines](#) (IGs) and the State Operations Manual are expected to be released by the CMS Survey and Credentialing Group in the Spring of 2017.
8. [Healthcare coalitions](#) are slated to play a prominent role in assisting non-hospital facilities in learning of and complying with the rule and have a major opportunity to engage new providers and foster collaboration and organization within regions.
9. There is no funding being provided to groups and facilities impacted by the rule to assist in compliance.
 - While healthcare coalitions (HCCs) cannot pass Hospital Preparedness Program (HPP) funding they receive directly to individual facilities to assist them in complying, HCCs may use HPP funding to develop staffing capacity and technical expertise to assist members with the new requirements.
10. Accrediting organizations (AOs) must have standards that meet or exceed CMS requirements in the rule and must demonstrate this to CMS by submitting their emergency preparedness standards/programs to CMS for review. Additional information is available on [CMS’s website](#).

General Overview of Healthcare Coalitions

A healthcare coalition (HCC), as defined in the [HHS ASPR 2017-2022 Health Care Preparedness and Response Capabilities](#), is a group of individual healthcare and response organizations (e.g., hospitals, emergency medical services [EMS], emergency management organizations, and public health agencies) in a defined geographic location that play a critical role in developing healthcare system preparedness and response capabilities. HCCs serve as multiagency coordinating groups that support and integrate with [ESF-8](#) activities in jurisdictional incident command systems (ICS).

The Health Care Preparedness Capabilities and resources such as those found in [ASPR TRACIE's Health Care Coalition Resources page](#) provide detailed guidance for establishing and sustaining an HCC. This fact sheet summarizes general information on the basic structure and key functions of an HCC. A complementary ASPR TRACIE fact sheet summarizes several [different fiscal models for an HCC](#). Additionally, ASPR TRACIE continues to host a [series of webinars](#) focused on improving HCC preparedness efforts, decision making processes, and operational planning. These resources and webinars include concepts and content from coalitions from around the country.

The HCC structure should bring together diverse healthcare organizations to work together to respond and coordinate efforts before, during, and after emergencies. HCCs collaborate with a variety of stakeholders to ensure the community has the necessary medical equipment and supplies, real-time information, communication systems, and trained and exercised personnel to respond to an emergency.¹

HCC Core Capabilities

HCC governance and structure differ based on jurisdiction and need, however, there are a few key capabilities and goals that HCCs should strive to achieve (taken directly from the [Health Care Preparedness and Response Capabilities](#)):

- **Capability 1: Foundation for Health Care and Medical Readiness**

Goal of Capability 1: The community's health care organizations and other stakeholders—coordinated through a sustainable HCC—have strong relationships, identify hazards and risks, and prioritize and address gaps through planning, training, exercising, and managing resources.

- **Capability 2: Health Care and Medical Response Coordination**

Goal of Capability 2: Health care organizations, the HCC, their jurisdiction(s), and the ESF-8 lead agency, plan and collaborate to share and analyze information,

¹ See the [HHS ASPR 2017-2022 Health Care Preparedness and Response Capabilities](#) Glossary for a definition of "emergency."

General Overview of Healthcare Coalitions

manage and share resources, and coordinate strategies to deliver medical care to all populations during emergencies and planned events.

- **Capability 3: Continuity of Health Care Service Delivery**

Goal of Capability 3: Health care organizations, with support from the HCC and the ESF-8 lead agency, provide uninterrupted, optimal medical care to all populations in the face of damaged or disabled health care infrastructure. Health care workers are well-trained, well-educated, and well-equipped to care for patients during emergencies. Simultaneous response and recovery operations result in a return to normal or, ideally, improved operations.

- **Capability 4: Medical Surge**

Goal of Capability 4: Health care organizations—including hospitals, EMS, and out-of-hospital providers—deliver timely and efficient care to their patients even when the demand for health care services exceeds available supply. The HCC, in collaboration with the ESF-8 lead agency, coordinates information and available resources for its members to maintain conventional surge response. When an emergency overwhelms the HCC's collective resources, the HCC supports the health care delivery system's transition to contingency and crisis surge response and promotes a timely return to conventional standards of care as soon as possible.

HCC Response Functions

The key response functions of HCCs during an emergency response include:

- **Share and analyze information** (e.g., coordinate information exchange and ongoing situational awareness).
- **Manage and share resources** (e.g., work with partners to manage regional cache [if appropriate/available], obtain/identify pharmaceuticals, medical equipment, and non-clinical supplies).
- **Coordinate strategies to deliver medical care** (e.g., enhanced medical surge capacity and capability, standardized response protocols, platform for real-time policy and strategy development and coordination).

HCCs should have a collective response plan that integrates with members' individual plans as well as the lead ESF-8 agency plan (in cases where the HCC serves as the ESF-8 lead agency, a single plan suffices). The HCC response plan should describe how the key functions above are integrated with the ESF-8 lead agency operations to ensure information is provided to local officials and to effectively communicate and address resource needs met through jurisdictional processes. The [ASPR TRACIE HCC Response Plan Template](#) provides additional information and guidance.

The Characteristics and Development of Regional Pediatric Surge Networks in the United States

Final Report

**A Cooperative Effort between the University of Alabama at Birmingham (UAB),
School of Public Health**

**Andrew C. Rucks, Ph.D.
Peter M. Ginter, Ph.D.
Charles R. Katholi, Ph.D.
Rongbing Xie, MPH**

**and
The American Academy of Pediatrics (AAP)**

**Steven E. Krug, MD, FAAP, Chairperson, Disaster Preparedness Advisory Council
Laura Aird, MS, Manager, Disaster Preparedness and Response
Sean Diederich, Program Coordinator, Disaster Preparedness and Response**

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The Characteristics and Development of Regional Pediatric Surge Networks in the United States

Project Final Report

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I. Executive Summary

The University of Alabama at Birmingham (UAB), School of Public Health and the American Academy of Pediatrics (AAP), [funded by the Oak Ridge Institute for Science and Education through the Centers for Disease Control and Prevention (CDC)], collaborated in April 2013 through October 2014 to determine the state of pediatric disaster surge collaborations and networks in the United States. The study reports the results of two surveys of individuals, agencies, and institutions involved in pediatric care throughout the U.S. concerning the nature, characteristics, and Stages of development of surge networks.

This inventory of U.S. networks and other collaborative efforts to address pediatric surge capacity and identify operational characteristics is an important step towards achieving pediatric preparedness. Further, the inventory provides guidance for improving existing networks and the creation of new networks. The research had six specific aims: 1) identify known agencies, institutions involved in collaborations and networks addressing pediatric disaster surge capacity within the United States; 2) describe the characteristics of informal and formal collaborations and networks; 3) assess the stage of organizational and operational development of each collaboration or network; 4) identify barriers and facilitating factors faced in collaboration and network development; 5) summarize the best practices employed in collaboration and network development; and 6) propose strategies for the development of informal and formal regional pediatric surge collaborations and networks.

To achieve these aims, key pediatric-focused preparedness professionals within local, state, and federal agencies, pediatric-specialty hospitals, regional hospitals, and private practitioners were identified through the researchers' and funding agency professional networks. These professionals were surveyed (Survey I) in order to (1) identify disaster related collaborative networks; (2) assess participants' awareness of and involvement in the networks; (3) collect participants' perceptions of an optimal disaster network's focuses and elements; and (4) recruit participants for a second survey. The second survey (Survey II) reported the disaster preparedness capabilities and achievements of each identified network from Survey I and measured the interagency collaboration between the agencies and the collaborative networks identified by these participants.

The study first identified and then surveyed collaborating providers, agencies, and institutions, involved in the development of pediatric surge collaborations and networks within a geographic area and secondly, within this set, identified the collaborators leading the effort. Analysis of the surveys determined the density and intensity of collaboration, identified the stage of network development, and measured the contribution of situational factors – task characteristics, environmental factors, interagency processes, and total outcome on the development of the network.

The descriptive analyses of data provided an overview of collaborative networks' characteristics. Path analysis was performed to test an interagency collaboration model and to assess direct and indirect relationships among the five constructs (situational factors, task characteristics, environmental factors, interagency processes, and outcomes) within the model.

More than 90% of the respondent to Survey I were aware of and identified at least one disaster related network; moreover, 68.5 % were involved in at least one collaborative network. Eighty three percent of those who were involved listed their roles in the networks. Furthermore, 20.8% of all the identified networks operated in more than one state, and 18.9% of all the identified networks operated in more than one country.

Of the ten identified *interstate* networks, five achieved Stage 3 of network development in which there are long-term formal linkages, three were in Stage 2 where there are mutual goals and collective actions, one was in Stage 1 where there was only information sharing, and no data was available for one of the networks. Considering the density of collaboration, as measured by the relative number of institutions involved in the network, four were assessed as high density, five as medium density, and one as low density. In terms of intensity of collaboration, as measured by the achievement of preparedness goals, three were determined to be low intensity, six as medium, and one as high intensity.

For the seven networks identified as *intrastate*, two had achieved Stage 3 and had long-term formal agreements, while five were assessed as Stage 2, forming mutual goals and taking collective actions. The density of collaboration for intrastate networks was measured as two with low density, four as medium, and one as high. The intensity of intrastate network collaborations was assessed as two with low intensity, four with medium, and one as high intensity. The degree of funds sharing varied considerably within both interstate and intrastate networks; however, the majority of the networks reported no funds sharing.

In order to identify barriers and facilitating factors contributing to network development, analysis of the contribution of situational factors, task characteristics, environmental factors, interagency processes, and total outcome on the development of the networks was undertaken and revealed that pediatric surge networks are largely located in rural areas; typically were in either Stage 2 or Stage 3 of development; and the establishment of agency-institution relationships were not materially influenced by environmental factors, or broad political, economic, and social conditions. Satisfaction with agency-institution relationships, programmatic goal attainment, and productivity for total outcomes, were positively influenced by interagency processes and task characteristics of interstate networks; however, task characteristics, the scope, complexity, and predictability of outcomes for a project were not influential in total outcomes for interstate networks.

Best practices for pediatric surge networks suggested a singular focus on community preparedness, emergency operations coordination, or medical surge. Key elements of a well-functioning network included strategies concerning community preparedness, information sharing, and emergency operations coordination.

II. Overview

The overall intent of this study was to determine the state of formal and informal pediatric patient disaster surge collaborations and networks in the United States. The project was a cooperative effort between the University of Alabama at Birmingham (UAB), School of Public Health and the American Academy of Pediatrics (AAP), funded by the Oak Ridge Institute for Science and Education through the Centers for Disease Control and Prevention (CDC), and was conducted from April 2013 through October 2014. The study reports the results of two surveys of individuals, agencies, and institutions involved in pediatric care throughout the U.S. concerning the nature, characteristics, and Stages of development of surge networks and documents the developmental barriers and facilitating factors as well as strategies of the existing collaborations and networks.

III. Purpose

Broadly, this research reports the state of pediatric surge collaborations and networks through an analysis of two nation-wide surveys of pediatric-specialty hospitals; general hospitals; public health agencies; and members of the American Academy of Pediatrics. More specifically, the research had six specific aims: 1) identify known agencies or institutions involved in collaborations and networks addressing pediatric disaster surge capacity within the United States; 2) describe the characteristics of informal and formal collaborations and networks; 3) assess the stage of organizational and operational development of each collaboration or network; 4) identify barriers and facilitating factors faced in collaboration and network development; 5) summarize the best practices employed in collaboration and network development; and 6) propose strategies for the development of informal and formal regional pediatric surge collaborations and networks.

IV. Background

The Institute of Medicine (IOM) reported that only six percent of the emergency departments in the United States have all the necessary supplies, facilities, or personnel to deal with pediatric emergencies (Gausche-Hill, Schmitz, & Lewis, 2007; Institute of Medicine, 2006). In addition, the AAP Committee on Pediatric Emergency Medicine identified pediatric emergency department (ED) overcrowding as a significant constraint to providing adequate pediatric emergency care in general and a significant constraint during disaster response (AAP, 2004; Hostetler, Mace, Brown, Finkler, Hernandez, Krug et al., 2007; LeBaron, Culberson, Wiley & Smith, 2010). The short-supply of resources and children's hospitals routinely operating at or near capacity combine to produce little available reserves for even a modest surge of inpatients (Sills, Hall, Fieldston, Hain, Simon, Brogan, et al, 2011, p. 1689; Kanter & Morgan, 2007).

Several agencies and organizations have devoted research or other efforts and resources to the topic of disaster-related regional collaborations and networks. For example, in its 2010 report to the President, the National Commission on Children and Disasters recommended that "resources for a formal regionalized pediatric system of care to support surge capacity during and after a disaster" be provided (NCCD, 2010). This recommendation was made earlier by the IOM in 2006 (Institute of Medicine, 2006) and independently corroborated by a peer-reviewed paper

published in the same year (Ginter, Wingate, Rucks, Vasconez, McCormick, Baldwin, et al. 2006). Further, the AAP, the Office of the Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Program (HPP), and the IOM have focused webinars and workshop presentations on the topic of regional collaborations and networks. There is significant evidence of the need for the formation of regional collaborations and networks of providers for pediatric surge. As Krug and colleagues note “enhanced partnerships between pediatricians and state or local health department representatives would likely result in improved pediatric preparedness planning” (Krug, Needle, Schonfeld, Aird & Hurley, 2012).

Despite the evidence of need, formal regional networks have been slow to develop perhaps because they are difficult to organize, develop, and manage, and there may be numerous legal, infrastructural, and operations barriers to their formation and maintenance (Ginter, Rucks, Duncan, Wingate, Beeman, Reeves, et al. 2010). Even with the inherent difficulties, there are a number of nascent and informal networks in various stages of development and fewer formally established regional pediatric surge networks; however, beyond networks for routine care, such as trauma, perinatal, and referral collaborations, little is known concerning the development, characteristics and effectiveness of these networks. Therefore, conducting an inventory and analysis of U.S. networks and other collaborative efforts to address pediatric surge capacity is an important step towards achieving pediatric preparedness. Further, such an inventory will provide guidance for improving existing networks and support the creation of new networks.

Network Rationale

Partnering among organizations has become an expectation of public health agencies at the local, state, and national levels (Zahner, 2005). Indeed, partnering and community involvement are essential in the Public Health Accreditation Board (PHAB) process for state, local and tribal public health accreditation (PHAB, 2013). “Mobilizing community partnerships” is one of the essential public health services defined by the IOM (Institute of Medicine, 1996), and the National Public Health Performance Standards includes the use of partnership strategies as a performance measure (Wisconsin Department of Health and Family Services, 2002).

In its Report to the President and Congress, the National Commission on Children and Disasters (NCCD, 2010) recommended that “The Executive Branch and Congress should provide resources for a formal regionalized pediatric system of care to support pediatric surge capacity during disasters.” This recommendation may have been based largely on the broad understanding that children’s hospitals “routinely operate so close to capacity that little available reserve exists for even a modest surge of inpatients” (Sills, Hall, Fieldston, Hain, Simon, Brogan et al, 2011).

With the passage of the Pandemic and All-Hazards Preparedness Act (PAHPA, Public Law No. 109-417) in 2006, the Congress authorized the Hospital Preparedness Program (HPP). The program is managed by the ASPR in the U.S. Department of Health and Human Services. The HPP has placed considerable emphasis on the formation of health care coalitions through its funding efforts. Rambhia and colleagues (2012) report that more than 90 % of hospitals participating in the survey were involved in a coalition or network as a result of HPP funding. It is noteworthy that the HPP program applies to all hospitals and is not specific to pediatric specialty hospital or pediatric-focused networks. Toner and colleagues (2009) conclude that

although the HPP program has contributed to major advancements in individual hospital preparedness and the furtherance of health care coalitions, health care coalitions remain in the early stages of development and are insufficient to effectively respond to widespread catastrophic events.

Network Theory and Research

The research on factors that promote inter-organizational collaboration is extensive (Gannon-Leary, Baines & Wilson, 2006; Huxham & Vangen, 2000; Oliver, 1990; Wood & Gary, 1991). Inter-organizational collaboration in its most advanced stage results in networks – non-hierarchical collections of legally separate organizations interacting for exchange, concerted action, and joint production (Alter & Hage, 1993; Trist, 1983). Networks are sets of collaborative relationships (Van De Ven & Ferry, 1980), between a lead collaborator and member collaborators (Caplow, 1964; Evan, 1966; Ring & Van De Ven, 1994; Van De Ven, 1976; Van De Ven & Ferry, 1980). Multiple organizations participating in inter-organizational relationships established by each lead collaborator has been labeled an “organizational set” by Evan (1966) and affirmed by Whetten (1981).

Density and Intensity. Two structural properties of inter-organizational collaboration have been defined as density and intensity (Alter & Hage, 1993; Singer & Kegler, 2004; Whetten, 1981). Density is the proportion of all possible linkages within an organizational set. Intensity is the frequency of interaction within an inter-organizational set. Essentially, density and intensity of collaboration, are measures of the richness of the collaboration efforts.

Network Development Stage. Networks typically evolve through three Stages: Stage 1 - **exchange networks**, the sharing of information among participants; Stage 2 - **action networks**, mutual goal setting and collective action; and Stage 3 - **formal networks**, long-term formal linkages with memoranda of understanding, memoranda of agreement, and contracts (Alter & Hage, 1993; Isset & Provan, 2005; Singer & Kegler, 2004; Whetten, 1981). The Stage of network development generally reflects the mutual interdependence within the organizational set and the maturity of the collaborative efforts.

Contribution of Inter-organizational Domains. Five constructs or domains, depicted in Figure 1, contribute to inter-organizational relationships by creating both barriers and facilitating factors to network development and maintenance. These include: 1) situational factors or organizational antecedents that contribute to the likelihood of relationship formation among community agencies; 2) task characteristics that are associated with the scope, scale, and complexity of projects and the perceived uncertainty of project outcomes; 3) environmental factors including economic, political, and social forces that offer motivation and mandates (constraints); 4) interagency processes involving the exchange of information, funding, and clients; and 5) outcomes related to organizational and client perceptions such as satisfaction with relationships. (Alter & Hage, 1993; Ring & Van De Ven, 1994; Van De Ven & Ferry, 1980). The five contributing domains can facilitate or impede network development.

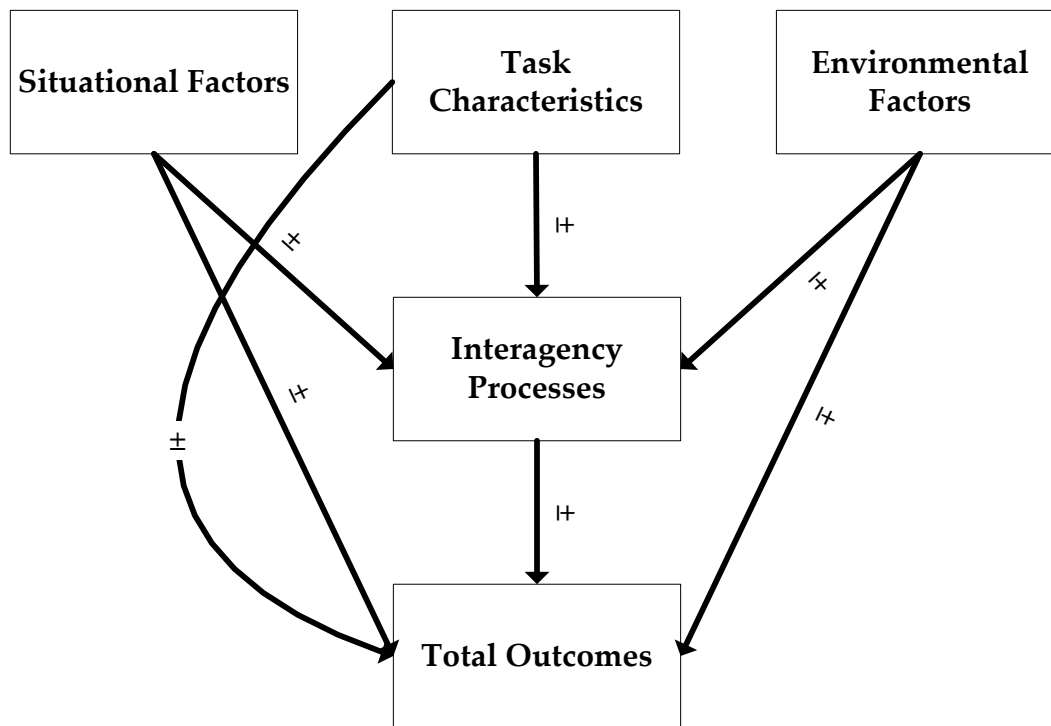


Figure 1. The Five-Domain Model of Inter-organizational Relationships

V. Study Methodology

Drawing upon collaboration theory and research, this section describes 1) the project research design, 2) the sampling criterion, 3) the two surveys, and 4) the analysis protocols.

Research Design

The project employed a single-phase sequential explanatory design (Teddlie & Tashakkori, 2009). The research design, Figure 2, involved four steps – Step 1 was the identification of inter-organizational sets. The goal was to: 1) identify collaborating agencies, institutions, and providers involved in the development of pediatric surge collaborations and networks and 2) within this set, identify the collaborators that are leading the effort.

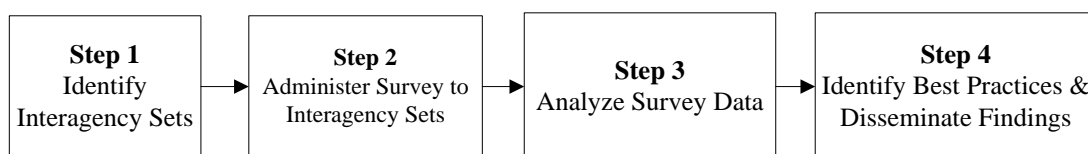


Figure 2. Research Design

Step 2 was designed to identify the geographic boundary and examine the administration of the network through a survey (Survey II) administered to the inter-organization sets. Survey II

included three components: 1) the determination of the intensity and density of collaboration within the interagency set, 2) the identification of the network development Stage, and 3) the identification of the contribution as barriers or facilitating factors, of the five inter-organizational relationship domains using the Interagency Collaboration Assessment Tool (ICAT). Step 3 was data analysis using qualitative and quantitative methods, and Step 4 was the identification of best practices and the dissemination of findings.

Density and Intensity. In order to measure the density and intensity of collaboration, each collaborator assessed his or her general level of interaction with each of the other collaborators in his or her inter-organizational set by answering how often the lead organization worked with each member collaborator in the previous 12 months (0=never to 5=daily/almost daily). Measures of density (the number of linkages present in the inter-organizational set divided by the total number of possible linkages) and intensity of collaboration (mean frequencies of different levels of interaction) were constructed, and each collaborative network assigned to a stage of network development. The richness of collaborative effort was then summarized by plotting density and intensity of collaboration on a two-by-two matrix shown in Figure 3 (Alter & Hage, 1993; Singer & Kegler, 2004; Whetten, 1981).

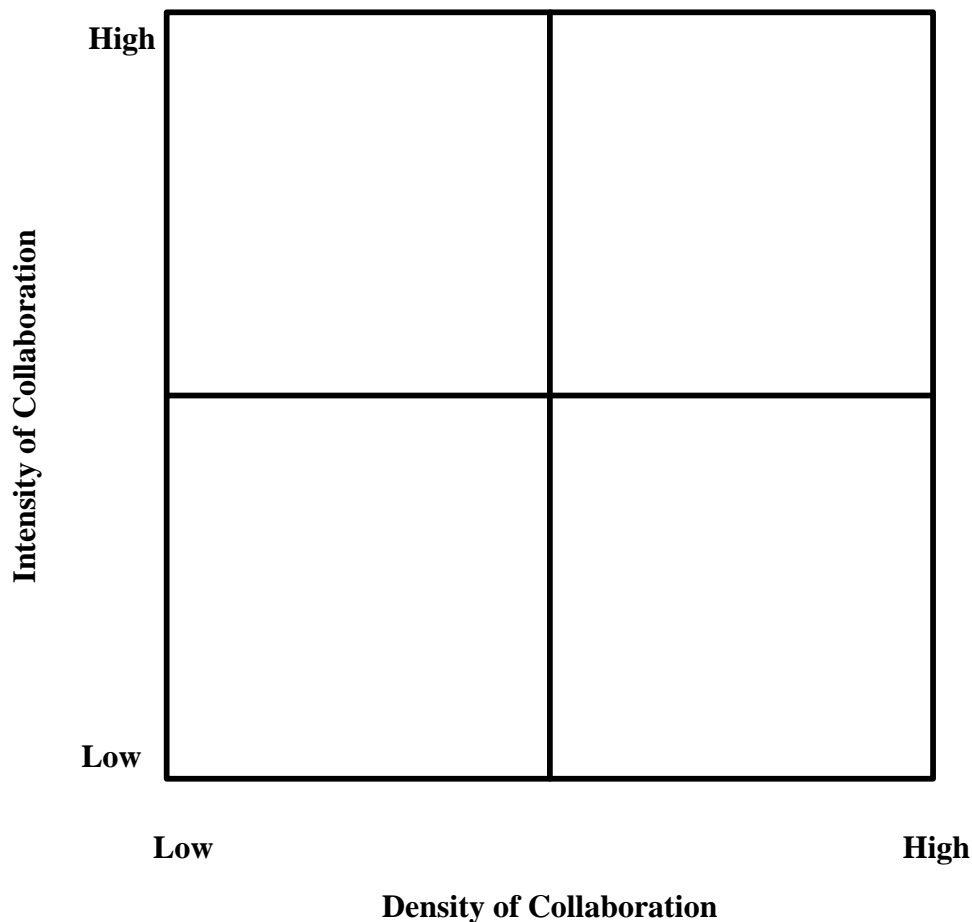


Figure 3. Collaboration Intensity and Density

Network Development Stage. Alter and Hage (1993) described three stages of collaborative network development and envisioned them as a sequential developmental process as shown in Figure 4. Stage 1 – the Exchange Network, in which participants share information about themselves and the work of their organization; Stage 2 – the Action Network, in which participants establish mutually acceptable goals and engage in work to achieve these goals; and Stage 3 – the Formal Network, in which participating organizations enter into formal, written agreements such as contracts and memoranda of agreement (Van de Van, 1976).

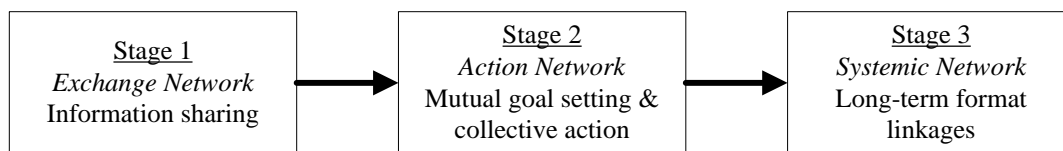


Figure 4. Stages of Collaborative Network Formation

Network Development Barriers and Facilitating Factors. The third component of Survey II utilized the Interagency Collaboration Assessment Tool (ICAT). The ICAT was administered to collaborators in each network to elicit information on the interaction of the five contributing constructs or domains of inter-organizational relationships. The ICAT was developed by Van De Ven and Ferry (1980) and has been adapted by several researchers (Paulson, 1989; Polivka, 1996; Polivka, Dresbach, Heimlich & Elliott, 2001).

Study participants were asked to describe the affiliations of their organizations with each of the other organizations in an inter-organizational set. Information was collected for each of the five contributing constructs of community inter-organization collaboration. The ICAT uses a 5-point Likert type format. Low scores (1-2) indicate minimal collaboration; midrange score (3) suggest average collaboration while the higher scores indicate a great deal of collaboration (Polivka, 1996). Polivka (1996) reported that the evidence of content, discriminant, and concurrent validity and internal reliability of the instrument was previously demonstrated by Van De Ven and Ferry (1980). Further, in her study Polivka (1996), found the alpha coefficients to range from 0.83 to 0.98 for all five dimensions of the instrument. Survey II was administered through the internet application Survey Monkey (www.surveymonkey.com).

Best Practices and Network Strategies. As a way of identifying network best practices and effective collaborative strategies, Survey I included two open-ended questions concerning the appropriate focus of an optimal disaster network and the elements of a well-functioning collaborative network. Each survey participant had the opportunity to list as many as 10 foci and 10 elements. For the qualitative content analysis of the responses, the 15 Public Health Preparedness Capabilities published by the CDC (2011) were used as the coding scheme.

Sampling

A purposeful sample utilizing criterion sampling was used for data collection. Key pediatric-focused preparedness professionals within local, state, and federal agencies, pediatric-specialty hospitals, regional hospitals, and private practitioners were identified through the researchers' and funding agency professional networks. The following criteria were considered when

selecting participants: 1) representation of pediatric-specialty hospitals; 2) representation of general hospitals with pediatric beds; 3) representation of public health agencies; 4) membership within the AAP; 5) representation of different geographic areas within the United States; 6) single agencies versus consortia of agencies; and 7) geographic location (urban versus rural).

The UAB Institutional Review Board for Human Use (IRB) reviewed and approved the research protocol (#X130723004). Two internet-based surveys using the survey tool SurveyMonkey at www.surveymonkey.com were developed and disseminated. Participants were individuals within federal, state, or local governments or non-governmental organizations addressing disaster preparedness, response, and recovery. Responses were requested from AAP members or public health representatives with an interest in disaster medicine, emergency readiness, or public health preparedness who were aware of or involved in a community, state, or regional collaboration or network related to disaster response.

Survey I

The AAP disaster preparedness initiatives staff identified AAP members and public health representatives in the field. The staff members sent out emails with the corresponding link to survey I and posted the survey link on numerous relevant online newsletters. In total, it was estimated that Survey I was shared with 50,422 AAP members, including the AAP Council on Community Pediatrics, AAP Section on Administration and Practice Management, AAP DisasterReady electronic mailing list members, and AAPDPAC electronic mailing list members. The AAP also shared the survey more broadly with Emergency Medical Services for Children (EMSC) grantees, Association for State and Territorial Health Officials (ASTHO), and the National Association of County & City Health Officials (NACCHO).

For open-ended questions assessing the focuses and elements of an optimal collaborative network, qualitative content analysis was conducted to code the content and draw conclusions (Zhang & Wildemuth, 2009). The descriptive analyses of data provided an overview of collaborative networks' characteristics.

Survey I was a five-item online questionnaire that aimed to (1) identify disaster related collaborative networks; (2) assess participants' awareness of and involvement in the networks; (3) collect participants' perceptions of an optimal disaster network's focuses and elements; and (4) recruit participants for Survey II. All the questions were piloted and validated by experts. The survey was opened on January 2, 2014, and the last response was received on May 12, 2014. The overall response rate was 53.4% with 111 complete responses out of 209 attempted or partial completions. A copy of Survey I is included as Appendix A.

Survey II

Eighty-two Survey I respondents agreed to participate in survey II and provided contact information. Participants were included if their agencies worked on disaster health or pediatric health topics. Participants were excluded if they failed to identify any collaborative networks, or if their agencies were not based in the United States. Responses to Survey I were used to refine

the questions in Survey II. The first six questions of Survey II examined the disaster preparedness capabilities and achievements of each identified network from Survey I. A copy of Survey II is included as Appendix B. Additionally, respondents' demographic information such as age, gender, race, education, job title, years with the organization, and years in their present position was collected and shown in Appendix C. The data collection started on March 25, 2014, and ended on May 20, 2014. The overall response rate was 62.2% with 51 responses.

Path Analyses

The ICAT tool, items 4 through 14 in Appendix B, was used to assess the influence of the five domains on collaborative relationships and whether they were barriers or facilitators or neutral? Each construct in the ICAT uses a five-point Likert-type format from 1 to 5 with 1 defined as "not at all" and 5 as "to a great extent." The association between the domains and inter-agency processes and total outcomes is determined using path analysis. Path analysis uses multiple regressions to measure the association between independent and dependent domains. Each construct or domain had several questions designed as described in the paragraph. (An examination of Appendix B will reveal one item that is a binary question about interagency processes, and this item was excluded from the analysis.)

The path coefficient for a direct association between two constructs (one independent and one dependent) is the correlation between them controlling for other constructs in a least squares linear regression model. The path coefficient for an indirect relationship between two constructs represents the effect of a construct on the other through an intermediate construct. The mean of the questions for each construct were calculated and used to represent the construct in the path analyses with the CALIS (Covariance Analysis of Linear Structural Equations) procedure in SAS 9.3.

As the Five-Domain Model depicted in Figure 1 shows, 7 sets of domain pairs were regressed: 1) Situational Factors and Interagency Processes; 2) Task Characteristics and Interagency Processes; 3) Environmental Factors and Interagency Processes; 4) Situational Factors and Total Outcomes; 5) Task Characteristics and Total Outcomes; 6) Environmental Factors and Total Outcomes; and 7) Interagency Processes and Total Outcomes. The path coefficient is the statistic Beta (β) indicating the "strength" of the dependency between sets of variables or domains. The value of β is $-1.0 \leq \beta \leq 1.0$. Statistically significant β s approaching -1.0 indicate a negative relationship between domains, β s near zero indicate neutrality, and β s approaching 1.0 indicate a positive relationship between domains. The level of significance applied during the analysis was $p \leq 0.05$. Beta is the sum of "direct" and "indirect" effects. Direct effects are the association of one variable with another net of any association occurring by indirect paths in the model. Indirect effects are the association of one variable with another mediated through another variable in the model.

An examination of the Five-Domain Model (see Figure 1), reveals the paths that will produce both direct and indirect effects and those that have direct effects only. This concept is shown in Figure 5, in which direct effects are symbolized by the solid lines and indirect effects by dashed lines. The domain through which dotted lines pass is the source of mitigation and produces the

indirect effects between an independent domain and the dependent domain Total Outcomes. Arrows originate with independent domains and terminate in dependent domains.

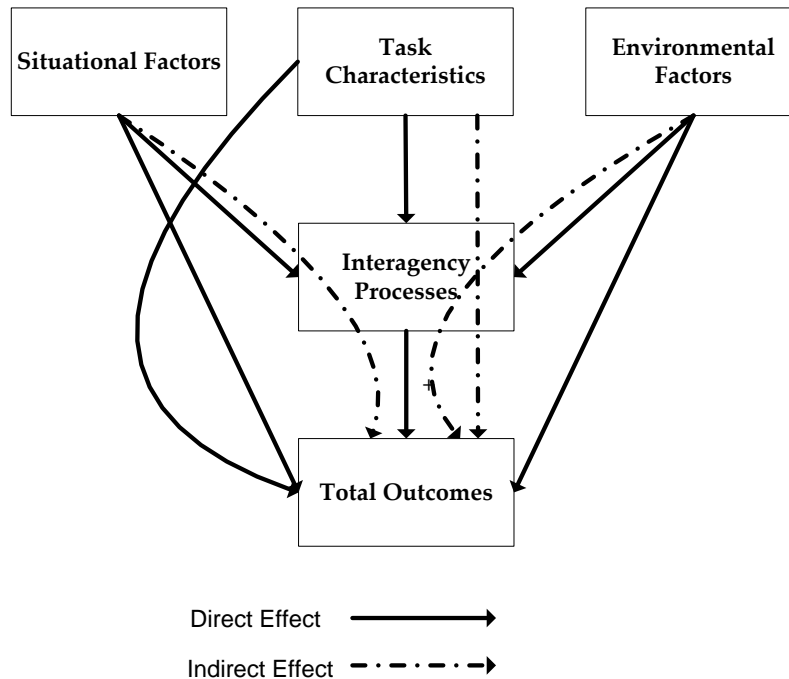


Figure 5. Direct and Indirect Effects in the Five-Domain Model

Evaluation of the Five-Domain Model involves two assessments, an initial assessment and a revised assessment with two path analyses conducted for each assessment. In the first path analysis the dependent domain is Interagency Processes, and the independent domains are Situational Factors, Task Characteristics, and Environmental Factors. Since an intermediary domain is absent in these relationships, only direct effects are involved. In the second path analysis, Total Outcomes is the dependent domain and the independent domains are the other four domains - Situational Factors, Task Characteristics, Environmental Factors, and Interagency Processes. As Figure 5 shows, the relationships between the domains' Situational Factors, Task Characteristics, and Environmental Factors with the dependent domain Total Outcomes is mitigated by Interagency Processes. Thus, there are direct effects on Total Outcomes from each of the four independent domains, and indirect effects from Situational Factors, Task Characteristics, and Environmental Factors. In the second assessment, associations not exhibiting significant associations are removed – those with β values that are not significant at $p \leq 0.05$. This second assessment produces a revision to the model created by the first assessment.

In the findings section of this report, path analysis results are presented for three sets of networks – **all** networks, **interstate** networks, and **intrastate** networks. In the tables and figures presenting the analytical results, R squared is calculated for the two dependent domains – the Interagency Processes domain and the Total Outcomes Domain in order to demonstrate the goodness of fit of the model. R squared is a value within the parameters, $0 \leq R^2 \leq 1$ and represents the percent of the variance explained by the model. R squared values approaching 1 indicate that the model achieves the highest levels of goodness of fit, and R squared values approaching 0 indicate that

the model demonstrates the lowest levels of goodness of fit and is not a reasonable representation of relationships between independent and dependent domains.

VI. Findings

Research Aim 1: Surge Agencies, Institutions, Collaborations and Networks

Among the 111 respondents to Survey I, 90.1% were aware of and identified at least one disaster-related network; moreover, 68.5 % were involved in at least one collaborative network. Eighty three percent of those who were involved listed their roles in the networks. Furthermore, 20.8% of all the identified networks operated in more than one state, and 18.9% of all the identified networks operated in more than one country.

Table 1 lists 17 coalitions identified by Survey I. The label identifying each coalition was selected by the study authors unless a formal name was known or clearly identified. For example, “Florida Children’s Preparedness Coalition” is the formal name of a collaborative network, while “Illinois Coalition” is an author-generated descriptive label. Within the list of collaborators, the collaborator’s names are taken from the survey and the extent of organizational formality of each collaborator is beyond the scope of this research; however, entities such as “Linkedin disaster network” and other similar names likely represent informal and non-institutional organizations. It is noteworthy that readers may recognize that there are some and, perhaps, many organizations participating in the various coalitions that are not represented in Table 1, this reflects the self-reported information provided by respondents to Survey I.

Table 1. Identified Collaborative Networks

Coalition Label	Collaborators
Interstate Coalitions	
Florida Children's Preparedness Coalition	Florida Department of Health (FDOH) - Bureau of Preparedness and Response
	Florida Emergency Medical Services for Children
	Florida Healthcare Coalition Statewide Working Group
	Florida Region 7 Domestic Security Task Force
	Jackson Health System, Miami, Florida
	Medical Reserve Corps
	Miami Dade Healthcare Preparedness Coalition
	National Voluntary Organizations Active in Disasters
	Southeastern Regional Pediatric Disaster Surge Network
	Strategic Planning Oversight Team, Bureau of Preparedness, FDOH

Coalition Label	Collaborators
Illinois Coalition	American Academy of Pediatrics
	Chicago Department of Health
	EMS-C at state and national level
	Illinois Department of Health
	Ann & Robert H. Lurie Children's Hospital of Chicago
	Northwestern Health Care Consortium
	Winneshiek County Public Health
Iowa Coalition	Iowa Department of Public Health
	Monona County Community Alliance
	Monona County Public Health
	Region 3 (Iowa) Emergency Preparedness Advisory Group
	Winneshiek Healthcare Emergency Preparedness Coalition
Kentucky Coalition	Greater Cincinnati Health Council Disaster Preparedness Coalition
	Healthcare Emergency Response Association of Region 7 Kentucky
	Kentucky Board of EMS, EMS for Children Program
	Kentucky Department for Public Health
	Kentucky Functional And Access Needs Collaborative
	Kentucky Hospital Preparedness Program
	MmpBench
	Northern Kentucky Health Department
	Norton Healthcare
	Region 4 HHS Unified Planning Coalition
	Region 7 Healthcare Planning Coalition - Northern Kentucky
Minnesota Coalition	LinkedIn Disaster Preparedness Groups
	Mayo Clinic
	Public Health Disaster Response Advisory Group
	Southeast Minnesota Disaster Health Coalition
Mountain States Pediatric Disaster Surge Coalition	ASPR HPP Region 8 Workgroup
	EMS CHIRP
	Heartland Planning Coalition - HSS Regions 7&8
	Southwest Utah Healthcare Preparedness Coalition
	Southwest Utah Public Health Department
	Utah Department of Health
	Utah Emergency Management Agency
	Utah National Disaster Medical System (NDMS) Participating Hospitals
	Utah Public Health Infrastructure and Preparedness Alliance (PHIPA)
	Utah Public Health Preparedness Senior Advisory Committee
	Utah's Regional Medical Surge Coalitions (ASPR HPP Coalitions)

Coalition Label	Collaborators
Oregon Coalition	Area Trauma Advisory Boards
	Conference of Local Health Officials
	Emergency Medical Services for Children Advisory Committee
	Healthcare Region Coalitions
	Linkedin disaster network
	Medical Reserve Corps
	Metropolitan Portland Hospital Preparedness group
	National Disaster Medical System
	Oregon Disaster Medical Assistance Team
	Oregon EMS for Children
	Oregon Medical Reserve Corp Volunteers
	Oregon State Public Health/Health Alert Network
	Portland Oregon Cities Readiness Initiative
	State Emergency Medical Services and Trauma Systems Advisory Committees
	State's Public Health Security and Preparedness Response Program
Southeastern Regional Pediatric Disaster Surge Network	Alabama Department of Public Health
	Florida Children's Preparedness Coalition
	Southeastern Regional Pediatric Disaster Response Network
	University of Mississippi Medical Center
Texas Coalition	Brazos Valley Healthcare Coalition
	Central Texas Healthcare Coalition
	Emergency Medical Task Force - 7
	EMPOWER
	Heart of Texas Healthcare Coalition
	Heart of Texas Regional Advisory Council
	International Association of Emergency Managers
	South East Texas Regional Advisory Council
	Texas Children's Hospital
Washington State Coalition	Pacific Northwest Border Health Alliance
	Washington State Department of Health
	Washington State Department of Health

Coalition Label	Collaborators
Intrastate Coalitions	
Arizona Healthcare Coalition Southeastern	Arizona Department of Health Services Partnership Workshop
	AZ Local Public Health Emergency Response Agency
	AZ Pediatric Healthcare Coalition
	Coyote Crisis Collaborative
	Local Emergency Planning Committee (LEPC) - Pima County
	South Arizona Regional Emergency Management Committee
	Tucson Metropolitan Medical Response System
	Tucson Urban Area Security Initiative
Colorado Coalition	Cheyenne County Healthcare Coalition
	Colorado North Central Region Public Health Committee
	Delta County ESF8 Partnership
	Delta County Health Department
	Denver Health Care Coalition
	Denver Local Emergency Preparedness Committee
	Denver Public Health
	Kit Carson County Health and Human Services
	Kit Carson County Healthcare Coalition
	Lincoln County Healthcare Coalition
	West Region Healthcare Coalition
Coyote Crisis Collaborative	Arizona Coalition for Healthcare Emergency Response - Southeastern Region
	Arizona Coalition for Healthcare Emergency Response (AZCHER) -- Central Region
	Arizona Pediatric Coalition
	Local Emergency Preparedness Councils
	Northern Healthcare Coalition
	Urban Area Security Initiatives (County Groups)
	Western Healthcare Coalition
Ohio Coalition	Ohio Division of Emergency Medical Services
	Ohio Pediatric Disaster Preparedness Coalition
	Rainbow Babies and Children's Hospital
San Bernardino (CA) County Coalition	Healthcare Emergency Planning Partners (HELPP), a PHEP Partnership for San Bernardino County
	Healthcare Preparedness Planning Partners (HP3), an HPP Coalition for San Bernardino County
	Inland Counties Emergency Medical Agency (ICEMA)
	pedisurgenetwork@googlegroups.com
San Francisco Coalition	California Hospital Association Emergency Preparedness network
	San Francisco General Hospital & Trauma Center
	San Francisco Hospital Council/DPH Emergency Preparedness Partnership

Coalition Label	Collaborators
Southern California Coalition	California EMS for Children
	Children's Hospital Los Angeles - Pediatric Disaster Resource and Training Center
	Children's Hospital Los Angeles Pediatric Disaster Resource Center Network
	Los Angeles County Disaster Resource Centers
	Orange County Emergency Management Organization (OCOMO) Schools Subcommittee
	Orange County Health Care Agency
	Orange County Hospital Preparedness Advisory Committee
	Orange County Kids in Disasters (KIDs) Working Group
	Pediatric and Neonatal Disaster Preparedness Network
	Pediatric coalition multi- state networking conference call

The geographic location of the networks listed in Table 1 is shown on a map of the United States in Figure 6.



Figure 6. Pediatric Surge Networks in the United States

Research Aim 2: Density and Intensity of Collaboration

Density and intensity of collaboration were measured through an examination of the number of collaborators reported in a network and the extent to which formal agreements were in place between the participating organizations. Density is normally measured by the proportion of all possible collaborators participating in a network. However, given the nature of the sample and especially its geographical breadth, it was not possible to know the number of potential collaborators in any network. Therefore, the number of collaborators reported in an identified networks was used to measure density by comparing the number of collaborators in each network to the overall median number of collaborators. Low density networks were in the first

quartile, medium density in quartiles 2 and 3, and high density networks were in quartile 4. The scale for assessing the density of collaboration is shown in Table 2.

Table 2. Scale for Assessing the Density of Collaboration

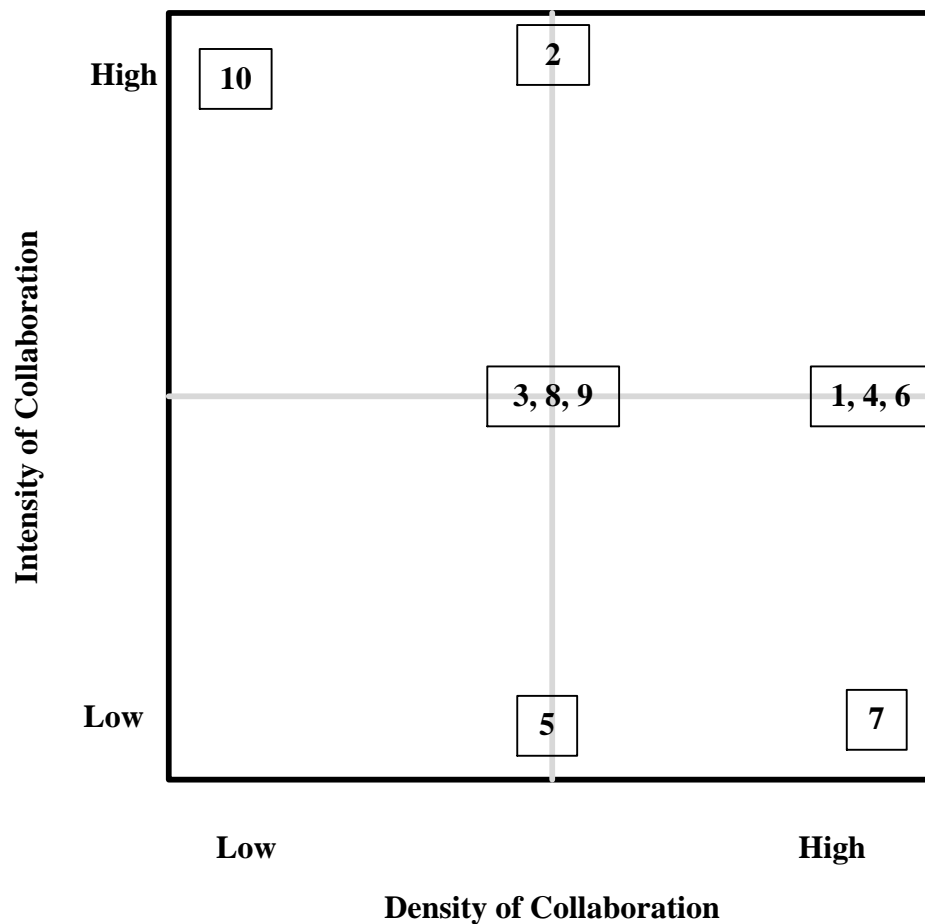
Density Assessment	Number of Collaborators in a Network
Low	< 4
Medium	4 to 10
High	> 10
Median	7
Range	1 to 15

Intensity of collaboration was assessed through an analysis of the responses to item 3.1 of Survey II. Item 3.1 asked the respondents to indicate the extent to which an identified network achieved each of 15 preparedness goals (CDC, 2011) using a four-point Likert type format, from 1 to 4, with 1 meaning “does not yet address” and 4 meaning “addresses to a significant extent.” Each network could achieve a score in the range of 15 (a score of 1 on each item) to 60 (a score of 4 on each item). Intensity was assessed for each identified network in a manner similar to the assessment of density: low intensity networks were in the first quartile, medium intensity in quartiles 2 and 3, and high intensity networks were in quartile 4. The scale for assessing the intensity of collaboration is shown in Table 3.

Table 3. Scale for Assessing the Intensity of Collaboration

Density Assessment	Number of Collaborators in a Network
Low	< 32
Medium	33 to 47
High	> 47
Median	41
Range	3 to 60

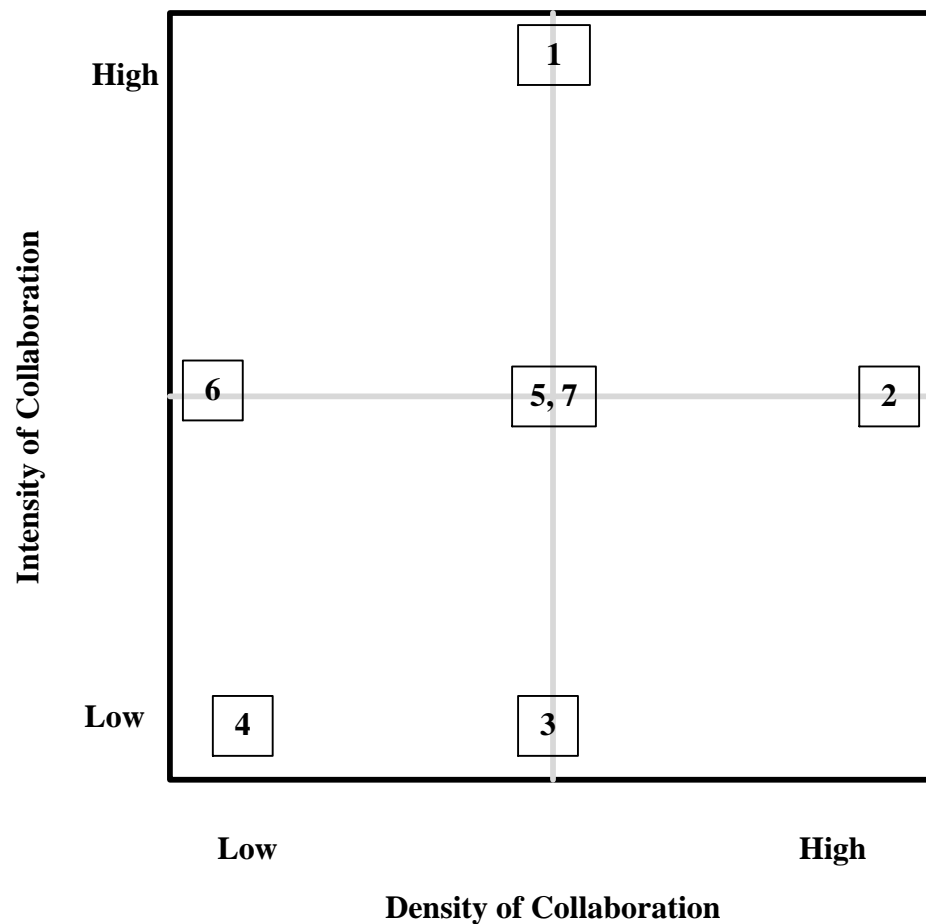
The results of the evaluation of the density and intensity of collaboration are summarized on the two-by-two matrices shown in Figures 7 and 8. Figure 7 shows that none of the interstate networks achieved both high density and high intensity; however two networks achieved high intensity, and two demonstrated low intensity. Figure 8 shows that intrastate networks, in general, demonstrated lower levels of density and intensity than interstate networks.



Legend:

1 = Florida Children's Preparedness Coalition; 2 = Illinois Coalition; 3 = Iowa Coalition; 4 = Kentucky Coalition; 5 = Minnesota Coalition; 6 = Mountain States Pediatric Disaster Surge Coalition; 7 = Oregon Coalition; 8 = Southeastern Regional Pediatric Disaster Surge Network; 9 = Texas Coalition; 10 = Washington State Coalition

Figure 7. Density and Intensity of Collaboration for Interstate Networks



Legend:

1 = Arizona Healthcare Coalition Southeastern; 2 = Colorado Coalition;
 3 = Coyote Crisis Collaborative; 4 = Ohio Coalition; 5 = San Bernardino
 (CA) County Coalition; 6 = San Francisco Coalition; 7 = Southern California
 Coalition

Figure 8. Density and Intensity of Collaboration for Intrastate Networks

Sharing of Financial Resources within Networks

Item 10.2 of Survey II ask the extent to which collaborators “send funds to or receive funds from” one another. A five-point Likert type format scale was used with 1 being “not at all” and 5 being “great extent.” The sharing of funds information is shown in Table 4. As Table 4 shows, the degree of funds sharing varied considerably within networks; however, the majority reported no funds sharing at all. Data that would indicate the volume or value of funds shared were not collected for this research and was outside the scope of this project.

Table 4. Shared Funding for Pediatric Surge Coalitions

Network Label	Not at All	A Little	Some	A Lot	Great Extent
Interstate Networks					
Florida Children's Preparedness Coalition	100.0%	0.0%	0.0%	0.0%	0.0%
Illinois Coalition	80.0%	20.0%	0.0%	0.0%	0.0%
Iowa Coalition	40.0%	0.0%	0.0%	0.0%	60.0%
Kentucky Coalition	25.0%	38.0%	13.0%	13.0%	13.0%
Minnesota Coalition	67.0%	0.0%	0.0%	0.0%	33.0%
Mountain States Pediatric Disaster Surge Coalition	89.0%	0.0%	0.0%	0.0%	11.0%
Oregon Coalition	No Data				
Southeastern Regional Pediatric Disaster Surge Network	100.0%	0.0%	0.0%	0.0%	0.0%
Texas Coalition	0.0%	0.0%	0.0%	25.0%	75.0
Washington State Coalition	0.0%	0.0%	100.0%	0.0%	0.0%
Intrastate Networks					
Arizona Healthcare Coalition Southeastern	100.0%	0.0%	0.0%	0.0%	0.0%
Colorado Coalition	88.0%	12.0%	0.0%	0.0%	0.0%
Coyote Crisis Collaborative	100.0%	0.0%	0.0%	0.0%	0.0%
Ohio Coalition	100.0%	0.0%	0.0%	0.0%	0.0%
San Bernardino (CA) County Coalition	67.0%	0.0%	33.0%	0.0%	0.0%
San Francisco Coalition	34.0%	33.0%	33.0%	0.0%	0.0%
Southern California Coalition	61.0%	13.0%	13.0%	13.0%	1.0%

Research Aim 3: Stage of Network Development

The stage of network development was assessed by analyzing responses to items 10.1 and 11.1 of Survey II. Item 10.1 asked respondents to use a five-point Likert type format to answer the question “to what extent does your agency send information to or receive information from this other agency?” – 1 meaning “not at all” and 5 meaning “great extent.” Item 11.1 asked a yes or no question – “does your agency have a formal agreement/contract with this agency?” The coding of stage of network development was: Stage 1 – a value of 3 or less on item 10.1; Stage 2 – a value of >3 on item 10.1 and a “no” on item 11.1; and Stage 3 – a value > 3 on item 10.1 and a “yes” on item 11.1.

The results of the stage of development with associated density and intensity of collaboration previously discussed are shown in Table 5.

Table 5. Stage of Network Development and Density and Intensity of Collaboration for All Identified Networks

Coalition Label	Stage of Network Development	Density of Collaboration	Intensity of Collaboration
Interstate Networks			
Florida Children's Preparedness Coalition	2	High	Medium
Illinois Coalition	3	Medium	High
Iowa Coalition	3	Medium	Medium
Kentucky Coalition	3	High	Medium
Minnesota Coalition	2	Medium	Low
Mountain States Pediatric Disaster Surge Coalition	1	High	Medium
Oregon Coalition	No Data	High	Low
Southeastern Regional Pediatric Disaster Surge Network	3	Medium	Medium
Texas Coalition	3	Medium	Medium
Washington State Coalition	2	Low	High
Intrastate Networks			
Arizona Healthcare Coalition Southeastern	3	Medium	High
Colorado Coalition	3	High	Medium
Coyote Crisis Collaborative	2	Medium	Low
Ohio Coalition	2	Low	Low
San Bernardino (CA) County Coalition	2	Medium	Medium
San Francisco Coalition	2	Low	Medium
Southern California Coalition	2	Medium	Medium

Of the ten interstate networks, five (or one-half) had achieved Stage 3 of network development, three were in Stage 2, one was in Stage 1, and no data was available for one of the networks. The density of collaboration for interstate networks revealed four high density networks, five with medium density collaboration, and one with low density collaboration. In terms of intensity of collaboration for interstate networks, three were low intensity, six medium, and one was high intensity. For the seven intrastate networks, two had achieved Stage 3 and five had achieved Stage 2. Density of collaboration for intrastate networks was two low density, four medium, and one high. The intensity of intrastate network collaboration was two low intensity, four medium, and one high intensity.

Research Aim 4: Barriers Facilitating Factors in Collaborative Relationships

Table 6 shows the results of the ICAT for the overall set of 119 relationships reported by the 51 respondents to Survey II. Each of the five domains consists of two or more variables. In Table 6, the mean and standard deviation is shown for each variable, and the variables are grouped by domain. An examination of the means and standard deviations shown in Table 6 suggests that the scores are skewed to the high end of the five-point Likert type format. This phenomenon may be explained by the relatively small number of respondents from each of the 24 states represented by Survey II. As shown in Table 7, the median number of responses per state was 3, and the range was from 1 to 6.

Table 6. ICAT Results for All Networks

Domain and Variables	Mean (SD) n = 119
Environmental factors	
• Competition among policy makers and agency heads	2.65 (1.14)
• State policies encourage local interagency collaboration	3.39 (1.04)
• Federal policies encourage local interagency collaboration	3.24 (1.12)
• Public advocated for community-wide disaster-preparedness programs	2.36 (1.03)
• Adequate funding for community-wide disaster-preparedness programs	2.23 (0.78)
Situational factors	
• Know staff at each agency	4.19 (1.31)
• Know specific goals and services of each listed agency	4.19 (1.20)
• Importance of other agencies in helping attain the agency's goal	3.66 (1.42)
• Obtain funding from the same sources	2.84 (1.74)
• Provide same services	2.53 (1.58)
• Agree on the community-wide disaster-preparedness needs	4.14 (1.12)
Task Characteristics	
• Need diverse specialties to accomplish collaborative goals	3.83 (1.28)
• Anticipate outcomes of collaborative efforts	3.55 (1.24)
Interagency Processes	
• Exchange information with agency	3.78 (1.37)
• Exchange funds	1.92 (1.49)
• Have a formal agreement/contract (1=yes; 0=no)	0.45 (0.50)
• Have an interagency committee or group coordinate activities	3.55 (1.55)
• Coordination of activities with agency	3.57 (1.31)
• Influence of each listed agency in shaping policies and programs	3.35 (1.36)
Total Outcomes	
• Satisfied with relationship with agency	3.92 (1.15)
• Collaborative goals achieved	3.47 (1.06)

Domain and Variables	Mean (SD) n = 119
• Productive relationship with agency	3.93 (1.11)

Table 7. Number of Respondents per State to Survey II

Number of Respondents Per State	Frequency
1	9
2	7
3	6
4	1
5	0
6	1
Median	3

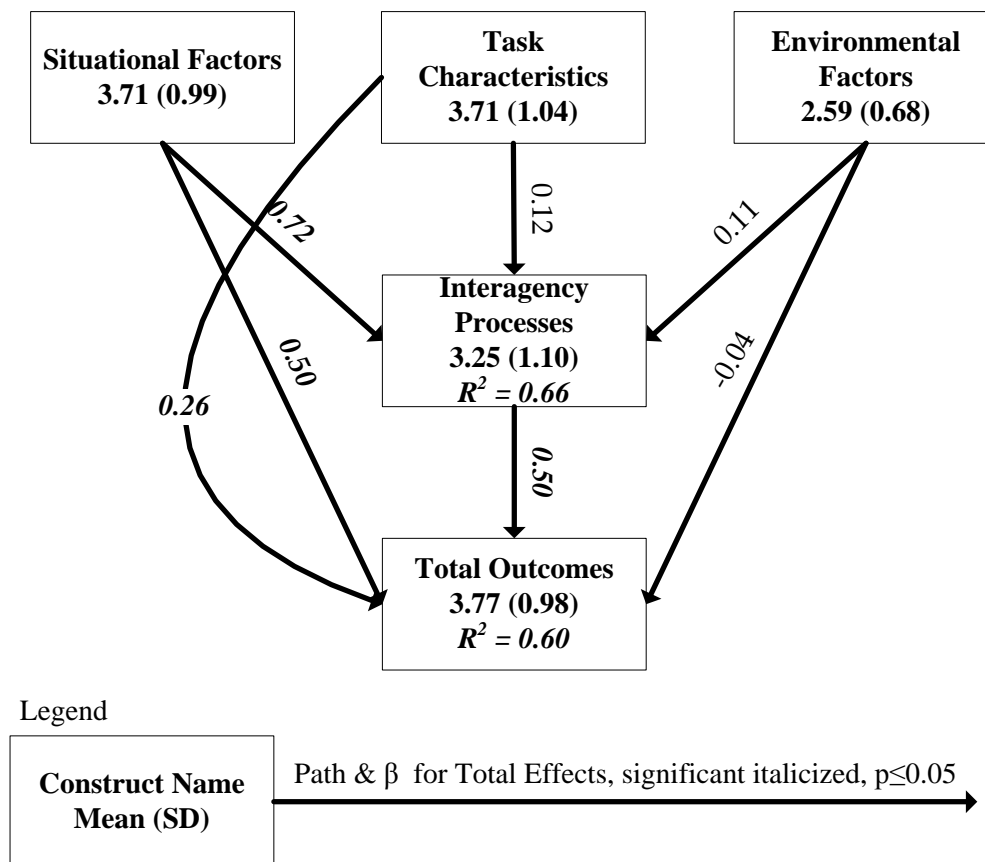
The results of the path analysis for all networks are shown in Table 8 and Figures 9 and 10. Table 8 shows that the model “fits” or correlates well with respect to both dependent domains, Interagency Processes and Total Outcomes. The multiple correlation coefficient or R^2 of 0.66 indicates that the three independent domains (Situational Factors, Task Characteristics, and Environmental Factors) are associated strongly with Interagency Processes. In addition, the R^2 for Total Outcomes is also strongly associated with the full set of independent domains. It is noteworthy that with the exception of the association between Environmental Factors and Total Outcomes, the associations are all positive, indicating that the elements of the domains facilitate interagency processes and total outcomes rather than present barriers. The initial model for all networks is shown in Figure 9 and shows all path coefficients, β , with the statistically significant values are shown in bold italics. Of the seven sets of associations, statistically significant associates are found between Situational Factors and Interagency Processes ($\beta = 0.72$); Situational Factors and Total Outcomes ($\beta = 0.50$); and Task Characteristics and Total Outcomes ($\beta = 0.26$). The significant associations are the basis for generating the revised model shown in Figure 10.

Table 8. Path Analysis for All Networks, n=119

Domain	Beta			R ²
	Direct Effects	Indirect Effects	Total Effects	
Situational Factors	<i>0.72</i>	0.00	<i>0.72</i>	<i>0.66</i>
Task Characteristics	0.12	0.00	0.12	
Environmental Factors	0.11	0.00	0.11	
Interagency Processes				
Situational Factors	0.14	<i>0.36</i>	<i>0.50</i>	<i>0.60</i>
Task Characteristics	<i>0.20</i>	0.06	<i>0.26</i>	
Environmental Factors	-0.05	0.01	-0.04	
Interagency Processes	<i>0.50</i>	0.00	<i>0.50</i>	
Total Outcomes				

R² is shown for the dependent domains

Significant values for $p \leq 0.05$ are bold and italicized

**Figure 9. Initial Five-Domain Model for All Networks**

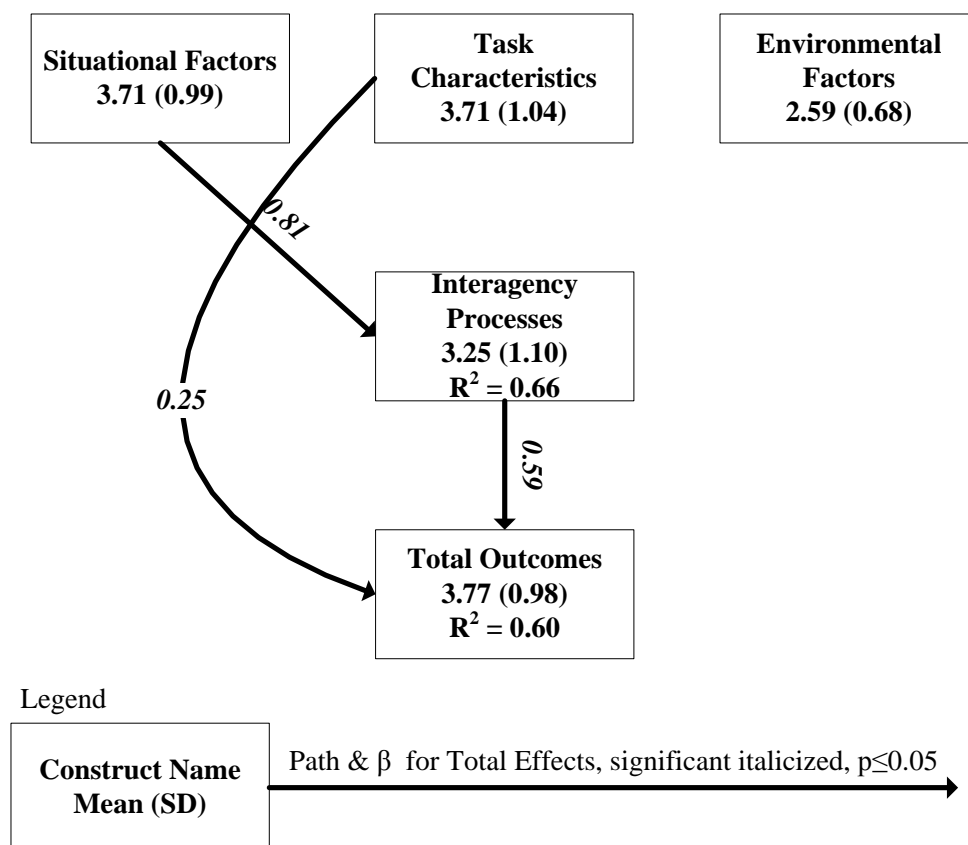


Figure 10. Revised Five-Domain Model for All Networks

The revised model for the overall set of networks, Figure 10, shows three facilitating relationships – 1) Situational Factors and Interagency Processes, a significant direct effect with $\beta = 0.81$; 2) Interagency Processes and Total Outcomes, a significant direct effect with $\beta = 0.59$, and 3) Task Characteristics and Total Outcomes, a significant combination of direct and indirect effects with $\beta = 0.25$. These results suggest that the organizational antecedents or prior relationships among network participants facilitate the interagency processes and in turn joint activities, sharing of information, and other interagency characteristics facilitate the achievement of goals or Total Outcomes. Task Characteristics, the scope, scale, and complexity of projects contributes to overall success, but much less so than Situational Factors and Interagency Processes.

Interstate Network Results

The results of the path analysis for interstate networks are shown in Table 9 and Figures 11 and 12. Table 9 shows that the model “fits” or correlates well with respect to both dependent domains, Interagency Processes and Total Outcomes, although slightly less well than for the overall results. The R squared value of 0.66 indicates that the three independent domains, Situational Factors, Task Characteristics, and Environmental Factors are associated strongly with Interagency Processes. In addition, the R Squared for Total Outcomes is also strongly associated with the full set of independent domains. The associations are all positive indicating that the

elements of the domains facilitate interagency processes and total outcomes rather than present barriers. However, in a demonstration of consistency with the overall results, the association between Environmental Factors and Interagency Processes and Total Outcomes is approaching neutrality; although they were not statistically significant. The initial model for interstate networks is shown in Figure 11 and shows all path coefficients, β , with the statistically significant values are shown in bold italics. Of the seven sets of associations, statistically significant associations are found between Situational Factors and Interagency Processes ($\beta = 0.73$); Situational Factors and Total Outcomes ($\beta = 0.50$); and Interagency Processes and Total Outcomes ($\beta = 0.69$). The significant associations are the basis for generating the revised model shown in Figure 12.

Table 9. Path Analysis for Interstate Networks, n=26

Domain	Beta			R ²
	Direct Effects	Indirect Effects	Total Effects	
Situational Factors	<i>0.73</i>	0.00	<i>0.73</i>	<i>0.66</i>
Task Characteristics	0.10	0.00	0.10	
Environmental Factors	0.08	0.00	0.08	
Interagency Processes				
Situational Factors	0.00	<i>0.50</i>	<i>0.50</i>	<i>0.57</i>
Task Characteristics	0.11	0.07	0.18	
Environmental Factors	0.01	0.05	0.06	
Interagency Processes	<i>0.68</i>	0.00	<i>0.68</i>	
Total Outcomes				

R² is shown for the dependent domains

Significant values for $p \leq 0.05$ are bold and italicized

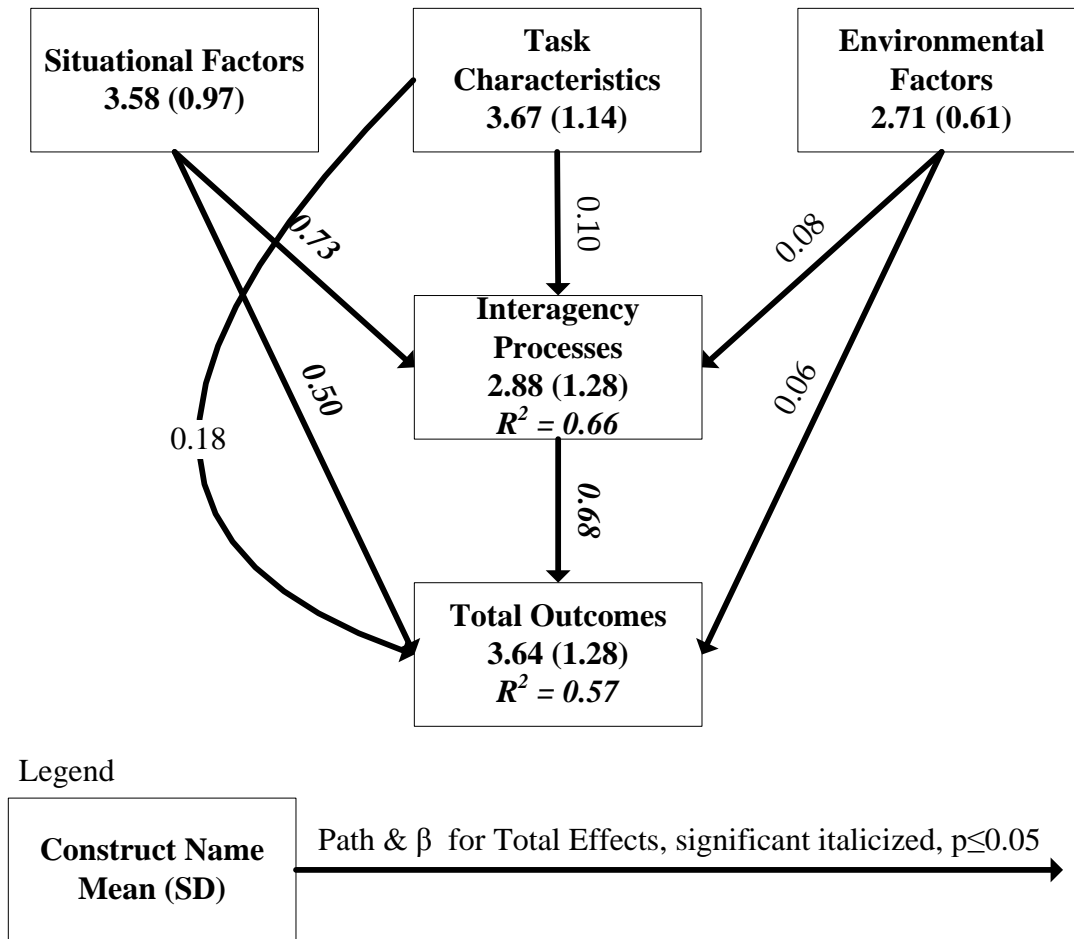


Figure 11. Initial Five-Domain Model for Interstate Networks

The revised model for interstate networks, Figure 12, shows two facilitating relationships – 1) Situational Factors and Interagency Processes, a significant direct effect with $\beta = 0.80$; and 2) Interagency Processes and Total Outcomes, a significant direct effect with $\beta = 0.75$. It is noted that in the revised model, the statistically significant association between Situational Factors and Total Outcomes ($\beta = 0.50$) drops out. The removal of the relationship between Situational Factors and Total Outcomes is explained by examining Table 9 and observing that all of the significance in the association is derived from indirect effects. Thus, in the revised model, the association between Situational Factors and Total Outcomes is “absorbed” by the direct association between Situational Factors and Interagency Processes. These results imply that, as with the overall results, the organizational antecedents or prior relationships among network participants facilitate the interagency processes and that the pursuit of joint activities, information sharing, and the like enhance interagency processes, which in turn lead to overall goal achievement.

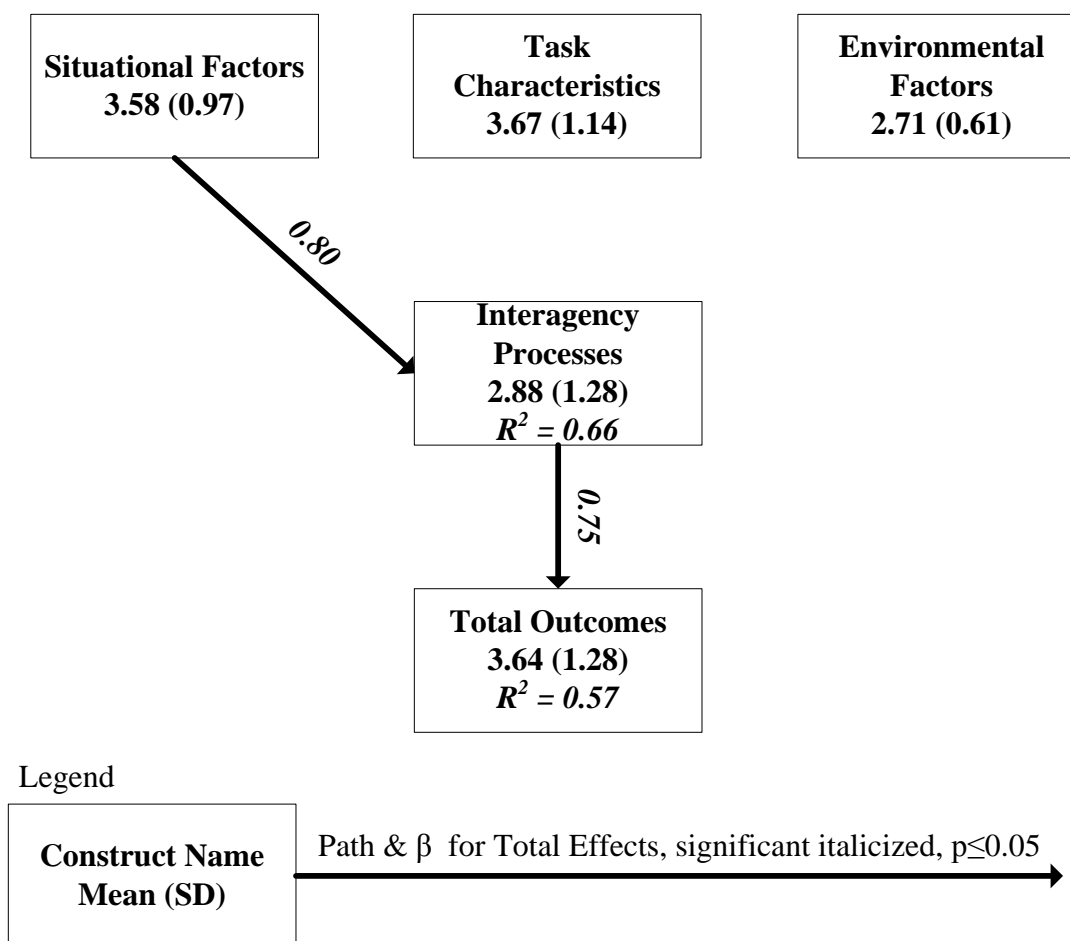


Figure 12. Revised Five-Domain Model for Interstate Networks

Intrastate Network Results

The results of the path analysis for intrastate networks are shown in Table 10 and Figures 13 and 14. Table 10 shows that the model “fits” or correlates well with respect to both dependent domains, Interagency Processes and Total Outcomes, although slightly less well than for the overall results. The correlation coefficient, R^2 , value of 0.60 indicates that the three independent domains, Situational Factors, Task Characteristics, and Environmental Factors are associated strongly with Interagency Processes. In addition, the R^2 value for Total Outcomes ($R^2 = 0.57$) is also moderately associated with the full set of independent domains. The associations between independent domains and the dependent domains are positive with the exception of the negative association between Environmental Factors and Total Outcomes and the nearly neutral association between Environmental Factors and Interagency Processes. The positive associations indicate that the elements of the domains facilitate interagency processes and total outcomes rather than present barriers. However, the near neutral association between Environmental Factors and Interagency Processes and the negative association between Environmental Factors and Total Outcomes, although not statistically significant, suggest that intra-organizational economic, social, and tensions may interfere with successful network formation and goal achievement.

Table 10. Path Analysis for Intrastate Networks, n=85

Domain	Beta			R ²
	Direct Effects	Indirect Effects	Total Effects	
Situational Factors	<i>0.69</i>	0.00	<i>0.69</i>	<i>0.60</i>
Task Characteristics	0.12	0.00	0.12	
Environmental Factors	0.04	0.00	0.04	
Interagency Processes				
Situational Factors	0.22	<i>0.29</i>	<i>0.51</i>	<i>0.57</i>
Task Characteristics	<i>0.22</i>	0.05	<i>0.27</i>	
Environmental Factors	-0.07	0.02	-0.05	
Interagency Processes	<i>0.41</i>	0.00	<i>0.41</i>	
Total Outcomes				

R² is shown for the dependent domains

Significant values for $p \leq 0.05$ are bold and italicized

The initial model for intrastate networks is shown in Figure 13 and shows all path coefficients, β , with the statistically significant values are shown in bold italics. Of the seven sets of associations, statistically significant associations are found in four relationships - Situational Factors and Interagency Processes ($\beta = 0.69$); Situational Factors and Total Outcomes ($\beta = 0.51$); Task Characteristics and Total Outcomes ($\beta = 0.27$); and Interagency Processes and Total Outcomes ($\beta = 0.41$). The significant associations are the basis for generating the revised model shown in Figure 14.

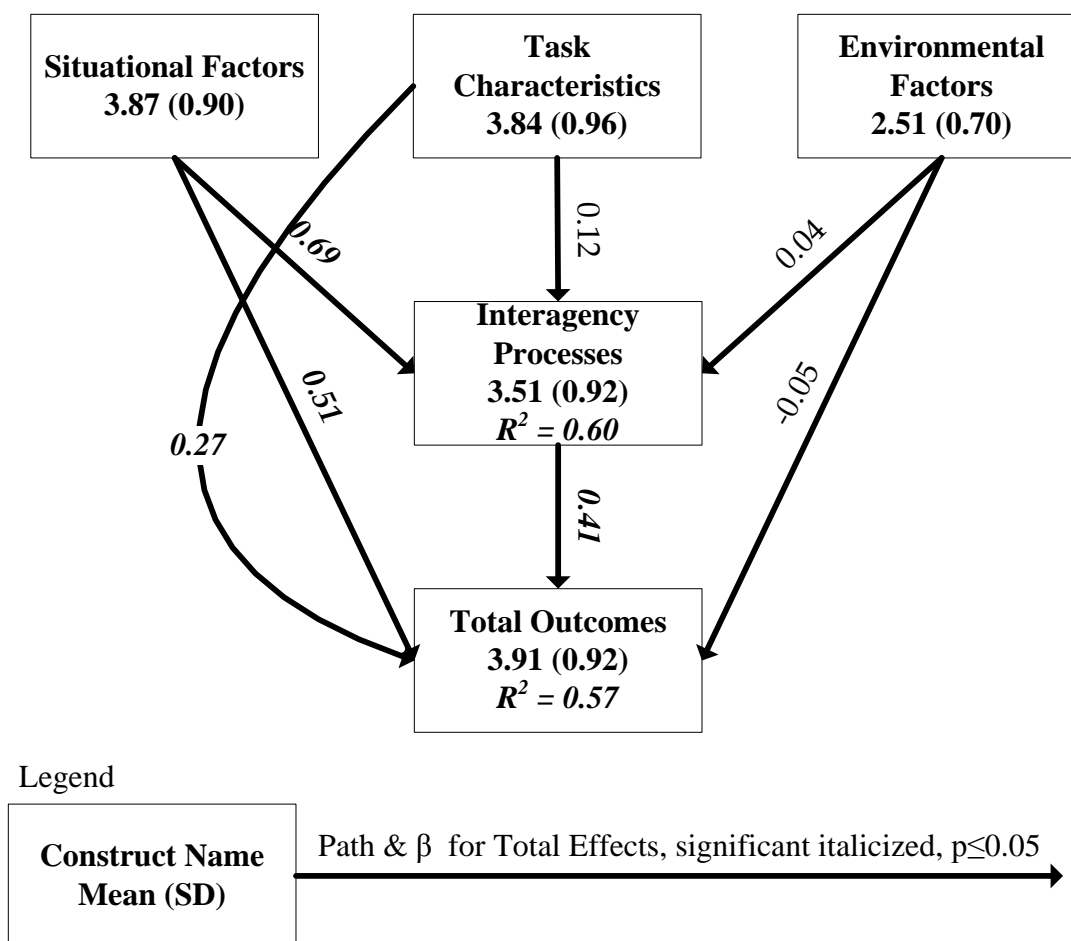


Figure 13. Initial Five-Domain Model for Intrastate Networks

The revised model for intrastate networks, Figure 14, shows three facilitating relationships – 1) Situational Factors and Interagency Processes, a significant direct effect with $\beta = 0.78$; 2) Interagency Processes and Total Outcomes, a significant direct effect with $\beta = 0.41$, and 3) Task Characteristics and Total Outcomes, a significant combination of direct and indirect effects with $\beta = 0.27$. These results are similar to the revised model for all networks and dissimilar to those for interstate networks. For intrastate networks, the organizational antecedents or prior relationships among network participants facilitate the interagency processes and in turn joint activities, sharing of information, and other interagency characteristics facilitate the achievement of goals – Total Outcomes. Task Characteristics, the scope, scale, and complexity of projects contributes to overall success, but much less so than Situational Factors and Interagency Processes. The relative weakness of the association between Interagency Processes and Total Outcomes suggests that the existence of some disturbance, perhaps interagency rivalries may mitigate the strength of this association as compared to those for interstate networks.

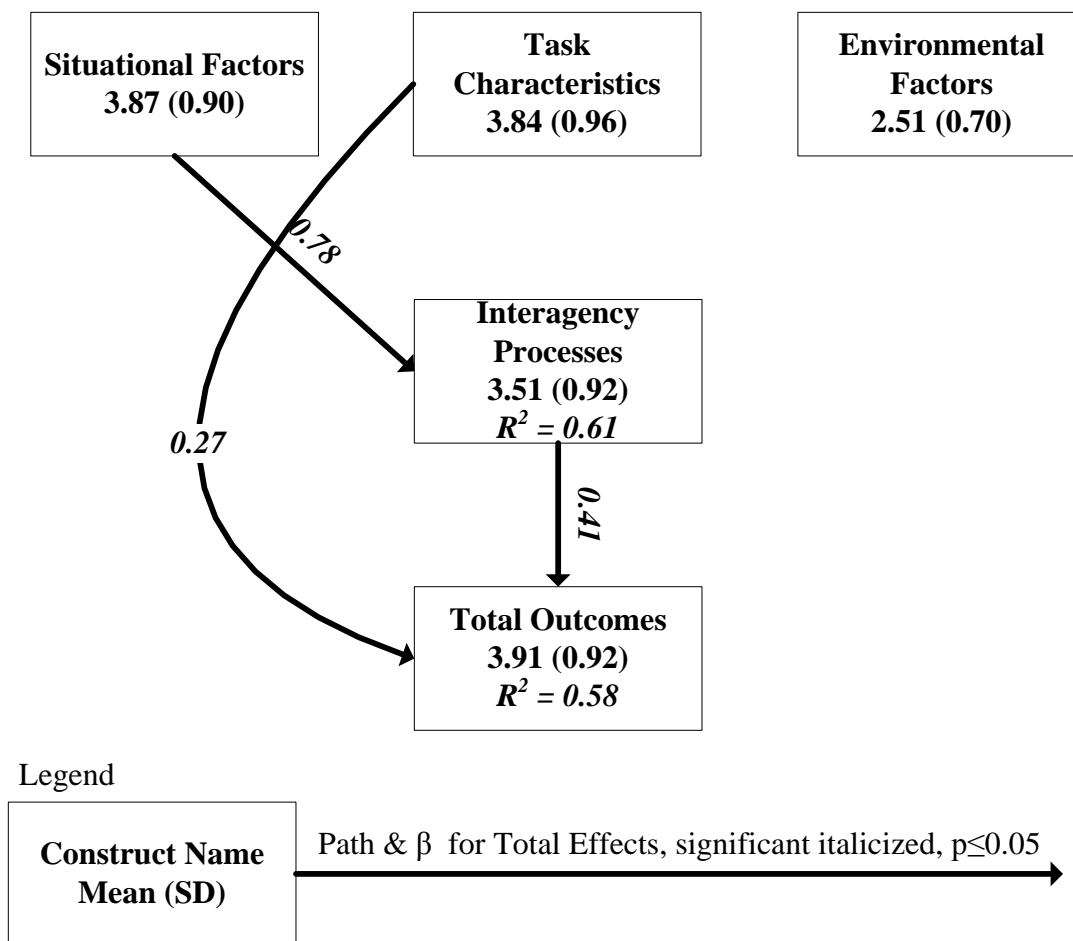


Figure 14. Revised Five-Domain Model for Intrastate Networks

Research Aim 5 & 6: Best Practices and Network Strategies

Survey I included two open-ended questions: one concerning the appropriate foci of an optimal disaster network and the second identifying components or elements of a well-functioning collaborative network. Each participant had the opportunity to list as many as 10 foci and 10 elements. For the qualitative content analysis of the responses, the 15 Public Health Preparedness Capabilities published by the CDC (2011) were used as the coding scheme. The most frequently identified focuses were associated with capabilities - Community Preparedness (181), Emergency Operations Coordination (55), and Medical Surge (47) categories, Table 11 presents the list of capabilities cited by two or more respondents. The elements with the highest frequencies were from these capabilities. Table 12 presents the comprehensive list for identified elements.

Table 11. Focuses of an Optimal Disaster Network

Public Health Preparedness Capability	Frequency	Key Words and Phrases	Frequency
Community Preparedness	181	Collaboration, coordination & partnerships	51
		Planning for all and specific hazards, general and specific populations, and COOP, MOUs & MOAs	44
		Education, training & exercising	39
		Hazard vulnerability analysis, gap analysis, needs assessment, & mitigation	21
Emergency Operations Coordination	55	Resource exchanges	11
		Activation and response	10
		Organizational structure	8
Medical Surge	47	Tracking for specific populations	14
		Triage, treatment, referral, transportation & mobilization	11
		Crisis, alternative or standardized medical standards of care	5
Community Recovery	43	Collaboration & partnership	12
		Long-term: business, school, homes, mental health, medical recovery, and planning & mitigation	11
Information Sharing	32	Communication interoperability	5
		Best practices, lessons learned and situational awareness	3
Emergency Public Information and Warning	21	Ability to operate without communication networks	3
		Development of a variety of educational offerings and media to present	2
Mass Care	14		
Medical Materiel Management and Distribution	8	Inventory, resource argumentation, logistical management	8
Communication	8		
Volunteer Management	5		
Fatality Management	4		
Medical Countermeasure Dispensing	4		
Responder Safety and Health	4		

Table 12. Elements of a Well-functioning Network

Public Health Preparedness Capability	Frequency	Key Words and Phrases	Frequency
Community Preparedness	174	Partnerships	67
		Trust & reliability	40
		Education, training & exercising	37
		Collaboration	30
		Engagement of local partners	19
		Planning for all hazards & populations	17
		Shared mission/purpose/goals/objectives/vision	11
		Memorandum of Understanding (MOU) and Memorandum of Agreement (MOA)	6
		Networking	6
		Coordination	2
Information Sharing	49	Regular meetings, ongoing updates, and communication interoperability among multi-disciplinary partners	23
		Willingness, open agendas, transparency, reliable information	8
		Best practices, lessons learned and situational awareness	6
Emergency Operations Coordination	26	Understanding roles and responsibilities	9
		Organizational structure	3
Communication	20		
Leadership	19	Accomplishment of goals and objectives, policies, delegation, , prioritization, celebration, incentives, excitement	19
Funding, Advocacy & Sustainability	9		
Medical Materiel Management and Distribution	9	Resource requests, allocation, inventory, sharing, and tracking	9
Medical Surge	5	Surge capacity planning for specific populations	3
		Continuity of patient care	1
		Patient/tenant/resident safety	1
Emergency Public Information and Warning	5	Joint Public Information services	2
		Communication plans	2
		Notification	1
Community Recovery	2	Mitigation and Evaluation	2

Best practices include a focus on preparedness, emergency operations or medical surge. It appears that a focus dealing with disasters and recovery was viewed as optimal. With such a focus, coordination, formal partnerships, planning, and education and training were seen as most essential. In addition, systems for resource exchange, network activation and response, organizational structure, patient tracking, and triage were deemed as most important.

Network strategies might be tailored to include developing formal partnerships, developing a high level of trust and reliability, continuous training and education, increased collaboration, engagement of local community partners, as well as planning and the development of shared mission, vision and objectives among network participants. Strategies that include joint regular meetings, updates, communication, role clarification, and networking (information sharing) were also seen as key. Finally, it appears that network leadership was viewed as an important part of network success.

VII. Discussion

Pediatric-focused Networks Across the United States

The map shown in Figure 6 displays the location of networks focusing on pediatric disaster surge in the United States. The networks are largely located in more rural areas. It is likely that the pediatric resources located in New England, the Capital Region, and Chicago are well connected through the normal course of business and thus may not be perceived to be part of a network. The rural locus of networks identified by this research is consistent with the findings of Brantley and colleagues (2012) who found “63.7% of the pediatric population lives within 50 miles of a pediatric hospital; 81.5% lives within 50 miles of a hospital with a PICU; 76.1% lives within 50 miles of a hospital with a PCICU; 80.2% lives within 50 miles of a level I or II trauma center; and 70.8% lives within 50 miles of a burn center. However, state-specific proportions vary from less than 10% to virtually 100%.”

The number of networks identified by this research, suggests that while a national effort has been initiated to improve preparedness through regional health care coalitions (Courtney, Toner & Waldhorn, 2009; USDHHS, 2011), the development of coalitions has not fully evolved regarding pediatric focused health care organizations. The identification of pediatric-focused networks in this research should not be construed as an indication of limited collaboration among hospitals in general, collaboration among children’s specialty hospitals, and collaboration among children’s hospitals and general hospitals. However, the sparseness of pediatric-focused coalitions is reinforced by the work of Niska and Shimizu (2011) in which they report “most hospitals had MOUs with other hospitals to transfer adults during epidemics, fewer hospitals had MOUs for pediatrics and burns.”

Density and Intensity of Collaboration

The density and intensity diagrams at Figures 5 and 6 suggest that there is little difference in the density and intensity of collaboration between interstate and intrastate networks. Density, the involvement of more rather than fewer collaborators is medium or high for 12 of the 15

networks. Likewise, intensity of collaboration, the involvement of collaborators is a wide range of preparedness activities, is medium or high for all but two of the identified networks. The importance of the density and intensity of collaboration among network participants falls into two areas – 1) increasing the density of collaboration improves the collective ability to deal with complex policy challenges (MacIndoe, 2013; Boris, de Leon, Roeger, & Nikolova, 2010) and 2) improves the economics of collaboration by lowering transaction costs as established routines and relationships (Austin, 2000; O'Regan & Oster, 2000; Provan & Milward, 1991).

Stage of Network Development

According to respondent perceptions, all of the identified networks had progressed through Stage 1 of formation and were in either Stage 2 or Stage 3. It is encouraging that 40% of the networks had progressed to become Systemic Networks with formal agreements in addition to collaborative goal setting and action planning. It is surprising that a greater proportion of interstate networks achieved Stage 3 than intrastate networks because conventional wisdom suggests that it is more difficult to establish interstate networks than intrastate ones. The identification of only one network in Stage 1 of development may indicate that networks for pediatric surge capacity are slow to develop or emerge and reinforces the relatively small number of pediatric-focused networks identified by this research.

Barriers and Facilitating Factors Affecting Network Development

A surprising finding from the analysis of the Five-Domain Model of Inter-organizational Collaboration is that environmental factors, the broad political, economic, and social conditions that motivate or mandate interagency relationships, were not influential in the networks identified by this research. It may be that the lack of influence of environmental factors is due to the fact that the people and organizations involved in pediatric surge network formation and functioning are sufficiently motivated by personal convictions and institutional norms; such that the environmental factors do not come into play. This conforms to the analysis revealing that situational factors are the most positive influences to successful interagency processes, overall, for interstate networks, and for intrastate networks.

Satisfaction with relationships, programmatic goal attainment, productivity, and total outcomes, were positively influenced by interagency processes and task characteristics overall and for interstate networks. However, task characteristics, the scope, complexity, and predictability of outcomes, were not influential in total outcomes for interstate networks. It may be that intrastate network formation and operation are made complex by agency “silos” within a state, or that complications arise through real or perceived competition for limited resources. Consistent with this observation is that interagency process influence on total outcomes is strongest for interstate networks and weakest for intrastate networks and overall.

The absence of association between Environmental Factors and Interagency Processes and Total Outcomes is troubling. Polivka and colleagues (1997) and Chaudry and colleagues (2000) suggest that “policy maker support” should be an expected facilitating element included in Environmental Factors. Thus, it may be that the lack of positive (or negative) influence of Environmental Factors on Interagency Processes and Total Outcomes indicates that coalition efforts will falter in the long-term due to the lack of support or reduction in support from policy

makers. An example of such a reduction is the funding for the HPP, which has been reduced by 46 % from peak funding of \$474 million in FY2006 and FY2007 to \$255 million in FY 2013 (Franco & Sell, 2012).

Best Practices and Network Strategies

It is not surprising that pediatric surge network and collaboration best practices and strategies centered on developing long-term partnerships focusing on effectively responding to pediatric disasters and the associated issues involving patient management. These partnerships based on planning, formal agreements, extensive training and education and shared goals were seen as optimal. Further, leadership, communication, transparency, regular interaction should be explicit part of the network strategy.

VIII. Study Limitations

This study has several limitations. First, the recruitment methods may have not reached all the eligible participants, and the web-based survey methodology may have not been preferred by some in the targeted population. Therefore, only 4 out of 193 children's hospitals were involved in the study; similarly, 20 public health departments (state, district, regional, or county) nationwide were included. Second, although the response rates (53.4% and 62.2%) are comparable to those of most published surveys filled out by physicians (53% to 54%) (Asch, Jedriewski, & Christakis, 1997; Cummings, Savitz, & Konrad, 2001; Freedman, Sivabalasundaram, Vithita, Bohn, Powell, Johnson, & Boutis, 2011), self-selection bias is unavoidable. Most of the respondents had already been familiar with and participated in pediatric surge preparedness collaboration; therefore, the study could not draw any meaningful conclusions on the non-participants' perceptions and barriers to collaboration. Moreover, white respondents (90%) were over-represented in the sample. Without enough responses from diverse racial and ethnic groups, the study failed to address racial and ethnic disparities in pediatric surge preparedness collaboration, to reflect the cultural influences on perceptions and barriers, and to generalize the findings to improve cross-cultural collaborations such as, collaborations between tribal agencies and governmental entities. Third, the number of respondents from each state was not restricted; consequently, the patterns of collaboration identified in this study may reflect those of some collaborative networks within one state assessed by most participants possibly clouding national patterns. Fourth, the self-reported responses cannot be validated with any objective measurements of collaboration; hence, social desirability bias may exist. Participants may have indicated participation in collaborative activities in which they had not, in fact, participated. It is recommended future studies use mixed recruitment and survey methods.

IX. Conclusions and Recommendations

There is considerable interest in pediatric preparedness as well as the development and maintenance of intrastate and interstate pediatric disaster surge networks and collaborations. Currently, throughout the United States there are a number of networks in various stages of development; seven (out of 17) of which have formal cooperative agreements. It also appears that institutional participation as measured by the density of the networks is relatively high where networks exist, and collaboration working toward prepared goals seems to be a binding factor.

Although there are few specific barriers to the development of cooperative surge networks, there seem to be few facilitating factors as well. Networks focused on preparedness, emergency operations, or medical surge are viewed as optimal, and strategies centered on developing long-term partnerships focusing on effective responses to pediatric disasters and associated issues involving patient management are important. These collaborative partnerships based on planning, formal agreements, extensive training and education, and shared goals were seen as optimal. Further, leadership, communication, transparency, and regular interactions were considered as parts of an effective network strategy.

This study was exploratory with the aim of identifying extant networks and discovering their characteristics and operational focus. More research needs to be undertaken to better understand the operational realities of these networks during activation. Certain questions remain: what is the extent to which funds sharing is beneficial? Is there a need to verify the network names and official collaborators? What led to the initiation or success of the pediatric-focused coalitions? To what extent do certain components of the MOUs/MOAs contribute to the sustainability of coalitions? What would support the development of new coalitions or networks? An in-depth study of a regional network field exercise or network operation in an actual disaster would yield considerable insight as how such networks actually work and potential problems. In addition, the provision of technical assistance and support (financial or resource-based) to existing and nascent networks may help further facilitate their development. Finally, implementation of a learning collaborative or meeting where network leaders can share experiences and learn from each other will further facilitate development.

X. References

- Alter C & Hage J (1993). Organizations working together. Newbury Park, CA: Sage.
- AAP (2004). American Academy of Pediatrics Committee on Pediatric Emergency Medicine. Overcrowding crisis in our nation's emergency departments: Is our safety net unraveling? *Pediatrics*, 114 (3): 878-888.
- Asch DA, Jedrzewski MK & Christakis NA (1997). Response rates to mail surveys published in medical journals. *J Clin Epidemiol*, 50(10), 1129-1136.
- Austin JE (2000). Strategic collaboration between nonprofits and business. *Nonprofit and Voluntary Sector Quarterly*. 29:69–97.
- Boris ET, de Leon E, Roeger KL & Nikolova M (2010). *Human Service Nonprofits and Government Collaboration*. Washington, DC: Urban Institute.
- Brantley MD, Lu H, Barfield WD, Holt JB & Williams A (2012). Mapping US pediatric hospitals subspecialty critical care for public health preparedness and disaster response, 2008. *Disaster Medicine & Public Health Preparedness*, 6(2):117-125.
- Caplow T (1964). Principles of organization. New York: Harcourt Brace.
- CDC (2011). Centers for Disease Control and Prevention. *Public Health Preparedness Capabilities: National Standards for State and Local Planning, March 2011*, available at http://www.cdc.gov/phpr/capabilities/DSLR_capabilities_July.pdf.
- Chaudry RV, Polvika BJ & Kennedy CW (2000). Public health nursing directors' perceptions regarding interagency collaboration with community mental health agencies. *Public Health Nurs*, 17(2): 75-84.
- Courtney B, Toner E & Waldhorn R (2009). Preparing the healthcare system for catastrophic emergencies. *Biosecur Bioterror*, 7(1), 33-34.
- Cummings SM, Savitz LA & Konrad TR (2001). Reported response rates to mailed physician questionnaires. *Health services research*, 35(6), 1347.
- Evan WM (1966). The organization set: toward a theory of inter-organizational relations. In J.D. Thompson (ed.). *Approaches to organizational design*. Pittsburgh, PA: University of Pittsburgh Press.
- Franco C & Sell TK (2012). Federal agency biodefense funding, FY2012-2013. *Biosecur Bioterror*, 10(2): 162-181. doi:10.1089/bsp.2012.0025.
- Freedman SB, Sivabalasundaram V, Bohn V, Powell EC, Johnson DW & Boutis K (2011). The treatment of pediatric gastroenteritis: a comparative analysis of pediatric emergency physicians' practice patterns. *Acad Emerg Med*, 18(1), 38-45.
- Gannon-Leary P, Baines S & Wilson R (2006). Collaboration and partnership: A review and reflections on a national project to join up local services in England. *J Interprof Care*, 20, 665-674.
- Gausche-Hill M, Schmitz C & Lewis RJ (2007). Pediatric preparedness of US emergency departments: a 2003 survey. *Pediatrics*. 120(6):1229-1237.
- Ginter PM, Rucks AC, Duncan WJ, Wingate MS, Beeman SK, Reeves J, et al. (2010). Southeastern Regional Pediatric Disaster Surge Network: a public health partnership. *Public Health Rep*, 125(Suppl 5):117–26.
- Ginter PM, Wingate MS, Rucks AC, Vasconez RD, McCormick LC, Baldwin S, et al. (2006). Creating a regional pediatric medical disaster preparedness network: imperative and issues. *Matern Child Health J*, 10:391- 6.

- Hostetler MA, Mace S, Brown K, Finkler J, Hernandez D, Krug SE, et al. (2007). Emergency department overcrowding and children. *Pediatr Emerg Care*, 23 (7): 507-515.
- Huxham C & Vangen S (2000). Leadership in the shaping and implementation of collaboration agendas: How things happen in a (not quite) joined-up world. *Acad Mgmt J*, 43 (6), 1159-1175.
- Institute of Medicine (1996). *Health communities: New partnerships for the future of public health*. Washington, D.C.: National Academies Press.
- Institute of Medicine (2006). *Committee on the Future of Emergency Care in the US Health System*. Report Brief: The Future of Emergency Care in the United States Health Care System. Washington, DC: National Academies Press.
- Isset KR & Provan KG (2005). The evolution of dyadic interorganizational relationships in a network of publicly funded nonprofit agencies. *J Pub Ad Res and Theory*, 15, 149-165.
- Kanter RK & Moran JR (2007). Hospital emergency surge capacity: an empiric New York statewide study. *Ann Emerg Med*. 50:314-319.
- Krug SE, Needle S, Schonfeld D, Aird L & Hurley H (2012). Improving pediatric preparedness performance through strategic partnerships. *Disaster Med Public Health Prep*, 6(2) 94-96.
- LeBaron J, Culberson MC, Wiley JF & Smith SR (2010). "Be Quick": A systems response to overcrowding in the pediatric emergency department. *Pediatr Emerg Care*, 26 (11): 808-813.
- MacIndoe, H (2013). Reinforcing the safety net: Explaining the propensity for and intensity of nonprofit-local government collaboration. *State & Loc Gov R*. 20(10): 1-13.
- NCCD (2010). National Commission on Children and Disasters *Report to the President and Congress*. AHRQ Publication No. 10-M037. Rockville, MD: Agency for Healthcare Research and Quality. October 2010, available at <http://archive.ahrq.gov/prep/nccdreport/nccdreport.pdf>.
- Niska RW & Shimizu IM (2011). Hospital preparedness for emergency response: United States, 2008. *Natl Health Stat Report*, 24(37): 1-14.
- Oliver C (1990). Determinants of interorganizational relationships: Integration and future directions. *Acad Mgt Rev*, 15, 241-265.
- O'Regan KM & Oster SM (2000). Nonprofit and for-profit partnerships: Rationale and challenges of cross-sector contracting. *Nonprofit and Voluntary Sector Quarterly*. 29S:120-40.
- Paulson RI (1989). The interorganizational delivery of mental health services. In D Roth (Ed.). *New Research in Mental Health*, Vol. 9. Columbus, OH: Ohio Department of Mental Health.
- PHAB (2013). Public Health Accreditation Board. *Public Health Accreditation Board Standards & Measures, Version 1.5, Adopted December 2013*, available at: <http://www.phaboard.org/wp-content/uploads/SM-Version-1.5-Board-adopted-FINAL-01-24-2014.docx.pdf>.
- Polivka BJ (1996). Rural sex education: Assessment of programs and interagency collaboration. *Public Health Nursing*, 13, 425-433.
- Polivka BJ, Kennedy C & Chaudry C (1997). Collaboration between local public health and community mental health agencies. *Res Nur Health*, 20: 153-180.
- Polivka BJ, Dresbach SH, Heimlich JE & Elliott M (2001). Interagency relationships among rural early intervention collaboratives. *Public Health Nursing*, 18, 340-349.

- Provan KG & Milward HB (2001). Do networks really work? A framework for evaluating public-sector organizational networks. *Public Admin Rev*. 61, 414-423.
- Rambhia KJ, Waldhorn RE, Selck F, Mehta KA, Franco C & Toner ES (2012). A survey of hospitals to determine the prevalence and characteristics of healthcare coalitions for emergency preparedness and response. *Biosecur Bioterror*, 10(3): 304-313. doi:10.1089/bsp.2012.0022.
- Ring PS & Van de Ven AH (1994). Developmental processes of cooperative interorganizational relationships. *Acad Mngt Rev*, 19, 91-118.
- Sills MR, Hall M, Fieldston ES, Hain PD, Simon HK, Brogan TV, et al. (2011). Inpatient capacity at children's hospitals during pandemic (H1N1) 2009 outbreak, United States. *Emerg Infect Dis*, 17(9), 1685-1691.
- Singer HH & Kegler MC (2004). Assessing interorganizational networks as a dimension of community capacity: Illustrations from a community intervention to prevent lead poisoning. *Health Education & Behavior*, 31, 808-821.
- Teddlie C & Tashakkori A (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA: Sage.
- Toner E, Waldhorn R, Franco C, Courtney B, Norwood A, Rambhia K, et al. (2009). Hospitals rising to the challenge: The first five years of the US Hospital Preparedness Program and priorities going forward. Center for Biosecurity of UPMC for the US Department of Health and Human Services.
- Trist E. (1983). Referent organizations and the development of inter-organizational domains. *Human Relations*, 36(3): 269-284.
- USDHHS (2011). US Department of Health and Human Services, FY11 Hospital Preparedness Program (HPP) Guidance, available at: <http://www.phe.gov/Preparedness/planning/hpp/Documents/fy2011-hpp-funding-guidance.pdf>.
- Van De Ven AH (1976). On the nature, formation, and maintenance of relationships among organizations. *Acad Mgt Rev*, 1, 24-36.
- Van De Ven AH & Ferry D (1980). *Measuring and Assessing Organizations*. New York: Wiley.
- Whetten D (1981). Interorganizational relations: A review of the field. *J Higher Educ*, 52, 1-28.
- Wisconsin Department of Health and Family Services (2002) Healthiest Wisconsin 2010: A partnership plan to improve the health of the public. Madison: Wisconsin Department of Health and Family Services.
- Wood DJ & Gary B (1991). Toward a comprehensive theory of collaboration. *J Applied Behavioral Science*, 27(2), 139-162.
- Zahner SJ (2005). Local public health system partnerships. *Pub Hlth Rep*, 120, 76-83.
- Zhang Y & Wildemuth BM (2009). *Qualitative analysis of content*. Applications of social research methods to questions in information and library science, 308-319.

Appendix A - Survey I

This survey is being used for research purposes and is part of a study that is a cooperative effort between the University of Alabama at Birmingham (UAB) School of Public Health and the American Academy of Pediatrics (AAP). The purpose of this survey is to identify and gather information about formal and informal networks among agencies and organizations that collaborate in preparing for, responding to, and recovering from disasters or public health emergencies.

Information obtained about you for this project will be kept private to the extent allowed by law. However, information that identifies you may be shared with the University of Alabama at Birmingham (UAB) Institutional Review Board (IRB) and others who are responsible for assuring compliance with laws and regulations relating to research, including people on behalf of the Oak Ridge Institute for Science and Education and the UAB Office for Human Research Protections. The results of this project may be published for scientific purposes. However, results will be summarized and your identity will not be revealed.

Your voluntary participation in this study is greatly appreciated. This survey is part one of a two-part series of surveys for this study. Completion of this survey should take about 15 minutes.

This research has been reviewed and approved by the UAB Office of the Institutional Review Board for Human Use under IRB protocol number X130723004. In addition, this research has been reviewed and was determined to be exempt by the AAP Institutional Review Board (IRB).

Improving Regional Pediatric Surge Networks Survey

2. Introduction to UAB-AAP Survey

* Why was I invited to complete this survey?

As indicated, the purpose of this survey is to identify and gather information about formal and informal networks of agencies and organizations that collaborate in preparing for, responding to, and recovering from disasters. By conducting this survey, the AAP and UAB hope to identify existing disaster networks and summarize the elements of these networks that could be replicated to improve future collaborations. Your experiences in disaster preparedness, response, and recovery are important as we try to understand the structure of networks of organizations and agencies that work together for these purposes.

* Who at the UAB and the AAP are involved in this project?

From the UAB: Drs. Andrew Rucks, Peter Ginter, Charles Katholi, and Ms. Rongbing Xie.

From the AAP: Steven E. Krug, MD, FAAP, Chairperson, American Academy of Pediatrics Disaster Preparedness Advisory Council, Professor of Pediatrics, Northwestern University Feinberg School of Medicine, Head, Division of Emergency Medicine, Ann & Robert H. Lurie Children's Hospital of Chicago, and Laura Aird, MS, Manager, Disaster Preparedness and Response, American Academy of Pediatrics Department of Child Health and Wellness.

* Who is the sponsor of this project?

The Oak Ridge Institute for Science and Education represented by Linda L. Hodges, MS, Health Education Specialist Project Manager; Jason S. Baker, MPH, Health Education Specialist Project Manager; and Freddy E. Gray, MPH, MCHES, Group Manager.

* How long will this survey take?

This survey will take approximately 15 minutes to complete.

* Are there any risks to me or discomforts I may feel associated with participating in this survey?

We know of no risks or discomforts associated with this survey and do not expect you to experience any discomforts from answering the questions. If there are any questions you would prefer not to answer, you may decline to answer any question or stop participating in the survey at any point.

* Are there any benefits to me from this survey?

You may not benefit directly from participating in this survey. However, this project may help us better understand collaboration among organizations and agencies in disaster preparedness, response, and recovery. The information from this study may be shared to promote the development and enhancement of disaster networks to improve services to those affected by a disaster.

* Is there an alternative to participating in this survey?

Your alternative is to not participate. You may exit the survey at any time.

* Is the information I provide about myself confidential?

Information obtained about you for this project will be kept private to the extent allowed by law. However, information that identifies you may be shared with the UAB IRB and others who are responsible for assuring compliance with laws and regulations relating to research, including people on behalf of The Oak Ridge Institute for Science and Education and the Office for Human Research Protections. The results of this project may be published for scientific purposes. However, your identity will not be revealed.

All data collected in this project will be stored on computers that are password protected so that only Dr. Rucks and other members of the study team can access the information. Your name will not be linked with the information you give in any way. The University of Alabama at Birmingham School of Public Health may collect paper copies of surveys, if this will be the easiest form of response from the survey applicant. All paper copies of surveys or other information will be stored in locked file cabinets. Any paper copies will be destroyed within one year of the close of the study (October 2014).

Improving Regional Pediatric Surge Networks Survey

* May I refuse or withdraw from this survey without penalty?

Your taking part in this survey is your choice. There will be no penalty if you decide not to participate in the survey. If you decide not to participate in the survey you will not lose any benefits you are otherwise owed. You are free to withdraw from this survey at any time. Your choice to withdraw from this survey will not affect your relationship with any institution or any individuals involved in the development of the survey.

* Who do I contact if I have questions about my rights as a research participant or have concerns or complaints about the research?

If you have questions about your rights as a research participant, or concerns or complaints about the research, you may contact the UAB IRB at (205) 934-3789 or 1-855-860-3789. You may also call this number in the event the research staff cannot be reached or you wish to talk to someone else. Anyone with questions may also contact the AAP IRB Administrator Margaret Wright, PhD, at MWright@aap.org, or call Dr Wright at 847-434-4075.

Improving Regional Pediatric Surge Networks Survey

3. Consent

***Do you consent to participate in this survey?**



I agree to participate in the survey.



I do not agree to participate in the survey.

Improving Regional Pediatric Surge Networks Survey

4. Questionnaire

1. Are you aware of any network or collaboration that aims to improve disaster preparedness, response or recovery?

 Yes

 No

2. [if the answer to 1 is yes] Please list the names or designations of the collaborative networks, cooperatives, alliances or partnerships in which you or your organization participates. The purpose of providing this information is to allow the project staff at the UAB to cross-check survey responses, and to avoid duplication of information.

Network1.	<input type="text"/>
Network2.	<input type="text"/>
Network3.	<input type="text"/>
Network4.	<input type="text"/>
Network5.	<input type="text"/>
Network6.	<input type="text"/>
Network7.	<input type="text"/>
Network8.	<input type="text"/>
Network9.	<input type="text"/>
Network10.	<input type="text"/>

Are you involved in network 1?

 Yes

 No

If yes, what is your role?

Who is the point person or contact person for network 1?


<input type="text"/>	
<input type="text"/>	

Improving Regional Pediatric Surge Networks Survey

Does network 1 operate in more than one state?

 Yes


 No

 Don't know

Does network 1 operate in more than one country?

 Yes

 No

 Don't know

Are you involved in network 2?

 Yes

 No


If yes, what is your role?

Who is the point person or contact person for network 2?

Does network 2 operate in more than one state?

 Yes

 No

 Don't know

Does network 2 operate in more than one country?

 Yes

 No

 Don't know

Are you involved in network 3?

 Yes

 No

If yes, what is your role?

Improving Regional Pediatric Surge Networks Survey

Who is the point person or contact person for network 3?

Does network 3 operate in more than one state?

- ☐ Yes
- ☐ No
- ☐ Don't know

Does network 3 operate in more than one country?

- ☐ Yes
- ☐ No
- ☐ Don't know

Are you involved in network 4?

- ☐ Yes
- ☐ No

If yes, what is your role?

Who is the point person or contact person for network 4?

Does network 4 operate in more than one state?

- ☐ Yes
- ☐ No
- ☐ Don't know

Does network 4 operate in more than one country?

- ☐ Yes
- ☐ No
- ☐ Don't know

Improving Regional Pediatric Surge Networks Survey

Are you involved in network 5?

 Yes

 No

If yes, what is your role?

Who is the point person or contact person for network 5?

	5
	6

Does network 5 operate in more than one state?

 Yes

 No

 Don't know

Does network 5 operate in more than one country?

 Yes

 No

 Don't know

Are you involved in network 6?

 Yes

 No

If yes, what is your role?


Who is the point person or contact person for network 6?

	5
	6

Does network 6 operate in more than one state?

 Yes

 No


 Don't know

Improving Regional Pediatric Surge Networks Survey

Does network 6 operate in more than one country?

 Yes

 No

 Don't know

Are you involved in network 7?

 Yes

 No

If yes, what is your role?

Who is the point person or contact person for network 7?

Does network 7 operate in more than one state?

 Yes


 No

 Don't know

Does network 7 operate in more than one country?

 Yes

 No

 Don't know

Are you involved in network 8?

 Yes

 No

If yes, what is your role?

Who is the point person or contact person for network 8?


	
	
	

Improving Regional Pediatric Surge Networks Survey

Does network 8 operate in more than one state?

 Yes


 No

 Don't know

Does network 8 operate in more than one country?

 Yes

 No

 Don't know

Are you involved in network 9?

 Yes

 No


If yes, what is your role?

Who is the point person or contact person for network 9?

Does network 9 operate in more than one state?

 Yes

 No

 Don't know

Does network 9 operate in more than one country?

 Yes

 No

 Don't know

Are you involved in network 10?

 Yes

 No

If yes, what is your role?

Improving Regional Pediatric Surge Networks Survey

Who is the point person or contact person for network 10?

Does network 10 operate in more than one state?

☐ Yes☐ No☐ Don't know

Does network 10 operate in more than one country?

☐ Yes☐ No☐ Don't know

3. In each of the blank boxes below, please list any organizations or agencies concerned with disaster preparedness, disaster response, medical surge, or disaster recovery with which your organization normally works or interacts.

1.	<input type="text"/>
2.	<input type="text"/>
3.	<input type="text"/>
4.	<input type="text"/>
5.	<input type="text"/>
6.	<input type="text"/>
7.	<input type="text"/>
8.	<input type="text"/>
9.	<input type="text"/>
10.	<input type="text"/>

Improving Regional Pediatric Surge Networks Survey

4. What do you believe an optimal disaster network should focus on?

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

5. What are some elements of a network that functions well?

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Improving Regional Pediatric Surge Networks Survey

5. Contact Information

This is Part 1 of a two part survey and we would like to send the second survey directly to you, please provide us with contact information. By completing this information, you are agreeing to receive Survey 2.

Name:

Organization:

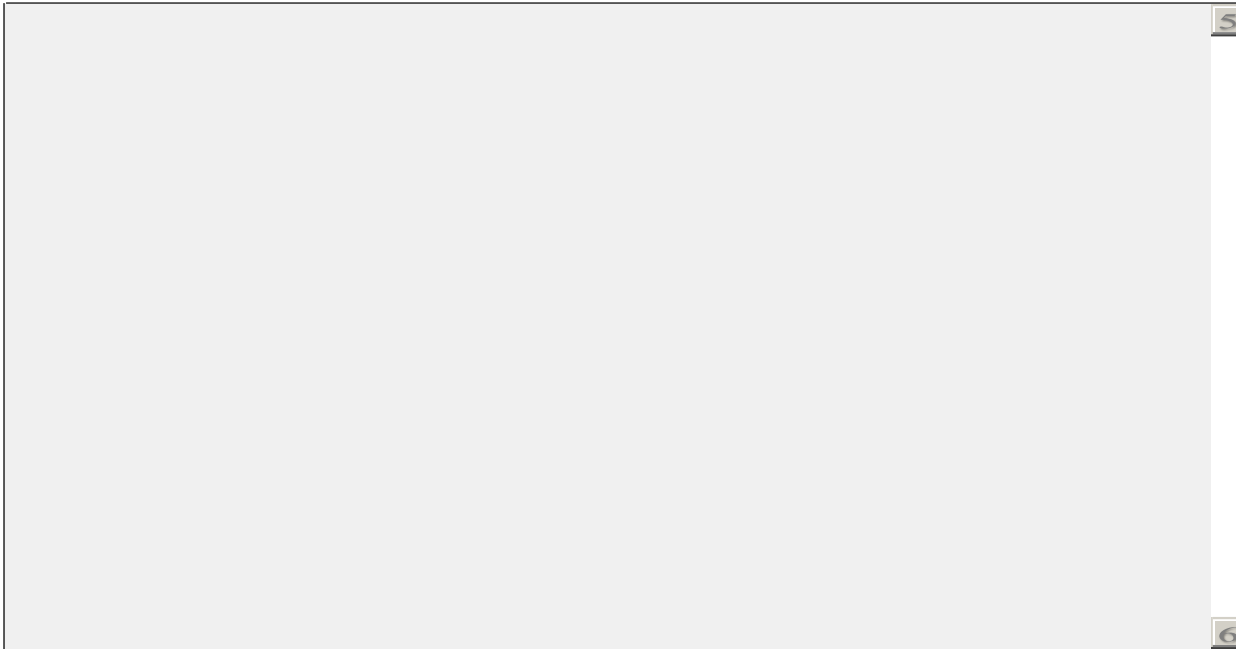
Title

Email Address:

Improving Regional Pediatric Surge Networks Survey

6. End of survey

Thank you for participating in this survey. If you would like to make any comments about this survey or the project, please use the following comment area.



Improving Regional Pediatric Surge Networks Survey

7. Withdrawal from participation

You have agreed to not participate in this survey.

Appendix B - Survey II

Hello, and welcome to part two of a two-part series survey, Improving Regional Pediatric Surge Networks Survey. This survey is a cooperative effort between the University of Alabama at Birmingham School of Public Health and the American Academy of Pediatrics.

The purpose of this survey is to gather information about networks among agencies and organizations that collaborate in preparing for, responding to, and recovering from disasters or public health emergencies. This survey asks questions about collaboration between you and representatives from the organizations listed by you in the first part of this survey. Please fill this survey out based on your personal/professional knowledge, not necessarily on behalf of your agency/organization. This survey should take 30 minutes to complete. It is very important that you finish this survey completely, so that the survey data will be accurate. If you provide your contact details at the end of the survey, the American Academy of Pediatrics will be happy to share the survey results at the completion of the project.

This research was reviewed and approved by the Office of the Institutional Review Board for Human Use (OIRB) at the University of Alabama at Birmingham under IRB protocol number X130723004.

Improving Regional Pediatric Surge Networks Survey Part 2

2. Disaster Preparedness Capabilities of Identified Networks

1. For each network you identified, improving community preparedness (conduct Gap Analysis, enhance collaboration and planning, and offer training and exercises) is the network's

1 - Lowest priority

2

3

4

5 - Highest priority

Identified Network 1



Comments:

5

6

2. For each network you identified, improving Emergency Response or Operations Coordination (through resource exchanges, activation of response strategies, and focus on strategies to increase medical surge or mass casualty response) is the network's

1 - Lowest priority

2

3

4

5 - Highest priority

Identified Network 1



Comments:

5

6

3. For each network you identified, enhancing Community Recovery (through enhanced connections and long-term planning with groups such as businesses, schools, mental health providers, medical care providers) is the network's

1 - Lowest priority

2

3

4

5 - Highest priority

Identified Network 1



Comments:

5

6

4. For each network you identified, enhancing Emergency Warnings, Public Information Sharing, or Interagency Communication is the network's

1 - Lowest priority

2

3

4

5 - Highest priority

Identified Network 1



Comments:

5

6

Improving Regional Pediatric Surge Networks Survey Part 2

5. For each network you identified, enhancing the Development and Focus of the Actual Network (through use of Memorandum of Agreements/Memorandum of Understandings, topic-specific subcommittees or work groups, regular calls or meetings, strategic plan, etc.) is the network's

	1 - Lowest priority	2	3	4	5 - Highest priority
Identified Network 1					

Comments:

5

6

Following questions assess the identified networks' achievements in Disaster Preparedness.

1. Indicate the extent to which you believe Identified Network 1 achieves the following in the area of disaster preparedness:

	1 = Does Not Yet Address	2 = Addresses to a Minimal Extent	3 = Addresses to an Adequate Extent	4 = Addresses to a Significant Extent
Conducts gap analysis	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Connects with or conducts outreach to child populations	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Offers preparedness training	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Conducts exercises or drills	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Implements preparedness or planning strategies	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Implements response or mitigation strategies	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Implements Short- or Long-term Recovery Strategies	<input checked="" type="radio"/> <input checked="" type="radio"/>		<input checked="" type="radio"/>	<input checked="" type="radio"/>
Improves Emergency Warning Systems or Notifications	<input checked="" type="radio"/> <input checked="" type="radio"/>		<input checked="" type="radio"/>	<input checked="" type="radio"/>
Improves Public Information Sharing	<input checked="" type="radio"/>			
Improves Communications Among Medical or Responder Groups	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Puts in Place Memorandums of Understanding (MOUs)/Memorandum of Agreement (MOA)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Has Subcommittees or Work Groups that Focus on Specific Topics	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Convenes Regular Calls or Meetings (comments)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Has a Written or Strategic Plan to Guide Network Efforts	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Uses E-mail or Electronic Mailing Lists to Conduct Business	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
	<input checked="" type="radio"/>			



Identify any elements of the network that could be improved upon:

Improving Regional Pediatric Surge Networks Survey Part 2



Improving Regional Pediatric Surge Networks Survey Part 2

4. Environment

Please answer the following questions related to disaster preparedness in your area, including community-wide disaster-preparedness programs.

1. To what extent is there competition among policy makers and agency heads in your area?

1 - Not at all





2

3

4

5 - Great Extent

.

Comments:

2. To what extent do state policies encourage local interagency collaboration?

1 - Not at all





2

3

4

5 - Great Extent

.

Comments:

3. To what extent do federal policies encourage local interagency collaboration?

1 - Not at all






2

3

4

5 - Great Extent

.

Comments:

4. To what extent has the public advocated for community-wide disaster-preparedness programs in your area?

1 - Not at all






2

3

4

5 - Great Extent

.

Comments:

5. To what extent is there adequate funding for community-wide disaster-preparedness programs in your area?

1 - Not at all






2

3

4

5 - Great Extent

.

Comments:

Improving Regional Pediatric Surge Networks Survey Part 2

5. Situational Factors: A. Awareness

In Survey One, you indicated that you were aware of at least one network or collaboration that aims to improve disaster preparedness, response, or recovery. In reference to the network(s) you identified, please complete the following questions:

1. How well are you personally acquainted with staff from each agency?

	1 - Not at all	2	3	4	5 - Very Well
Identified Network 1					

Comments:

5

6

2. How well informed are you about the specific goals and services of each listed agency?

	1 - Not at all	2	3	4	5 - Very Well
Identified Network 1					

Comments:






5

6

Improving Regional Pediatric Surge Networks Survey Part 2

6. Situational Factors: B. Resource Dependency

1. How important was each listed agency in helping YOUR agency attain its goals in the past 6 months?

	1 - Not at all	2	3	4	5 - Very Important
Identified Network 1					

Comments:



Improving Regional Pediatric Surge Networks Survey Part 2

7. Situational Factors: C. Domain Similarity

1. To what extent does each agency obtain funding from the same sources as your agency?

	1 - Not at all	2	3	4	5 - Great Extent
Identified Network 1					

Comments:

5

6

2. To what extent does this agency provide the same kind of services as your agency?

	1 - Not at all	2	3	4	5 - Great Extent	Don't Know
Identified Network 1						

Comments:

5

6

Improving Regional Pediatric Surge Networks Survey Part 2

8. Situational Factors: D. Consensus

1. To what extent does your agency and each listed agency agree on the community-wide disaster-preparedness needs in your area?

	1 - Not at all	2	3	4	5 - Great Extent	Don't Know
Identified Network 1						

Comments:






5

6

Improving Regional Pediatric Surge Networks Survey Part 2

9. Task Characteristics

1. To what extent are professionals from different disciplines/specialties needed to accomplish the goals that your agency and this agency have in common?






	1 - Not at all	2	3	4	5 - Great Extent
Identified Network 1					

Comments:

5

6

2. To what extent can you anticipate what the outcomes of the project that you and each agency worked on would be?

	1 - Not at all	2	3	4	5 - Great Extent
Identified Network 1					

Comments:






5

6

Improving Regional Pediatric Surge Networks Survey Part 2

10. Interagency Processes: A. Intensity

1. To what extent does your agency send INFORMATION to or receive INFORMATION from this other agency?






	1 - Not at all	2	3	4	5 - Great Extent
Identified Network 1					

Comments:

5

6

2. To what extent does your agency send FUNDS to or receive FUNDS from this other agency?

	1 - Not at all	2	3	4	5 - Great Extent
Identified Network 1					

Comments:



5

6

Improving Regional Pediatric Surge Networks Survey Part 2

11. Interagency Processes: B. Formalization

1. Does your agency have a formal agreement/contract with this agency?

	Yes	No
Identified Network 1		

Comments:



Improving Regional Pediatric Surge Networks Survey Part 2

12. Interagency Processes: C. Decision Making

1. To what extent does an interagency committee or group coordinate activities between your agency and each agency?

	1 - Not at all	2	3	4	5 - Great Extent
Identified Network 1					

Comments:

5

6

2. How well coordinated are the activities of your agency and each listed agency?

	1 - Not at all	2	3	4	5 - Very Coordinated
Identified Network 1					

Comments:






5

6

Improving Regional Pediatric Surge Networks Survey Part 2

13. Interagency Processes: D. Centralization

1. How influential is each listed agency in shaping policies and programs in your area?

	1 - Not at all	2	3	4	5 - Very Influential
Identified Network 1					

Comments:






5

6

Improving Regional Pediatric Surge Networks Survey Part 2

14. Outcomes




1. To what extent are you satisfied with the relationship of your agency with this other agency?

	1 - Not at all	2	3	4	5 - Great Extent
Identified Network 1					

Comments:




2. To what extent have the GOALS of the programs been achieved that your agency and each agency co-participated?

	1 - No participation with this organization	2	3	4	5 - Great Extent
Identified Network 1					

Comments:




3. To what extent do you feel the relationship between your agency and each listed agency is productive?

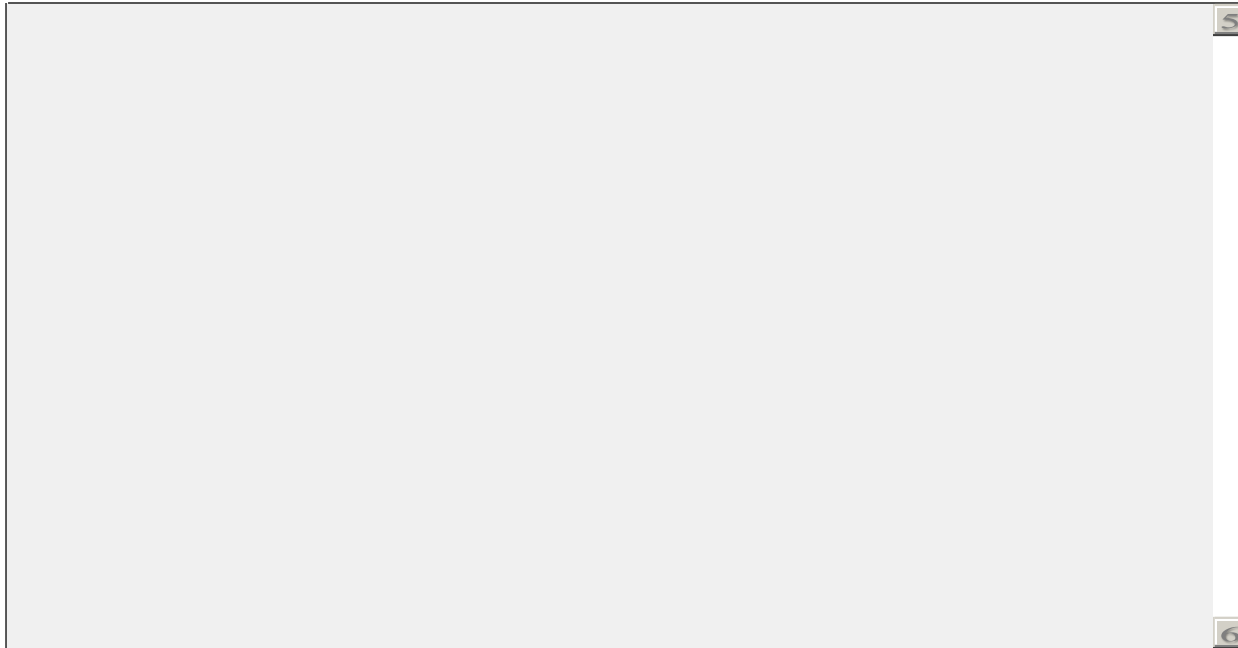
	1 - No participation with this organization	2	3	4	5 - Great Extent
Identified Network 1					

Comments:




Improving Regional Pediatric Surge Networks Survey Part 2

4. If you have any further comments or clarifications that you would like to make regarding any of the questions, please feel free to do so here.



Improving Regional Pediatric Surge Networks Survey Part 2

15. Background Information

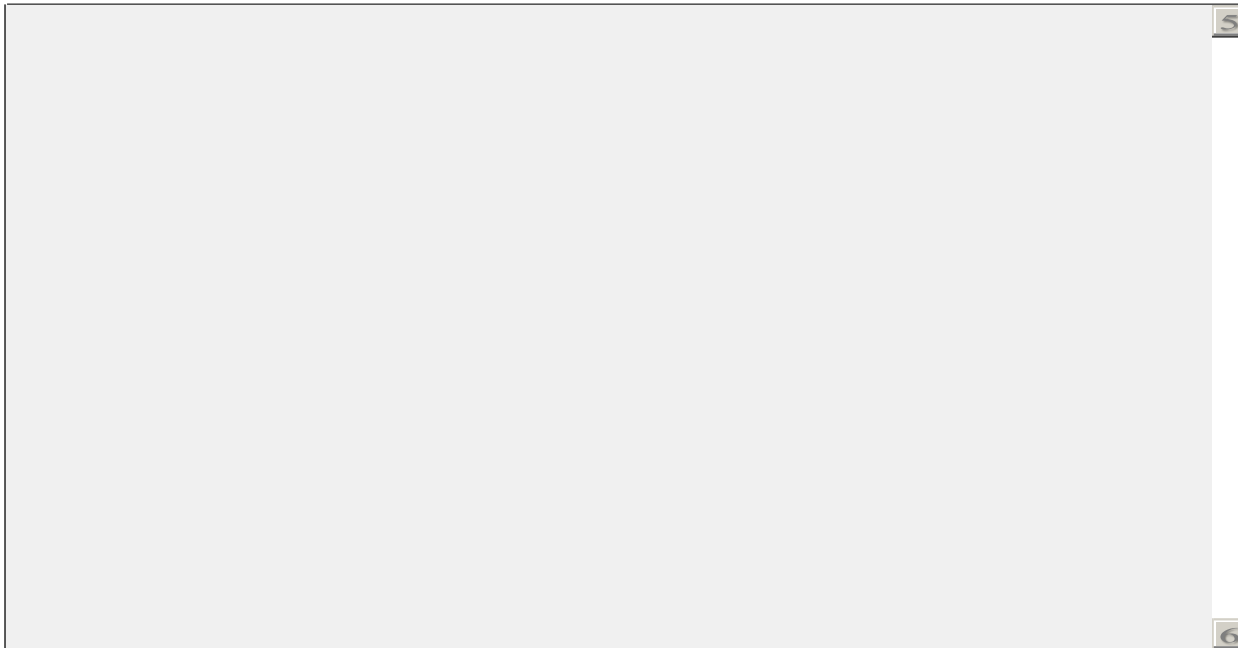
Finally, I would like to ask you several questions about your agency and yourself:

1. Does your agency currently participate in any disaster-preparedness programs?

☐ Yes

☐ No

If yes, please briefly describe the programs:



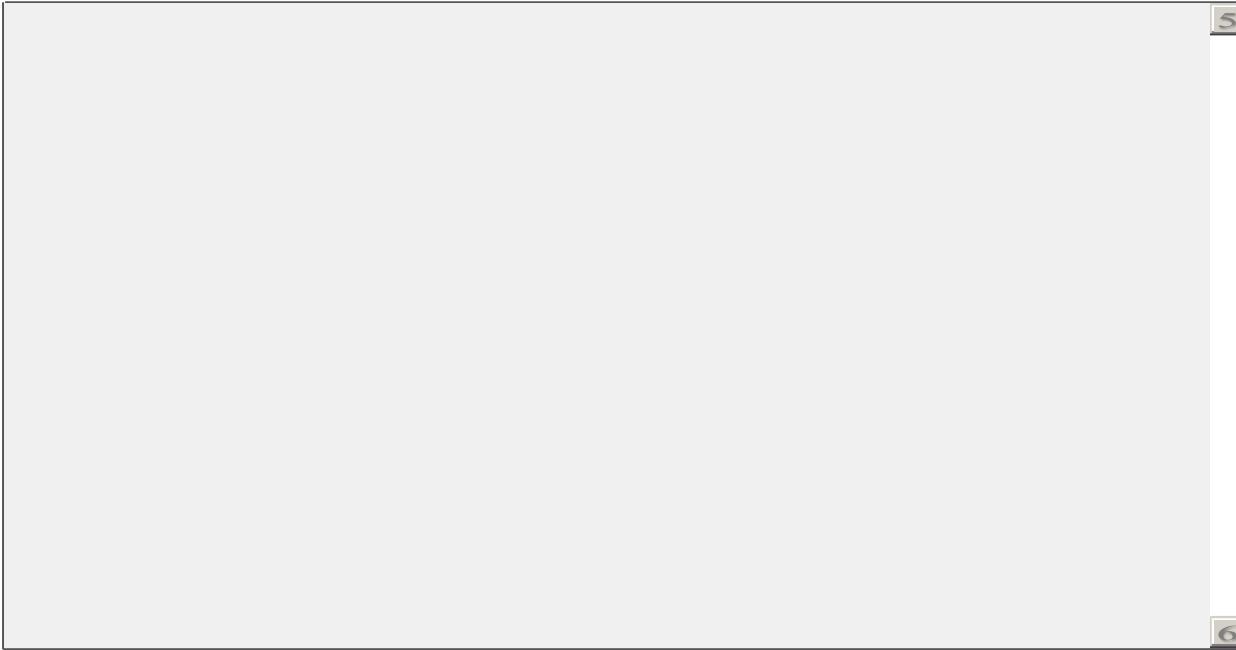
Improving Regional Pediatric Surge Networks Survey Part 2

2. Does your agency currently participate in any disaster-preparedness programs focused specifically on children?

☐ Yes

☐ No

If yes, please briefly describe the programs:

A large, empty text box with a light gray background and a thin black border. It has a vertical scrollbar on the right side, indicating it is a scrollable area for text input.

3. What is your present job title?

4. How many years have you worked in your present position?

5. How many years have you worked for this agency?

6. What is your age?

☐ 18 to 34

☐ 35 to 44

☐ 45 to 54

☐ 55 to 64

☐ 65 and over

☐ Decline

Improving Regional Pediatric Surge Networks Survey Part 2

7. What is your gender?

☐ Female

☐ Male

8. What is your highest level of education?

☐ Less than high school or GED

☐ High school only or GED

☐ Some undergraduate college

☐ Completed associate's degree

☐ Completed bachelor's degree

☐ Some graduate school

☐ Completed graduate degree (please indicate Master's or Doctoral degree)

9. What is your racial/ethnic background?

☐ White

☐ Black, African American, or Negro

☐ Asian Indian

☐ Chinese

☐ Filipino

☐ Japanese

☐ Korean

☐ Vietnamese

☐ Native Hawaiian

☐ Guamanian or Chamorro

☐ Samoan

☐ Other Asian or Pacific Islander

☐ Some other race

☐ American Indian or Alaska Native (Please indicate the name of your enrolled or principal tribe, or your tribe's formal legal name)

Thank you so much for your participation!

We expect the results of this survey to be available in 6 months. If you would like to see the results from this survey, please contact the University of Alabama at Birmingham (UAB) research team by emailing the project coordinator, Rongbing Xie, at rongbing@uab.edu.

Thanks again!

Appendix C - Survey II Participant Characteristics

As shown in Table C-1, 43 Survey II respondents completed the demographic questions. Fifty-nine percent of these respondents were female, and more than 90% of them were white. The majority of them had bachelor's degrees or higher and were older than 35 years of age. State/district/ county health departments or Children's Hospitals employed more than 50% of all the respondents, and preparedness networks employed another 15% of them. The respondents spent an average of 11.6 years at the current agency and an average of 9.1 years in the current position, which was primarily coordinator, planner, or director. Among all the employing agencies, 86% of them participated in disaster preparedness, and 75% of them participated in pediatric disaster preparedness specifically.

Table C-1. Survey II Respondent Demographics, n = 43

Characteristic	Number (%)
Gender	
Female	24 (59)
Male	17 (41)
Age	
18 to 34	2 (5)
35 to 44	11 (26)
45 to 54	10 (24)
55 to 64	15 (36)
65 and over	4 (10)
Race	
White	37 (90)
Other	4 (10)
Education	
Some Undergraduate Education	3 (7)
Completed Bachelor's Degree	13 (30)
Completed Master's Degree	15 (35)
Completed Doctoral Degree	12 (28)
Type of Employing Agency	
Children's Hospital	4 (8)
Hospital	11 (22)
City Government	1 (2)
State/District/County Health Department	18 (36)
EMA	3 (6)
Pediatric Practice	4 (8)
Preparedness Network	7 (14)
Training Center	2 (4)
Years at Current Position (mean)	9.1
Years at Current Agency (mean)	11.6
Job Title	
Coordinator/Planner	18 (42)

Characteristic	Number (%)
Manager/Administrator	5 (12)
Physician	5 (12)
Director	13 (30)
Staff	3 (7)
Employing Agency Participated in Disaster Preparedness	37 (86)
Employing Agency Participated in Pediatric Disaster Preparedness	33 (75)



PRQC DISASTER BUNDLE - DISASTER DOMAIN 2, 3

Regional Coalition Building and Pediatric Surge

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PEDIATRIC PREPAREDNESS RESOURCE KIT

INSPIRED BY THE H1N1 PANDEMIC:
STRENGTHENING PEDIATRIC AND
PUBLIC HEALTH PARTNERSHIPS

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

“The plan is nothing, the planning is everything.”

Dwight D. Eisenhower, US President

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Appendix 1 was reprinted with permission from *AAP News*. Learning from H1N1: pediatric, public health leaders discuss how to improve states' pediatric preparedness. *AAP News*. 2011;32(7):15.

Appendix 2 was reprinted with permission from the Society for Disaster Medicine & Public Health, Inc. Improving pediatric preparedness performance through strategic partnerships. *Disaster Health Med Public Health Prep*. 2012;6(2):94–96.

Appendix 6 was adapted with permission from American Academy of Pediatrics Disaster Preparedness Advisory Council. The youngest victims: disaster preparedness to meet children's needs. <http://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/children-and-disasters/Documents/Youngest-Victims-Final.pdf>.

Listing of resources does not imply an endorsement by the American Academy of Pediatrics (AAP). The AAP is not responsible for the content of the resources mentioned in this publication. Phone numbers and Web site addresses are as current as possible, but may change at any time.

The persons whose photographs are depicted in this publication are professional models. They have no relation to the issues discussed. Any characters they are portraying are fictional.

The recommendations in this publication do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations taking into account individual circumstances, may be appropriate.

American Academy of Pediatrics. Pediatric Preparedness Resource Kit. Elk Grove Village, IL: American Academy of Pediatrics; 2013.

Key words: children, H1N1, pandemic, public health emergency, disaster, pediatrician, pediatrics, preparedness, public health

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Disaster Preparedness Advisory Council

Steven E. Krug, MD, FAAP
David J. Schonfeld, MD, FAAP
Scott Needle, MD, FAAP

Council on Children with Disabilities

Larry Desch, MD, FAAP

Council on Clinical Information Technology

Willa Drummond, MD, FAAP

Council on Communications and Media

Deborah Ann Mulligan, MD, FAAP, FACEP

Council on Environmental Health

Jerome A. Paulson, MD, FAAP

Council on School Health

Robert Gunther, MD, MPH, FAAP
Margaret Dolan, MD, FAAP
Linda Grant, MD, MPH, FAAP

Committee on Bioethics

Alex Okun, MD, FAAP

Committee on Genetics

Robert Saul, MD, FAAP

Committee on Infectious Diseases

Hank Bernstein, DO, FAAP
Walter Orenstein, MD, FAAP

Committee on Medical Liability and Risk Management

Steven Donn, MD, FAAP

Committee on Pediatric Education

Beverly P. Wood, MD, MEd, PhD, FAAP

Committee on Pediatric Emergency Medicine

Lou Romig, MD, FAAP

Committee on Practice and Ambulatory Medicine

Geoffrey Simon, MD, FAAP

Section on Anesthesiology and Pain Medicine

James Gordon Cain, MD
Alvin Hackel, MD, FAAP
Rose Campise-Luther, MD, FAAP

Section on Critical Care

Alice D. Ackerman, MD, MBA, FAAP
William Bradley Poss, MD, FAAP

Section on Genetics and Birth Defects

Tracy L. Trotter, MD, FAAP

Section on Infectious Diseases

Leonard Krilov, MD, FAAP
Jennifer Vodzak, MD

Section on International Child Health

Ilan Shapiro Strygler, MD
Mark X. Cicero, MD, FAAP
Karen Olness, MD, FAAP

Section on Medical Students, Residents, and Fellowship Trainees

Oneka Bynoe Marriott, DO, MPH

Section on Oral Health

David Krol, MD, MPH, FAAP

Section on Telehealth Care

Dale Alverson, MD, FAAP
Bryan L. Burke Jr, MD, FAAP
Peter Dehnel, MD, FAAP

Section on Young Physicians

Cristina Pelaez-Velez, MD, FAAP

The AAP would also like to recognize the AAP Section on Bioethics, Section on Breastfeeding, and Section on Hematology/Oncology.

California State Team

Robert J. Schechter, MD

Florida State Team

Mobeen Rathore, MD, FAAP
Scott Needle, MD, FAAP

Georgia State Team

Natalie E. Lane, MD, FAAP

Illinois State Team

Julie Morita, MD, FAAP
Evelyn Lyons, MPH, RN
Jihad Shoshara, MD, FAAP
Kenneth Soyemi, MD, FAAP

Missouri State Team

Theodore Mahler Barnett, MD, FAAP
George Turabelidze, MD
Fredric Wheeler II, DO, FAAP
Paula F. Nickelson, MEd

Utah State Team

Brent Kaziny, MD
William Cosgrove, MD, FAAP
Robert Jex, RN, MHA
Melissa Dimond, MPH

Additional Reviewers

Dana A. Braner, MD, FAAP
Anne Epstein, MPH
John Rinard, MSPCI

Office of the Assistant Secretary for Preparedness and Response

Daniel Dodgen, PhD
Andrew Garrett, MD, MPH, FAAP

Federal Emergency Management Agency

Lauralee Koziol

AAP Staff

V. Fan Tait, MD, FAAP
Laura Aird, MS
Sean Diederich
Elizabeth Friedman
Hope Hurley
Angela Tobin, AM, LSW

CDC Staff

Georgina Peacock, MD, MPH, FAAP
Michael Bartenfeld, MA

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Dear Colleague:

Because children are least likely to be able to “fend for themselves” in the event of an emergency, pediatricians and public health leaders need to be very strong and active champions in advocating for the needs of children. Disaster planning resources dedicated to pediatric populations remain unavailable or are extremely limited. To address this shortcoming, it is vitally important that pediatricians and other pediatric experts be included and engaged in local, state, regional, and federal pandemic and preparedness planning to ensure appropriate care of our most vulnerable population.

Pediatricians should work collaboratively with public health departments and colleagues to identify and decrease barriers to the health and well-being of children in the communities they serve. Pediatricians working in partnership with public health professionals can make a recognizable impact in advocating for the needs of children and families who seldom receive enough attention in disaster planning.

The purpose of the American Academy of Pediatrics (AAP) Pediatric Preparedness Resource Kit is to promote collaborative discussions and decision-making among pediatric and public health leaders about pediatric preparedness planning. Specifically, this kit aims to increase state- and community-level preparedness efforts regarding how best to address children’s needs.

It is important to note that the implementation of governmental recommendations during a pandemic or disaster will vary from state to state and county to county. Each population and region has different decision-makers and unique needs and challenges. Physicians who care for children are encouraged to use the resource materials found in the kit to develop strategic partnerships, increase partner engagement, identify strengths and challenges for pediatric preparedness planning, and establish communication networks to ensure that the needs of children are addressed during a pandemic or other emergency. Public health officials are invited to review the contents of the kit to increase their awareness of issues relevant to pediatric preparedness and strategies for partnering with pediatricians and AAP chapters. Although this kit was inspired by the 2009 H1N1 pandemic, most of the contents will be useful and effective in supporting planning for disaster or emergency situations other than infectious disease outbreaks. For an electronic version, go to www.aap.org/disasters/resourcekit.

We are pleased to share this resource kit with you. If you are a pediatrician or pediatric expert, we hope that the kit will encourage you to get more involved in pandemic preparedness or disaster planning efforts. If you are a public health leader or other child advocate, we hope that this kit will encourage you to connect with your state AAP chapter to request that a pediatrician be identified to serve as a point of contact for pandemic and disaster preparedness planning. The strategies shared in this key resource are designed to stimulate action and inspire you to take steps to form key partnerships and improve day-to-day emergency readiness for children in your area. Thank you in advance for the steps you will take to protect children in your community!

Sincerely,

AAP Disaster Preparedness Advisory Council
Steven E. Krug, MD, FAAP, Chairperson
Sarita Chung, MD, FAAP
MAJ Daniel B. Fagbuyi, MD, FAAP
Margaret Fisher, MD, FAAP
Scott Needle, MD, FAAP
David J. Schonfeld, MD, FAAP

BACKGROUND INFORMATION

The American Academy of Pediatrics (AAP) is a not-for-profit professional organization of 60,000 primary care pediatricians, pediatric subspecialists, and pediatric surgical specialists dedicated to the health, safety, and well-being of infants, children, adolescents, and young adults. The AAP offers a variety of resources for pediatricians and others who wish to become better prepared for a pandemic or disaster. The AAP has been involved in disaster preparedness efforts for many years. In 2001 the AAP established a Task Force on Terrorism to manage follow-up efforts regarding the terrorist attacks on September 11, 2001, and issues related to anthrax. The AAP then established a Disaster Preparedness Team that focused on Katrina follow-up and clarified the AAP role in reunification, rescue, and recovery. In 2006 the AAP Board of Directors identified disaster preparedness as 1 of 7 strategic health priorities requiring special attention and resources. In 2007 the AAP appointed the Disaster Preparedness Advisory Council to establish a focused effort within the AAP and to develop and implement a strategic plan for disaster preparedness and response.

Through its disaster preparedness and response efforts, the AAP strives to

- Ensure that children's needs are addressed as early as possible in the development of disaster preparedness programs and activities.
- Involve pediatric experts in all areas of disaster planning and response, from the medical home to national levels.
- Assist AAP chapters and members to integrate pediatric issues into state preparedness and response planning.

This resource kit is one of many tools developed by the AAP to support improved pediatric preparedness. For more information and resources, visit the AAP Children & Disasters Web site at www.aap.org/disasters.

PURPOSE OF THE RESOURCE KIT

The content in this resource kit is based on the experiences of AAP members and public health professionals during the 2009 H1N1 pandemic. The AAP conducted after-action activities and discussions, which revealed several areas for improvement related to future pandemics or public health emergencies. A key finding was the need to encourage partnerships and joint decision-making between pediatricians and state health department representatives. It was recommended that the AAP and its state chapters build on relationships forged during the 2009 H1N1 experience and develop

improved strategies for pediatric preparedness planning. Further, it was deemed important that AAP chapter leaders have strategic conversations with directors of state health departments, so that when public health emergencies like H1N1 arise, there is a ready channel of communication that can facilitate a response to the crisis. To address these issues, the AAP, in collaboration with the Centers for Disease Control and Prevention (CDC), convened a meeting titled, Enhancing Pediatric Partnerships to Promote Pandemic Preparedness in 2011. (For meeting materials and proceedings, go to www.aap.org/disasters/pandemicmtg2011.)

The Enhancing Pediatric Partnerships to Promote Pandemic Preparedness meeting generated 3 overarching conclusions specific to disaster preparedness and response.

1. Including pediatric experts, especially practitioners, in planning discussions and development of clinical guidance and educational messages would improve health care system efficiency and the care provided to children.
2. Management of messaging to health professionals would reduce information overload and enhance their ability to care for children in need of medical care.
3. Putting a system in place to discuss pediatric considerations and prioritization among children at increased risk in advance of an emergency would enhance outcomes for all populations, especially during times when resources are limited.

An emphasis was placed on selecting the most qualified or "right" pediatric expert. Individuals tend to reach out and ask for help from the pediatricians they know, especially those already involved in other initiatives. It is preferable to ask for an official AAP (national) or AAP chapter (state) representative. By contacting the AAP headquarters office or the AAP chapter directly, a strategic liaison relationship can be established.

The strategies described in the resource kit are already demonstrating positive results. Follow-up discussions in 2012 with the 10 state teams that attended the AAP/CDC meeting revealed that meeting participation had led to

- New opportunities for team members to report on disaster preparedness and meeting follow-up at relevant AAP chapter and other state meetings
- Enhanced interest in disaster preparedness discussions among AAP members
- Improved awareness of children's needs during and after disasters at the state department of health
- An increase in discussions focused on pediatric issues (in general) within state-level public health meetings

- Specific follow-up at the state level regarding vaccine registries and vaccine distribution systems
- Enhanced opportunities for meeting participants to develop expert-level skills and to be viewed as experts by others

Follow-up priorities for state teams include

- Identifying a statewide list of pediatricians or contact network for ready communication
- Developing a pediatric advisory council or children's preparedness coalition (or appointing an AAP chapter liaison to a standing preparedness committee) to ensure the needs of pediatric populations and medical practices are included in state and local preparedness plans
- Implementing a system to identify children at high risk, perhaps through effective use of statewide registries

Common barriers/challenges for state teams include

- The time, commitment, and resources required to further the involvement of pediatricians at the state level (eg, busy schedules, funding restrictions for travel to meetings)
- Working to make the right connections at the state level to ensure a pediatric focus on preparedness and response planning
- Turnover in state team members

The resource kit aims to address these issues, enhance state- and community-level preparedness planning, and implement strategies to address children's needs. Strategies referenced in the kit can stimulate discussions and increase decision-making and strategic communication about pediatric preparedness topics. Although many of the core concepts found in the kit stemmed from discussions about the 2009 H1N1 influenza pandemic, most strategies are applicable to all-hazards disaster planning. As an example, a key recommendation found in the resource kit proposes that states establish a pediatric advisory council or children's preparedness coalition where leaders and practitioners decide together what actions are required to protect children in the event of a disaster. This effort lays the groundwork for effective decision-making regardless of the type of emergency or disaster.

INCLUDING PEDIATRIC CARE PROVIDERS IN STATE-LEVEL DECISION-MAKING

Actively seeking pediatrician and pediatric provider input and creating a bi-directional partner dialogue with public health decision-makers are key components of including pediatricians in state-level decision-making before, during, and after a disaster.

By inviting pediatric experts into discussions about pandemic preparedness and public health emergency planning, the federal, state, and local decision-makers can work to ensure that children's issues are addressed during the initial state, regional, and local plan development stages. By including pediatricians and pediatric care providers in pandemic and disaster preparedness discussions, the individuals responsible for planning will have greater ability to identify and address specific gaps in pediatric readiness. They will also have increased access to pediatric experts. It will be important to ensure that all partners involved in pandemic and disaster preparedness efforts work together to develop an integrated, cohesive plan with a high level of flexibility.

Questions to Consider

- How does the state's existing pandemic and disaster preparedness plan address children's needs?
- Is there an existing committee or coalition of pediatric and public health leaders that aims to improve pediatric preparedness in the state? Every state has an Emergency Medical Services for Children (EMSC) program, which may be a potential location for an existing coalition. See www.childrensnational.org/EMSC/DisasterPreparedness/DisasterAgencies for state contacts.
- Is there an ongoing preparedness council that a pediatrician or public health representative could join to improve preparedness for children?
- Does the AAP chapter have a "pediatric champion" or committee to address disaster preparedness and response?
- Is there a state-specific action plan for pediatric preparedness?
- What opportunities are there for individual pediatricians to get involved in public health planning? Are there ways that public health leaders could join AAP chapter leaders in their planning efforts?

By including pediatricians and pediatric care providers in pandemic and disaster preparedness discussions, the individuals responsible for planning will have greater ability to identify and address specific gaps in pediatric readiness.

IDEAS TO INCREASE PEDIATRIC INVOLVEMENT IN DECISION-MAKING

Basic	Advanced
<ul style="list-style-type: none"> ❑ Compile a list of key pediatric and public health leaders and identify their involvement in preparedness efforts. 	<ul style="list-style-type: none"> ❑ Prioritize pediatric preparedness improvement opportunities and implement steps to achieve the most critical needs.
<ul style="list-style-type: none"> ❑ Identify a “pediatric champion” within the AAP chapter or certain organizations and encourage collaboration and integration of their work with local emergency management agency officials. An example would be to identify a pediatric contact at each community or referral hospital (in the emergency department [ED]) who can participate in pandemic or public health disaster surge planning discussions. 	<ul style="list-style-type: none"> ❑ Promote the use of the AAP and other resources to improve the quality of pediatric preparedness and related collaborative efforts. Use the AAP joint policy statement, “Care of Children in the Emergency Department” (http://pediatrics.aappublications.org/content/124/4/1233.full), and its companion checklist (www.ena.org/media/news/Documents/EDPrepChecklist.pdf) to implement guidelines and strategies to optimize care for children in hospital EDs.
<ul style="list-style-type: none"> ❑ Conduct a needs assessment/survey to identify gaps in pediatric preparedness planning. 	<ul style="list-style-type: none"> ❑ Contact those involved in existing or ongoing disaster preparedness drills and exercises to determine ways to involve pediatricians in planning efforts, target pediatric-specific requirements, and include pediatric victims.
<ul style="list-style-type: none"> ❑ Initiate a dialogue among pediatricians, emergency management officials, and public health personnel about the needs of children before a public health emergency or disaster. 	<ul style="list-style-type: none"> ❑ Form a pediatric advisory council or children’s preparedness coalition to address children’s needs during or after a public health emergency or disaster.
<ul style="list-style-type: none"> ❑ Obtain pediatric care providers’ input (including those who provide outpatient primary care) to plan ahead for vaccine or medication distribution during a disaster. 	<ul style="list-style-type: none"> ❑ Identify and connect with personnel involved in the Strategic National Stockpile Points of Dispensing. Ask the state department of public health for names of contacts.
<ul style="list-style-type: none"> ❑ Review existing chapter and state public health Web sites for pediatric preparedness content. Suggest that links to relevant resources from the AAP Children & Disasters Web site be added. 	<ul style="list-style-type: none"> ❑ Develop and maintain a shared online resource describing clinical workload, clinical capacity, critical supplies on hand, and current utilization in the event of an emergency.



PROMOTING STRATEGIC COMMUNICATIONS AND SYSTEMATIC MESSAGING

Communication and messaging are important components of an effective response to a pandemic or public health emergency and are therefore critical to pediatric preparedness. Suboptimal messaging and communication can easily exacerbate a crisis. Messaging is important (what to say, how to say it, and who to say it to), as is the means to deliver the message. With the wide use of smartphones and other computer technology, messages can be delivered through many different forms. Examples of such methods include social media, text messaging, YouTube videos, blogs, other Web sites or online tools, and apps specifically designed for topics such as tracking various aspects of disaster planning or acute issues during disasters, as well as the clean-up and follow-up in the aftermath.

In a time of crisis, the message needs to be simple, poignant, accessible, and timely. Messages should come from a trusted source, be reviewed by a pediatric expert, and be crafted to reassure and/or communicate concrete steps to reduce risk.

Key communication points identified by AAP members during the 2009 H1N1 pandemic included

1. Preparedness and planning efforts should consider messaging and strategic communication as essential to response.
2. Preexisting and trusted collaborative relationships between public health and health care organizations form the basis of a strong communication system during an emergency.
3. It is important to minimize excessive, conflicting, confusing, or unnecessarily anxiety-provoking messages.
4. It is critical to ensure up front that children's needs are specifically addressed.
5. The AAP and CDC partnership during the recent pandemic was effective. It will be important to continue and expand a joint AAP/CDC response strategy.

In a time of crisis, the message needs to be simple, poignant, accessible, and timely. Messages should come from a trusted source, be reviewed by a pediatric expert, and be crafted to reassure and/or communicate concrete steps to reduce risk.



Questions to Consider

- Does the state have an emergency contact database for health professionals who care for children, such as pediatricians, pediatric care providers, and pediatric nurse practitioners? If not, what is the first step in creating such a database?
- Has a strategic communication plan been created based on state, regional, and local partner input?
- What specific strategies can be implemented at the state, regional, and local level to enhance communication and reduce information duplication or overload before, during, and after a pandemic or public health emergency?
- Does the communication plan consider the unique needs of all children, including children and youth with special health care needs (CYSHCN) and their families?
- What types of existing vehicles are available to communicate important messages to colleagues, patients, and families before, during, and after a pandemic or public health emergency?
- What are some new ways to develop strategic communication and systematic messaging in planning for a public health emergency?
- Can connections with child care health consultants or school nurses be enhanced to ensure accurate health information can be shared with families?
- How can telecommunications and telemedicine strategies be leveraged to improve situational awareness and consequence management, share critical knowledge, and provide just-in-time training to enhance response during public health emergencies without power failure, and thus enable the best possible outcomes?



IDEAS TO IMPROVE COMMUNICATION AND MESSAGING

Basic	Advanced
<ul style="list-style-type: none"> ❑ Establish a contact network, electronic mailing list, or database of key contacts. Compile and share relevant contact information. 	<ul style="list-style-type: none"> ❑ Identify, recruit, and provide appropriate training of pediatric subject matter experts to develop them as spokespersons. Encourage selected individuals to build relationships with media contacts before an emergency or disaster. Include local radio, television, newspapers, and Web sites (eg, school Web sites).
<ul style="list-style-type: none"> ❑ Review available communication opportunities in the state (eg, social networking, webinars, telehealth care strategies, registries, Web sites). Work with state AAP chapter and public health leaders; regional, county, and local pediatric societies; and counterparts in the public sector to compile a list of communication options and develop a model for communication to minimize inconsistency. 	<ul style="list-style-type: none"> ❑ Create an evaluation to test existing communication approaches. Suggest that communication be addressed or tested within existing “tabletop” or live exercises or drills.
<ul style="list-style-type: none"> ❑ Develop a written plan to facilitate rapid and effective messaging and communication. Separate vehicles for encouraging a dialogue with health professionals and sharing information with parents and the public are recommended. 	<ul style="list-style-type: none"> ❑ Increase awareness of the communication plan before and during a public health emergency. Let key contacts know which communication option to expect. Include instructions for texting or alternate communication if others fail.
<ul style="list-style-type: none"> ❑ Put strategies in place to avoid information overload and conflicting messages during a pandemic or public health emergency response. Identify a leader to review important notices from federal agencies and other trusted sources and debrief on communication messages daily during a public health emergency. The task force can craft a single message and bullet new items to be communicated regarding clinical guidance. 	<ul style="list-style-type: none"> ❑ Develop a pediatric public health emergency surge communication plan (eg, host-state surge plans, statewide profile of hospital pediatric bed capacity, staffing, unique/specialty services, transport capabilities, key pediatric resource capabilities). One example is the Southeastern Regional Pediatric Disaster Response Surge Network (www.southcentralpartnership.org/pediatric_network).
<ul style="list-style-type: none"> ❑ Identify a Web page where announcements can be posted to easily communicate with state pediatric and public health leaders during an emergency. 	<ul style="list-style-type: none"> ❑ Develop, adapt, or implement Web-based communication systems to facilitate communication across states that involve key stakeholders (eg, public health, pediatric care providers, hospitals, schools, parents, and community- and faith-based associations). Consider how to incorporate social networking sites so that information can be acquired and disseminated as rapidly and widely as possible.
<ul style="list-style-type: none"> ❑ Discuss strategies for addressing culture and language barriers in advance of communicating an important message to health professionals and the public. Approach nontraditional partners like local consulates, faith-based leaders, or librarians. One example might be to develop an emergency communication plan adaptable for health care professionals who care for sight- and hearing-impaired patients. 	<ul style="list-style-type: none"> ❑ Use a variety of communication vehicles to reach as many diverse populations as possible (eg, social media, “Dear Colleague” letters, flyers in stores, call center, community-based outreach, text and e-mail blasts).

Tips for Working With the Media and Risk Communication

Crisis communication and messaging are important components of an effective response to a public health emergency and therefore become a critical component of preparedness efforts. These efforts are most efficiently handled by those experienced in doing so. However, in the event those individuals are unavailable, here are some important tips on working with the media during a pandemic or public health emergency.

- **Identify, recruit, and train pediatric subject matter experts as media spokespersons.** Have a communications plan in place with pre-identified spokespersons to streamline information and avoid any inaccurate or conflicting messaging during an actual event.
- **Communicate openly and honestly.** Promptly respond to rumors and inaccurate information to minimize concern, social disruption, and stigmatization.
- **Engage the public.** Help them to make better, informed decisions.
- **Provide timely and accurate information.** It will be important to communicate messages before, during, and after an emergency. It is helpful to maintain regular contact with the media instead of approaching them only in a time of emergency.
- **Establish a solid (contractual, if possible) relationship with the media in advance of a pandemic or public health emergency.** This will help to guide attitudes, decisions, collaboration, and cooperation.
- **Participate in media training.** Assess readiness for response in advance of a declared pandemic or public health emergency.
- **Develop a list of media contacts.** Constantly and consistently maintain this list.
- **Have a well-developed, single overriding communications objective.** In a pandemic or public health emergency, the public will need clear, simple instructions.

PRIORITIZING WITHIN AND AMONG HIGH-RISK GROUPS

The October 2010 report delivered to the president of the United States and Congress by the National Commission on Children and Disasters (NCCD) highlights persistent gaps in disaster preparedness for children. The NCCD calls for the development of a national strategy to ensure children are given a higher priority before, during, and after disasters. The report includes more than 100 recommendations to federal, state, and local governments and nongovernmental organizations

to improve protections for children. To review a copy of the NCCD report, visit <http://archive.ahrq.gov/prep/nccdreport/>.

Most community pediatricians and pediatric care providers are left out of formal planning for disaster response. Ideally, this should be rectified before a pandemic or public health emergency. Pediatricians and other pediatric care providers can help ensure that federal, state, and local disaster plans include specific protocols for management of children by advocating for the special needs of children during planning efforts at every organizational level. Public health leaders can connect with the relevant AAP chapter to identify pediatric experts who can collaborate with them on preparedness efforts.

Even further emphasized within the priority given to children are high-risk groups. The unique medical attention that will be required for infants, children, and young adults with special health care needs must be considered. Taking steps to include pediatric care providers in state-level decision-making and promote strategic communications and systematic messaging are key components of achieving prioritization within and among high-risk groups of children.

Within the general population, high-risk groups can include pregnant women; lactating mothers and their infants; health care personnel; CYSHCN; and hard-to-reach populations, such as minorities, undocumented immigrants, the homeless, or families without access to computers or cellular telephones. Use of a generic catch-all term (at-risk, special needs, special populations) for diverse populations with very different needs interferes with the need to examine each of these groups and their needs individually. Use of these generic terms has resulted in combining children, pregnant women, the elderly, and even pets into one group, and this practice sends an unhelpful message regarding the unique needs of each of these populations.

A better message to send is that children have important physical, physiological, developmental, and mental differences from adults that can and must be anticipated in the disaster planning process. In addition, there are certain groups of children that will require specialized planning and extra consideration up front. By carefully considering which groups of children may be at increased or even highest risk in a specific disaster or emergency, planning will benefit all children and the population at large.

One example would be that infants are specifically at risk for dehydration, hypothermia, and infection. Special attention must be placed on keeping mothers and infants together and to create a safe environment for

breastfeeding or pumping breast milk (see www2.aap.org/breastfeeding/files/pdf/InfantNutritionDisaster.pdf). In addition, children younger than 5 years, especially very young infants (those younger than 12 weeks), are at increased risk of influenza-related complications and, therefore, should be observed carefully for any signs and symptoms of influenza (see www.aap.org/disasters/preventflunewborns). The AAP has experts and resources to assist states in planning to address the unique needs of children, including certain groups of children who might be at increased risk.

Questions to Consider

- Has a strategic plan been developed to identify and address the needs of high-risk populations before, during, and after a disaster?
- What strategies can be implemented at the state, regional, and local level to enhance the care of children at high risk, including CYSHCN?
- Does the state preparedness plan consider the unique needs of all children, especially CYSHCN?
- What are the opportunities at the local level to advocate for hard-to-reach populations?
- Are there questions that public health leaders have about children in high-risk categories that AAP member experts can help answer in advance of an emergency or disaster?
- Is there a mechanism in place for AAP chapter and public health decision-makers to determine how to allocate resources and address the needs of children, especially those at increased risk after a disaster? See one example from Kansas at www.kdheks.gov/cphp/download/GuideforPlanningUseofScarceResources.pdf.
- Can a current public health emergency or local disaster situation be used to reinforce influenza preparedness or other health messages (eg, need for annual influenza immunization, connection to the child's medical home)?

IDEAS FOR PRIORITIZING AMONG HIGH-RISK GROUPS

Basic	Advanced
<input type="checkbox"/> Improve access to care for children in high-risk groups through better use of immunization registries or another tracking mechanism to flag children at high risk for developing complications.	<input type="checkbox"/> Initiate efforts with local emergency management officials to use geographic information system mapping, state registry or database, or other strategies to rapidly identify where high-risk populations exist within regional areas.
<input type="checkbox"/> Convene a group of experts to facilitate discussions regarding children at highest risk to coordinate response efforts and propose improvements. Centralize decision-making initially, but defer to local leaders for customized execution for high-risk populations (strategic planning and tactical execution).	<input type="checkbox"/> Identify one point person or group to discuss and disseminate key recommendations regarding the chemoprophylaxis (administration of medication to prevent disease or infection) and treatment of high-risk populations. When making decisions about how to allocate scarce resources, one or more pediatric bioethics experts should be included.
<input type="checkbox"/> Engage community leaders and representatives from local and state educational agencies and child care facilities in discussion about pandemic and public health emergency planning for high-risk populations. Create community-based educational campaigns tailored for various high-risk populations.	<input type="checkbox"/> Create partnerships among pediatricians, other pediatric care providers, families of CYSHCN, advocates, and payers, particularly Medicaid and state children's health improvement programs, to address the unique health care requirements of CYSHCN, especially those who are in managed care. Preparedness planning for high-risk populations should be comprehensive and involve all sectors of the community (eg, residents, families, health officials, law enforcement, faith-based representatives).
<input type="checkbox"/> Create a pediatric-focused statewide model for distribution of limited resources (eg, vaccine, antibiotics, masks, ventilators) that will reflect the distribution of pediatric patients at highest risk for a particular threat.	<input type="checkbox"/> Create a statewide database of practices and hospitals that care for children to include patient numbers and characteristics to facilitate the appropriate prioritization of resources.
<input type="checkbox"/> See the AAP policy statement "Emergency Information Forms and Emergency Preparedness for Children With Special Health Care Needs" (http://pediatrics.aappublications.org/content/125/4/829.full) for more ideas.	<input type="checkbox"/> See Appendix 2 of this policy statement (http://pediatrics.aappublications.org/content/125/4/829.full#app-group-1) for a sample Emergency Information Form that can be customized for individual children.

DEVELOPING STATE ACTION PLANS

Developing a state action plan for pediatric preparedness will encourage discussion and create partnerships between pediatricians, pediatric care providers, and public health professionals. Having a concrete action plan also will enhance direction and accountability of pediatric preparedness planning. An action plan involves creating a sequence of steps that must be taken for a strategy or plan to be implemented. An established state action plan can be used as the vehicle for the creation of a team of subject matter experts who can make important local connections, brainstorm, and problem-solve before, during, and after a pandemic or disaster.

Determine whether the plan will focus on issues specific to disaster preparedness, pandemic preparedness, or pediatric preparedness in general. The plan should include steps that states, chapters, and individual pediatricians and other pediatric care providers can take, given available resources (as opposed to steps that require actions from others). Review state models, identify key challenges, discuss possible solutions, and prioritize action steps.

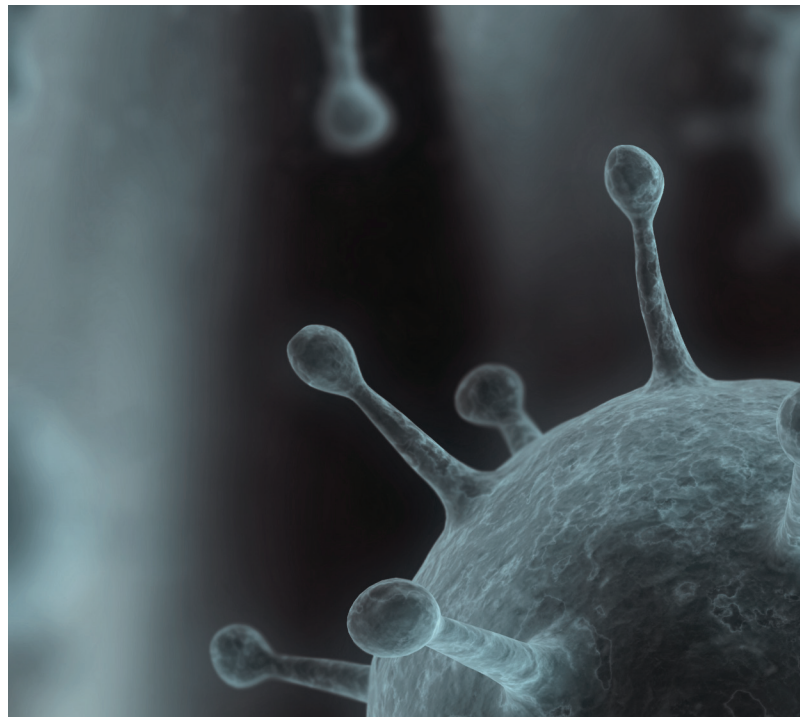
The state action plan will need to be fluid and subject to change as clinical guidelines and experiences evolve. Developing a state action plan is critical for pediatricians, pediatric care providers, and public health leaders, and it is important to be aware that the content of the plan may be different at the state or even county level. Follow these helpful tips when writing a state action plan.

- Create a team of experts.
- Write a list of actions.
- Analyze and prioritize.
- Develop a timeline to monitor the execution of your plan and make needed changes.

The 10 state teams that participated in the Enhancing Pediatric Partnerships to Promote Pandemic Preparedness meeting (California, Florida, Georgia, Illinois, Michigan, Missouri, New Mexico, Texas, Utah, and Virginia) have developed and are maintaining updated state action plans. It is important to note that the state action plans will continue to evolve based on future discussions. To view the 10 state team action plans, go to www.aap.org/disasters/pandemicmtg2011.

Each state action plan should consider the phase or phases that the plan aims to address. Presidential Policy Directive 8 (PPD-8) describes the nation's approach to national preparedness. The national preparedness goal is the cornerstone for implementation of PPD-8. Identified within it are the nation's core capabilities across 5 mission areas: prevention, protection, mitigation, response, and recovery. **Prevention** refers to the capabilities necessary to avoid, prevent, or stop a threatened or actual disaster, while **protection** focuses specifically on securing the homeland against disasters. **Mitigation** involves reducing loss of life and property by lessening the impact of disasters, and **response** similarly involves saving lives, protecting property and the environment, and meeting basic human needs after the incident has occurred. **Recovery** involves helping communities affected by an incident to recover effectively.

The National Preparedness System is the instrument the nation will employ to build, sustain, and deliver those core capabilities in order to achieve the goal of a secure and resilient nation. Aligning your state action plan with this framework can enhance connections to existing federal efforts. To learn more about the National Preparedness System, go to www.fema.gov/pdf/prepared/nps_description.pdf.



An established state action plan can be used as the vehicle for the creation of a team of subject matter experts who can make important local connections, brainstorm, and problem-solve before, during, and after a pandemic or disaster.

“A small group of thoughtful people could change the world. Indeed, it’s the only thing that ever has.”

Margaret Mead, American Cultural Anthropologist

ESTABLISHING PEDIATRIC ADVISORY COUNCILS OR CHILDREN’S PREPAREDNESS COALITIONS

As mentioned previously, establishing a pediatric advisory council or children’s preparedness coalition where pediatric and public health leaders and practitioners decide together what actions are required to protect children in the event of a disaster can promote effective decision-making regardless of the type of emergency or disaster. These committees or coalitions can

- Participate in an analysis of the current EMSC activities. See www.childrensnational.org/EMSC/.
- Identify priorities for children and solution-orientated suggestions for system change, based on nationally recognized standards.
- Inform and educate state decision-makers and the community.
- Help identify pediatric and public health representatives who can serve on other relevant state project task forces.
- Create networking opportunities with local pediatricians, other pediatric care providers, public health decision-makers, and state partners.
- Contribute to ongoing discussions and offer updates and enhancements to key federal reports.

Members of Pediatric Advisory Councils or Children’s Preparedness Coalitions

At the very least, a pediatric advisory council or children’s preparedness coalition should include a pediatrician point person with a connection to the relevant state AAP chapter, a public health leader in a position of making key decisions during an emergency or disaster, and a community pediatrician or primary care pediatrician. Including a mental health professional (psychiatrist, psychologist, social worker, or counselor) who regularly works with children can also be very beneficial. Although a small working group or coalition of pediatric and public health leaders should guide the

discussions and decision-making when developing or implementing an action plan, there is value in having this core group identify and connect with a larger group of pediatric experts.

Think broadly and creatively about who might be identified to participate with this work. Pediatric care providers understand the needs of children, and they have transferrable skills that can be used in an emergency when local services are overwhelmed and resources are scarce.

- A community pediatrician or primary care pediatrician can help ensure that clinical recommendations are appropriate for use in a pediatric office practice.
- A pediatric dentist can be a crucial addition to the team. After the 2011 tornadoes in Alabama, it was a pediatric dentist who worked in the local ED to help with lacerations and trauma care.
- A pediatric infectious diseases expert or critical care specialist can provide expertise on children at highest risk during an infectious disease outbreak or pandemic.
- Pediatric anesthesiologists, emergency physicians, and surgeons can help with planning for mass casualty situations.

Various resources about community collaborations are available from the AAP Council on Community Pediatrics (www2.aap.org/commmpeds/resources.html).

Sustaining Pediatric Advisory Councils and Children’s Preparedness Coalitions

Initiating or establishing a council or coalition can be easier than sustaining these collaborations during times when there are not active disasters. Ideally, it is best to connect this effort to a standing committee or group that meets on a regular basis. The following additional strategies may be useful in sustaining a committee or council over time:

- Provide open membership to all interested pediatric volunteers.

- Identify and secure funding and other resources (eg, person to serve as a point person or “driver,” resources to support food/meeting room).
- Establish a relationship with the state/territory EMSC program.
- Develop teams or task forces to address select national or state-specific issues.
- Maintain communications by sharing meeting proceedings (www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Children-and-Disasters/Documents/Pandemic-Preparedness-April2011.pdf) and status of actions with all appropriate stakeholders.
- Include public health representatives or establish a mechanism to report back to the state department of health point person.
- Consider ways to leverage discussions into training opportunities, perhaps to satisfy continuing medical education requirements.
- Explore ways to infuse use of pediatric requirements or child victims into ongoing drills and exercises. Consider ways to implement a pediatric-specific drill.

Existing Pediatric Advisory Councils

Below are select examples of existing pediatric advisory councils or children’s preparedness coalitions.

- **Florida:** Following the Enhancing Pediatric Partnerships to Promote Pandemic Preparedness meeting, the AAP Florida Chapter and the state department of health developed the Florida Children’s Preparedness Coalition. This group convenes bi-monthly to discuss and build on disaster preparedness planning for children. The coalition works to forge connections between public health representatives and community pediatricians to achieve disaster preparedness and enhance communications at the state and local level. The Florida Chapter is also active in the South-eastern Regional Pediatric Disaster Response Surge Network, which is a network of southeastern states that deals with surge capacity and focuses efforts on how to handle the sharing of resources so that they can be available where and when they are needed.
- **Illinois:** Since 2002 the Illinois EMSC program has coordinated a State Pediatric Preparedness Workgroup that focuses specifically on pediatric preparedness initiatives. In 2011 a Pediatric Surge Annex Planning Committee was developed. This committee is developing a Pediatric and Neonatal Surge Annex for the State Emergency Support Function-8 Plan (state public health and medical services disaster plan).
- **Maryland:** The Maryland Pediatric Emergency Medical Advisory Committee (PEMAC) (www.miemss.org/home/PEMAC/tabid/167/Default.aspx) advises the state emergency medical services (EMS) Board and State EMS Advisory Council on pediatric issues.

The PEMAC was developed to facilitate the identification of needs for pediatric emergencies, trauma, and critical care and to make recommendations for statewide enhancement initiatives for the Maryland EMS system. The PEMAC helps to develop statewide guidelines for hospital and prehospital care; identifies educational needs of health care professionals regarding pediatric emergencies, trauma, and critical care; and supports the dissemination of prevention programs focused on children and families.

- **Pennsylvania:** The Pennsylvania EMSC Advisory Committee (www.pehsc.org/ems_children_committee.htm) offers a forum for issues that have potential impact on the emergency care and transport of all pediatric patients in the commonwealth. The committee strives to educate prehospital providers, other health practitioners, and the general public about services available through the EMSC. This advisory committee also formulates recommendations for consideration by the Pennsylvania Emergency Health Services Council Board of Directors regarding pediatric emergency care and injury prevention.
- **Texas:** The EMSC Advisory Committee (www.bcm.edu/pediatrics/texasemsc/index.cfm?PMID=13143) supports state partnerships to support pediatric emergency medical care in Texas. Committee efforts focus on identification of EMSC priorities, development of a strategic plan, and implementation and evaluation of EMSC strategy. Committee members, through their various backgrounds and disciplines, bring together a rich assortment of experiences and perspectives to achieve common goals.

For more information or to connect with the leaders of these groups, e-mail DisasterReady@aap.org.

AAP CHAPTER CONTACTS FOR DISASTER PREPAREDNESS

One person can make a difference. For states that may not be ready to launch an entire council or coalition, a useful strategy might be to identify one pediatrician to spearhead pediatric preparedness initiatives. The AAP is in the process of identifying a “pediatric champion” or chapter contact who can work to initiate and mobilize disaster preparedness and response efforts in every state. In some states an experienced pediatrician is partnering with and mentoring a pediatric resident or medical student. A disaster preparedness contact can be someone who is willing to learn more about supporting children after a disaster or a member who is interested in even just one of the following:

- Improving personal disaster preparedness
- Enhancing office and/or hospital readiness

- Helping families prepare an emergency kit and develop a disaster plan
- Improving state and local emergency readiness

Chapter contacts can focus on specialty or interest areas (eg, community pediatrics, critical care, emergency medicine, medical home, or public health). A list of existing chapter contacts along with a description of state initiatives being managed by AAP chapters can be found at www.aap.org/disasters/stateinitiatives. Pediatric leaders and public health decision-makers can work together to mobilize state or AAP chapter disaster preparedness contacts and connect these individuals to relevant preparedness planning and response efforts.

Responsibilities of Chapter Contacts for Disaster Preparedness

The AAP chapter contact for disaster preparedness and response position is voluntary. The responsibilities and initiatives of the position can be diverse based on the needs within the state or region and can represent the interests or expertise of those leading these efforts. Each contact can do as little or as much as they like.

These individuals can

- Serve as a conduit for disseminating best policies and practices to pediatric care providers through the leadership and networks of the AAP chapters. As an example, the contact can review information distributed by the AAP and provide updates to their chapter.
- Serve as an advocate for change at the local, state, and national levels.
- Explore ways to represent children's issues on an existing preparedness coalition.
- Assist in developing a key contact network and a communication plan.
- Become involved in providing technical assistance, as well as tools and resources to pediatricians and other pediatric care providers.
- Assist in aligning national, state, local, and/or community priorities (perhaps through the formation of a pediatric advisory council or children's preparedness coalition).

Initiatives for Chapter Contacts for Disaster Preparedness

The following ideas are designed to help chapter contacts for disaster preparedness begin to promote preparedness at the local, state, and national level.

...establishing a pediatric advisory council or children's preparedness coalition where pediatric and public health leaders and practitioners decide together what actions are required to protect children in the event of a disaster can promote effective decision-making regardless of the type of emergency or disaster.



IDEAS FOR CHAPTER CONTACTS

Basic	Advanced
<ul style="list-style-type: none"> ❑ Work with a local community emergency response team to conduct training or provide information on relevant courses to AAP chapter members. 	<ul style="list-style-type: none"> ❑ Help the state Medical Reserve Corps coordinator develop training on pediatric issues and identify resources for pediatric disaster care.
<ul style="list-style-type: none"> ❑ Determine who oversees the state plans for public health emergency preparedness and pandemic influenza. Review these plans for inclusion of children's issues. 	<ul style="list-style-type: none"> ❑ Identify state preparedness committees, task forces, or initiatives and represent the pediatric perspective and children's needs when necessary.
<ul style="list-style-type: none"> ❑ Plan to do "just one thing" in September, which is National Preparedness Month (eg, join the National Preparedness Month Coalition). See www.aap.org/disasters/preparednessmonth. 	<ul style="list-style-type: none"> ❑ Ask which AAP members are already involved in preparedness initiatives. Refer to www.aap.org/disasters/stateinitiatives to learn about what other AAP chapters are doing.
<ul style="list-style-type: none"> ❑ Check the AAP chapter or state department of health Web site to ensure that children's preparedness issues are addressed. Ask that a link be added from these sites to the AAP Children & Disasters Web site home page at www.aap.org/disasters/stateinitiatives. 	<ul style="list-style-type: none"> ❑ Ask other medical specialties or societies to add a link to the AAP Children & Disasters home page to their Web site.
<ul style="list-style-type: none"> ❑ Get involved and help implement a state pediatric preparedness action plan. See plans for California, Florida, Georgia, Illinois, Michigan, Missouri, New Mexico, Texas, Utah, and Virginia at www.aap.org/disasters/pandemicmtg2011. 	<ul style="list-style-type: none"> ❑ E-mail DisasterReady@aap.org to learn more about how to start a pediatric/public health preparedness initiative.
<ul style="list-style-type: none"> ❑ Donate to the AAP Friends of Children Fund and identify your donation for "Disaster Relief." See www.aap.org/disasters/disasterfund for more information. 	<ul style="list-style-type: none"> ❑ Sign up to volunteer in advance. Join the Medical Reserve Corps (https://medicalreservecorps.gov/HomePage) or the Emergency System for Advance Registration of Volunteer Health Professionals (www.phe.gov/esarvhp/pages/registration.aspx), or review EMSC disaster volunteer opportunities by state (www.childrensnational.org/EMSC/DisasterPreparedness/DisasterAgencies/).
<ul style="list-style-type: none"> ❑ Promote preparedness and continuity of operations planning for pediatric practices. 	<ul style="list-style-type: none"> ❑ Help strengthen relationships between the community hospital(s) and affiliated pediatric practices to encourage joint planning.
<ul style="list-style-type: none"> ❑ Use existing preparedness infrastructure (federal/state/regional/local) to advocate for and educate about pediatric needs during a disaster. Leverage findings of the National Commission on Children and Disasters to create urgency regarding this issue. 	<ul style="list-style-type: none"> ❑ Develop a vehicle to support physician/public health relationships at county health department levels. Possibilities include webinars or lunch and learn sessions.
<ul style="list-style-type: none"> ❑ Work with hospital regional groups, as well as state department of health, emergency care, and children's hospital leadership to be able to assess ED, clinic, and hospital clinical overload and key supply shortages in disasters. 	<ul style="list-style-type: none"> ❑ Join or form a regional pediatric disaster surge network or work with other AAP chapters to form a similar network in the region.
<ul style="list-style-type: none"> ❑ Review AAP disaster preparedness resources and customize a handout or publication for all physicians, families, or other key audiences. See the AAP Children & Disasters Web site at www.aap.org/disasters or review the EMSC National Resource Center's "PEDPrepared" Pediatric Disaster Clearinghouse at www.childrensnational.org/EMSC/DisasterPreparedness/DisasterClearinghouse/. 	<ul style="list-style-type: none"> ❑ Coordinate a meeting, continuing medical education presentation, or trainings on pediatric disaster topics. For ideas on pediatric disaster response competency areas and training topics, refer to the Pediatric Disaster Preparedness Curriculum Development Conference Report (http://ncdmph.usuhs.edu/Site_n/Documents/PedsConferenceReport_1.pdf).
<ul style="list-style-type: none"> ❑ Contact the local Red Cross chapter (www.redcross.org/find-your-local-chapter) to learn about volunteering at the local level or to discuss whether there is an opportunity to provide training on child health topics to disaster relief workers. 	<ul style="list-style-type: none"> ❑ Improve shelter readiness for children by assisting in the creation of guidelines to ensure the pediatric perspective is addressed. More information, including standards, can be found at www.aap.org/disasters/hurricane.

INCREASING PEDIATRICIAN INVOLVEMENT IN PREPAREDNESS EFFORTS

In addition to identifying a pediatric champion or including appropriate pediatric experts on the pediatric advisory council or children's preparedness coalition, it is important to encourage individual pediatricians to increase their involvement in disaster preparedness. Emergency preparedness is important at many levels (personal, family, community, regional, other specialty societies, state, and federal), with the state and federal governments having pivotal roles.

The federal government provides significant funding for disaster preparedness and response and establishes the framework that is then followed by states, regions, and communities. In disaster response, funding and planning tend to be top down, yet the response and use of resources tend to be bottom up—as resources are exhausted at the local level, assistance is requested from the next level, such as the state, which then requests federal assistance as needed. Recent concepts of disaster and aftermath response and planning include the involvement of neighborhoods and families and have even begun to address needs at the individual level. A successful response to a disaster requires the interaction of personnel and resources from multiple agencies in an organized and coordinated manner according to a well-formulated plan. Although this planning has increased in recent times, attention to the unique needs of children and the inclusion of pediatric expertise in the planning phases is still minimal or, in many cases, nonexistent. Individual pediatricians can be active champions in advocating for the needs of children as well as pediatric-focused preparedness planning.

As individual pediatricians take steps to increase their involvement, they may have questions about medical liability.

Volunteering and Professional Liability

Pediatricians and other health care providers sometimes cite uncertainties about liability coverage as a reason for not getting involved in disaster response efforts. Although this is not an issue for those involved in the public health service, it is important that health care professionals serve as part of an organized program if they provide medical services during a pandemic or public health emergency. Lack of an oversight organization may result in services that are not in concert with the organized response and places health care professionals in a position without professional liability insurance coverage. Most malpractice coverage is limited to the health care professional's usual scope of practice and practice setting. In some states, individual malpractice insurance policies do not cover out-of-office care or the expanded scope of practice that may be required during a pandemic or disaster.

Good Samaritan statutes provide some liability protection when rendering medical care at the scene of an emergency to one who would not otherwise receive it. Good Samaritan statutes cover physicians at the scene of acute incidents but vary among states and may not provide liability protection during or after disasters. These laws do not cover a physician if there is any payment for services or if there is an accusation of gross negligence. In many states, coverage for liability during a disaster requires health care professionals to practice under the umbrella of an official disaster agency, such as the Federal Emergency Management Agency, the Department of Health and Human Services, a state or local health department, a state or local office of emergency management, the local EMS authority, or other recognized government or volunteer agency. See <http://pediatrics.aappublications.org/content/117/2/560> for more information.

Partnering With Others

Connecting with ongoing efforts, especially those with existing funding and deliverables, makes good sense, avoids duplication, and leverages available resources to improve pediatric preparedness. There are various ways for pediatricians and other pediatric care providers to get involved in organized state efforts and relevant grant initiatives. Connecting a state pediatric advisory council or children's preparedness coalition with individuals already involved in these efforts can also be effective.



Federal Efforts and Initiatives

Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP)

The ESAR-VHP is a federal program created to support states and territories in establishing standardized volunteer registration programs for disasters and public health and medical emergencies. For more information, visit www.phe.gov/esarvhp/Pages/default.aspx.

Disaster Medical Assistance Teams (DMATS) Within National Disaster Medical System

DMATs are federal assets deployed only in a federally declared disaster on request of the state. For more information, visit www.phe.gov/Preparedness/responders/ndms/teams/Pages/default.aspx and www.phe.gov/Preparedness/responders/ndms/Pages/default.aspx.

Medical Reserve Corps (MRC)

Pediatricians and pediatric specialists interested in joining organized community medical efforts can become part of the MRC. Volunteers should register for notification systems that most state health departments and many large local health departments establish. Information on these programs can be obtained from state health departments. For more information, visit www.medicalreservecorps.gov/HomePage and www.bt.cdc.gov/HAN/.

State Preparedness Grantees

Emergency Medical Services for Children (EMSC)

All states, US territories, and the District of Columbia have received funding from the federal EMSC program. In fiscal year 2011, the program administered 2 types of grants: state partnership and targeted issue. For more information, visit www.childrensnational.org/emsc. Review EMSC activities and contacts by state at www.childrensnational.org/files/PDF/EMSC/GrantPrograms/State_GrantList.pdf.

Public Health Emergency Preparedness

The CDC Public Health Emergency Preparedness cooperative agreement is a critical source of funding, guidance, and technical assistance for state, territorial, and local public health departments. For more information, visit www.cdc.gov/phpr/coopagreement.htm.

Hospital Preparedness Program

The Office of the Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Program (HPP) provides leadership and funding through grants and cooperative agreements to states, territories, and eligible municipalities to improve surge capacity and enhance community and hospital preparedness for public health emergencies. To learn more about opportunities through the HPP program, visit www.phe.gov/preparedness/planning/hpp/Pages/default.aspx.

Public and Private Partnerships in the Community

As was evidenced during the 2009 H1N1 pandemic, it is critical to integrate pediatric preparedness planning efforts with existing institutions or networks. Connections with hospitals, child care facilities, schools, and mental health professionals are crucial.

Disaster and pandemic planning at the community level needs to be a fluid and ongoing process. Pediatricians and other pediatric care providers can aid schools, child care centers, and other facilities and organizations that provide services to children in developing disaster plans. Preplanning for the health care needs of the community will be coordinated by the office of emergency management but assigned to the local department of health.

Communities should attempt to prepare for pandemics and disasters through many different angles. Opportunities exist to promote individual and family preparedness, serve as a community resource, form partnerships to support pediatric emergency management, promote community resiliency, and identify the potential implications of a disaster or pandemic on the community.

Children's Hospitals/Community Hospitals

Connections with hospitals are critical when preparing to respond during a public health emergency or disaster.

Because children have unique medical needs, especially in serious or life-threatening emergencies, it is imperative that all hospital EDs have the appropriate resources (such as medications, equipment, policies, and education) and staff to provide effective emergency care for infants and children. The CDC has identified areas of needed improvement in hospital preparedness for emergency response (www.cdc.gov/nchs/data/nhsr/nhsr037.pdf).

The AAP provides resources and recommendations regarding pediatric care within a hospital setting. The AAP core recommendations for hospital preparedness are included in the AAP joint policy statement, "Guidelines for Care of Children in the Emergency Department" (<http://aappolicy.aappublications.org/cgi/content/full/pediatrics;107/4/777>). This policy delineates guidelines and the resources necessary to prepare hospital EDs to serve pediatric patients. Adoption of these guidelines should facilitate the delivery of emergency care for children of all ages and, when appropriate, timely transfer to a facility with specialized pediatric services.

Pediatricians and other pediatric care providers should inquire about the emergency preparedness plans at all hospitals at which they work or admit patients. In times

of crisis, there may be a need for transfers or discharges based on different clinical criteria or altered hospital admission policies. To assist hospitals in these functions and to be able to care for their patients, pediatricians and other pediatric care providers must understand how each hospital has planned to handle these events. Volunteer to assist with developing the facility's emergency plan. In particular, review plans or strategies for family reunification and discuss challenges and solutions. Family reunification will be more successful if these challenges are understood and solutions are considered in advance of a disaster.

In addition to connecting with hospitals, pediatric advisory councils or children's preparedness coalitions should also establish connections to other key programs.

Early Education and Child Care Programs

In the past 35 years, the percentage of children in out-of-home care during their earliest and most formative years has increased from 30% to 70%. Unless attention is paid to the availability of safe, high-quality early education and child care, most of today's infants and preschoolers are at risk for spending a great proportion of their time in what may be suboptimal environments. Pediatricians can play a vital role in promoting children's health and well-being in early education and child care settings. During a pandemic, a strong connection between child care, health care, and public health leaders is even more critical because recommendations and communication strategies evolve rapidly and directly affect the operation of child care programs. During the 2009 H1N1 pandemic, certain public health departments, primary care physicians, emergency hotline personnel, and hospital EDs were overwhelmed. A strategic partnership or outreach effort connecting health and public health professionals with child care programs can help in the following ways:

- Enhance child care provider awareness of inclusion and exclusion criteria for ill children, best practices for infection control, and appropriate messaging to children and parents.
- Increase the number of local child care programs that have written disaster plans.
- In consultation with certified health professionals or child care health consultants, child care facilities can provide health information and education to parents on a daily basis.

One key resource is *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs*, 3rd Edition. This manual includes updated or new standards related to disasters and emergency preparedness.

To review this information, visit www.nrckids.org/CFOC3/index.html. Another useful tool is *Managing Infectious Diseases in Child Care and Schools*, 2nd Edition. This publication includes quick reference sheets to distribute to teachers and families, as well as guidance about appropriate exclusion policies and planning for outbreaks and pandemics.

States interested in identifying AAP members with expertise in child care health and safety topics and in enhancing a connection between child care, health, and public health professionals should go to <http://healthychildcare.org/WorkWithHP2.html>.

For additional resources, see www.aap.org/disasters/childcare and www.aap.org/disasters/childcarepandemic.

Mental Health Professionals

Pediatricians have noted that after a disaster, it is especially challenging to know what to do to support children and families who are trying to adjust to what they experienced during the disaster as well as what they might expect in the future, especially if their basic needs are not being met. During the 2009 H1N1 pandemic there were challenges in addressing the questions and concerns of the "worried well" while also determining how best to help physicians (and those under their supervision) decide whether children with symptoms of influenza-like illness should be evaluated for treatment, receive a medical evaluation, or be monitored for potential follow-up.

Primary care clinicians and mental health partners can look at the needs of special populations known to be at higher risk for mental health problems. In addition, these groups can consider reviewing utilization of local or regional emergency facilities, mental health outpatient and inpatient services, nonprofit and private-sector programs, and the school system's exceptional children's or special educational services. Findings can assist in developing priorities for community and school-based initiatives and for either targeted or community-wide efforts to enhance protective factors or improve access to needed services. State-level leaders, particularly members of pediatric advisory councils or children's preparedness coalitions, can identify state-wide priorities from these findings as well.

School Systems

Making a connection and collaborating with school personnel or school district leaders can help in improving services for children during and after a disaster.

The following information and recommendations are excerpted from the policy statement "Disaster Planning for Schools," written by the AAP Council on School

Health. For more information, see <http://pediatrics.aappublications.org/content/122/4/895.full>.

School disaster planning is a facet of larger community planning and, therefore, requires coordinated planning and allocation of community resources. Plans should be developed in partnership with other community groups, including law enforcement, fire safety, public health, EMS, and pediatric and mental health professionals.

Yet, even if there is coordination of planning, community members may not be aware of a school district's and/or an individual school's emergency plans. Without community understanding of the school plan, parents separated from their children may amplify the crisis by their well-meaning efforts to reach their children. Without participation in planning, primary care clinicians cannot be expected to assist with a coordinated and integrated response and/or recovery. When community agencies are involved in the planning process, they can reinforce prevention messages that may help decrease the extent of the crisis, such as infection-control measures for preventing the spread of pandemic influenza and messages about bullying, parent education/guidance, and media education for violence prevention.

Potential roles of schools specific to a pandemic

- Infection control
- Education on hand-hygiene and social distancing
- Ensuring time-sensitive health education and communication to families
- Case finding and identification of outbreak/pandemic
- Syndromic surveillance
- Triage of children with symptoms; referral for treatment as indicated
- Helping to identify highest-risk children and making them aware of preventive measures as indicated
- Sites for distribution of vaccines and medical countermeasures
- Awareness to avoid policies that may encourage children to come to school ill (eg, awards for perfect attendance records)
- Awareness of policies that may drive unnecessary emergent pediatric/ED visits for children who are not requiring such care (eg, requirements for a doctor's note to return to school)
- Lending space (eg, shelter, temporary clinic, and morgue) and services (eg transportation and meal services) during times of crisis



IDEAS FOR PEDIATRICIAN INVOLVEMENT IN SCHOOL PREPAREDNESS

Basic	Advanced
<ul style="list-style-type: none"> Be familiar with AAP resources on emergency and disaster preparedness. See www.aap.org/disasters.index.cfm and www2.aap.org/visit/cmte26.htm. 	<ul style="list-style-type: none"> Know the names and means of contacting the school physician (where available) and the school health and safety team (eg, school nurse, social worker, school resource officer).
<ul style="list-style-type: none"> Become familiar with local community and school districts' disaster plans. Ideally, these plans should have primary care clinician input in all areas of crisis planning. Be aware of local EMS capabilities and public health capabilities and key contacts. 	<ul style="list-style-type: none"> Help schools develop and implement individual crisis plans for CYSHCN. Help families and schools plan for prolonged sheltering or evacuation of the medically fragile student and the use of the emergency information form.
<ul style="list-style-type: none"> Reinforce, through waiting room literature, the health-promotion and injury-prevention messages of the school district. Examples are violence prevention messages, cough/sneeze etiquette and hand-hygiene behaviors, attendance policies that do not encourage children who are ill to attend school, resources for stressed families, and support for individual family crisis planning. 	<ul style="list-style-type: none"> Reinforce family awareness of the school district's crisis plan as part of anticipatory guidance in the medical home, particularly calling attention to the school's plan for parental notification in the event of lockdown, shelter-in-place, or evacuation to an alternative site.
<ul style="list-style-type: none"> Help develop school protocols on absenteeism, psychosocial support, and disease surveillance. 	<ul style="list-style-type: none"> Assist others in the school and community in recognizing symptoms of posttraumatic stress and other adjustment difficulties. The medical community's collective sense of the emotional effects of a disaster can help guide schools and staff in their continuing interventions. Participate in those interventions, which can include trauma and grief counseling.
<ul style="list-style-type: none"> Be aware of the capacity for each school in the district to provide on-site first aid and assist the school in developing that capacity. 	<ul style="list-style-type: none"> Work with school superintendents and county health departments to increase use of school-related immunization programs for annual seasonal influenza immunization. These systems will serve as the foundation for delivery of medical countermeasures, including medications and vaccines to pediatric populations during emergency situations.
<ul style="list-style-type: none"> Share information about the school district's response plan with ED clinician colleagues and determine ways to ensure that the school district's response plan is integrated with the overall community disaster plan, emergency medical system, and local emergency planning committee or other equivalent groups. 	<ul style="list-style-type: none"> Advocate for improved communication between school officials and local medical, emergency, and public health officials in the preparation and practice of an emergency plan. Ensure that prevention, preparedness, response, and recovery components are addressed and integrated into the larger community plan. Link disaster planning at hospitals with school crisis and disaster planning.

CONCLUSION

A state action plan, a pediatric advisory council or children's preparedness coalition, a chapter contact for disaster preparedness, and a system for prioritizing among high-risk groups can be established in advance of an emergency to facilitate decision-making in the midst of a crisis. Pediatricians can have dialogues with emergency planners and public health colleagues about ways to improve services for children by increasing their involvement in preparedness planning and response. In partnership with public health leaders, pediatricians and other pediatric care providers can assess what is already happening in their communities or states and help determine what still needs to be done before an emergency or disaster. Pediatricians and public health

leaders can play a key role in promoting readiness for children and families through partnering with others at the local, state, and national levels. In simplifying the connection between members of such partnerships, strategic communications and systematic messaging can facilitate disaster response. Crisis communications with the media can also provide the public with accurate, up-to-date information.

If embraced earnestly, these efforts will result in an enhanced ability to respond not only to a disaster or pandemic, but also to multiple hazards and threats.

Although the challenge is formidable, the consequences of facing a disaster or pandemic unprepared will be intolerable.

RESOURCES

American Academy of Pediatrics

AAP Advocacy Guide

<http://www2.aap.org/compeds/CPTI/training-modules.cfm>

AAP Children and Disasters Web site

www.aap.org/disasters.index.cfm

Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, 3rd Edition

Chemical-Biological Terrorism and Its Impact on Children

<http://aappolicy.aappublications.org/cgi/content/full/pediatrics;118/3/1267>

AAP Children and Disasters—Influenza/Pandemics Resources

www.aap.org/disasters/h1n1

Disaster Planning for Schools

<http://aappolicy.aappublications.org/cgi/content/full/pediatrics;122/4/895>

Disaster Preparedness and Pediatrics: What's Next?

<http://pedsinreview.aappublications.org/content/29/11/371.extract>

Emergency Information Forms and Emergency Preparedness for Children With Special Health Care Needs

<http://pediatrics.aappublications.org/content/125/4/829.full>

Guidelines for Care of Children in the Emergency Department

<http://pediatrics.aappublications.org/content/107/4/777.full>

Guidelines for Care of Children in the Emergency Department Checklist

www2.aap.org/visit/Checklist_ED_Prep-022210.pdf

Infant Nutrition During a Disaster—Breastfeeding and Other Options

www2.aap.org/breastfeeding/files/pdf/InfantNutritionDisaster.pdf

The Pediatrician and Disaster Preparedness—Committee on Pediatric Emergency Medicine, Committee on Medical Liability, and Task Force on Terrorism

<http://pediatrics.aappublications.org/content/117/2/560.full>

Preparation for Emergencies in the Offices of Pediatricians and Pediatric Primary Care Providers

<http://aappolicy.aappublications.org/cgi/content/abstract/pediatrics;120/1/200>

Preparing Child Care Programs for Infectious Disease Outbreaks or Pandemic Influenza

<http://www.healthychildcare.org/PDF/InfDiseases/AdditionalResources.pdf>

Prevention and Control of Influenza: Special Considerations for Newborns and Very Young Infants

www.aap.org/disasters/preventflunewborns

Promoting Adjustment and Helping Children Cope

www.aap.org/disasters/adjustment

Psychosocial Implications of Disaster or Terrorism on Children: A Guide for the Pediatrician

<http://aappolicy.aappublications.org/cgi/content/full/pediatrics;116/3/787>

Red Book Online Influenza Resource Page

<http://aapredbook.aappublications.org/>

US Department of Health and Human Services

Influenza Season (CDC)

www.cdc.gov/flu/about/season/index.htm

Administration for Children and Families

www.acf.hhs.gov/

Centers for Disease Control and Prevention (CDC) Emergency Preparedness and Response

www.bt.cdc.gov/children/

CDC Community Outreach and Communication Activity

www.bt.cdc.gov/coca/

Information for Flu Prevention Partners (CDC)

www.cdc.gov/flu/partners/index.htm

Know What to Do About the Flu (CDC)

www.flu.gov

National Commission on Children and Disasters

<http://cybercemetery.unt.edu/archive/nccd/20110427002908/http://www.childrenanddisasters.acf.hhs.gov/index.html>

Office of the Assistant Secretary for Preparedness and Response

www.phe.gov/preparedness/pages/default.aspx

US Department of Health and Human Services
www.phe.gov/emergency/communication/Pages/default.aspx

Zombie Preparedness
www.cdc.gov/phpr/zombies.htm

Federal Emergency Management Agency

Emergency Preparedness Checklist
www.washingtonpost.com/wp-srv/health/specials/preparedness/guides/femachecklist.pdf

FEMA
www.fema.gov

Lessons Learned Information Sharing
www.llis.dhs.gov/index.do

Ready Campaign
www.ready.gov

National Library of Medicine
www.nlm.nih.gov

World Health Organization

Effective Media Communication during Public Health Emergencies
www.who.int/csr/resources/publications/WHO%20MEDIA%20HANDBOOK.pdf

Health Library for Disasters
<http://helid.desastres.net/>

Myths and realities in disaster situations
www.who.int/hac/techguidance/ems/myths/en/index.html

Technical guidelines in emergencies
www.who.int/hac/techguidance/en/

WHO
<http://who.int>

WHO Health Topic: EMERGENCIES
www.who.int/topics/emergencies/en/index.html

Other Organizations

Children and Disasters (Child Care Aware of America)
www.naccrra.org/

Emergency Preparedness and Response Discussion Group (American Telemedicine Association)
www.americantelemed.org/i4a/pages/index.cfm?pageID=3319

Fighting Flu Fatigue (Trust for America's Health)
<http://www.healthyamericans.org/assets/files/TFAH2010FluBriefFINAL.pdf>

Save the Children
www.savethechildren.org

By carefully considering which groups of children may be at increased or even highest risk in a specific disaster or emergency, planning will benefit all children and the population at large.





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Learning from H1N1

Pediatric, public health leaders discuss how to improve states' pediatric preparedness

by **Alyson Sulaski Wyckoff** • Associate Editor

With waiting rooms overflowing, inadequate vaccine distribution and rapidly changing advice, pediatricians faced many frustrations during the height of the H1N1 crisis in 2009.

To help avoid a repeat of these problems, about 70 representatives from AAP chapters and public health agencies spent two days in April discussing how to improve pediatric preparedness based on fresh memories of their 2009 H1N1 experiences.

A rare gathering of pediatric and public health personnel, the meeting "Enhancing Pediatric Partnerships to Promote Pandemic Preparedness" was sponsored by the Academy and the Centers for Disease Control and Prevention (CDC).

One of the speakers was Georgina Peacock, M.D., M.P.H., FAAP, medical officer, National Center on Birth Defects and Developmental Disabilities, CDC. She said children were the central focus of concern during the pandemic. Children and young adults up to age 24 accounted for as much as 73% of all U.S. H1N1 cases and 56% of H1N1 hospitalizations. Two-thirds of the 300 children under 18 who died from H1N1 had underlying pulmonary or neurological conditions.

A pediatric desk was established at the CDC to handle all the inquiries related to H1N1.

States reveal biggest challenges

After participants heard an overview of H1N1 and efforts to contain it, the AAP-CDC meeting moved on to sharing ideas from 10 state teams. There were two pediatric and two public health representatives from California, Florida, Georgia, Illinois, Michigan, Missouri, New Mexico, Texas, Utah and Virginia. The teams, which were selected from 29 state chapters that had applied to attend the conference, discussed their state models and challenges before finalizing plans to improve preparedness efforts.

Prioritizing for high-risk groups, communications and messaging, and incorporating pediatricians into state decision-making were key topics.

Common challenges during the pandemic included:

- ineffective distribution of vaccines;
- problems reaching all providers and key parties (schools, child care, pharmacies, etc.), especially in large states with remote regions;
- frustrations in areas where patients had greater health disparities;
- underuse of immunization registries;
- lack of pediatrician involvement in pandemic planning (due in part to lack of a relationship between pediatricians and public health departments);
- inadequate staffs and facilities to meet demand; and

- lack of a single source of communication, sometimes due to poor media relationships.

Planning for the future

Virtually all teams indicated they intended to become more involved in promoting children's needs in planning for future pandemics; develop two-way communications systems with all pediatricians in the state; cultivate relationships with public health and other key groups; make use of school-related immunization opportunities; and maximize use of registries.

Other ideas included:

- identifying a pediatric champion at each adult hospital/emergency department who can participate in the communications and prepare his or her facility for pediatric overflow (Georgia);

What AAP chapters can do now to improve pediatric preparedness

Following is a summary of ideas from 10 state pediatric-public health teams participating in the AAP-CDC meeting, "Enhancing Pediatric Partnerships to Promote Pandemic Preparedness":

1. Educate peers about what was learned at the meeting.
2. Create a chapter committee on pandemic/disaster readiness.
3. Develop relationships with state and local public health departments and emergency response planners.
4. Form a pediatric advisory committee in partnership with public health leaders.
5. Learn about and link with stakeholders and existing emergency/disaster preparedness efforts.
6. Partner with local children's hospitals and community hospitals to improve emergency and disaster readiness.
7. Advocate for effective use of statewide vaccine registries.
8. Develop an information dissemination network with a single contact.
9. Maintain proactive relationships with media.
10. Connect with the state volunteer agencies such as the Medical Reserve Corps.
11. Collaborate with the state department of education and local schools to ensure they have a functional, coordinated disaster plan.
12. Participate in local public health meetings.

Appendix 1: Learning From H1N1: Pediatric, Public Health Leaders Discuss How to Improve States' Pediatric Preparedness (2 of 2)

- creating a safety net for high-risk children by enhancing their emergency care plans to include contingencies for local care and home care during mass medical emergencies (Michigan); and
- developing vehicles to support physician-public health relationships at the county level, such as webinars or lunch-and-learn sessions (Missouri).



Dr. Krug

Based on the plans and suggestions, a to-do list for states was developed (see sidebar).

Steven Krug, M.D., FAAP, chair of the AAP Disaster Preparedness Advisory Council, said the meeting generated a lot of ideas and helped to conceptualize lessons learned after H1N1 and some best practices. "There was a great synergy among the

RESOURCE

AAP Disaster Preparedness Advisory Council Web site,
www.aap.org/disasters/index.cfm

groups," he said. "I was extremely gratified."

While pediatricians were urged to attend meetings of local and state health departments or emergency management entities to become more involved, Dr. Krug said there is a role for individuals as well: "Pediatricians also can make a personal difference

by discussing preparedness issues with patients' family members. Data indicate that families are more likely to be prepared as a result of those discussions."

COMMENTARY

Improving Pediatric Preparedness Performance Through Strategic Partnerships

Steven E. Krug, MD; Scott Needle, MD; David Schonfeld, MD; Laura Aird, MS; Hope Hurley

The 2009 H1N1 influenza pandemic provided a real-world exercise that revealed the strengths and weaknesses of the public health system in response to a major infectious disease outbreak. Because children were disproportionately affected, a review of lessons learned offered opportunities to improve future planning. The American Academy of Pediatrics (AAP) and the Centers for Disease Control and Prevention (CDC) implemented various strategies to address the needs of children during the pandemic—these efforts illustrate that strategic partnerships can improve preparedness.

Pediatricians faced many challenges throughout the pandemic. Clinicians universally reported being overwhelmed by the high volume of patients, numerous questions from various audiences, and “information overload” (ie, many messages and rapidly changing advice). A significant difficulty was helping the public understand when to seek treatment, so that health care systems were not inundated with questions and visits from patients who did not have symptoms of an influenza-like illness (ILI) or were not at higher risk of complications if infected. Pandemics can evolve rapidly, so developing strategic alliances and effective communication systems is advantageous. This is especially important when considering children, as they constitute about one-quarter of the US population and require special planning in an emergency or disaster.^{1,2}

WARNING, CHILDREN AT RISK

The AAP and the Trust for America's Health identified that children were at increased risk during an influenza pandemic and recommended specific actions to address children's needs.³ A National Commission on Children and Disasters was appointed in 2008 to examine and assess the needs of children in relation to the preparation for, response to, and recovery from all hazards, including major disasters and emergencies. In 2010, the commission delivered its final report to the president and Congress.² The report cited gaps in disaster preparedness and called for the development of a national strategy to ensure that children are protected before, during, and after a public health emergency. The commission encouraged government agencies and nongovernmental organizations to consider children a distinct population in disaster planning, and to include pediatric experts in all planning efforts.

The recommendation that the needs of children should be prioritized in disaster preparedness, mitigation, response, and recovery planning required validation. In October 2010, the AAP, in collaboration with the Children's Health Fund, developed questions for an opinion poll to stimulate further discussion on

the allocation of resources related to disasters. The vast majority of those surveyed supported giving higher priority to children and their needs over adults in the setting of scarce resources during a disaster. This opinion remained consistent across various demographics, including region, household income, education, age, race, gender, and political party.⁴

During the pandemic, certain children seemed to be at increased risk. Clinicians reported that it was challenging to know which children might require early care or increased monitoring. The AAP and the CDC recognized this and immediately took steps to determine which children were at “highest risk.” On September 4, 2009, data related to children at highest risk of experiencing fatal outcomes from H1N1 infection were published in the MMWR.⁵ With CDC support, the AAP identified a group of experts to review and synthesize these data and provide practical recommendations to assist clinical providers in the management of H1N1 in children. On the basis of preliminary mortality data, children with certain conditions appeared to be at highest risk of experiencing fatal outcomes from H1N1 illness. The AAP highlighted which children were most likely to be affected by the H1N1 virus or would merit closer medical follow-up or treatment. Because the situation was constantly changing, updates and guidance were shared throughout the pandemic. Convening experts to review data and share recommendations with those who care for children was deemed an effective strategy toward improving pediatric preparedness.

SHARED INTEREST, LESSONS LEARNED

AAP and CDC leaders expressed interest in learning from experiences during the pandemic to improve future response. An ongoing dialogue at various leadership levels was maintained throughout the pandemic, and when the public health emergency concluded, the AAP and CDC conducted several after-action discussions with internal and external partners to determine ways to improve preparedness planning. These discussions led to several important conclusions.

For the first time, the CDC activated a Children's Health Team and a Children's Health Desk within the CDC Emergency Operations Center. In addition to this, CDC leaders identified crucial elements for building capacity to address the needs of at-risk populations through strategic partnerships, including

- targeted outreach to strategically selected stakeholders;
- enhanced engagement of identified partners and associations; and
- rapid establishment of communication vehicles and networks.

Appendix 2: Improving Pediatric Preparedness Performance Through Strategic Partnerships (2 of 3)

Commentary

The AAP established a multidisciplinary response team of staff and pediatrician leaders. Various perspectives and specialty areas were represented. In addition to infectious disease experts, it became clear that as more children became infected with H1N1, expertise related to emergency medicine, critical care, and disaster preparedness was needed to determine the best course of action. When the government began discussing community mitigation and school closures, it was important to include pediatric expertise related to child care facilities, schools, and pediatric practices. When there were questions about vaccine safety and distribution, public health and AAP chapter leader involvement became critical. It was particularly challenging when guidelines were developed or when resource allocation decisions were made that affected care providers in various settings. Practitioners or end users need to be included in planning discussions from the beginning to produce effective clinical guidelines that are both relevant and practical.

Establishment of this pediatric influenza response team, known as FluPeds, allowed the AAP to promote collaborative discussions and decision-making, address member concerns, and respond to requests efficiently throughout the pandemic. This team served as a vehicle for rapid review of data, discussion of diagnosis and treatment options, and identification of strategies for sharing key messages and resources with pediatric clinicians.

Many telephone triage and clinical algorithms were proposed around the time when hospital emergency departments were overrun with patients with ILI. The FluPeds team assisted the AAP and the CDC in the development and joint release of an influenza season triage algorithm for children with ILI.⁶ This algorithm was developed for use by clinicians to help determine whether symptomatic children should receive a medical evaluation, be administered antiviral medications, or be followed up closely. The algorithm considered whether the child lived with or was cared for by an individual at higher risk of complications from influenza, identified strategies to help prevent the spread of influenza, and emphasized the importance of appropriate monitoring and follow-up with the child's medical home/primary care provider. Although comprehensive policies and guidance documents were also necessary, many clinicians reported that this tool was helpful as a quick and efficient "go-to" resource.

The FluPeds team and AAP leaders identified several areas that could be improved in future public health emergencies. After-action discussions revealed the following:

- Including pediatric experts, especially practitioners, in planning discussions and development of guidance would improve health care system efficiency and the care provided to children.
- Management of messaging to health professionals would reduce information overload and enhance their ability to care for children in need of medical care.
- Putting a system in place to discuss pediatric considerations in advance of an emergency would enhance outcomes for all populations, especially if resources were limited.

ENHANCING PEDIATRIC PARTNERSHIPS TO PROMOTE PANDEMIC PREPAREDNESS

After-action discussions suggested that enhanced partnerships between pediatricians and state or local health department representatives would likely result in improved pediatric preparedness planning. Strategic conversations between AAP chapter and state health department leaders would ensure an existing line of communication to facilitate a response in an emergency. To address this, the AAP and the CDC convened the "Enhancing Pediatric Partnerships to Promote Pandemic Preparedness" meeting to enhance these connections and develop future response strategies.

Funding was available to bring 10 state teams of 4 representatives to this meeting. The 10 states invited (California, Florida, Georgia, Illinois, Michigan, Missouri, New Mexico, Texas, Utah, and Virginia) were asked to identify a team leader, convene a team with pediatric and public health leaders, maintain a strong connection to the AAP chapter office in that state, and develop a draft state action plan before the meeting.

Participant surveys, conference calls, and review of action plans before the meeting helped to identify model strategies and common areas of interest to guide development of an agenda. The April 2011 meeting included 66 participants: 40 members from the 10 participating states and AAP and CDC leaders. Attendees discussed lessons learned from the 2009 pandemic, determined strategies for advancing pediatric preparedness, and identified key resources to improve state-level preparedness. Each of the 10 teams discussed models and challenges experienced during the pandemic, shared priority steps within their action plan, and identified solutions. Meeting presentations focused on model strategies and interest areas, as described in the following sections.

PRIORITIZING WITHIN AND AMONG HIGH-RISK GROUPS

In any disaster or emergency, it can be challenging to determine how to allocate available resources. A key question from the pandemic was how to prioritize within high-risk groups when vaccine, antiviral medications, or health care providers were limited. Determining a system to facilitate decision-making in advance of an emergency would be easier than establishing this scheme in the midst of a crisis. Establishing a pediatric advisory committee composed of pediatric providers, stakeholders, and public health representatives (who would meet regularly to discuss preparedness and response issues for children) was a model strategy that resonated with those who attended the meeting. Participants concluded that this advisory committee should be in place in each state to facilitate discussions with regard to children, coordinate response efforts, and propose improvements. In addition, strategies should be in place to identify high-risk populations and determine ways to improve access to care. The most effective pediatric advisory committee would be one that is sustainable over time, with ongoing and consistent funding and staff.

Registries that identify certain high-risk conditions can be extremely useful. As an example, the Michigan Care Improvement Regis-

Appendix 2: Improving Pediatric Preparedness Performance Through Strategic Partnerships (3 of 3)

Commentary

try (MCIR) was useful in pandemic response activities and was successfully used by a variety of providers to track vaccine inventory and distribution, as well as to flag individuals at high risk for developing complications from influenza. As a prerequisite to placing orders for H1N1 vaccine, several states found that mandating the use of the state registry greatly expanded its use. Whether practitioners use an electronic registry, a database, or a chart identification system, having a mechanism in place to identify patients with various medical conditions during a pandemic or other emergency would be especially useful.

STRATEGIC COMMUNICATION AND MESSAGING

Communication and messaging are important components of an effective strategic response during a disaster and, therefore, are a critical component of pediatric preparedness. Suboptimal messaging and communication can easily exacerbate a crisis. Messaging is important (ie, what to say and how to say it), as is the means to deliver the message. In a time of crisis, the message needs to be simple and timely, should come from a trusted source, and should be crafted to reassure and/or to communicate concrete steps to reduce risk.

In an emergency, communication systems should leverage existing and trusted relationships, especially those between public health and health care organizations. Messaging strategies should aim to minimize excessive, conflicting, confusing, or unnecessarily anxiety-provoking messages. The “one voice, one message” concept is a simple way to approach this. Also, communication is not a “pipeline” from which information flows, but an exchange of information. Like the handing off of a baton in a relay race, the passing of information critically depends on the readiness of the receiver. No matter how accurate the information, if the recipient is not ready to receive the message or does not trust its source (or cannot confirm its validity), then the message is lost. The baton is dropped. Having information delivered by a known and trusted spokesperson, or having it vetted through trusted professional organizations, ensures better acceptance of the message.

Messaging strategies should promote two-way (or bi-directional) communication at all times. There must be an efficient way to distribute information to front-line clinicians and there should be a vehicle for these clinicians to communicate back to decision-makers. An example is to offer practitioners a way to discuss their experiences with those developing clinical guidelines or mitigation strategies.

INCORPORATING PEDIATRICIANS INTO STATE-LEVEL DECISION-MAKING

By increasing their involvement in preparedness planning and response, pediatricians can have dialogues with emergency planners and public health colleagues about ways to improve services for children. By inviting pediatric experts into discussions about pandemic preparedness and disaster planning, federal, state, and local decision-makers can ensure that children's issues are addressed early. Each population and region has unique needs, risks, and challenges. The implementation of federal recommendations during a disaster can

vary from state to state. It is important to identify and evaluate specific gaps in pediatric readiness at the state/local level, by involving pediatricians in disaster preparedness and response efforts. This collaboration should yield better health care delivery during day-to-day operations, as well as in crisis situations.

CONCLUSIONS

Special attention must be paid to our nation's ability to meet children's needs before, during, and after a pandemic or disaster. The discussions surrounding the April 2011 AAP/CDC meeting highlight the importance of establishing strategic state and local partnerships between pediatricians and public health professionals. Pediatricians working in partnership with public health professionals can make a recognizable impact in advocating for the needs of children and families who seldom receive enough attention in disaster planning. Improving pediatric preparedness and forming strategic partnerships is the foundation on which to build a cohesive plan to achieve state-level emergency readiness should a disaster or pandemic occur.

Author Affiliations: Pediatric Emergency Medicine, Children's Memorial Hospital, Northwestern University Feinberg School of Medicine, Chicago, Illinois (Dr Krug); Department of Pediatrics, NCH Downtown Naples Hospital, Naples, Florida (Dr Needle); Developmental and Behavioral Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio (Dr Schonfeld); and Department of Community and Specialty Pediatrics, American Academy of Pediatrics, Elk Grove Village, Illinois (Mss Aird and Hurley).

Correspondence: Laura Aird, MS, Department of Community and Specialty Pediatrics, American Academy of Pediatrics, 141 Northwest Point Blvd, Elk Grove Village, IL 60007-1019 (e-mail: laird@aap.org).

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REFERENCES

1. American Academy of Pediatrics Committee on Pediatric Emergency Medicine; American Academy of Pediatrics Committee on Medical Liability; Task Force on Terrorism. The pediatrician and disaster preparedness. *Pediatrics*. 2006; 117(2):560-565.
2. National Commission on Children and Disasters. *2010 Report to the President and Congress*. Rockville, Maryland: Agency for Healthcare Research and Quality; October 2010. AHRQ publication No. 10-M037.
3. Pandemic influenza: warning, children at-risk. Issue brief by Trust for America's Health and the American Academy of Pediatrics; October 16, 2007. <http://www2.aap.org/disasters/pdf/AAP-TFAH-KidsPandemicFluRevised10-16-07.pdf>. Accessed February 27, 2012.
4. American Academy of Pediatrics National Survey, October 2012. Conducted by Marist College Institute for Public Opinion. <http://www2.aap.org/disasters/pdf/AAP-Opinion-Poll-Data-Oct2010.pdf>. Accessed February 27, 2012.
5. Centers for Disease Control and Prevention (CDC). Surveillance for pediatric deaths associated with 2009 pandemic influenza A (H1N1) virus infection - United States, April-August 2009. *MMWR Morb Mortal Wkly Rep*. 2009;58(34):941-947.
6. American Academy of Pediatrics and Centers for Disease Control and Prevention. 2009-2010 Influenza season triage algorithm for children (≤ 18 years) with influenza-like illness; October 16, 2009. <http://www.cdc.gov/h1n1flu/clinicians/pdf/childalgorithm.pdf>. Accessed February 27, 2012.

Appendix 3: The Value of Partnering With AAP Chapters

As state affiliates of the American Academy of Pediatrics (AAP), AAP chapters can serve as a powerful ally in advocacy for disaster preparedness and the needs of children. The AAP works daily with its 66 chapters, located throughout the United States and Canada, to address the priorities of the national organization and provide support and guidance in issues surrounding children's health care. Although the chapters are separately incorporated and function independently, they look to the national organization and its strategic plan to set an annual agenda to reach mutual goals and objectives.

As one example, in the weeks and months following Hurricane Katrina, the immediate and long-term effects of the disaster became the priority issue of the pediatricians in the Gulf Coast region. The leadership of the chapters in affected areas partnered with child psychologists, social workers, school nurses, and others to undertake the enormous task of addressing both the physical and mental health needs of children. Not only can AAP chapters provide expert guidance on child health and well-being for state-level disaster planning efforts, they can act as a coordinating body for pediatricians and other child health professionals following a disaster.

Connecting With Your State AAP Chapter Is Easy

This brief provides an introduction to state government issues and additional background information that can be used when communicating about disaster preparedness and children. To locate your state's AAP chapter, visit the AAP Chapter Contacts Listing page on the AAP Web site at www2.aap.org/member/chapters/chaplist.cfm.

What You Can Do to Improve Disaster Preparedness in Your State

Share the advocacy considerations in this toolkit and your concerns about disaster preparedness and the needs of children with your state AAP chapter. Communicating with your state AAP chapter is an excellent way to voice your opinion, build coalitions and relationships with pediatricians and other physicians, increase state-wide awareness of the issue, and ultimately motivate decision-makers at the state level to promote pediatric disaster preparedness measures during legislative sessions, through the regulatory process, and other policymaking avenues.

List of AAP Chapters and Web sites

Alabama AAP Chapter
<http://www.alaap.org/>

Alaska AAP Chapter
<http://www.aapalaska.org/>

Arizona AAP Chapter
<http://www.azaap.org/>

Arkansas AAP Chapter
<http://www.arkansasaap.org/>

California AAP Chapters
1: <http://www.aapca1.org/>
2: <http://www.aapca2.org/>
3: <http://www.aapca3.org/>
4: <http://www.aapca4.org/>

Colorado AAP Chapter
<http://coloradoaap.org/>

Connecticut AAP Chapter
<http://www.ct-aap.org/>

District II (New York) AAP Chapter
<http://aapdistrictii.org/>

District IX (California) AAP Chapter
<http://www.aap-ca.org/>

District of Columbia AAP Chapter
<http://aapdc.org/>

Florida AAP Chapter
<http://www.fcaap.org/>

Georgia AAP Chapter
<http://www.gaaap.org/>

Hawaii AAP Chapter
<http://www.hawaiiaap.org/>

Idaho AAP Chapter
<http://www.idahoap.org/>

Illinois AAP Chapter
<http://illinoisap.org/>

Indiana AAP Chapter
<http://www.inaap.org/>

Iowa AAP Chapter
<http://www.iowapeds.org/>

Kansas AAP Chapter
<http://www.kansasaap.org/wordpress/>

Kentucky AAP Chapter
<http://www.kyaap.org/>

Louisiana AAP Chapter
<http://www.laaap.org/>

Maine AAP Chapter
<http://maineaap.org/>

Maryland AAP Chapter
<http://www.mdaap.org/>

Massachusetts AAP Chapter
<http://www.mcaap.org/>

Michigan AAP Chapter
<http://www.miaap.org/>

Minnesota AAP Chapter
<http://www.mnaap.org/>

Mississippi AAP Chapter
<http://www.aapms.org/>

Missouri AAP Chapter
<http://moaap.org/>

Montana AAP Chapter
<http://www.mtpeds.org/>

Nebraska AAP Chapter
<http://nebraska-aap.org/>

Nevada AAP Chapter
<http://www.nevadaaap.org/>

New Hampshire AAP Chapter
<http://www.nhps.org/>

New Jersey AAP Chapter
<http://www.aapnj.org/>

New Mexico AAP Chapter
<http://www.nmpeds.org/>

New York AAP Chapters
1: <http://www.ny1aap.org/>
2: <http://www.ny2aap.org/>
3: <http://www.ny3aap.org/home/default.htm>

North Carolina AAP Chapter
<http://www.ncpeds.org/>

North Dakota AAP Chapter
<http://ndaap.com/>

Ohio AAP Chapter
<http://www.ohioaap.org/>

Oklahoma AAP Chapter
<http://www.okaap.org/>

Oregon AAP Chapter
<http://oregonpediatricsociety.org/>

Pennsylvania AAP Chapter
<http://www.paaap.org/>

Puerto Rico AAP Chapter
<https://sites.google.com/site/aaprp/>

Rhode Island AAP Chapter
<http://www.riaap.org/>

South Carolina AAP Chapter
<http://www.scaap.org/>

Tennessee AAP Chapter
<http://www.tnaap.org/>

Texas AAP Chapter
<http://txpeds.org/>

Uniformed Services East AAP Chapter
<http://www2.aap.org/pedsuniform/default.htm>

Uniformed Services West AAP Chapter
<http://www2.aap.org/pedsuniform/default.htm>

Utah AAP Chapter
<http://www.aaputah.org/>

Vermont AAP Chapter
<http://www.aapvt.org/>

Virginia AAP Chapter
<http://www.virginiapediatrics.org/>

Washington AAP Chapter
<http://www.wcaap.org/>

West Virginia AAP Chapter
<http://www.hsc.wvu.edu/som/pediatrics/aapwv/>

Wisconsin AAP Chapter
<http://www.wiaap.org/>

Appendix 4: Becoming a Child Advocate

The American Academy of Pediatrics (AAP) provides the following 10 tips for child advocates:

1. **Choose your issue.** Personal experiences, community issues, and data on system-wide disparities are all sources of potential advocacy issues. Decide what it is that you would like to change.
2. **Identify solutions.** Prepare a list of possible ways to successfully resolve your issue.
3. **Identify supporters.** Chances are good that you are not the only person or group advocating for an issue. Talk to parents, parent groups, and organizations that work with children. Use the Internet to find other people or organizations that are working on related issues and seek their assistance. Equally important is choosing a legislator or other government official who will sponsor and be a champion for your issue.
4. **Develop a strategy.** Will you advocate for change on the local, state, or federal level? Which of the 3 branches of government—executive, legislative, or judicial—is best positioned to help you achieve your desired outcome? Who will oppose your efforts, and what can you do to neutralize the opposition?
5. **Frame your message.** Work with someone who has experience in public or media relations to help develop and disseminate a clear, concise, and consistent message to help advance your issue.
6. **Educate.** Attend community, state, and national organization meetings. Offer to be a speaker at a civic group or philanthropic organization, or professional society event. Meet with lawmakers and other government officials. Write letters to your newspaper.
7. **Mobilize supporters.** Democracy is not a spectator sport! Establish and activate e-mail alert systems and telephone trees to ensure that supporters make their lawmakers aware of the need and support for your initiative.
8. **Testify.** Offer to tell your story at a public hearing. The personal experiences of constituents are very powerful in convincing government officials to make changes.
9. **Don't give up.** Often it takes more than one attempt to enact a new law or implement changes in public policy. Take Thomas Jefferson's advice, "Eternal vigilance is the price of freedom."
10. **VOTE!** Pay attention to what candidates are proposing for children, and make your decisions accordingly. Remember, these are the people who will be making decisions about your issue. Take a

child with you when you vote to teach them about this important civic duty!

The following are 5 advocacy actions AAP members can take to ensure that children's needs are being met and that the voices of pediatricians and other pediatric care providers are resonating with federal legislators.

1. Meet with federal legislators during the December recess. When Congress adjourns, AAP members can meet their federal legislators in their home district offices. Visiting congressional staff during this pivotal point in the budgetary process can help build a foundation for future outreach on the importance of investing in children's programs. Visit <http://FederalAdvocacy.aap.org> (log-in required) for single-page fact sheets to bring to these visits and for district office contact information.
2. Tell Congress to protect children's programs from budget cuts. On <http://FederalAdvocacy.aap.org>, there are up-to-date resources on the Joint Select Committee on Deficit Reduction's latest developments and Congress' progress in advancing appropriations legislation, as well as a template e-mail and speaking points for AAP members to use when contacting federal legislators. This one-click advocacy is a quick and effective way to urge Congress to put children first when they consider ways to reduce the national deficit.
3. Attend an advocacy training session. For more information, e-mail Jamie Poslosky in the AAP Department of Federal Affairs at jposlosky@aap.org.
4. Take to Twitter and Facebook. Because of the ability to share information quickly with broad audiences, social media are becoming an increasingly popular advocacy platform. Join the conversation by following the AAP on Twitter@AmerAcadPeds and "liking" the AAP Department of Federal Affairs on Facebook at www.facebook.com/pages/American-Academy-of-Pediatrics-Department-of-Federal-Affairs/197242991030.
5. Become a key contact. Key contacts are AAP members interested in becoming involved in federal advocacy. Through targeted action alerts and weekly federal policy updates, key contacts are the first to be informed of critical child health issues at the federal level and the first to act. Key contacts have published hundreds of opinion editorials; sent thousands of communications to federal legislators; and served in leadership positions at the local, state, and national levels of the AAP. Request to be enrolled by e-mailing kids1st@aap.org.

Appendix 5: Preparedness for Pediatric Practices Checklist (1 of 5)

1. Prepare an Office Disaster Kit

In the event of a large-scale calamity, state and federal authorities may not be able to deliver assistance until days later, so the pediatric office should have fundamental supplies to ensure self-sufficiency for at least 72 hours. Even smaller emergencies, such as an office fire, chemical spill, or power failure, might require immediate action with pre-positioned materials. Pediatricians should also prepare an Emergency Go Kit containing the supplies and equipment needed to provide basic medical care in virtually any location.

Decide which supplies you will keep in your Office Disaster Kit. Consider preparedness and evacuation supplies, shelter-in-place and immediate recovery supplies, and Emergency Go Kit supplies. Some examples include

- ☐ Copies of credentials and license
- ☐ Essential business documents
 - ☐ scanned to flash drive
- ☐ Computer backups
- ☐ Spare clothes and shoes
- ☐ Emergency toiletries
- ☐ Contact lens solution and eyeglasses
- ☐ Rain gear
- ☐ Hand sanitizer
- ☐ Sunscreen
- ☐ Insect repellent
- ☐ Duct tape
- ☐ Pocket knife
- ☐ Toilet paper
- ☐ Paper towels
- ☐ Plastic bags
- ☐ Towel
- ☐ Food
 - ☐ granola bars
 - ☐ dry cereal
 - ☐ nuts
 - ☐ dried fruits
 - ☐ beef jerky
 - ☐ trail mix
 - ☐ crackers
 - ☐ peanut butter
 - ☐ canned goods
 - ☐ can opener
- ☐ Water
- ☐ Blanket
- ☐ Cell phone charger
- ☐ Flashlight
- ☐ Radio

- ☐ Spare batteries
- ☐ Extension cords
- ☐ Cash
- ☐ Stethoscope
- ☐ Otoscope
 - ☐ and specula
- ☐ Ophthalmoscope
- ☐ Spare bulbs
- ☐ Tongue blades
- ☐ Thermometer
- ☐ Tape measure
- ☐ Calculator
- ☐ Reference handbook
- ☐ Prescription pad
- ☐ Pen/pencil
- ☐ Paper/notebook
- ☐ Gloves
- ☐ Masks
- ☐ Portable scale
- ☐ Alcohol wipes
- ☐ Bandages
- ☐ Antibiotic ointment
- ☐ Topical steroid cream
- ☐ Albuterol MDI or nebulizer solution
- ☐ Ibuprofen and acetaminophen
- ☐ Diphenhydramine
- ☐ Ceftriaxone
- ☐ 1% lidocaine
- ☐ Saline solution
- ☐ Oral or injectable steroids
- ☐ Syringes and needles
- ☐ Sharps container
- ☐ Toys for children
- ☐ Diapers, baby wipes, and formula

Pack supplies in easily transportable containers (eg, camera bag, backpack, tote bag, suitcase with wheels, plastic bin with lid), and store these in a safe, accessible location known to other employees.

Keep a list of the supplies in the Office Disaster Kit, along with a checklist and schedule for checking expiration dates.

Appendix 5: Preparedness for Pediatric Practices Checklist (2 of 5)

2. Store Essential Supplies and Minimize Risk to Equipment

Thoughtful placement or storage of high-importance equipment and supplies can mitigate risk and preserve maximal office functioning in case of physical damage to the office.

- ☐ Identify essential, high-value, or irreplaceable items.
- ☐ Organize the office to store supplies appropriately and minimize risk to equipment. Determine where and how these items might be moved in preparation for disaster. Designate which staff member(s) will be responsible for this task.
- ☐ Copy equipment warranties, model numbers, manufacturers, purchase receipts, and suppliers/servicers. This information may be necessary if equipment needs to be repaired, replaced, or declared lost.

3. Attend to Facility Issues

Consider the steps that you and your office staff can take to mitigate damage to your office space, building, or facility.

- ☐ Investigate structural issues; walk around the office/building to identify any needed repairs. Pay particular attention to potential risks based on disasters that would be more likely to strike your area (eg, structural stability in case of earthquake; flammable exterior materials in case of wildfire).
- ☐ Record contact information for utility companies. Record shut-off procedures and locations for water, electricity, and gas as applicable. Contact utilities in advance to be listed for priority restoration of service.
- ☐ Develop contingency plans for office repairs. If you lease your space, discuss with your landlord how repairs will be done. If you own your space, research and select contractors.
- ☐ Research options for generators, including wattage, fuel source, and portable versus built-in. If using a portable generator, develop a plan and procedure for fueling it, including assigning responsibility, and ensure that employees and staff who will be operating it are familiar with it in advance.
- ☐ Consider transportation options for a post-disaster environment, such as a bicycle, or the availability of gasoline for automobiles.
- ☐ Research potential alternate practice sites in case the primary office is damaged. Consider drafting a memorandum of understanding or similar document and retaining emergency contact information for the owner of the alternate site(s).

4. Protect Patient Records and Office Files

If paper or electronic records are damaged or lost, business operations and patient care may be significantly compromised—perhaps even irrevocably. Sound backup planning includes knowing what records to store, as well as multiple ways to store them. This applies to both vital office documents and patient charts and records.

- ☐ Research potential ways to record crucial health data or records, files, scan documents, and backup files. Consider an automatic backup system. Have multiple backup methods for redundancy. Keep at least one copy of all data offsite, in a different physical location from your office, preferably distant to your community. Also consider simultaneous online backup.

Sample backup options

- ☐ Online (cloud) storage
- ☐ Remote server
- ☐ Portable hard drive
- ☐ Tape drive
- ☐ Flash drive/memory card
- ☐ Scan vital business documents, such as a recent bank statement, tax return, business permit, and letters of incorporation. Record contact information for your bank headquarters, local branch, and business loan officer.
- ☐ Record insurance policy numbers, agent contact information, and any other relevant information. Scan insurance policy documents and store on a flash drive.
- ☐ Test electronic backups regularly to make sure they are accurate and complete. Develop and test data recovery procedures. (Keep in mind that large computer systems or storage may take significant time to restore.)

5. Review Insurance Coverage

Adequate insurance can reduce physical and operating losses during disaster, but make sure coverage is appropriate and current.

- ☐ Locate and review your office insurance policies. Pay particular attention to exclusions, limits, and deductibles. Check if you have coverage for
 - ☐ Vaccines and spoilage
 - ☐ Business interruption/income replacement
 - ☐ Civil disruption
 - ☐ Unique hazards (eg, flood or earthquake)

Contact your insurance agent to discuss coverage and benefits. Do you need to increase coverage limits? Do you have any superfluous or unnecessary coverage? Do you need to add any particular coverage riders?

Prepare a paper or video office inventory. Scan documentation onto a portable drive or online backup service.

Appendix 5: Preparedness for Pediatric Practices Checklist (3 of 5)

6. Prepare Office Staff/Employees	8. Ensure Effective Communications
<p>Effective preparedness planning requires the cooperation and input of everyone in your office. Promote team building and buy-in from colleagues and staff by discussing roles, responsibilities, and expectations in advance.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Review disaster preparedness plan details with your staff, including where the planning materials, essential supplies, and the Office Disaster Kit (if applicable) are kept. Solicit staff input to develop effective and practical preparedness protocols. <input type="checkbox"/> Determine organizational strategies, priorities, contingency plans, and systems for decision-making. Assign a chain of command. If applicable, consider the implications of having multiple practice sites. <input type="checkbox"/> Collect and share staff personal contact information (eg, cell phone numbers, e-mail addresses, emergency contact information). Encourage staff to store this information on their cell phones as well as in separate written format. <input type="checkbox"/> Discuss with staff the office preparedness, response, and recovery procedures in case of crisis or disaster. Make sure all relevant responsibilities are assigned and that all personnel are aware of their responsibilities. Remember that each person's primary responsibility is to keep himself or herself and his or her family members safe, and that this will take priority over office or work-related tasks. <input type="checkbox"/> Encourage staff to develop their own personal preparedness plans. Consider how your office will help staff address their family needs. <input type="checkbox"/> Be prepared to address human resources issues, such as how absences, pay, and benefits might be handled in case of disaster. 	<p>Communications are one of the most critical—and frequently problematic—concerns during a disaster situation. Anticipate how you might communicate, to whom, and what messages you want to provide in a crisis.</p> <p>Review and investigate options for communicating with patients and other community members. Sample communication methods include</p> <ul style="list-style-type: none"> <input type="checkbox"/> Word of mouth <input type="checkbox"/> Paper flyers or other signs (eg, plywood) <input type="checkbox"/> Telephone forwarding <input type="checkbox"/> Telephone answering service or messages (voice mail) <input type="checkbox"/> Text messaging <input type="checkbox"/> E-mail <input type="checkbox"/> Notification via hospital, law enforcement, or governmental officials <input type="checkbox"/> Local media (eg, TV, radio, newspaper) <input type="checkbox"/> Social media (eg, Facebook, Twitter) <input type="checkbox"/> Ham radio <input type="checkbox"/> Satellite phone <p>Consider which methods of communication might apply in various situations. Prepare for each situation by purchasing needed supplies or discussing needs with communication providers (eg, Ham radio operators, local media). Discuss communication plans with staff, determine who will issue communications and conduct media relations, and review basic guidelines and office policies on messaging.</p>
7. Handle Vaccine Issues	
<p>Vaccines are a key part of pediatric practice and a significant financial investment. In case of power failure or facility damage, it is important to have a way to keep these assets safe.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Locate a robust alternative facility that might be willing to store vaccines in case your facility cannot (eg, community hospital, local health department). Consider signing a memorandum of understanding ensuring that you can store your vaccines there if necessary. <input type="checkbox"/> Develop a written procedure describing storage or transport of vaccines in the event of a power outage or catastrophic event. Designate staff members to be responsible. Include a contingency plan in case time or situation precludes moving vaccines to a different location. <input type="checkbox"/> Maintain an adequate supply of freezer packs and insulated boxes. <input type="checkbox"/> Record vaccine manufacturers' and local representatives' contact information. <input type="checkbox"/> Record and update vaccine inventories regularly. 	

Appendix 5: Preparedness for Pediatric Practices Checklist (4 of 5)

9. Develop Service and/or Evacuation Plans	10. Consider How to Handle Infection Control
<p>Discuss contingency plans in a variety of situations with partners and colleagues. Identify the criteria that you and your employees will need to make key decisions during a disaster.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Delineate what services might be provided under increasingly severe conditions. Consider developing a tiered response, taking into account available utilities, supplies, condition of the facility (or facilities), patient demand, and external conditions (eg, public health emergency, declared evacuation, state of emergency). <input type="checkbox"/> Determine who will be notified in different crises or disaster situations (eg, when the practice remains open, when services will be provided at an alternate site, when the practice is closed). Develop plans to communicate practice changes and updates with staff, families, and community members (also see number 8, Ensure Effective Communications). <input type="checkbox"/> Identify patients who are technology or otherwise dependent and share information with utility companies, emergency medical services personnel, and special needs shelters. Discuss contingency plans with family and school representatives. <input type="checkbox"/> Develop a plan to work with families to coordinate completion of an emergency information form for each child with special health care needs. <input type="checkbox"/> Consult local hospitals where you have privileges to learn their disaster plan procedures, focusing on your expected responsibilities as medical staff. Ask how hospital disaster decisions will be made and communicated, as well as under what situations inpatients might be discharged early, transferred or redirected to other institutions, or treated in place. <input type="checkbox"/> Reach out to other health care professionals to share or integrate preparedness plans in order to support each other while strengthening health care delivery for the entire community. 	<p>Pediatric office practices should plan for emergencies that might involve a virus or other infectious agent. Remind staff of the importance of implementing infection control practices on a day-to-day basis and determine office protocols for various types or levels of outbreaks.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Annually train staff on standard precautions, infection control, seasonal and pandemic influenza, and the importance of immunizations. <input type="checkbox"/> Develop an office respiratory protection plan delineating the use of masks, gloves, hand sanitizers, tissues, etc. Provide or update fit testing for staff who use (or might need to use) N95 respirators. <input type="checkbox"/> Design an office management plan for use in a pandemic that addresses office flow issues, including how to segregate patients with influenza-like illness or respiratory symptoms from others. Consider surge issues and how less time-critical visits such as checkups might be postponed. <input type="checkbox"/> Develop a plan for rapid triage using telephone screening and in-office protocols. <input type="checkbox"/> Determine how routine cleaning and disinfection strategies (and the process for ordering relevant supplies in advance) might be enhanced during an outbreak. <input type="checkbox"/> Identify ways to collaborate with other office staff or building personnel on sharing of staff, supplies, or office space during times of staff illness or absenteeism. Consider options for telecommuting, such as nurse telephone triage from home.



Appendix 5: Preparedness for Pediatric Practices Checklist (5 of 5)

11. Plan for Continuing Operations

A disaster or pandemic can significantly impair your revenue, billing, and collections, and therefore your ability to pay staff and vendors. Plan ahead to minimize business disruption and financial liability in order to keep your practice operating under adverse conditions.

- ☐ Compile a list of vendors with whom you have accounts, such as advertising, medical supply companies, business credit cards, cell phone service, and Internet provider. Include information on vaccine manufacturers and facility utilities from the appropriate sections of this kit as well. Record account numbers and telephone numbers for customer service. If this information is already stored in an accounting program, make sure data are current and backed up offsite on a regular basis.
- ☐ Record contact information and provider numbers for payers with which you are contracted, including commercial health insurance companies, State Children's Health Insurance Program, and Medicaid. Consider scanning copies of current contracts. Include contact information for any billing service, clearinghouse, or practice management service.
- ☐ Back up payroll information and employee W9 forms, as well as contact information for any payroll service you may use.
- ☐ Determine which staff member(s) will be responsible for communicating with vendors and paying bills after a disaster, or negotiating alternate payment arrangements.
- ☐ Consider alternate billing and collection procedures in case usual systems are disrupted.
- ☐ If not already done, consider securing a line of credit in case you need extra operating funds.
- ☐ Consider opening a second business account at a different bank, in case of disruption to the first bank or your local branch.
- ☐ Develop a plan to cut paper checks when electronic deposits for payroll are interrupted.

12. Develop a Preparedness Plan for Your Home and Family

Don't neglect your personal preparedness. Planning is just as important for your home and family as it is for your office and practice. Good planning will provide more confidence and peace of mind in a disaster situation, enabling you to concentrate on the most critical issues. Personal preparedness will also help you better understand the issues that your staff and clients face, and it will help you encourage the families that you serve to develop their own disaster plans.

- ☐ Review the AAP Family Readiness Kit, the Federal Emergency Management Agency's Ready.gov, or the American Red Cross Web site for recommendations on how to prepare your home and family.
- ☐ Make a list of possible contacts or destinations to consider in case of an evacuation (eg, family, friends, colleagues). Discuss planning with your family in case of an evacuation. If your family will not be evacuating, where will they be staying? Home? Community shelter? Office? Will they be allowed in the hospital if you need to be stationed there?
- ☐ Buy needed supplies for your Family Disaster Kit.
- ☐ Scan vital home documents and store them in multiple ways.
- ☐ Review home and property insurance coverage, including special hazards (eg, wind, flood, earthquake).



Appendix 6: The Youngest Victims: Disaster Preparedness to Meet Children's Needs (1 of 4)

For more information, see the AAP Children and Disaster Web site at www.aap.org/disasters/index.cfm.

The following commentary is an appendix to the Commentary: Disaster Preparedness and Pediatrics: What's Next? *Pediatrics in Review* Vol. 29 No. 11 November 1, 2008 pp. 371-373.

The Youngest Victims: Disaster Preparedness to Meet Children's Needs

The American Academy of Pediatrics (AAP) Disaster Preparedness Advisory Council has identified a variety of guiding principles or key messages that AAP members and child advocates can use to guide decision-making and support the implementation of new public policy, effective community/state planning, and appropriate education and training.

Children Have Unique Needs

In 2006, there were 73.7 million children under age 18 years in the United States, constituting more than one quarter of the United States population. When discussing disaster preparedness, the nation's children are often combined with many other diverse populations under the rubric of "special needs." Use of a generic catch-all term (at-risk, special needs, special populations) for diverse populations with very different needs obscures our duty to examine each of these groups and their needs individually. With children, it is important to highlight the various needs of children of different ages and developmental stages (infants, preverbal toddlers, preschool-age children, school-age children, adolescents, young adults, children with low English proficiency, children of different cultures, and so on) so their needs are anticipated during assessment and planned for accordingly. Use of these generic terms has resulted in combining children, pregnant women, the elderly, and even pets into one group, and this practice sends an unhelpful message regarding the unique needs of each of these populations. Governmental agencies should anticipate that a disaster may overwhelm a state's ability to serve these groups, particularly children, and be prepared to address this issue pro-actively by designating aid specifically for children and describing how this aid can be accessed.

Children are not little adults. Their developing minds and bodies place them at increased risk in a number of specific ways. Children have important physical, physiologic, developmental, and mental differences

from adults that can and must be anticipated in the disaster planning process. Plans must ensure that health care facilities and medical providers are prepared to meet the medical needs of children of all ages and developmental stages.

Children are particularly vulnerable to aerosolized biologic or chemical agents because they normally breathe more times per minute than adults, meaning they would be exposed to larger doses in the same period of time. Also, because some agents (eg, sarin and chlorine) are heavier than air, they accumulate close to the ground—right in the breathing zone of children. Children are also more vulnerable to agents that act on or through the skin because their skin is thinner and they have a larger skin surface-to-body mass ratio than adults.

Children are more vulnerable to the effects of agents that produce vomiting or diarrhea because they have less body fluid reserve than adults do, and this characteristic increases their risk for rapid dehydration. Further, children have smaller circulating blood volumes than adults; so, without rapid intervention, relatively small amounts of blood loss can quickly tip the physiologic scale from reversible shock to profound irreversible shock or death.

Children have significant developmental vulnerabilities not shared by adults. Infants, toddlers, and young children do not have the motor skills to escape from the site of a chemical, biologic, or other terrorist incident. Even if they are able to walk, young children may not have the cognitive ability to figure out how to flee from danger or follow directions from others. Also, they may not know when they need help or may not be able to tell others about their symptoms. Just as children's developing bodies affect their response to physical trauma, **children's ongoing cognitive and social development poses unique challenges to providing quality mental health care.** In general, a child's reaction to a new situation varies greatly, depending on their developmental level, temperament, experience, and skills. When children are exposed to circumstances that are beyond the usual scope of human experience (eg, a terrorist attack or violence), they may develop a range of symptoms related to post traumatic stress disorders. Exposure to media (on television) or being interviewed by the media would traumatize children further. Efforts should be made to protect children from these experiences.

Appendix 6: The Youngest Victims: Disaster Preparedness to Meet Children's Needs (2 of 4)

Children have ongoing needs that must be addressed by their parents or other caregivers. They require direct supervision, assistance with feeding, and protection from hazards. When children are separated from their caregivers (whether because of displacement or medical evacuation), they require priority assistance. Children are highly influenced by the emotional state of their caregivers. When the family or another caretaker is psychologically harmed by the events around them, it is likely to affect the psychological well-being of the child. Counselors should be trained to recognize the signs of distress in children and to help parents and caregivers address children's needs at varying levels of development. Techniques used in assisting adults may be ineffective or even counterproductive with children.

Children are a highly vulnerable population during a food or agriculture incident. Children consume proportionately more food and drink than adults. Children are more vulnerable to the effects of agents that produce vomiting or diarrhea because they have smaller body fluid reserves than adults, increasing the risk of rapid progression to dehydration or shock. Young children may need to be breastfed or fed by adults. Planning should acknowledge the unique vulnerabilities of children and the fact that they could represent a disproportionately high percentage of victims in a food or agriculture incident.

Children are particularly vulnerable to rapid spread of infectious disease and exposure to toxic substances. Young children, especially infants and toddlers, have a natural curiosity (that leads to frequent and wide-ranging handling of objects and surfaces) and a tendency to put their hands and objects in their mouths without washing first. Since their immune systems are still developing and because children are smaller than adults, they often have a more pronounced reaction to infections and other substances. Increased attention to infection control measures (eg, immunizations, hand washing, routine cleaning, disinfection, and sanitization) can reduce the spread of infectious diseases. In pandemic situations, child care and school closure along with social distancing may be recommended.

Evacuation plans should specifically address children, particularly in schools and other places where children gather in large numbers. Child care programs, schools, and before and after school programs must be prepared to evacuate children, take them to a safe

place, notify parents, and reunite children with their families.

A disaster may disrupt community child care services and leave first responders and other providers of vital services without a safe place for their children. This disruption could result in a need for accessible child care facilities to care for more children than they typically do, or for establishment of temporary child care programs. The special challenges of providing such care during disaster situations should be identified. Guidelines for these situations should be flexible, depending on the need. Minimum health and safety standards should be followed; yet some guidelines (need for immunization records, confidentiality when discussing health information, the maximum number of children cared for) may need to be adjusted or waived.

When children are cared for in shelters or other temporary care situations, child-specific supplies must be provided, including cribs, children's clothing of various sizes, formula and bottles, water, baby food, feeding utensils, etc.

Feeding plans or guidelines should stress the special needs of infants and young children for breast milk, formula, and baby food. Plans must describe how clean water, bottles, and other necessary feeding equipment will be provided.

Communities Can Best Care for Children by Focusing on Family-centered Care

The importance of family-centered care is critical given the likely unwillingness of many parents to be separated from their children in a disaster, even if both the parent and child are injured and in need of medical care. Children frequently receive more appropriate and more effective care when they are accompanied by a parent or other caregiver. Children should not be separated from their families or caregivers to the maximum extent possible during evacuation, transport, sheltering, or the delivery of other services. If separation was unavoidable, children should be reunited with their families or caregivers as soon as possible.

In particular, children must be transported with at least one parent or caregiver during evacuation of medical facilities. In addition, this transportation and care must be coordinated so patients are moved to facilities with appropriate pediatric resources, whether they

Appendix 6: The Youngest Victims: Disaster Preparedness to Meet Children's Needs (3 of 4)

are evacuated from field providers, inpatient units, or specialized advanced facilities (such as pediatric or neonatal intensive care units). Communications must be maintained between medical providers and patients' families or guardians if they are not together. Child passenger safety recommendations should be followed.

During a no-notice or mass evacuation, children will likely be gathered in large numbers away from their parents, whether at schools, child care facilities, summer camps, hospitals, or other locations. Plans must account for their safe transportation and reunification with caregivers. Child-specific supplies, such as clothing, food, water, formula, and diapers must be present at evacuation sites and en route, with the assumption that large numbers of children may be transported together.

States and other entities need to determine how to subsidize and provide quality care for children whose caregivers may be killed, ill, injured, missing, quarantined, or otherwise incapacitated for lengthy periods of time. Legal and other issues must be addressed when these children are taken into the care of the state. Special consideration must also be given to those children who are already wards of the state, either through the foster care or the judicial system. Preemptive planning and creation of a system to identify, monitor, and care for these children will help to ensure their needs are met at a time when they may not otherwise be supported or protected.

Children may be at increased risk for being abducted, abused, or neglected during a disaster or times when their parents or caregivers are experiencing unusual stress. If there is a disaster or emergency situation, adults should take care to ensure that children are supervised by sight and sound at all times, reinforce safety rules, and talk to children about what they should do if they need help. Also, professionals who assist with rescue and recovery should recognize that children involved in a disaster may exhibit signs and symptoms similar to those who have been maltreated, and they should consider whether each child may have been victimized or abused. Because most abuse occurs within the family or by someone known to the child, an emergency or disaster can cause increased stress to the family or a child, and children may choose that time to disclose that they have been maltreated. Reports by children of any form of abuse or neglect should be taken seriously and pursued in an appropriate manner. Lastly, disaster planning efforts should include methods

for tracking sexual and other adult predators, especially during evacuations or times when children may need to be housed in a shelter or other communal area.

Children Require Appropriate Pediatric Care

As defined by the AAP, the purview of pediatrics includes infants, children, adolescents, and young adults through and, in certain circumstances, beyond 21 years of age. Children must be cared for properly in the event of a disaster, whether by their parents, families, caregivers, or teachers. Limiting pediatric services to specific age groups—eg, “children under 8 years old”—is not advisable or adequate. The needs of *all* children must be addressed, from infants to young adults. Necessary resources need to be provided to make this possible.

Once children are critically ill or injured, their bodies will respond differently than adults in similar medical crises. Consequently, pediatric treatment needs are unique in a number of different ways.

Children need different dosages of medicine than adults—not only because they are smaller, but also because certain drugs and agents may have effects on developing children that are not of concern for adults.

Children need different sized equipment than adults. Because children have smaller bodies, they require smaller equipment. From needles and tubing to oxygen masks and ventilators, to imaging and laboratory technology, children need equipment that has been specifically designed for them.

Children demand special consideration during decontamination efforts. Because children lose body heat more quickly than adults, skin contamination showers that are safe for adults may result in hypothermia in children unless heating lamps or other warming equipment is provided.

Plans that describe care for children must have a specific pediatric component. Pediatricians should be direct participants in the teams that develop this advice, and appropriate guidelines will almost certainly be different for children than for adults. Pediatricians must be included in the primary notification process. The signs and symptoms of exposure and methods of treatment are different for children than they are for adults. Families and health care providers will need customized information and guidelines to respond appropriately.

Appendix 6: The Youngest Victims: Disaster Preparedness to Meet Children's Needs (4 of 4)

Pediatric-specific capabilities must be present at all points of operation. Health care and mental health providers with adequate pediatric training will be required to provide appropriate care.

It may not be reasonable to expect strict confidentiality practices to be maintained during a disaster. In particular, attention must be paid to medical care for unaccompanied minors in a mass casualty situation when there are reunification issues. There are special challenges when providing care during disaster situations and waivers related to confidentiality and the Health Insurance Portability and Accountability Act (HIPAA) may be requested and granted.

Customize Disaster Planning to Meet Children's Needs

Federal, state, and local disaster plans should include specific protocols for management of pediatric casualties and should include pediatricians in planning at every organizational level. Further, local disaster teams should include pediatricians and other personnel skilled at evaluating and treating children.

Children must be cared for properly in the event of a disaster, whether by their parents, families, caregivers, or teachers. The needs of *all* children must be addressed, from infants to young adults. Adults in charge of children, including caregivers and teachers, should have a plan for providing first aid and further care for children until they are reunited with a family member who can meet their needs. Appropriate resources must be provided to make this care possible.

Government agencies should work to ensure that adequate supplies of antibiotics, antidotes, and vaccines are available for children; that these agents are safe and efficacious; and that pediatric doses are established. Resource allocation plans should ensure that these agents are readily available to pediatric health care sites and other locations where children may congregate.

Many individuals have lost their lives during hurricanes and other disasters because they would not evacuate without their pets. In addition, separating children from their pets without appropriate preparation can have negative consequences. Children are very close to their pets, and family and community disaster preparedness plans must take pets into account. Consideration must also be given to safety issues in designing shelter

plans that allow pets to remain with their owners. The cramped quarters and high-stress nature of shelters pose unique challenges in preventing injuries among children from animals unknown to them.

AAP Resources

Pediatric Terrorism and Disaster Preparedness: A Resource for Pediatricians

This comprehensive 350-page report and its summary serve as practical resources that pediatricians can consult when planning for and responding to natural disasters and bioterrorist events. The report was published in 2006 and was prepared by the American Academy of Pediatrics for the Agency for Healthcare Research and Quality.

Pandemic Influenza: Warning Children at Risk!

This 34-page issue brief was published in 2007 and was prepared by Trust For America's Health and the American Academy of Pediatrics.

A Disaster Preparedness Plan for Pediatricians

This 21-page booklet developed by a practicing pediatrician and an AAP Chapter describes the steps that pediatricians need to take to prepare their office practices for a disaster.

Infant Nutrition During a Disaster: Breastfeeding and Other Options

This 2-page fact sheet includes recommendations and a flow chart to help guide decision-making regarding infant feeding during and after a disaster.

The Pediatrician and Disaster Preparedness

The American Academy of Pediatrics has developed a policy statement and technical report that complement each other and include recommendations regarding the pediatrician's role in disaster preparedness and recovery.

These and other key resources can be found on the AAP Children and Disasters Web site at: www.aap.org/disasters/index.cfm

If you have questions or wish to join the AAP Disaster Preparedness Contact Network, please send an e-mail describing your interest or involvement in disaster preparedness initiatives to DisasterReady@aap.org.





American Academy
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Disaster-Related Coalitions

The unique needs of children mandate specialized and appropriate planning for disasters. Establishing pediatric advisory councils or children's preparedness coalitions where leaders decide together what actions are required to protect children in the event of a disaster are crucial. The AAP [Pediatric Preparedness Resource Kit](#) offers guidance on developing pediatric advisory councils or children preparedness coalitions. As experts in the health of children, it is imperative that pediatricians participate in such efforts and collaborate with local and state officials.

Many states and communities have developed coalitions to bring together diverse government agencies, nonprofit organizations, health care providers, and other groups. Some either focus on or address children's preparedness in some way. Below are known disaster-related coalitions for you to connect with. If you want the contact information for a specific coalition, please e-mail DisasterReady@aap.org.

- [Arizona Healthcare Coalition Southeastern](#)
The goal of this coalition is to facilitate collaboration among public health, health care, pre-hospital entities, and various community partners to prepare for, respond to, and recover from an emergency or disaster.
- [Arizona Pediatric Disaster Coalition](#)
The mission of this coalition is to help prepare pediatric hospitals to respond effectively in times of disaster.
- [California Neonatal and Pediatric Disaster Preparedness Coalition](#)
The purpose of this coalition is to support pediatric and neonatal local, regional, and statewide disaster preparedness and medical surge efforts.
- [California – San Bernardino County Coalition](#)
- **California – San Diego**
- [California – San Francisco Coalition](#)
- [California – Southern California Coalition](#)
The Children's Hospital Los Angeles Pediatric Disaster Resource and Training Center provides training, resources and more to health care centers throughout Los Angeles County. The center brings together all efforts of pediatric disaster training to provide resources and training for the health care community.
- [Central Valley Regional Pediatric Disaster Coalition](#)
- [Colorado Coalition](#)
The emergency preparedness department at Denver Public Health consists of a team of experts who specialize in all-hazards emergency preparedness. They work to identify, monitor and respond to public health emergencies that impact resident health and well-being.

- [Coyote Crisis Collaborative](#)
The mission of the Coyote Crisis Collaborative is to provide tools, experience, education, and information to facilitate continuous improvement for the community.
- [Florida Children's Preparedness Coalition](#)
This coalition is a multi-agency and multi-organization coalition created to ensure the emergency preparedness and response needs of children are planned for and integrated across the state of Florida. This partnership aims to successfully address children's needs when a disaster or emergency strikes. This group is also tasked with leveraging the many state, local, tribal and federal resources identified to serve children.
- [Illinois Coalition](#)
This coalition works to exercise and improve preparedness plans for all-hazards emergencies, including pandemic influenza, increasing the ability of healthcare systems to provide needed beds, developing systems for healthcare volunteers, protecting healthcare workers with proper equipment, and much more.
- [Illinois EMSC Pediatric Disaster Workgroup](#)
This workgroup is responsible for identifying best practices and developing resources to assist in assuring that the special needs of children are addressed during a disaster or terrorist event.
- [Iowa Coalition](#)
- [Kentucky Coalition](#)
This coalition enhances the capacity of the Kentucky Department for Public Health, local public health departments, and the health care system to prevent, prepare for, respond to and recover from the adverse health effects of public health emergencies and disasters.
- [Maryland Coalition](#)
The Maryland Pediatric Emergency Medical Advisory Committee advises the state Emergency Medical Services Board and State Emergency Medical Services Advisory Council on pediatric issues.
- [Mountain States Pediatric Disaster Coalition](#)
The Mountain States Pediatric Disaster Coalition was established to create a network of hospitals, health care providers, public health departments, municipal services, and community groups to provide regional pediatric surge capacity and ensure effective use of critical resources in the event of a large-scale disaster affecting children in the mountain states regions. The states in the coalition consist of Montana, Wyoming, Idaho, Utah, and Colorado.
- **National Pediatric Preparedness Collaboration**
The purpose of this network is to provide opportunities for federal agencies and national organizations to network and collaborate in order to best address pediatric issues in the field of preparedness. The network aims to address issues of national significance related to pediatrics and preparedness.
- [New York City Pediatric Disaster Coalition](#)

This group was established to build a coalition of hospitals, public health, municipal services, and community groups to ensure effective use of critical assets during and after a large scale disaster affecting children.

- **[Ohio Coalition](#)**
The Ohio Emergency Medical Services for Children, housed within the Division of Emergency Medical Services at the Ohio Department of Public Safety, incorporates pediatric issues into all aspects of Emergency Medical Services.
- **[Oregon Coalition](#)**
The Oregon Disaster Medical Team is an independent, non-profit organization of volunteer health care professionals from Oregon and Southwest Washington.
- **[Pennsylvania Coalition](#)**
The Pennsylvania Emergency Medical Services for Children Advisory Committee offers a forum for issues that have potential impact on the emergency care and transport of all pediatric patients in the community.
- **[Southeast Minnesota Disaster Health Coalition](#)**
The mission of this coalition is to build health care system resilience and capacity in southeastern Minnesota to better ensure delivery of care during disasters by providing resources and a communication platform for planning, response and recovery activities.
- **[Southeastern Regional Pediatric Disaster Surge Network: A Public Health Partnership](#)**
The purpose of the Southeastern Regional Pediatric Disaster Surge Network is to improve the pediatric preparedness response strategies of public health, emergency response, and pediatric providers in the event of large-scale emergencies or disasters that overwhelm local or state pediatric resources.
- **[Texas Coalition](#)**
The Heart of Texas Regional Advisory Council is committed to building an all-hazard disaster preparedness program for the region. Multiple programs and tools are utilized to enhance disaster preparedness.
- **[Washington State Coalition](#)**
The goal of this coalition is to establish and promote a system of emergency medical and trauma care services. This system would provide timely and appropriate delivery of emergency medical treatment for people with acute illness and traumatic injury, and allow for recognition of the changing methods and environment for providing optimal emergency care throughout Washington.

If you are aware of an additional coalition or network, please e-mail DisasterReady@aap.org. Please keep in mind that the coalition or network does not need to have a pediatric focus or component. The AAP is interested in compiling information about all relevant networks. Include in your message:

- The name of the network (if known).
- The purpose of the network (if known).
- The area that the network serves.

- The contact information of an individual who could provide additional details about the collaboration or network.

Resources

- [Establishing Pediatric Advisory Councils or Children's Preparedness Coalitions \(AAP\)](#)
- [Contact Network \(AAP\)](#)

In Box 10 Example list of Regional Entities to Engage

- National Pediatric Disaster Coalition
- Disaster Related Coalition List (see attached)
- Hospital Preparedness Program (HPP) County or State Point of Contact
- Local EMS Agency (regulators)
- EMS for Children Coordinators
- Pediatricians
- Schools
- Child Care
- Faith Based
- Red Cross
- Law enforcement
- Fire first responders
- EMS Ambulance providers



PRQC DISASTER BUNDLE - DISASTER DOMAIN 2, 3

Regional Coalition Building and Pediatric Surge

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NATIONAL PEDIATRIC DISASTER COALITION CONFERENCE



**Improving Pediatric
Disaster Preparedness**

After Action Report

November, 2015
Scottsdale, Arizona



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Any questions about this National Pediatric Disaster Coalition Conference may be addressed to:

Deborah Roepke, Executive Director
Coyote Crisis Collaborative
10323 E. Sutton Drive
Scottsdale, AZ 85260
480-861-5722

General Overview

This After Action Report is the result of the first National Pediatric Disaster Coalition Conference (the Conference), held November 2-4, 2015, at the J. W. Marriott Camelback Inn in Scottsdale Arizona. The Conference was conducted by the Coyote Crisis Collaborative, an Arizona Department of Health Services (ADHS) Bureau of Public Health Emergency Preparedness (PHEP)-recognized healthcare coalition. The Conference was hosted in conjunction with ADHS-PHEP, with primary sponsorships from Arizona Public Service and Dignity Healthcare-St. Joseph's Hospital.

The Conference was a workshop form of an exercise for emergency management-level positions representing organizations and individuals interested in improving community readiness for meeting the needs of infants, children and pregnant women affected by disasters. Individuals were invited from:

1. Healthcare Coalitions,
2. Medical Practitioners,
3. Clinical Staff,
4. Hospital Emergency Managers,
5. Other Hospital Representatives,
6. Local, State, and Federal Government,
7. Emergency Medical System/Technicians,
8. Community Leaders,
9. Education, Child Care, Blood Bank Liaisons,
10. School Nurses and Other School Representatives,
11. Behavioral Health Providers, and
12. Faith-Based Organization Representatives.

Planning guidance was offered by a distinguished committee of Subject Matter Experts. Agencies represented pediatric coalitions, public health departments, the National Advisory Committee on Children and Disasters, the Centers for Disease Control and Prevention, Homeland Security, Health and Human Services, the Federal Emergency Management Agency, the International Association of Emergency Managers, the American Academy of Pediatrics, pediatric nurse and physician leaders from Children's Hospitals across the country - and more.

The conference featured international and national speakers, each of whom addressed topics targeting three specific themes. These themes were 1) pediatric disaster response, 2) resilience and extended pediatric care in a disaster, and c) recovery and lessons learned for coalitions.

A total of 208 individuals attended the Conference, primarily from healthcare coalitions, hospitals and other healthcare entities (including behavioral health), education, the special; access and functional needs community, and local, state, and federal government.

Exercise Summary

Capabilities Tested:

In 2012, the U. S. Department of Health and Human Services (HHS) surveyed states about capability gaps. Using the information gathered from the surveys, HHS developed customized HPP and PHEP grant capabilities and functions requirements for each state. The capabilities and functions addressed through the Conference are listed below:

Table 1. Capabilities, conference objectives, and functions

Capability	Function
HPP C1: Healthcare System Preparedness	Function 1: Develop, refine, or sustain Health Care Coalitions
	Function 2: Coordinate healthcare planning to prepare the healthcare system for a disaster
	Function 5: Coordinate training to assist healthcare responders to develop the necessary skills in order to respond
	Function 7: Coordinate with planning for at-risk individuals and those with special medical needs
PHEP C1: Community Preparedness	Function 2: Build community partnerships to support health preparedness
	Function 4: Coordinate training or guidance to ensure community engagement in preparedness efforts
HPP C2: Healthcare System Recovery	Function 1: Develop recovery processes for the healthcare delivery system
HPP C5: Fatality Management	Function 1: Determine the role for public health in fatality management
	Function 2: Coordinate surges of concerned citizens with community agencies responsible for family assistance
HPP C10: Medical Surge	Function 3: Assist healthcare organizations with surge capacity and capability
	Function 4: Develop Crisis Standards of Care guidance

Objectives:

The purpose of the Conference was to improve pediatric disaster preparedness by providing attendees tools, training, resources, and information. More specifically, the Conference sought to address Hospital Preparedness Program (HPP) and Public Health Emergency Preparedness (PHEP) grant requirements and capabilities by offering Subject Matter Experts (SMEs) to explain lessons learned and other guidance as a result of experiences with nationally-recognized disasters impacting children.

Coyote Crisis Collaborative introduced speakers from other states and countries that have experience with disasters. These experts were able to impart lessons learned for the purpose of improving pediatric disaster plans.

By the end of the conference, attendees were expected to better understand:

1. How pediatric healthcare coalitions prepare community response to disasters.
2. Guidelines and/or standards for general hospital systems on baseline pediatric care skills and resources in the event of a disaster.
3. Pediatric/Neonatal Intensive Care Unit (NICU) disaster plans for responding to large public health emergencies.
4. General emergency/pediatric surge capacity plans including access and functional needs and mental health.
5. Guidelines and/or standards for general hospital systems on baseline pediatric care skills and resources in the event of a disaster.
6. General emergency/pediatric surge capacity plans including recovery and family reunification
7. Plans for community evacuation and surge for children in a disaster.
8. The need to match resources to needs to provide the best outcomes for children in disasters

Table 2 shares more detailed objectives. Each objective is as a result of attending the Conference (e.g., the timeframe is by the completion of the Conference).

Table 2. Topics by objective and function

Topic	Objective	Capability and Function
<i>Day 1, Pediatric Disaster Response</i>		
A Call to Action for our Pediatric Coalitions by the National Advisory Committee on Children and Disasters	Attendees will be able to identify objectives to be addressed by their pediatric coalitions, subcommittees or other planning groups	HPPC1, F1
Pediatric Evacuation and Surge During Super Storm Sandy	Attendees will be able to improve their pediatric disaster evacuation and surge support plans	HPPC1, F2
Differences in Responding to Pediatric Injuries Pertaining to the Murrah Federal Building Bombing and Three TORNADOS	Attendees will be able to improve pediatric clinical response plans during a disaster	HPPC1, F5 PHEPC1, F4
Differences in a Rural Hospital's Evacuation of Children during Hurricane Rita and the Westbrook High School Soccer Team Bus Accident	Attendees will be able to improve rural area pediatric clinical response plans during a disaster	

Blast Injuries and Implications for Children	Attendees will be able to improve pediatric disaster triage of clinical processes for blast injuries	
Topic	Objective	Capability and Function
Pediatric Disaster Triage	Attendees will be able to improve pediatric disaster triage of clinical processes for blast injuries	HPPC1, F5 PHEPC1, F4
Pediatric Disaster Triage	Attendees will be able to understand OB/NICU evacuation plans	
Role of the Pediatrician in Disaster Response	Attendees will be able to improve community surge for children in disasters	HPPC10, F3
Ethical Considerations in Response Pertaining to Pediatrics	Attendees will be able to integrate ethical considerations in their disaster plans	HPPC10, F4
Decisions on Limited Resources in a Pediatric Disaster		
Public Health Preparedness for Children with Access and Functional Needs	Attendees will be able to improve disaster plans for children with access and functional needs	HPPC1, F7
Pediatric Disaster Preparedness: Lessons Learned from the Israel Experience	Attendees will be able to improve rural area pediatric clinical response plans during a disaster	HPPC1, F5 PHEPC1, F4
<i>Day 2, Resilience and Extended Pediatric Care in a Disaster</i>		
Preparing the United States Hospitals to Care for Pediatric Ebola Patients: Challenges and Successes	Attendees will be able to improve pediatric infectious disease disaster plans	HPPC1, F2, HPPC10
Checklist of Essential Pediatric Domains and Considerations for Every Hospital's Disaster Preparedness Policies	Attendees will be able to add resilience tools to their pediatric disaster plans	
The Night the Mirror Broke: Evacuation of the NICU during the Sayre Wildfire	Attendees will be able to improve NICU disaster plans	
Triage and Care of Young Casualties from the Utøya Island in Norway	Attendees will be able to improve mass casualty response plans for children	
Community Health Resilience Guide, Toolkit, and Projects Pertaining to Pediatrics	Attendees will be able to add resilience tools to their pediatric disaster plans	
Supporting Children in the Aftermath of Crisis	Attendees will be able to improve mental health disaster plans	HPPC1, F7
Toward a National Concept of Operations for Children's and Family Mental Health Needs after Disaster		

Topic	Objective	Capability and Function
An Application of Treatment of Military Post-Traumatic Stress Disorder (PTSD) and Compassion Fatigue for Taking Care of the Civilian Caregivers in a Pediatric Disaster	Attendees will be able to improve mental health disaster plans	HPPC1, F7
Pediatric Disaster Coalition Tools	Attendees will be able to improve pediatric coalition, subcommittee, or other pediatric group disaster plan development	HPPC1, F1
A Regional Approach to Pediatric Disaster Coalitions		
A Midwest Model for Pediatric Disaster Coalitions		
A California Model for Pediatric Disaster Coalitions		
Lessons Learned from Managing Pediatric Injuries in Haiti	Attendees will be able to improve pediatric disaster plans for conditions where there are sparse resources.	HPPC1, F2
<i>Day 3, Recovery and Lessons Learned for Coalitions</i>		
Pediatric Disaster Coalitions and Subcommittees Today and Tomorrow: A Dialogue on the Development of Benchmarks and Best Practice Guidelines	Attendees will be able to identify benchmarks and best guidelines for consideration by their pediatric coalition, subcommittee, or other pediatric group disaster plan development	HPPC1, F1
Planning Guides for Hospital Reception Sites and Family Reunification Centers	Attendees will be able to improve family reunification plans	HPPC5, F2
Reunification of Children		
Community Recovery from Hurricane Sandy	Attendees will be able to improve recovery plans for children	HPPC2, F1
Disaster Recovery for Children in Multiple States		
Issues Impacting Recovery for Children Following a Disaster		
Children with Access and Function Needs	Attendees will be able to improve pediatric disaster coalition development	HPPC1, F1
Family Reunification and Recovery Following the Sandy Hook Shooting	Attendees will be able to improve recovery planning following a school shooting	HPPC5, F1&2

Participation

Outreach:

Invitations were extended to individuals who would be interested in disaster planning for children. Individuals were invited from:

1. Healthcare Coalitions,
2. Medical Practitioners,
3. Clinical Staff,
4. Hospital Emergency Managers,
5. Other Hospital Representatives,
6. Local, State, and Federal Government,
7. Emergency Medical System/Administrators, Technicians,
8. Community Leaders,
9. Education, Child Care, Blood Bank Liaisons,
10. School Nurses and Other School Representatives,
11. Behavioral Health Providers, and
12. Faith-Based Organization Representatives.

Invitations were distributed by or through the Arizona Association for Community Health Centers, Arizona Coalitions for Healthcare Emergency Response, the Arizona Department of Health Services, the Arizona School District Consortium, the Arizona Nursing and Medical Boards, the American Academy of Pediatrics, Emergency Medical Services for Children, Homeland Security, Health and Human Services, and every health department and hospital association in the United States. Continuing Education Credits were made available to inspire attendance.

Participants:

While 238 individuals were initially registered to attend the Conference, the final tally of signatures showed 208 representatives from across the United States. States represented are depicted on the next page. Arizona had the most individuals attending.

Based on the findings, certain additional demographics are known. For example, most individuals were from large urban areas.

A horizontal bar chart with a light gray background and white vertical grid lines at 10% intervals. The x-axis is labeled from 0% to 100% at the bottom. The y-axis lists five categories on the left. The bars are colored as follows: Large Urban (1 million or more) is blue, Urban (Under 1 million, but at least 250,000) is red, Smaller Urban (Under 250,000) is green, Rural (Under 50,000) is brown, and I Don't Know is dark gray.

Category	Percentage
Large Urban (1 million or more)	45%
Urban (Under 1 million, but at least 250,000)	26%
Smaller Urban (Under 250,000)	22%
Rural (Under 50,000)	7%
I Don't Know	1%

By far, most attendees were from hospitals. Children's hospitals and community hospitals were equally represented). The signature pages are presented in an Attachment.

Table 3. Organization best defining attendee employers

Answer Choices	Responses	
Hospital (Pediatric)	28.57%	24
Hospital (General)	25.00%	21
Emergency Medical System	1.19%	1
Private Physician Office	1.19%	1
Nursing (Non-hospital)	0.00%	0
Organization (Physician)	0.00%	0
Organization (Nursing)	0.00%	0
Public Health (State)	10.71%	9
Public Health (County)	3.57%	3
Behavioral/Mental Health	0.00%	0
Emergency Management (State)	2.38%	2
Emergency Management (County)	0.00%	0
Emergency Management (Municipal)	0.00%	0
Tribal Government	0.00%	0
Pharmacy	0.00%	0
Poison Control Center	0.00%	0
Community Health Center	1.19%	1
Educational Institution	11.90%	10
Childcare	1.19%	1
Access and Functional Needs Service Provider/Organization	1.19%	1
Police	0.00%	0
Fire	0.00%	0
Military	1.19%	1
Business (Non-hospital)	1.19%	1
Health Care Coalition	2.38%	2
Other (please specify)	7.14%	6
Total		84

Evaluation

Outcomes:

The performance measures that were assessed by independent evaluators demonstrated achievement of objectives. The one caveat was a break-out session (Community Recovery from Hurricane Sandy) that was not able to be assessed due to the temporary loss of an evaluator, although study of the presentation indicates the objective for that session (attendees will be able to improve recovery plans for children) was also achieved.

Consensus on Areas of Success:

There were a significant number of both specific and generic ideas, techniques, training and educational interventions and lessons learned presented during the conference that were viewed as successful positive outcomes among the participants and stakeholders. These included:

1. The power of pediatric coalitions may be harnessed to make changes (loud voice).
2. A National Advisory Committee on Children and Disasters should be established.
3. Routine exercises.
4. Tools and best practices, including:
 - a. Community Health Resilience Initiative.
 - b. Jumpstart and SALT.
 - c. The National Incident Management System and Incident Command System Training (includes HICS).
 - d. Critical Incident Management System and Psychological First Aid.
 - e. Crisis Standards of Care.
 - f. Checklist of Essential Pediatric Domains and Considerations for Every Hospital's Disaster Preparedness Policies.
 - g. Child Life Toolkit.
 - h. Psychological First Aid.
 - i. PsySTART Rapid Mental Health Triage and Incident Management. System.
 - j. Technical Resources, Assistance Center, and Information Exchange (TRACIE).
 - k. Pediatric Bags (Glucoscan, AED, Broselow pre-filled modules of all colors, Intubation / airway / oxygen, IV catheters, baby wiped, diapers, and hand held suction device/bulb syringe).
 - l. Sedative protocols.
 - m. Triage by Resource Allocation for IN patient (TRAIN) pertaining to OB.
 - n. Pediatric Prepared Emergency Care.
5. Mutual aid agreements that are in place in many regions. Exemplary pediatric coalition models across the nation to share templates, plans, structure recommendations, exercises, and more (New York, California, Southeast, Wisconsin, and others).
6. Israeli lessons learned that possibly could be integrated into best practices in the U.S.:
 - a. Security first.

- b. Scoop and run.
 - c. Distribute patients matching resources to needs for best outcome
 - d. 30 minutes to clear the scene of critical patients.
 - e. 60 minutes to clear the scene.
 - f. 24 hours to rid the scene of any evidence of terror event
 - g. One-way flow in the Emergency Department
 - h. Senior level triage
 - i. Prioritize Diagnostic Services (X-ray, US, CT etc.) and disposition to OR/ICU to avoid bottlenecks.
 - j. Provide Stretchers/Rapid Decon, etc. to ensure rapid ambulance patient unloading
 - k. Military-civilian relationships and joint response.
7. Ability to manage a 20% surge.

Consensus on Gaps Remaining:

Some of the challenges identified by the evaluators, based on presentations, included the following:

1. Lack of mental health services and training for responders to support their resilience.
2. Numerous silos among community partners in planning, training, exercises and response.
3. Family reunification requirements; only 15 states have laws that address this.
4. Deficits in training and capabilities for transporting pediatric patients among emergency and non-emergency ambulance providers.
5. Pediatric disaster specialty capable teams are no longer present in the National Disaster Medical System.
6. General hospitals have gaps in training and equipment to accommodate pediatric patients, although 90% of pediatric patients are known to be seen in community hospital emergency departments on a daily basis.
7. Lack of designated pediatric nurse and/or physician coordinators/champions in the emergency departments, known to be essential to successful pediatric emergency department readiness.
8. Declining funding to support pediatric disaster preparedness (only 1 cent of every \$10 is spent on children's safety). Question from participant: Is this safety in general or disaster preparedness specifically?
9. Lack of a standardized method for tracking pediatric resources (can't cross state borders, for example). Question from participant: Who cannot track? This is unclear.
10. Lack of confidence among and tools provided to community physicians so they become a part of the response effort (set up a temporary practice in a facility like a house of worship). Question from participant: Is this engagement or "confidence" among community physicians?
11. Lack of pediatric disaster training and consistent back-up systems within hospitals that care for children (batteries, personal lights, other equipment and paper medical record capabilities at hospitals).
12. Lack of understanding of the laws and decision-making associated with treating non-critical pediatric patients in a disaster without parental consent.
13. Need for a national pediatric exercise.
14. Need engagement of pediatric hospitals, child care, and hospital CEOs.

15. Variation of laws, jurisdictions, organizations, procedures, nomenclature across state lines.
16. Donations management following a mass casualty incident (MCI) involving children.
17. Dealing with Media demands and effective risk communications. Question from participant:
Is this lack of training and resources to manage media demands associated with disasters involving children?
18. Volunteers, students, teachers, and others are not trained in emergency medical response for children (control bleeding through B-CON).
19. Decontamination standards for children (children can't go through this by themselves).
20. Lack of a current organizational structure to capitalize on the brain trust of the Conference.
21. Lack of integration of children in disaster exercises (including access and functional needs).

Opportunities for Improvement and Next Steps:

The completion of Improvement Plans (IPs) by conference participants did not fall within the purview of the Collaborative Conference. However, the following recommendations were discussed and shared with the Chair of the Executive Committee that resulted from the Conference and serve as a potential action plan to support future pediatric disaster coalition and leadership efforts.

Recommendation	Responsible Agency	Dates
Establish a National Pediatric Disaster Coalition (NPDC) and Executive Committee: to capitalize on the Conference Subject Matter Experts and develop a charter, mission, goals and objectives.	Michael Frogel MD	By 2016

<p>NPDC Activities to possibly include and not limited to:</p> <ol style="list-style-type: none"> 1. Information sharing utilizing Tracie and other resources 2. Provide SME to member coalitions, communities, providers local regional and federal agencies 3. Defining Pediatric Coalitions re: participants, roles and responsibilities within overall response to disasters 4. Provide Advocacy for Pediatric patients (25% population) in regard to matching needs to resources, including funding 5. Develop plans to Provide Mental Health services for pediatric victims, families and service providers during and after disaster. 6. Include patients with access and functional special needs in disaster planning 7. Promote pediatric disaster training for physicians, nurses, first responders, community members and agencies 8. Promote training and capacity building for the timely ,safe, and effective transport of children in disasters.(land,air,sea) 9. Promote integration of pediatric needs in to the NDMS including pediatric capable rapid deployment response teams 10. Help Develop and promote (guidelines/templates) discussion based, functional and full scale exercise programs for the needs of children in disasters for local, regional and national events 11. Hold a yearly national conference for pediatric disaster coalitions and other related participants 	<p>National Pediatric Disaster Coalition Executive Committee</p>	<p>Initiate by 2017</p>
<p>Promote training and implementation pediatric disaster plans for General Hospitals through the utilization of the EMSC Checklist of Essential Pediatric Domains and Considerations for Every Hospital's Disaster Preparedness Policies</p>	<p>EMSC /AAP/ NPDC</p>	
<p>Support implementation of American Academy of Pediatrics guidelines for community physicians/pediatricians on their role in disasters and training</p>	<p>AAP</p>	
<p>Identify a strategy for pediatric health care coalitions to promote community resiliency by engaging health care providers, child care providers, schools, social agencies, mental health providers and other targeted community agencies serving children</p>	<p>All Participants NPDC</p>	
<p>Utilize information, identified gaps and lessons learned from the conference to improve planning and response (for example see topics below):</p> <ol style="list-style-type: none"> 1. Mental health interventions. 2. Resource utilization prioritization in disasters. 	<p>Individual Coalitions/ Conference Participants/AAP/ EMSC/NPDC</p>	

3. Israeli practices. (Scene, Transport, Emergency Department) 4. Pediatric go bags. 5. Decontamination of children. 6. Donation management. 7. Tracking of pediatric resources. 8. Exercises for children in disasters (include simulators, real moulaged patients). 9. Neonatal, OB, perinatal preparedness. 10. Determine how to conduct B-CON training (Bleeding Control) for the community and provide kits in schools. 11. Utilization of Pediatric community Threat and Hazard Identification and Risk Assessment (THIRA) tool		
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Attachment 1

National Pediatric Disaster Coalition Conference Planning Committee

Dr. Michael Anderson, MD, MBA, FAAP
Chief Medical Officer,
University Hospitals
Chair
U. S. Health and Human Services National Advisory Committee on Children and Disasters

Drew Bumbak, MS, Chair
Children in Disasters Caucus
International Association of Emergency Managers

Dr. Rita Burke, PhD, MPH
Children's Hospital Los Angeles/University of Southern California
Chair, Children in Disasters Working Group

Bruce Clements, MPH
Director, Community Preparedness Section
Texas State Department of Health Services

Dr. Ron Cohen, MD
Clinical Professor of Pediatrics
Stanford Packard Children's Hospital

Kate Dischino
Emergency Response Manager
AmeriCares

Dr. Daniel Dodgen, PhD
Director, Division for at Risk Individuals, Behavioral Health, and Community Resilience,
Office of the Assistant Secretary for Preparedness and Response, Office of the Secretary
U.S. Department of Health and Human Services

Teresa Ehnert
Bureau Chief of Public Health Emergency Preparedness
Arizona Department of Health Services

Dr. George Foltin, MD
Vice Chair, Department of Pediatrics, Infants and Children's
Hospital at Maimonides Medical Center, Brooklyn
Associate Professor, Pediatrics and Emergency Medicine
New York University School of Medicine

Mike Frogel, MD

Co-Principal Investigator

New York City Pediatric Disaster Coalition

Committee Member

U. S. Health and Human Services National Advisory Committee on Children and Disasters

Pat Frost, RN, MS, PNP

Director, Emergency Medical Services

Contra Costa Health Services

Anthony Gilchrest, MPA, EMT-P

Lead

Washington, D. C. Medical Reserve Corps

Sharon Hawa

Manager, Emergency Preparedness and Response

National Center for Missing and Exploited Children

Lauralee Koziol

Senior Advisor

Federal Emergency Management Agency

Evelyn Lyons, RN, MPH

Emergency Medical Services for Children Manager

Illinois Department of Public Health

Dr. Paul Myers, PhD, CEM

Director of Research and Content

Readiness and Emergency Management for Schools Technical Assistance Center

Dr. Scott Needle, MD

Primary Care Pediatrician and Chief Medical Officer

Healthcare Network of Southwest Florida, the Academy of Pediatrics Disaster Preparedness Advisory Council

Committee Member

U. S. National Advisory Committee on Children and Disasters

Dr. Georgina Peacock, MD, MPH Developmental-Behavioral Pediatrician

Director

Division of Human Development and Disability, Centers for Disease Control and Prevention

Deb Roepke, MPA

Executive Director

Coyote Crisis Collaborative

Manager

Arizona Pediatric Disaster Coalition and the National Pediatric Disaster Coalition Conference

Dr. Andy Rucks, PhD
Professor, Director of Finance and Administration, and Executive Director, Survey Research Unit, School of Public Health
University of Alabama at Birmingham

Michelle Seitz, MSHSM, BSEM, CHEC
Emergency Management Coordinator
Children's Hospital of Wisconsin

Dan Stanley
Chair
Arizona Pediatric Disaster Coalition and National Pediatric Disaster Coalition Conference Planning Committee
Emergency Management Coordinator
Tucson Medical Center

Dr. Jeffrey Stiefel, PhD
Executive Coordinator of Climate Change and Health Resilience in the Health Threats Resilience Directorate, Office of Health Affairs
U. S. Department of Homeland Security

CDR Jonathan White, PhD
Deputy Director, Administration for Children and Families Office of Human Services Emergency Preparedness and Response
U. S. Department of Health and Human Services

Attachment 2

2015-16 National Pediatric Disaster Coalition Conference Speakers (Positions at Time of the Conference)

Michael Anderson, MD, MBA, FAAP. Dr. Michael Anderson AAP is Vice President and Chief Medical Officer at University Hospitals, a Cleveland-based health system. He is also Chief Medical Officer for University Hospitals Case Medical Center, the primary affiliate of Case Western Reserve University School of Medicine. Dr. Anderson enjoys rising stature as a sought-after authority on bioethics, children's health policy, pediatric disaster preparedness, system quality and the physician workforce. As President George W. Bush's appointee, Dr. Anderson served as Vice Chair of the National Commission on Children and Disasters. He was recently appointed by the Obama Administration to the National Advisory Committee on Children and Disasters at HHS. Dr. Anderson has published on a variety of pediatric critical-care topics including sepsis, acute respiratory distress syndrome, care of the immune-suppressed patient, and transport of the unstable pediatric patient.

Leila Barraza, JD, MPH. Leila Barraza is an Assistant Professor in the Division of Community, Environment, and Policy in the Mel and Enid Zuckerman College of Public Health at the University of Arizona. Previously, Leila served as Deputy Director of the Network for Public Health Law, Western Region Office, and a Fellow and Adjunct Professor in the Public Health Law and Policy Program at the Sandra Day O'Connor College of Law, Arizona State University. She has been published in several scholarly journals, and has provided numerous presentations at national and local conferences on a variety of critical public health law issues.

Bridget M Berg, MPH, FACHE. Bridget Berg is responsible for Children's Hospital Los Angeles (CHLA) emergency management efforts and operations for the Pediatric Disaster Resource and Training Center. The Center focuses on research, education and training for pediatric disaster preparedness. Bridget was instrumental in developing the Los Angeles County regional plan and exercise for pediatric surge for 80+ hospitals the county. Bridget received her Bachelor of Arts in Communication and a minor in Health Care/ Social Issues at the University of California, San Diego and her Masters in Public Health, Health Care Policy and Management at the University of California, Los Angeles.

Sarita Chung, MD. Dr. Sarita Chung is the Director of Disaster Preparedness in the Division of Emergency Medicine at Children's Hospital Boston. She was the principal investigator of an Emergency Medical Services for Children Targeted Issue grant to develop the original novel image based family reunification system which proved to be effective and has presented this work in national forums and peer reviewed journals. Dr. Chung has also published important

peer review papers on issues of pediatric disaster preparedness, including the role of hospital preparation for disasters involving children, emergency mass critical care, and effects of the recent pandemic influenza on pediatric emergency departments.

Mark Cicero, MD, FAAP. Dr. Mark X. Cicero is an assistant professor of pediatric emergency medicine at the Yale School of Medicine, the director of the pediatric disaster preparedness program, and an Attending Physician at Yale-New Haven Children's Hospital. Dr. Cicero has designed experiential and didactic curricula in pediatric disaster medicine, and has published original research about disaster medicine. He is a member of the Connecticut Emergency Medical Services for Children Advisory Committee. Dr. Cicero is the principal investigator for the Pediatric Research In Disaster Education (PRIDE) network. His current funding is an Emergency Medical Services for Children Targeted Issues Grant concerning pediatric disaster triage.

Arthur Cooper, MD, MS, FACS, FAAP, FCCM, FAHA. Dr. Arthur Cooper was educated at Harvard College, University of Pennsylvania School of Medicine, the Columbia University College of Physicians and Surgeons Institute for Human Nutrition, and the Albert Einstein College of Medicine Montefiore-Einstein Center for Bioethics. He is also certified in disaster medicine by the American Board of Disaster Medicine, of which he is a founding member and current Chair, in emergency medical services by the American Board of Emergency Medicine, and in bioethics and medical humanities by the Montefiore-Einstein Center for Bioethics. He also serves on a variety of national and regional boards, councils and expert advisory committees.

Allen Clark. Allen Clark is the Director of Emergency Preparedness at Arizona State University. He accepted this position after retiring as Assistant Chief of Police at the University. Allen held various positions within the police department spanning over 20 years of service. A few of his accomplishments specific to this the emergency management area include: Incident/unified commander for numerous planned and unplanned events to include national sporting events; the largest commencement in the history of the country prior to 2009 (~79 K attendees) with President Obama as the keynote speaker; Presidential debates; dignitary visits; completion of the All Hazards Incident Management Training course through the National Fire Academy; Planning Section Chief Training for a Type III all hazards team; and the Operation Section Chief for the 2009 State-wide Coyote Crisis full scale exercise. Allen is a 2007 graduate of Ottawa University with a Bachelor of Arts (summa cum laude) in "Law Enforcement Administration and Supervision" and a 2005 graduate of Northwestern School for Staff and Command.

Adam Czynski, DO. Dr. Adam J. Czynski is a neonatologist at Loma Linda Children's Hospital and an Assistant Professor of Pediatrics at Loma Linda University Medical School. He is in charge of disaster preparedness for the NICU at Loma Linda and has been involved in further developing NICU based disaster policies for the Children's Hospital. Dr. Czynski's research interests are in system evaluation to improve disaster response and planning and team development through simulation. He sits on the graduate medical education committee for the

American College of Osteopathic Pediatricians and is a content specialist for the American Osteopathic Board of Pediatrics.

Kay Daniels, MD. Dr. Kay Daniels is a Clinical Professor of Obstetrics and Gynecology at Stanford University School of Medicine. She completed her medical training at the University of Colorado followed by an internship and residency at Kaiser Permanente Hospital in Oakland, California. Dr. Daniels has been a faculty member at Stanford University since 1994. She presently is the Co- Director of Disaster Planning for the Johnson Center for Pregnancy and Newborn Services at Lucile Packard Children's Hospital at Stanford and Co-Director of the Obstetrics' simulation program at Stanford.

Daniel Fagbuyi, MD. Dr. Daniel Fagbuyi is the Medical Director of Disaster Preparedness and Emergency Management at Children's National Medical Center in Washington, DC, providing strategic leadership in disaster preparedness, response, business continuity and community outreach efforts. He is Assistant Professor of Pediatrics and Emergency Medicine at The George Washington University School of Medicine with board certification in both Pediatrics and Pediatric Emergency Medicine. He was recently appointed by the U. S. Secretary of Health and Human Services, Kathleen Sebelius, to the National Biodefense Science Board providing expert advice and guidance on preventing, preparing for, and responding to adverse health effects of public health emergencies.

Michael Frogel, MD. Dr. Michael Frogel is an Associate Professor of Pediatrics at the Albert Einstein College of Medicine. Since 2008 he has served as Principal Investigator for the New York City Department of Health, U. S. Health and Human Services, Pediatric Disaster Coalition Grant encompassing pediatric emergency preparedness for New York City including pediatric pre-hospital triage, primary and secondary transport, intensive care, neonatal and Ob/Newborn evacuation and surge capacity, training, exercises and disaster Behavioral and Mental Health. Since 2004, Dr. Frogel has coordinated a comprehensive course in Israel on Emergency Preparedness and Disaster Mental Health for US and Canadian Physicians in Israel. He has frequently visited Israeli cities under attack and has spearheaded campaigns to build shelters at schools and playgrounds.

Patricia Frost, MS, RN, PNP. Patricia Frost is the Director of Emergency Medical Services (EMS) for Contra Costa County. She is founder and co-chair of the California Neonatal/Pediatric/Perinatal Disaster Preparedness Coalition, linking novice to expert to support local disaster preparedness for infants and children. Ms. Frost has expertise in creating, developing, and managing programs supporting implementation of standards of care in communities, including pediatric advanced life-support training, patient safety, quality improvement, coalition building, pediatric emergency care, prehospital care provider education, emergency preparedness and medical health pediatric disaster and surge preparedness.

Anthony Gilchrest, MPA, BS, EMT-P. Anthony Gilchrest is the EMS Program Manager for the Emergency Medical System for Children (EMSC) National Resource Center at Children's

National Health System. Over the past two years, Anthony has worked in partnership with the National Library of Medicine (NLM) and Assistant Secretary for Preparedness and Response to create the Health Resources for Children in Disasters and Emergencies website, coordinated a multi-disciplinary workgroup in the development of the Checklist of Essential Pediatric Domains and Considerations for Every Hospital's Disaster Preparedness Policies, and established the EMSC Pediatric Disaster Planning and Preparedness Community of Practice.

Stephanie Griese, MD, MPH, FAAP. Lt. Commander (U. S. Public Health System) Stephanie Griese is a medical epidemiologist at the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, and is currently serving as the Co-Lead for the Ebola Children's Health Team. The Children's Health Team works across CDC's response to ensure the needs of children are integrated throughout CDC efforts. Core activities include establishing science to better explain the impact of Ebola on children, ensuring domestic preparedness efforts reflect pediatric concerns, and advancing international response efforts focused on children. Prior to joining CDC's Office of Public Health Preparedness and Response in 2013, Dr. Griese served as a CDC Epidemic Intelligence Service Officer with the North Carolina Division of Public Health.

Sunday Gustin, RN, MP. Sunday Gustin is the Administrator for the Office of Early Childhood Services in the Division of Family and Community Partnership of the New Jersey Department of Children and Families. Early Childhood Services reaches families from pregnancy/ infancy to preschool and kindergarten entry. This prevention-focused work includes the statewide Strengthening Families Initiative, the network of evidence-based Home Visiting programs, New Jersey's Early Childhood Comprehensive Services/Help Me Grow initiative, Project LAUNCH, and the Children's Trust Fund. In November 2012, the Office of Early Childhood Services participated in a state-level interagency task force to assess the disaster recovery needs of parents and families with infants and young children.

Cynthia Hansen, PhD. Dr. Cynthia K. Hansen currently serves as Senior Advisor to the Director of National Healthcare Preparedness Programs, leading the NHPP portfolio for pediatrics, behavioral health and at risk individuals in the Office of Emergency Management, Office of the Assistant Secretary for Preparedness and Response (ASPR), in the Department of Health and Human Services. Dr. Hansen joined ASPR in September 2008 and has developed policies and plans regarding state and local emergency preparedness across ASPR, integrating the Federal Response into state and local planning efforts, providing evaluation services and technical assistance to improve healthcare preparedness programs and leading interagency initiatives to strengthen emergency preparedness grant coordination.

Sharon Hawa. Sharon Hawa is the Manager for Emergency Preparedness & Response, National Center for Missing and Exploited Children. She began her emergency management career with the American Red Cross in Greater New York immediately following the tragedies of 9/11. She spent the next 12 years working and volunteering with the Red Cross disaster response units in both New York and later at their headquarters in Washington D.C. where she supported critical emergency services. Sharon also worked for the New York City Office of

Emergency Management as a human services planner and member of the external affairs unit, and managed the City's Community Emergency Response Team program.

Joe Keys. Joe Keys has been employed by Los Angeles County's Department of Health Services for thirty-six years. Currently assigned to Olive View, UCLA Medical Center, he served as the hospital's incident commander for the first fourteen hours of the response to the Sayre wild fire in November 2008. As the former director of the county's Medical Alert Center, Joe has had many opportunities to work with experts in disaster planning and response. His experiences include working with the U.S. Secret Service to plan emergency medical responses for visiting dignitaries, coordinating emergency preparedness activities for Los Angeles' Olympic Games and collaborating in the development of the Rapid Emergency Digital Data Information Network or Reddi-Net.

Steve Krug, MD, FAAP. Dr. Steve Krug is the head of the Division of Emergency Medicine at the Ann and Robert H. Lurie Children's Hospital of Chicago and Professor of Pediatrics at the Northwestern University Feinberg School of Medicine. He has been actively involved within the Emergency Medical Services for Children (EMSC) program for over 25 years, and serves on the Advisory Boards for the EMSC National Resource Center and the National EMSC Data Analysis Resource Center. Dr. Krug is the Chair of the American Academy of Pediatrics Disaster Preparedness Advisory Council, and serves as a subject matter expert to various federal departments on pediatric disaster readiness. He is also the editor-in-chief for the journal, Clinical Pediatric Emergency Medicine.

Evelyn Lyons, RN, MPH. Evelyn Lyons is the Emergency Medical System for Children (EMSC) Manager within the Division of EMS and Highway Safety, Illinois Department of Public Health. She has coordinated the Illinois EMSC program since 1994. Her responsibilities include developing and implementing pediatric emergency care and disaster preparedness initiatives within the state of Illinois, as well as coordinating several data projects. Her background includes over 30 years of experience in emergency nursing and emergency medical services.

Paul Myers, PhD, CEM. Dr. Paul Myers is an instructor for the Homeland Security and Emergency Management program of the University of California, Los Angeles. Previously, he served as Save the Children's emergency preparedness lead in the United States. He also held various levels within the American Red Cross, including being the educational lead for the Preparedness department at the National Headquarters and a Director of Emergency Services. Paul graduated from UC Santa Barbara with a PhD in Communication where his research combined health communication and mass-media persuasion in the context of health threats, emergency management and counter-terrorism. He served as a police constable with London's Scotland Yard before immigrating to the U.S.

Scott Needle, MD. Dr. Scott Needle is the Chief Medical Officer of the Healthcare Network of Southwest Florida, a Federally Qualified Health Center. He has been a member of the American Academy of Pediatrics' Disaster Preparedness Advisory Council since 2007, and was recently appointed to the Health and Human Services' National Advisory Committee on Children and

Disasters. Dr. Needle has written and lectured extensively on the needs of children and the role of pediatricians in disaster preparedness, response and recovery, and has worked closely with numerous local, state, and federal groups, including the Department of Health and Human Services' Assistant Secretary for Preparedness and Response, the Florida Children's Preparedness Coalition, and the Institute of Medicine.

Laura Prestidge, RN, MPH. Laura Prestidge is the Pediatric Preparedness Coordinator for Illinois Emergency Medical Services for Children, which is a program within the Office of Preparedness and Response in the Illinois Department of Public Health. She is responsible for assisting in the development of disaster preparedness initiatives specific to children within the state of Illinois. Ms. Prestidge has been in this role since 2010. Her background includes 17 years of experience as an emergency department nurse. She has been involved in disaster response since 2003 as a member of the Illinois Medical Emergency Response Team. She is also a nurse with the Wisconsin 1 Disaster Medical Assistance Team.

Joe Rios. Captain Joe Rios is a 25-year veteran of the Newtown Connecticut Police Department where he serves as the executive officer reporting directly to the Chief of Police. He holds a Bachelor's Degree in Criminal Justice from Norwich University and is a graduate of the FBI National Academy's 221st session.

Kathy Rodgers, RN, MSN, CNS, CCRN, CEN. Kathy Rodgers has been the Director of Trauma at the Level III trauma Center at CHRISTUS St. Elizabeth Hospital in Beaumont, Texas, since its inception in 1997. She has helped to successfully evacuate the hospital three times due to hurricanes. Ms. Rodgers has been actively involved in the mobile medical units developed by the State of Texas in response to the disasters in Texas. She is currently on the board for the Texas Trauma Acute Care and Emergency Foundation, Texas Trauma Coordinator Forum, Regional Advisory Council for Trauma, and a member of the state trauma subcommittee.

Andrew Rucks, Ph.D. Dr. Andrew C. Rucks is Professor in the Department of Health Care Organization and Policy at the University of Alabama at Birmingham, School of Public Health. His academic teaching focuses on finance, leadership, and management. Andy works extensively with state and local health departments. His focus is on developing a regional pediatric disaster surge network for response to disasters affecting children, continuity of operations planning, strategic planning, budgeting, preparedness exercises and drills, and process optimization.

Vicki Sakata, MD, FAAEM, FAAP. Dr. Vicki L. Sakata double boarded and double residency trained in Pediatrics and Emergency Medicine. She is the Clinical Associate Professor at the University of Washington, Seattle; Mary Bridge Children's Hospital Staff Emergency Medicine Physician; Senior Medical Advisor, Northwest Healthcare Response Network; and WA-1 DMAT and MAC-T Medical Officer with deployments to Hurricanes Katrina and Rita as well as the San Diego Wildfires. Dr. Sakata's international medical experience has been in multiple countries in Central and South America, Africa, Pakistan and Haiti. She has been the invited speaker and coordinator for several regional and national Pediatric, Emergency Medicine and Disaster

Conferences. Her MD is from University of Colorado, and she did her Residency training at University of Washington, Seattle, WA.

Rick Schobitz, PhD. Captain Rick Schobitz is Chief of Intensive Outpatient and Residential Treatment Services at Brooke Army Medical Center, Fort Sam Houston, Texas. He manages Intensive Outpatient program consisting of four treatment tracks, provides care or oversee care of more than 40 patients per day, developed the Residential Treatment Program (RTP) for patients with PTSD, and serves as Chief of Training and Research. He currently oversees hiring of RTP staff, renovations to a medical ward, development of treatment programming, and coordination of start to program with stakeholders within Brooke Army Medical Center and the Southern Region Medical Command. Prior to 2013, he served as Director of Psychology Training (2010 to 2013) and Chief of Psychology Services (2012 to 2013), also at Brooke Army Medical Center. From 2008 to 2010, he was Deputy Director of the Behavioral Medicine Division in the Office of the Chief Medical Officer, TRICARE Management Activity, Falls Church, Virginia. He received his doctoral degree in Clinical Psychology in 2003 from the Virginia Commonwealth University in Richmond, Virginia.

David Schonfeld, MD, FAAP. Dr. David J Schonfeld is a developmental-behavioral pediatrician and Professor of Practice in the School of Social Work and Pediatrics at the University of Southern California and Children's Hospitals, Los Angeles. He established the National Center for School Crisis and Bereavement, the goal of which is to promote an appreciation of the role schools can serve to support students, staff, and families at times of crisis and loss; to collaborate with organizations and agencies to further this goal; and to serve as a resource for information, training materials, consultation, and technical assistance. Dr. Schonfeld has provided consultation and training on school crisis and pediatric bereavement in the aftermath of a number of school crisis events and disasters within the United States and abroad.

Merritt Schreiber, Ph.D. Dr. Merritt D. Schreiber is Associate Professor of Emergency Medicine and Director, Psychological Programs, at the Center for Disaster Medical Sciences, University of California, Irvine School of Medicine. He develops best practice models for disaster medical, mental and public health in mass casualty events and accidental trauma in children. Dr. Schreiber created the PsySTART Rapid Mental Health Triage and Incident Management System. He is also the originator of a novel Psychological First Aid program for children, parents, teachers and family members called "Listen, Protect and Connect".

Patty Seneski, RN, ENP. Patty C. Seneski is the Emergency Preparedness Manager for Banner Desert Medical Center and Cardon Children's Medical Center. Ms. Seneski has wide variety of clinical nursing experience and is an Emergency Nurse Practitioner, with an expertise in forensic nursing, and disaster management. She is a certified instructor of clinical aroma therapy, and is competent in Healing Touch. Ms. Seneski is a past President of the International Association of Forensic Nurses; and co-author of the forensic nursing textbook "The Color Atlas of Sexual Assault."

Stephen Sollid, MD, PhD. Dr. Stephen J. M. Sollid is a trained anesthesiologist with his main clinical activity in the Norwegian Air Ambulance as a HEMS physician. He has a PhD in patient safety and risk management from the University of Stavanger, is an Associate Professor of Prehospital Critical Care at the same university and currently also Dean of the Norwegian Air Ambulance Academy. His main interest and research activity is in prehospital patient safety and risk management strategies. On July 22nd 2011 Dr Sollid was one of the HEMS physicians involved in the triage and treatment of victims from the shootings at Utøya.

New York City Health Care System Preparedness Annual Report

July 2015 to June 2016

**New York City Department of
Health and Mental Hygiene**

Office of Emergency
Preparedness and Response



Dear Colleague,

The New York City Department of Health and Mental Hygiene is pleased to present the enclosed “New York City Health Care System Preparedness Annual Report: July 2015 to June 2016.” This report shows how the Health Department helped New York City (NYC) health care facilities—including hospitals, dialysis centers, long-term care facilities, ambulatory care facilities and pediatric services—strengthen their ability to respond to emergency incidents in 2015 and 2016.

The Health Department works with health care providers and public health stakeholders to achieve the best outcomes for New Yorkers before, during and after emergencies. Some of our many accomplishments in fiscal year 2016 included:

- ▶ Working with 54% of the NYC hospitals that provide pediatric services to exercise their emergency plans
- ▶ Organizing the Long-Term Care Emergency Management Program, which helped 92 nursing homes and six adult care facilities to increase their emergency management capabilities
- ▶ Connecting 449 primary care sites to the Primary Care Emergency Preparedness Network, allowing them to grow their emergency management programs

We appreciate your partnership and collaboration with our efforts to improve emergency preparedness in NYC. Working with other health care and emergency response agencies, such as yours, can help us continue to meet emergency management requirements and improve our response capacity.

Sincerely,



Marisa Raphael, MPH
Deputy Commissioner
Office of Emergency Preparedness and Response
New York City Department of Health and Mental Hygiene

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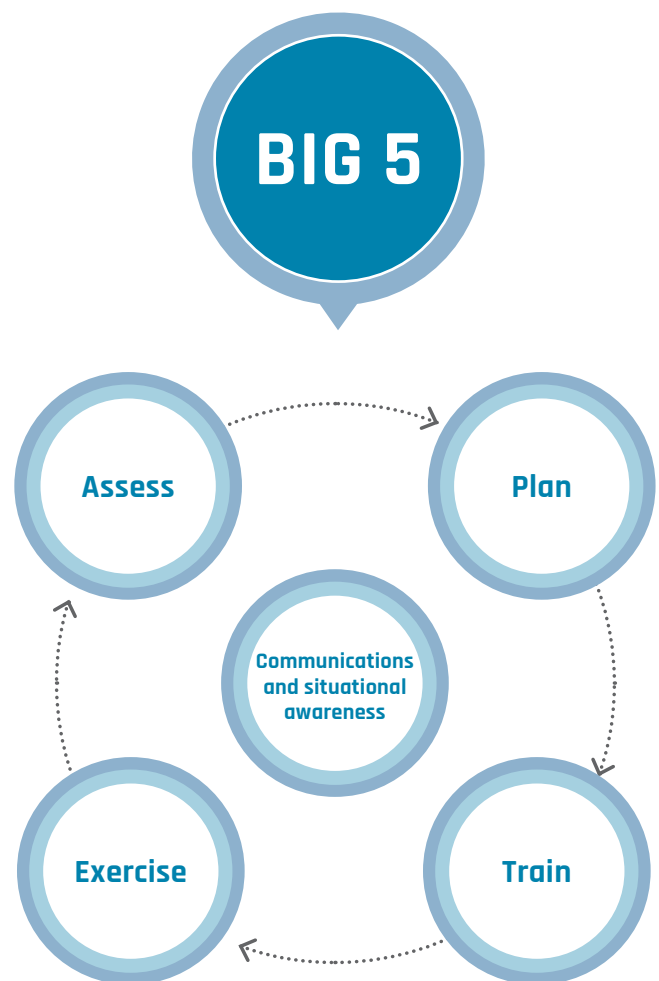
Overview

The New York City Department of Health and Mental Hygiene (the Health Department) helps health care providers across the city respond safely and effectively in emergencies. As part of this mission, the Health Department:

- ▶ Promotes collaboration between health care providers and public health stakeholders to prioritize and address emergency preparedness and response gaps
- ▶ Ensures health care facilities have the tools and resources they need to care for their patients and residents during an emergency event
- ▶ Supports the New York City (NYC) health care system's ability to provide care and meet acute medical needs during and after emergencies

The Health Department uses five activities, called the Big Five, to improve emergency preparedness: Health care organizations first **assess** their hazards and risks. They then develop **plans** to address any gaps, **train** staff on those plans and ultimately **exercise** those plans to test their efficacy. All plans and responses rely on **communications and situational awareness**.

This report summarizes the Health Department's achievements in helping NYC health care facilities strengthen their ability to respond to emergency incidents in 2015 and 2016.





54%

of the NYC hospitals that provide pediatric services

worked with the Health Department's Pediatric Disaster Coalition to exercise their emergency plans.



92+6

nursing homes

increased their emergency management capabilities by participating in the Long-Term Care Emergency Management Program.

adult care facilities



449

primary care sites

grew their emergency management programs by connecting to the Primary Care Emergency Preparedness Network.

- ▶ NYC hospitals planned, trained and conducted exercises for multiple hazards. They also successfully screened and isolated patients during mystery patient drills, or exercises where an actor posing as a patient with certain symptoms tests an established emergency preparedness process (pages 8-9).
- ▶ Of the NYC hospitals that provide pediatric services, **13** (54%) worked with the Health Department's Pediatric Disaster Coalition to exercise their emergency plans, which dramatically increase pediatric critical care communications and surge capacity (pages 10-11).
- ▶ **Ninety-two** nursing homes (54% of NYC nursing homes) and **six** adult care facilities (8% of NYC adult care facilities) increased their emergency management capabilities by participating in the Long-Term Care Emergency Management Program (pages 14-15).
- ▶ More primary care sites than ever (**449**) grew their emergency management programs by connecting to the Primary Care Emergency Preparedness Network (pages 16-17).
- ▶ With funding from the Health Department, **five** borough-based health care coalitions and **seven** network health care coalitions planned, trained and conducted exercises with facilities from different health care sectors. The coalitions strengthened their emergency management programs by sharing best practices and identifying opportunities to work together (page 20).

The Health Department's health care system preparedness programs are primarily funded by the Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Program (HPP), with additional support from the Centers for Disease Control and Prevention's (CDC) Public Health Emergency Preparedness Program (PHEP).

To learn more about the Health Department's health care preparedness, visit nyc.gov/health and search "**hospitals.**"

Hospitals

Reaching NYC's Health Care System at Its Core

The Hospital Core Contract is the Health Department's largest funding program for health care system emergency preparedness.

Hospitals funded through the Core Contract completed 96% of the required preparedness activities.

Training

- Fifty-three hospitals conducted emergency event trainings. Among these, 18 hospitals trained staff on how to respond to an active shooter event.

Medical Surge Planning

- Thirty hospitals identified ways to improve their response protocols and scale up staff during various disaster scenarios, helping them avoid potential staffing shortages during a large-scale disaster.

Equipment

- Hospitals identified ways to share equipment between off-site partner health care facilities and coalition member locations during disasters. Hospitals also purchased more than \$300,000 worth of critical equipment, including evacuation supplies.

Design Your Own Activity

Eighteen hospitals completed activities to address gaps identified in their hazard vulnerability analyses, previous exercises or real-life events.

Topic	No. of Hospitals
Incident Command System Training	4
Patient Influx/ Surge Capacity	3
Morgue Surge Capacity	2
Plain Language Notifications	2
Rehabilitation Units Evacuation	2
Active Shooter	2
Corrections/Prison System	1
Situational Awareness	1
Emergency Management Conference/ Community Fair	1



Health Care Cybersecurity

The Health Department's Emergency Preparedness Symposia (EPS) is a series of meetings for NYC health care emergency management professionals. In fiscal year 2016, the EPS focused on improving cybersecurity in hospitals and other sectors. Forty-six hospitals reported having a cybersecurity plan in place by spring 2016; of these, 15 (33%) had tested their plans by fall 2015 and 34 (74%) had exercised them by spring 2016.

Information Sharing

Fifty-four hospitals, 73 adult care facilities and 173 nursing homes updated their facility profiles in the Health Department's Health Facilities Directory (HFD). The HFD includes robust data on health care services and contact information for clinical and administrative departments. The Health Department uses the directory to communicate efficiently during routine and emergency operations.

Coalition Development

With the help of the Health Department, 41 hospitals planned, trained and/or tested their emergency systems with at least three other health care organizations within their network or borough. These activities increased health care coalition capacity and improved NYC hospitals' ability to partner with other health care organizations before, during and after emergencies.

Mystery Patient Drills

- ▶ Forty-nine of NYC's 911-receiving hospitals participated in two mystery patient drills between December 2015 and May 2016 for a total of 98 drills.
- ▶ Hospitals successfully masked and isolated the mystery patient during 81% of the drills.

Mystery Patient Drill Scenario	No. of Drills
Measles	52
Middle East Respiratory Syndrome (MERS)	43
Ebola	3

46

hospitals reported having a cybersecurity plan in place

by spring 2016; of these, 15 (33%) had tested their plans by fall 2015 and 34 (74%) had exercised them by spring 2016.



**Tested by
fall 2015**



**Exercised by
spring 2016**

Pediatric Preparedness

The New York City Pediatric Disaster Coalition (PDC), housed in Maimonides Medical Center, brings together hospitals, public health agencies, including the Health Department, municipal services and community groups to ensure effective use of critical assets during and after large-scale disasters affecting children.

Health Care Facility-Specific Plans

- ▶ By June 30, 2016, PDC oversaw the development of surge and evacuation plans for 16 of the 24 (67%) pediatric intensive care unit (PICU) services in NYC.
- ▶ Between July 2015 and June 2016, PDC helped develop two neonatal intensive care unit (NICU) and two obstetric service surge and evacuation plans. NYC now has a total of nine NICUs and four obstetric services with facility-specific plans.
- ▶ With help from PDC, St. Mary's Hospital for Children completed surge and evacuation planning, the first ever such plan for a pediatric nursing home.

PDC oversaw the development of surge and evacuation plans for

67%
of PICU services in NYC.

Citywide Plans

PDC has worked with the Health Department, the Fire Department of New York City (FDNY) and NYC Emergency Management to improve the city's response to mass casualty incidents involving pediatric patients. In August 2015, a draft Pediatric Disaster Plan was shared with NYC hospitals.

- ▶ Twenty-nine hospitals agreed to become Pediatric Disaster Ambulance Destinations.

Preparedness Exercises

All NYC pediatric hospitals now have PDC's NICU and PICU Hospital Exercise Toolkit, which allows them to design and execute their own pediatric disaster exercises.

- ▶ Staten Island University Hospital North used the toolkit to plan and carry out a workshop, tabletop exercise and full-scale PICU surge exercise.

To learn more about PDC, visit pediatricdisastercoalition.org

NYC is home to approximately 1.8 million people under the age of 18 (21% of the total population).

(Source: 2010-2014 American Community Survey 5-Year Estimates)

The NYC health care system includes:

- ▶ 24 PICU services
- ▶ 39 NICU services
- ▶ 39 obstetric services

Pediatric Surge Exercise

Thirteen hospitals tested their existing plans to rapidly increase capacity and provide pediatric care.

This exercise, conducted via a web-based application, tested internal and two-way communications, rapid patient discharge, staffing, surge space, triage and transfer elements of pediatric surge capacity plans.

Given the results of this exercise, it is estimated that the 13 participating hospitals have the capacity to care for an additional:

- ▶ 119 PICU patients
(an approximate 80% increase in PICU capacity)
- ▶ 61 NICU patients
- ▶ 256 pediatric patients in emergency departments
- ▶ 82 pediatric patients requiring surgery, by making 82 operating rooms available



119
additional
PICU patients



61
additional
NICU patients



256
additional
pediatric patients
in emergency departments



82
additional
pediatric patients
requiring surgery

Ebola and Special Pathogens Preparedness

NYC is better prepared for Ebola and other highly infectious diseases.

The New York City Department of Health and Mental Hygiene

Agency Concept of Operations

- ▶ In 2015 and 2016, the Health Department drafted a Concept of Operations (ConOps) outlining the agency's response to a patient with confirmed or suspected Ebola in NYC. The document details every step in the care process, from who should be contacted when the patient is first identified to how to dispose of contaminated waste. The strategies outlined in the ConOps can guide the Health Department's response to other infectious disease outbreaks.

Coordinated Development of Regional Transport Plan

- ▶ In coordination with other organizations and health departments, the Health Department drafted a plan to transport patients in Department of Health and Human Services (HHS) Region 2 (New York, New Jersey, Puerto Rico and the Virgin Islands) with confirmed Ebola from treatment centers to the region's Ebola and Other Special Pathogen Treatment Center.

Three Designated Ebola Treatment Centers

Ebola treatment centers are hospitals prepared to receive, isolate and treat Ebola patients. NYC's three designated treatment centers—Mount Sinai, Montefiore and Bellevue—tested Ebola protocols during at least one functional or full-scale exercise. They also trained staff in personal protective equipment (PPE) use and maintained PPE and laboratory supplies to safely manage Ebola patients.

One Regional Treatment Center: Bellevue

NYC Health + Hospitals/Bellevue is the Regional Ebola and Other Special Pathogen Treatment Center for HHS Region 2. Bellevue safely and successfully received, isolated and treated an Ebola patient in 2014. To prepare for similar incidents, Bellevue designed a negative-pressure procedure room and developed plans for a high-volume autoclave. Bellevue continues to ensure that staff are trained and competent in the safe care of Ebola patients.



Seven Hospital Networks

NYC's seven hospital networks developed plans for an Ebola response and trained staff to execute these plans. They also participated in a network-level exercise with the FDNY, testing initial patient management and transport protocols.

First Responders

The FDNY trained 3,601 members of the Emergency Medical Service (EMS) in transporting patients suspected of or confirmed with Ebola or another special pathogen, as well as in selecting and using proper PPE. The FDNY also participated in Health Department- and coalition-led Ebola exercises.

The Regional Emergency Medical Services Council of NYC (REMSCO) assessed infection control practices among NYC's non-municipal ambulance companies. REMSCO developed an infection control focused train-the-trainer curriculum and purchased PPE supplies. Increased access to PPE for non-municipal EMS providers will help prevent the transmission of highly infectious diseases.

A plane carrying someone suspected of having Ebola lands at John F. Kennedy (JFK) International Airport.

What happens next?

The Health Department oversaw an interagency tabletop exercise testing notification and response roles in the scenario that a person under investigation arrives at JFK Airport.

Participants included Bellevue, Jamaica Hospital Medical Center, the FDNY, the New York State Department of Health (NYS DOH), the CDC Quarantine Station at JFK, HHS Region 2, NYC Emergency Management and the Port Authority of New York and New Jersey.

The exercise clarified different agency roles and resulted in an updated notification and response algorithm that better aligns with interagency plans.

Long-Term Care Facilities

NYC is home to 170 nursing homes and 78 adult care facilities. Of these, 64% participated in a Health Department program that allows them to better respond to emergency events.

Long-Term Care Emergency Management Program

The Health Department offered the Long-Term Care Emergency Management Program (LTCEMP), a seven-month technical assistance program, for the third time in 2015 and 2016. Thirty-eight nursing homes and six adult care facilities participated in three day-long learning sessions. They also received bi-weekly coaching on all-hazard emergency management concepts and policy development.

As part of the LTCEMP, the facilities completed a tabletop exercise focused on a MERS outbreak in NYC. The exercise addressed challenges to sustaining operations, including the potential impacts on staffing and supplies. This tested the facilities' ability to make high-level decisions during an emergency response.

Long-Term Care Exercise Program

Nineteen nursing homes (11% of all NYC nursing homes) participated in the 2016 Long-Term Care Exercise Program (LTCEXP) Functional Exercise (Operation Nursing Home Exercise for Influenza Surge 2016). The facilities tested their ability to respond to a novel pandemic influenza strain

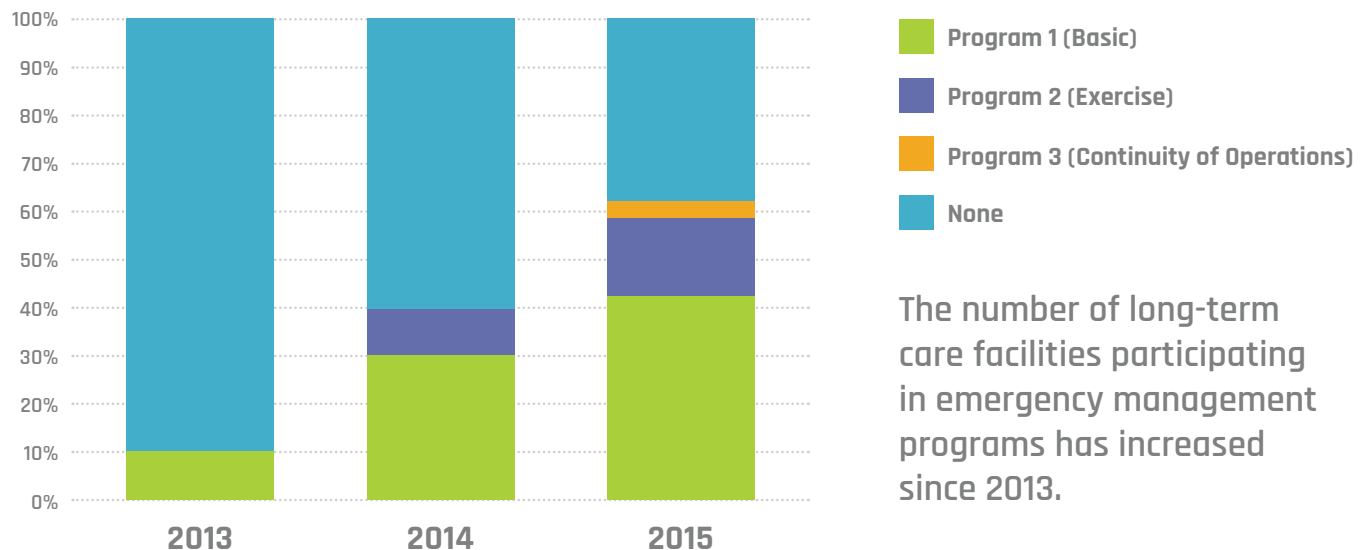
infecting large numbers of people in the NYC metropolitan area. They activated their Emergency Operations Centers and identified areas for improvement in emergency operations coordination, information sharing and fatality management protocols. The exercise revealed planning gaps in the Health Department's use of their 700 MHz public safety radios, Evacuation of Facilities in Disaster Systems (e-FINDS) and fatality management protocols. These gaps have been addressed through new curriculum enhancements.

Long-Term Care Continuity Planning Program

In 2015, the Health Department introduced the Long-Term Care Continuity Planning Program (LTCCPP). The LTCCPP aims to build resilience for long-term care facilities by enhancing their ability to sustain operations and resident care during a loss of external resources or other emergencies.

Nine facilities developed leadership expertise through two learning sessions, 36 individualized mentoring sessions, an Advanced Practicum Capstone session and three online surveys. Facilities will use the knowledge they gained to implement continuity planning programs.

Cumulative NYC Nursing Home Participation in Long-Term Care Emergency Management Programs



The number of long-term care facilities participating in emergency management programs has increased since 2013.

Emergency Radio Communication Program

Of the 248 nursing homes and adult care facilities in NYC, 96% now have a direct connection to NYC Emergency Management if all other methods of communication fail during a disaster. Each long-term care facility has a 700 MHz radio and staff members have attended in-person radio training at NYC Emergency Management.

Webinars

- ▶ New York City **nursing home** trade associations hosted three emergency preparedness webinars. Topics included New York State e-FINDS, cybersecurity, active shooters, the Incident Command System, infectious diseases, the New York State Health Commerce System and data security.
- ▶ New York State **adult care facility** trade associations hosted four webinars covering data security and HIPAA, Legionella and other infectious diseases, the Incident Command System and the Health Commerce System.
- ▶ Webinar training increased knowledge of key emergency management topics among long-term care facility staff.

Of the
248
nursing homes and adult
care facilities in NYC,
96%
now have a direct radio
connection to NYC
Emergency Management.



Primary Care

TRAINING

Emergency Management Capacity

In collaboration with the Primary Care Emergency Preparedness Network (PCEPN), the Health Department hosted a seminar for primary care providers about citywide planning and response roles. Sixty individuals representing 20 primary care networks attended. The seminar discussed volunteer resources such as the NYC Medical Reserve Corps, infectious disease preparedness, Points of Dispensing (PODs) and more. Participants received the following materials:

- ▶ Business continuity plan template
- ▶ Infectious disease plan template
- ▶ PCEPN coastal storm plan template
- ▶ Community Health Care Association of New York State (CHCANYS) emergency management plan template



Business Continuity

Seventy-five percent of primary care networks participated in a site-specific business continuity plan workshop. They learned how to improve their facility's ability to sustain operations during disasters and provide care to NYC's most vulnerable populations.

75%
of primary care networks
participated in a site-specific
business continuity plan workshop.

Respirator Fit Testing

Twenty-three people attended a webinar and workshop on the Respiratory Protection Toolkit developed for the primary care sector. Participants also learned how to properly select and use PPE.



Personal Protective Equipment (PPE)

The Health Department hosted five training sessions on the proper use of PPE, which will help prevent the spread of infectious diseases. Fifty-one providers representing 25 primary care networks attended the sessions.

EXERCISES

Screening and Isolation

Fifteen primary care networks participated in mystery patient drills, increasing participants' ability to successfully identify, screen and isolate patients and notify the Health Department.

Communications

PCEPN sent notifications via a web-based platform to test 45 primary care networks' ability to respond. This exercise demonstrated the need to enhance communications between the primary care sector and external partners, such as the Health Department.

Bio-Events

Ten primary care networks participated in a tabletop exercise about risk communication, application of reportable disease protocols, business continuity, IT failure and patient surge.

The Primary Care Emergency Preparedness Network (PCEPN)

Formed in 2009, PCEPN is a coalition of primary care providers within NYC. PCEPN's mission is to increase the NYC primary care community's ability to prepare for, respond to and recover from disasters. PCEPN connects the larger NYC health care community to local government agencies.

This connection ensures primary care is represented in citywide planning and response, and enhances health system preparedness.

PCEPN membership increased from 43 networks (representing 297 sites) in mid-2015 to 45 networks (representing 449 sites) in mid-2016.

To learn more about PCEPN, visit pcepn.org

Dialysis Centers

Information Sharing

All 10 dialysis centers from hurricane evacuation zones 1 and 2 (NYC areas with the highest risk of storm surge impact) participated in an information-sharing exercise using the Sustainable Planner Situation Status tool. This web-based tool helps staff coordinate resources and manage patients during a disaster. It also allows centers to share real-time situational awareness updates with the Island Peer Review Organization (IPRO) and the Emergency Support Function-8 (ESF-8) Health and Medical desk at the City's Emergency Operations Center.

Dialysis Patient Personal Preparedness

The Northern Manhattan Health Care Emergency Liaison Partnership (North HELP, which is funded by the Health Department) produced a personal preparedness instructional DVD for dialysis patients in English, Spanish, Haitian Creole, Russian, Korean and Mandarin. One hundred and eleven dialysis centers (100% of centers in NYC at the time) offered the DVD to their patients.

Patient Education Outreach

NYC Medical Reserve Corps volunteers provided in-person disaster preparedness training to 300 dialysis patients at eight dialysis centers.

“None of the three [patients I spoke with] had medical alert bracelets. I believe I was able to raise their awareness about the importance of wearing one... Materials were helpful in that they provided a framework from which to introduce emergency preparedness information to patients.”

– Linda R., Medical Reserve Corps volunteer

Mapping Dialysis Centers

The Health Department and NYC Emergency Management mapped dialysis centers by borough, hurricane evacuation zone and network affiliation. The maps are available for use by the IPRO representative at the ESF-8 desk during a citywide emergency.

North HELP Membership Expansion

North HELP supports emergency management and operations continuity for providers serving vulnerable populations during emergencies. North HELP membership expanded from 38 dialysis centers (34% of centers in NYC at the time) in 2015 to 60 dialysis centers (54%) in 2016.

Dialysis Center Involvement



The NYC Health Care Coalition

Health Care Coalitions in NYC

Since 2012, numerous health care and non-health care partners throughout NYC have formed health care coalitions, which significantly improve NYC's health care preparedness and resilience. The Health Department funds the coalitions, facilitates communication between members, and supports local and citywide exercises. NYC has the following health care coalitions:

► **Seven network coalitions**

Network coalitions support the development of health care emergency management programs, across facility types and within growing health systems. They promote current trends in health care delivery and ensure emergency preparedness capacity-building in all sectors of each system.

► **Five borough coalitions**

Borough coalitions include health care and non-health care facilities and organizations within each NYC borough. Borough Coalition members collaborate to develop preparedness capabilities, including assessment, planning, communications and situational awareness, training and exercises.

► **Three subject matter expertise (SME) coalitions**

SME coalitions are groups with extensive experience in and knowledge of a particular health care service area or sector. SME coalitions help their members, other health care coalitions and providers improve their emergency preparedness capabilities to support the sectors they represent.



The NYC Health Care Coalition (NYCHCC)

NYCHCC is made up of leadership from NYC's borough and network coalitions, as well as leadership from the Health Department, nursing home and adult care facility trade associations, Greater New York Hospital Association (GNYHA), NYC Emergency Management, FDNY EMS and North HELP and PDC.

NYCHCC helps foster relationships between facilities and provides opportunities to practice coordination, collaboration and communication in non-emergency situations.

Health care coalition representatives convene at NYCHCC Leadership Council meetings to share best practices. The meetings promote adherence to a growing set of planning assumptions and ensure that all coalitions benefit from practices that work. From 2015 to 2016, all network and borough coalitions developed a three-year strategic plan to help them achieve their long-term goals.

Coalitions at Work from 2015 to 2016

- ▶ **Mount Sinai Health System Emergency Management Partnership (MSHSEMP)** categorized patient care and other facilities according to their ability to support operations during an emergency response. MSHSEMP's managers use this assessment to scale participation from network partners up or down.
- ▶ **New York-Presbyterian Regional Hospital Network** updated mutual aid agreements among all members across the system.
- ▶ **The Social Work Disaster Response Team**, part of the **Bronx Emergency Preparedness Coalition**, designed and implemented guidelines for a comprehensive Staff Support Center, a social work-led structure that supports staff emotionally and practically during an extended disaster response, ensuring continuity of operations. The guidelines include all materials needed to activate and run a center.
- ▶ **The Brooklyn Coalition** conducted an exercise applying the NYC Burn Mass Casualty Incident Protocol to a multiple explosion scenario occurring in Brooklyn. The Health Department and the Brooklyn Coalition recruited NYC agencies and facilities outside Brooklyn to participate in the coalition exercise. Eleven Brooklyn hospitals, three long-term care facilities and two regional burn centers participated, along with New York City Emergency Management, NYS DOH, NYS e-FINDS, REMSCO, GNYHA and FDNY EMS.
- ▶ **The Staten Island Community Organizations Active in Disaster** conducted a call-down notification drill, or a drill where one person calls the next to relay information, to assess communication among health care and non-health care members of the coalition.

Health Care Preparedness at the System Level

New York City Health and Medical Executive Advisory Group

To prioritize NYC health and medical preparedness planning initiatives and response efforts, six health and medical agency partners created the New York City Health and Medical Executive Advisory Group (HMEExec).

- ▶ **Mission:** In coordination with other ESF-8 agencies and NYC health system partners, HMEExec advises and informs agency and incident response leadership as a unified voice on health and medical issues.
- ▶ **Membership:** HMEExec is comprised of emergency planning and operations leaders from the Health Department, FDNY, GNYHA, NYC Health + Hospitals, NYC Emergency Management and NYS DOH.

Patient Movement Workgroup

The Health Department and GNYHA co-chaired a workgroup to address challenges with large-scale evacuations of hospital patients.

The workgroup has:

- ▶ Recommended additions to transfer forms to ensure clinical and demographic information is transported with patients.
- ▶ Developed a Medical Record Access worksheet to increase access to medical records for sending and receiving hospitals.
- ▶ Drafted standardized bed definitions to match patients to appropriate bed types.
- ▶ Drafted a Disaster Credentialing Guidance Document and complementary toolkit.



Continuing Our Mission

- ▶ The Health Department is working with health care delivery system and city agency emergency response stakeholders to develop a guide that outlines roles and responsibilities during preparedness, response and recovery.
- ▶ This guide will inform the planning and development of HPP funded activities in fiscal year 2017 and beyond.
- ▶ The following funding changes will take place in fiscal year 2018:
 - Hospitals that are members of network coalitions will be funded through their networks, rather than directly through the Core Contract.
 - Independent hospitals will still be funded directly.
 - The Health Department will continue to develop the NYC Health Care Coalition, bringing together health care coalition leadership and preparedness and response agencies and organizations in NYC.

The NYC health care system has increased its ability to respond to emergency events thanks to the dedication and persistence of stakeholders. Before, during and after emergencies, the Health Department is working to ensure the best outcomes for all New Yorkers.

We would like to thank all of our partners for their persistent work to improve emergency preparedness.

For more information, visit nyc.gov/health and search **hospitals** or email EmergencyPrep@health.nyc.gov

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PRQC DISASTER BUNDLE - DISASTER DOMAIN 2, 3

Regional Coalition Building and Pediatric Surge

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15 'TIL 50...

Mass Casualty Incident Guide

For Healthcare Entities



CASE STUDY

The Emergency Department was operating at full capacity with another 30 patients in the waiting room when the initial call came in. It was 2:30 in the afternoon when staff were notified of a cruise ship explosion at the Port. The initial report indicated that there were potentially 2,500 victims. Details were vague about the cause and types of injuries and whether or not decontamination of victims would be required. The emergency department Director and the Nurse Supervisor were immediately alerted to the unfolding events. With the hospital located just 20 minutes from the Port, the decision was made to initiate a Code Triage External. The Code was paged overhead and with minimal guidance the external treatment areas were set up.

The pilot MCI response plan of “15 Minutes ‘til 50 Patients” was less than two months in development and about to get its first test. Roles were assigned and with only five available staff, four untrained in the process, the treatment areas were established in under 20 minutes. The first victim was received within 35 minutes of the initial notification. Although the initial casualty report was greatly exaggerated the “15 Minutes ‘til 50 Patients” rapid response plan proved to be the answer for quickly responding to a mass casualty incident.



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The 15 'til 50 Mass Casualty Guide was developed by Henry Mayo Newhall Memorial Hospital and Providence Little Company of Mary Medical Center Torrance. The Guide and accompanying Toolkit were published in January of 2016.

Project Contributors provided strategic guidance regarding guide development, validation, and implementation.

Project Sponsor

Terry Crammer, RN
Los Angeles County Department of Health Services Emergency Medical Services Agency

Project Managers

Terry Stone, RN
Henry Mayo Newhall Hospital

Chris Riccardi, CHSP, CHEP, CHCM-SEC
Providence Little Company of Mary Medical Center Torrance

Consultants

Constant and Associates, Inc. served as the project consultant.

The following individuals supported content development:

Robbie Spears, MSW
Francisco Soto, MS
Jim Sims, MS
Ashley Slight, MPH
Michelle Constant
Crystal Chambers



Acronyms

ACLS	Advanced Cardiac Life Support
BLS	Basic Life Support
CDC	Center for Disease Control and Prevention
CMIST	Communication, Medical, maintaining Independence, Supervision, Transportation
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
FE	Functional Exercise
FEMA	Federal Emergency Management Agency
FSE	Full Scale Exercise
HICS	Hospital Incident Command System
HCC	Hospital Command Center
HSEEP	Homeland Security Exercise and Evaluation Program
IAP	Incident Action Plan
IC	Infection Control
ICS	Incident Command Center
JIT	Just In Time
LMFT	Licensed Marriage and Family Therapist
MCI	Mass Casualty Incident
MT Specialist	Medical Technician
OR	Operation Room
PLCMMCT	Providence Little Company of Mary Medical Center Torrance
PsySTART	Psychological Simple Triage and Rapid Treatment
RN	Registered Nurse
TTX	Tabletop Exercise

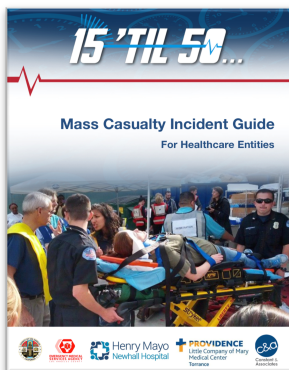
Owner's Manual

Introduction

Today, mass casualty disaster scenarios that once seemed merely theoretical have become a disturbing reality. Hospital disaster preparedness has therefore taken on increased importance at local, State, and federal levels. Hospital staff are taking renewed interest in disaster preparedness and reexamining their disaster plans with the goal of preparing hospital personnel to respond to a Mass Casualty Incident (MCI).

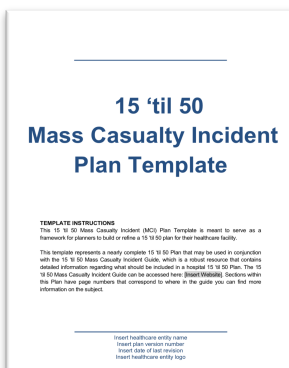
In support of MCI readiness efforts, the 15 'til 50 model was developed. It is designed to enable hospital staff to receive a surge of 50 or more patients within 15 minutes of notification of a MCI. The model can be readily implemented through a series of resources made available as part of the 15 'til 50 MCI Toolkit: a comprehensive MCI Guide, a MCI Plan Template, videos, training materials, sample plans and several other tools. Flexible, scalable and adaptable, the 15 'til 50 Toolkit takes what was a daunting planning task and streamlines the steps of MCI Plan development and application. This Toolkit allows health care personnel—clinicians, medical staff, health system leaders, and policymakers — to familiarize themselves with their roles and responsibilities, make more informed decisions, and maintain the quality of healthcare services.

The 15 'til 50 Mass Casualty Incident Toolkit



MCI Guide

The Guide provides a comprehensive explanation of the 15 'til 50 model. It offers a step-by-step walkthrough for developing a 15 'til 50 Program.



MCI Plan Template

The Plan Template provides an easy-to-populate document that can be used to create a MCI Plan for your facility.

**MCI Multimedia**

MCI Multimedia connects the user to all media files (photos, video and audio) relating to 15 'til 50 MCI planning.

**MCI Toolkit Library**

MCI Toolkit Library provides a comprehensive suite of supplemental materials to aid with the design and implementation of the 15 'til 50 program. It includes a train the trainer program, a healthcare responder training program, presentation material, patient care forms, Job Action Sheets, sample plans, executive briefing materials, and more.

Internet Access to Toolkit

As of the date of publication, the toolkit is available at the following websites. You may also locate the Toolkit by entering "15 'til 50" in an internet search engine.

<http://dhs.lacounty.gov/wps/portal/dhs/ems/>

<http://constantassociates.com/our-work>

<http://cdphready.org>

<http://calhospital.org>



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Section I: Introduction

Overview

A MCI has the ability to throw a wrench in the finely tuned engine of a hospital. For those caught unprepared, it can overwhelm staff and drain resources. The 1994 Northridge Earthquake in Los Angeles killed 60 people and wounded over 7,000, many of whom crowded hospitals that had been crippled by the earthquake. Immediately following the Boston Marathon Bombing in 2013, six trauma facilities saw three dead and over 264 wounded surged to surrounding hospitals.

What is 15 'til 50?

The innovative and award winning 15 'til 50 program is designed to enable hospital staff to receive a surge of 50 or more patients within 15 minutes of notification of a mass casualty incident. This includes the rapid deployment of staff, supplies, and equipment to successfully active and operate MCI triage and treatment areas.

The program utilizes the Hospital Incident Command System and can be initiated using existing hospital supplies and equipment.

Most MCI Plans focus on the activities that take place after the first patient arrives, such as utilizing special equipment or alternate care arrangements. This guide goes further, by outlining what staff need to do before the arrival of the first patient – specifically within the first 15 minutes of notification of an MCI. It's based on the pioneering work done by emergency planners at Providence Little Company of Mary Medical Center Torrance and Henry Mayo Newhall Hospital in California. They developed the 15 Minutes Until 50 Patients MCI Program, or "15 'til 50" for short. 15 'til 50 concentrates on the planning process and pre-positioning of supplies in addition to operations upon activation. This model provides an all-inclusive process that identifies what each department should do to increase capacity and successfully manage a MCI.

Purpose

The purpose of this Guide is twofold: (1) to explain the 15 'til 50 model and (2) to provide planners with a step-by-step resource for developing a 15 'til 50 Plan. The Guide, along with the accompanying Plan Template, covers activation, operation, and transition to either ongoing emergency operations or demobilization. It is designed to increase capacity and rapidly screen patients during a no-notice/short-notice incident. The 15 'til 50 MCI Planning model is applicable to events that test medical surge capacity.

The planning framework falls within what the Center for Disease Control and Prevention (CDC) describes as the "Dual Wave Phenomenon" in which the larger group of less severely injured walking wounded typically arrive within 15-30 minutes of an incident, followed within an hour or two by a second wave of more severely injured who will require pre-hospital emergency transportation.



Scope

15 'til 50 was developed to supplement existing MCI Plans and functions as a transition program that can help your hospital through the initial waves of a medical surge, after which you can phase into your emergency operations plans or demobilize to normal operations. The program is distinct in that it covers hospital activity 15 minutes before the first patient arrives and through the first two hours of response.

Frequently Asked Questions (FAQ)

What Is A Mass Casualty Incident?

The Federal Emergency Management Agency (FEMA) defines an MCI as one in which the number of people killed or injured in a single incident is large enough to strain or overwhelm the resources of local medical service providers.

When planning for a MCI, 50 patients can be a useful benchmark for hospitals of a certain size however the number that qualifies as a surge will change depending on the hospital and its resources. The standard assumption put forward by the CDC is 20% above licensed bed capacity.

What Is 15 'til 50?

The original "15 Minutes 'til 50 Patients" Mass Casualty Incident (MCI) response program was conceptualized by a multidisciplinary team within the Emergency Department at Providence Little Company of Mary Medical Center Torrance (PLCMMCT), California. The premise of this model was the rapid deployment of staff, supplies and equipment. The goal was to prepare hospital personnel to respond to an MCI by familiarizing them with their roles and responsibilities. Under the leadership of Emergency Management Officer Christopher Riccardi and Bradford Baldrige, M.D., Emergency Department Physician, the process was developed, tested and modified over the past ten years to create a plan that is flexible, scalable, and adaptable to the needs of any hospital or healthcare facility.

The program concept came about as a solution to a problem that exists in many hospitals. Working at full capacity on a daily basis, PLCMMCT noticed that there wasn't a place to treat arriving victims from a MCI. During exercises it could take up to one hour for the treatment areas to be established and supplies to be deployed. The role of the Emergency Department was underutilized in the response plan and it was obvious that the plan required some modification. As such, a Planning Team was established to create a model, now known as "15 'til 50", that would allow for the rapid triage and treatment of patients from an MCI.



Upon convening a Planning Team, the following questions were asked:

- Where can treatment supplies be set up?
- How is a safe and secure location to treat victims established?
- How would supplies be deployed?
- Who can deploy the equipment?
- Who is best suited to staff the external treatment areas?
- How is staff mobilized?
- How can staff surge to an alternate location when the emergency department is full?
- What logistical challenges need to be overcome?

From these questions, some resolutions emerged:

- Identify a location that can be secured and favorable to the flow of pedestrian and ambulance traffic.
- Identify essential resources needed for deployment.
- Identify key personnel to respond to an MCI.
- Identify a storage location for supplies.
- Identify key departments that need to be part of the immediate response.
- Develop a process to integrate support and ancillary departments into response.
- Create a process to ensure equipment and personnel were deployed to a common location.

These solutions evolved into the 15 'til 50 response framework and ensuing plan. The rapid deployment process ensured an achievable, consistent and coordinated response utilizing staff on hand. From concept to application, this program has been tested, modified and retested at least 30 times in four different hospitals. This plan has been adopted and integrated by trauma and pediatric hospitals as their MCI response. The program is designed to equip staff for success at a time when failure is not an option.

What Does A 15 'til 50 Activation Look Like?

The following timeline should help you get a sense of what 15 'til 50 looks like within a hospital with an external triage/treatment structure:

00:00:00 – 00:15:00 Minutes

- The Emergency Operations Plan and 15 'til 50 Plan is activated by the appropriate authority, e.g., the nursing supervisor
- Internal notification/communication, such as an overhead “Code Triage, External” page to alert staff of a 15 'til 50 incident and impending arrival of a surge of patients
- Staff callback protocols such as email, text, phone trees to alert staff not in the hospital of the incident. During the time period covered by the 15 'til 50 program, operations will be mostly handled by staff already on duty. Human resources is prepared to activate their labor pool as needed
- Activation of the Hospital Command Center (HCC)
- Staff accesses 15 'til 50 go-kits, which include vests, job action sheets, and special 15 'til 50 admissions forms with active medical identification
- Resource management system to distribute, track, and allocate supplies
- Radios signed out and distributed to the appropriate staff members
- Case management begins to coordinate the rapid discharge of inpatients and emergency department patients with physicians in order to accommodate the influx of survivors, to include preparation for transportation
- Security will set up barriers, cones, and signage outside the hospital to control traffic. Security will direct traffic to include guiding ambulances to their appropriate routes
- HCC establishes operational period and begins development of the Incident Action Plan (IAP)
- A holding area for arriving patients waiting for triage and treatment is set up



- Activation of triage treatment areas to include: signage, review of Job Action Sheets, staffing, equipment and supplies, patient tracking/medical records, and stored materials such as cots, canopies, and medical carts
 - Staff sets up green, yellow, red, and black triage tarps
 - Staff sets up cots on each tarp
 - Medical carts are wheeled out
 - Spaces designated for where staff can access the needed admissions paperwork, and where they can deposit requests directed at ancillary/support departments such as lab work
 - Spaces designated for where medical waste will be deposited
 - Generators are checked to ensure they are in working order



- Ancillary and support staff report to their pre-designated staging areas or report directly to the triage and treatment site according to their protocols. Pharmacy arrives with pharmaceutical supply carts for medication dispensing. Anesthesiologist/surgical representative evaluates survivors and communicates to the HCC the potential burden on the operating room
- Ancillary departments without an immediate role on standby. An example would be the blood bank which will have a tech standing by to supply the external triage and treatment area as requested by logistics, or radiology which would be available to deploy with portable x-ray for rapid radiological diagnostics
- Case management establishes a patient discharge area away from the emergency department where discharged patients can be processed and await transportation
- Emergency department doors and all points of ingress/egress are secured
- Radio check in between the Incident Management Team and the HCC



- Liaison Officer communicates with local external agencies to determine extent of damage to critical infrastructure and services
- Coordinate with regional patient transport center equivalent as appropriate
- Safety Officer begins to provide an assessment of facility structures and systems condition (if necessary)
- Staff sets up triage tents over the cots/tarps

00:015:00 Minutes – 02:00:00 Hours

- First wave of survivors arrive at the hospital within 15 – 30 minutes, depending on the hospital's proximity to the incident. The CDC estimates that most of the initial patient load will be minor/moderately wounded, as they're able to ambulate on their own. Patients are triaged
- Patients are processed through the rapid admissions/discharge system
- Public Information Officer receives information at HCC in order to provide situation briefing to patients, visitors, and staff
- Inventory of all supplies, equipment, food and water conducted
- As per the CDC Mass Casualty Predictor, the number of survivors arriving in the first hour multiplied by two is used to estimate the overall size of the surge
- Logistics/Human Resources projects any labor shortfalls

02:00:00 Hours – Beyond

- Ongoing incident management, transition to either disaster operations or demobilization to normal hospital operations
- Infrastructure Branch performs a detailed assessment of structure and systems (if necessary)

Using This Guide

The Guide is a resource to help you and other hospital emergency planners complete the accompanying 15 'til 50 MCI Plan Template.

The guide provides a high-level overview of the hospital's planning considerations, emergency operations, and response to a no-notice or short-notice MCI and is organized into three sub-sections:

- Section I: Introduction. The introduction includes a description of the document's purpose, definition of key terms, scope, instructions on how to use the guide, and assumptions
- Section II: Getting Ready for 15 'til 50. This section will walk you through the steps for implementing the 15 'til 50 concept in your hospital including the creation of buy-in for the model, the process of creating the actual plan, coordination and pre-positioning of resources, and creating a training and exercise strategy to test your plan.
- Section III: Creating the 15 'til 50 Plan. After providing a broad outline of how to bring the 15 'til 50 concept to your hospital this section provides step-by-step information regarding how your plan should be constructed. An overall plan blueprint is provided along with a walkthrough of each section that can be connected back to the 15 'til 50 Plan Template.

The supplemental materials contained in the appendices of this Guide and the accompanying Toolkit include functional and support annexes that clearly state the policies, processes, roles, and responsibilities within critical operational sections. It also contains tools that might be helpful for implementing 15 'til 50 in your hospital, like training materials, a presentation/talking points for creating executive buy-in, and Job Action Sheets specific to incidents involving Chemical, Biological, Radiological, Nuclear, or Explosive materials. In contrast to the broad strokes found within the basic guide, supplemental materials are targeted to specific roles within the emergency operations structure or unusual circumstances.





Assumptions

This guide is not intended to be prescriptive. Emergency planning doesn't take place in a vacuum and no guide can account for every possible scenario. When you put together your plan, use your own discretion and professional judgment as to what will work for your hospital during an incident or event. A MCI will place stress on your entire facility so seek to involve multiple departments and gather input from other members of your hospital team.

While every incident is unique and every hospital is different, there are some basic assumptions that were made in the development of this Guide:

- Hospitals already have emergency plans, procedures and policies in place. This Guide is meant to supplement, not replace existing plans
- "15 minutes" is counted from the moment the plan is activated, not from the moment the incident starts
- Your 15 'til 50 MCI Plan will involve multiple departments in your hospital, not just the emergency department
- For the first 15 minutes, and perhaps longer, response will have to be conducted by staff on duty using existing equipment and supplies
- Less seriously injured casualties who self-transport, or are transported by friends and family typically arrive before those who are most seriously injured



Section II: Getting Ready For 15 'til 50

Creating Buy-In

One of the first steps towards implementing the 15 'til 50 program in your hospital is creating buy-in both at the executive level and within the departments that will be participating in the planning process. As part of the Toolkit, a “one-liner” card and brief slide deck have been developed to provide planners with talking points that describe what 15 'til 50 model is and the benefits to any participating hospital.

The Planning Process

The planning process is incredibly important. Often gathering various departments into a room and creating a sense of ownership for the process is as important if not more so than the actual written plan itself. The planning process itself is well established and described below.

Designate A Project Leader

While there might be many candidates for leadership in your hospital, make sure you choose someone with knowledge of all operational areas of the healthcare facility, including patient admissions, record keeping, and emergency operations.

Organize A Working Group

Too few participants won't provide a deep pool of knowledge to draw on, too many can weigh down the process and impede progress. Keep your working group to whatever a manageable number is for you and your facility. Creating buy-in across all departments is crucial, so make sure to include representatives from all departments that will be directly or indirectly involved in plan implementation.

Review Existing Policies And Procedures

Have the group review your facility's existing policies regarding admissions, patient tracking, and emergency operations. Take the time to review the Joint Commission or the other accrediting organizations to understand what is required.

Review The 15 'til 50 Guide

Your working group should review the Guide in detail and determine how the recommendations contained in the Guide apply to your facility.



Develop And Maintain The 15 'til 50 Plan

Using the guide and the template prepare your 15 'til 50 Plan. Provide any department within your hospital responsible for response operations a draft document for review and comment. Then revise/finalize the plan as needed and submit it to the appropriate facility authority(s) for approval as required.

Designate a unit or person by position title to be responsible for plan maintenance making sure they are scheduled to review it at least annually. Update the plan as necessary following every exercise or event by preparing and implementing an After Action Report/Improvement Plan (AAR/IP). In the interim the plan should be the foundation for a 15 'til 50 exercise or training program within your hospital and updated to incorporate lessons learned.

Coordinate and Pre-Position Supplies

One of the hallmarks of the 15 'til 50 program is the organized multi-departmental effort to pre-position supplies and equipment for a mobile triage site. This is not just a matter of making sure your storage room is full of backup supplies. 15 'til 50 features a number of prepositioned caches specifically for 15 'til 50 activation. These include:

- 15 'til 50 “Go-Kits”
- Mobile Storage Units/Trailers
- Command Center Supplies

Go-kits are boxes that can be easily deployed to mobile triage, ideally one for each triage area (minor, immediate, etc.). Along with go-kits, mobile storage units or trailers should be used for larger equipment, such as traffic cones, tents, and signs. Additional boxes of supplies for the HCC and the Family Information Center with relevant 15 'til 50 MCI Plan materials are also recommended.

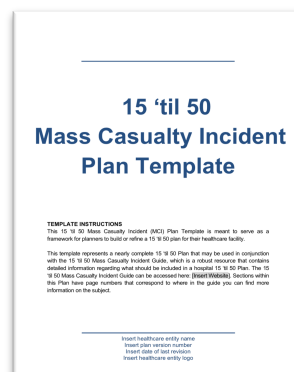
A detailed, sample list of supplies and equipment for each element above can be found in Appendix E. Your facility will need to create your own 15 'til 50 supplies and equipment list based on your hospital's capacity and the details of your plan. For example, if your facility plans to utilize an outdoor mobile triage site in the parking lot, you may want to have your 15 'til 50 storage units located in trailers or buildings easily accessible from the parking lot. If your facility plans to use an existing department or ward as your triage location, you will need to store your supplies according to the layout of the department.

Section III: Writing The 15 'til 50 Plan

15 'til 50 Plan Blueprint

Once you've designated a project leader, formed your working group, and reviewed relevant policies and procedures, it will be time to create your 15 'til 50 Plan. This section provides you with blueprints, or table of contents, to build out your plan, including an explanation of the information that should be provided in each section.

Use the accompanying 15 'til 50 Plan Template to create your plan. Here is a sample table of contents for your plan, taken directly from the 15 'til 50 Plan Template.



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15 'til 50 Plan Blueprint Walkthrough

Acknowledgements

Acknowledge your planning team members, the hospital, or any group that provided feedback, editing, or direct input.

Table of Contents

The table of contents should be logically organized and consist of the major sections and subsections of your document. The above 15 'til 50 Blueprint is essentially your table of contents for the plan.

Acronyms

Acronyms are a functional way for people within a profession to communicate commonly used phrases in shorthand. Try to use acronyms sparingly, and include an acronym list at the beginning of the plan.

Introduction Section

Overview

The overview serves as the foundation of the rest of the document. It tells your audience why the plan has been written, what the plan offers, who has written the plan, the plan's scope, assumptions, and how the plan will be maintained.

Purpose

The purpose is important as it provides guidance for the rest of the plan. It answers the question "what is this plan offering" and provides a brief description of the plan's contents.

Scope

The scope defines the boundaries of the emergency response activities for the plan. For example, if you represent a multi-site organization, does the plan apply to several hospitals, or just one? Does the plan apply to one department, or all of them?



Assumptions

Many decisions made in daily life are based on assumptions. When you make plans to meet someone for lunch, you're assuming that you'll have reliable transportation to get you where you need to go, that there won't be a crisis situation that will disrupt your schedule, or that you won't suddenly come down with the flu.

Sample assumptions for this plan may include:

- Staff and responders will follow the plan
- The plan will follow the Hospital Incident Command System (HICS)
- Patients may need decontamination
- Patients may report with pre-existing Access and Functional Needs (AFN)



Pre-Incident Section

Identify the area within your facility that will be used for triage and treatment in the event of an MCI. Select the individuals and alternates who will fill key positions in the event of an MCI including those who can fill positions after normal business hours. Determine the 15 'til 50 MCI set-up strategy. Pre-position supplies and equipment (Appendix E).

Prepare for the accommodation of at-risk populations including children and those with access and functional needs. Perform a gap analysis to identify any additional equipment or supplies needs. If purchasing medical surge resources is prohibitively expensive, consider a Memorandum of Understanding (MoU) with a neighboring healthcare facility.

Training and Exercise Schedule

Once you've written the 15 'til 50 Plan, it's important to train your staff to ensure they understand their roles and responsibilities. It's equally important to test your plan for "holes" with regular exercises.

Training

Two types of training are of key importance:

Advance training for those pre-identified for key staff positions. The curriculum should include a review of the 15 'til 50 Plan and walkthrough of all aspects of your hospital's response operations from activation to either demobilization or transition to continued incident management.

Just in Time (JIT) Training. The purpose of JIT Training is to refresh the knowledge of those persons who have been pre-trained, and to provide persons with no prior training with the tools to perform their assigned functions. JIT Training should cover all aspects of 15 'til 50 operations.

A unit or individual, identified by position title, should be designated to coordinate training activities. Training should be conducted on a regularly scheduled basis, and documented.

Exercises

A progressive exercise program will allow your facility to test critical capabilities related to your plan. In accordance with the 2013 FEMA Homeland Security Exercise and Evaluation Program (HSEEP), there are seven different types of exercises grouped as either discussion-based or operations-based.



Discussion-Based Exercises. Discussion-based exercises test policy-oriented and strategic issues. They're a good forum to make sure that everyone is aware of their role and responsibilities during a MCI.

Seminars. Seminars may provide an orientation to your hospital's policies and procedures that are the foundation of your 15 'til 50 Plan as well as available resources.

Workshops. Workshops are similar to seminars except there is more active participation on behalf of your staff and the end result is a product such as job aids or revised procedures.

Tabletop Exercises (TTX). A TTX uses a hypothetical emergency scenario to test your staff's understanding of roles and responsibilities, validate plans and procedures, and identifying strengths as well as areas for improvement.

Games. A game simulates a hypothetical scenario and divides staff into two or more teams that are competing according to a pre-determined metric. An example of a game might be pitting different teams against one another to see who can set up the external staging area the fastest (hopefully within 15 minutes).

Operations-Based Exercises. In operations-based exercises, you and your staff will be physically interacting with and reacting to an exercise scenario rather than talking through it. They're best for validating your plan and identifying resource gaps. For example, until you run a drill setting up your external staging area you don't realize you had your supplies prepositioned and ready...but didn't include a barrier for traffic control.

Drills. A drill runs through a specific component of a plan within one agency or organization. Drills are an excellent way to test new equipment, procedures, or practice one component of your plan without involving the entire hospital.

Functional Exercises (FE). Functional exercises usually test command, management, and control functions. You might use this sort of exercise to test operational communications between your HCC and incident management team.

Full-Scale Exercises (FSE). The most resource-intensive and complex, these exercises usually involve more than one agency or organization and tests multiple aspects of preparedness.

At a minimum, tabletop and other discussion-oriented exercises should be used to familiarize staff with plans, including recent updates. Drills, functional and full-scale exercises will provide opportunities to test plan functionality in a tactical manner and may include interaction with external partners, such as your local Emergency Medical Services Agency. For more information on HSEEP exercises visit www.fema.gov.



Supplies and Equipment

All prepositioned supplies and equipment for the 15 'til 50 program should not be used for day-to-day operations. All staff should be notified about supplies and equipment designated for this type of emergency, and where they are located. Staff should be trained not to use these supplies or equipment unless the Plan has been activated.

You and your staff will need to establish storage locations, obtain needed supplies, and re-evaluate supplies after each and every exercise or incident. The “15” in 15 'til 50 refers to the small window of time your hospital will have to setup all prepositioned supplies, so staff need to exercise setup and takedown as often as possible. The more you exercise, the quicker your response will be during a real incident.

Finally, review supplies and equipment needed to activate the MCI Plan. For each resource, identify:

- Number
- Type
- Location
- If in a secure storage area, who has keys and /or 24/7 access
- Who is responsible for securing
- Who is responsible for positioning
- Restrictions or authorization requirements
- How the resource will be acquired
- How the resource will be tracked
- Prioritize the order in which supplies and equipment should be set up



Activation Section

Activation involves the processes that transition a hospital from a normal mode of operations to that of incident management. The 15 'til 50 MCI Plan should establish a “trigger” point for activation, such as notification that the facility is expecting to receive patients from the incident. Planners should use their existing activation protocols to activate their 15 'til 50 response. Patient triage and treatment, either internal or external to the hospital facility, should be activated as soon as your facility is made aware of an incident with notification such as a “Code Triage” page. Initial activation should include minimum staffing for 15 'til 50 functions and provide for escalation of staffing as required.

Authorization to Activate

Confirm who is responsible for 15 'til 50 operations at your facility. The person responsible may be the person who is authorized to activate the plan and lead 15 'til 50 operations as described in this Guide.

Notification

When designing your 15 'til 50 MCI Plan, describe how staff will be notified and the notification process used at your facility. Consider mechanisms for notifying staff at the hospital, not at the hospital, and external agency/organizations.

Staff at the facility.

Staff will be notified by overhead page such as “Code Triage, External”, emergency notification text system, or pager.

Staff not at the facility.

Staff will be notified through either an emergency notification text system, or phone call using a pre-determined notification procedure

External agencies and organizations.

External agencies are notified through either a dedicated medical emergency communication network software or through the phone. In preparation for an MCI, create a contact list consisting of a table with a description of services, name of provider/organization and contact information. Include e-mail addresses, and most important, a 24/7 access telephone number for each. Key stakeholders you will want to contact include:

- Local emergency management department
- Local public health department



- Local emergency medical services agency
- Hospitals, clinics, and other facilities within your healthcare community
- Law enforcement (if necessary)

Clearly identify what types of information needs to be relayed, with special consideration paid to:

- Type of incident, including specific hazard/agent, if known
- Location of incident
- Number and types of injuries
- Any special populations (e.g. a large number of children)
- Special actions being taken (e.g. decontamination, transporting by bus)
- Estimated time of arrival of first-arriving EMS unit

Coordinate Staffing and Prepare Staff for Activation

Critical staff during the initial stages of an MCI will likely come from the emergency department, Operating Room, and Intensive Care Units. However, a hospital is a large organization with many moving parts and dependencies. When making decisions on staffing, it's important to consider the scope and nature of the incident and match them with needed capabilities. Consider how the types of injuries your hospital will see can change based on the category of event. As an example, in comparing a wildfire to a flood: a burn unit, general surgeon, and plastic surgeon will probably be needed for the wildfire, but not the flood. For the most part, services provided by Mental Health, Pediatrics, Obstetrics and Gynecology, and Internal Medicine will be consistently necessary. Table (1) below provides some suggested considerations for which departments would play a role in response by incident type and can help you in planning staff deployment accordingly.

JIT Training should be conducted for all staff at the beginning of each shift and/or when any new staff member is assigned. This is important not only for staff unfamiliar with MCI operations, but also for previously trained staff that may need refresher training. You will need to create a JIT Training program that is tailored for your facility. The plan should outline who is responsible for JIT Training conduct. Overall JIT Training should address: objectives, organizational structure, patient flow, and key functions.

Specific position JIT Training should address:

- Job Action Sheets
- Organization chart with names, positions and missions, to include reporting relationships
- Fact Sheet regarding MCI operations
- Hospital Layout, with a detailed map of triage operations and the emergency department
- Documents and forms that will be utilized by the position
- Talking points for the JIT instructor
- Develop JIT Training materials

Table (1): Staffing Considerations by Incident Type

MCI Scenario	Trauma Surgeon	General Surgeon	Orthopedic Surgeon	Neuro Surgeon	Plastic Surgeon	Thor Surgeon	Vascular Surgeon	Internal Medicine	Pulmonary	Infectious Disease	Pediatric	OB -GYN	Hem - Oncology	Radiation Oncology	Behavioral Health
Chemical								X			X	X			X
Biological								X	X	X	X	X			X
Radiologic								X			X	X			X
Nuclear	X	X						X			X	X	X	X	X
Explosive	X	X	X	X	X	X	X	X	X		X	X	X	X	X
Tornado	X	X	X	X	X		X	X	X		X	X			X
Hurricane								X			X	X			X
Flooding								X			X	X			X
Earthquake	X	X	X	X	X	X	X	X			X	X			X
Wildfire		X			X			X			X	X			X
Transportation Crash	X	X	X	X	X	X	X	X			X	X			X

Deploy Supplies and Equipment

In this section, describe how material, equipment, supplies and personnel resources will be deployed to their assigned locations. Schematics and diagrams depicting the deployment location of all materials, supplies and personnel should be developed and tested pre-incident. Lists or spreadsheets showing quantities should accompany schematics. Personnel deployment schematics should depict the number of staff in each job category to be deployed. See Job Action Sheets provided as part of this toolkit for information that should be included in your deployment strategy.

Hospital Command Center

Here describe how Hospital Command Center (HCC) staff will be informed of activities happening in the triage and treatment areas and other areas supporting MCI efforts. This should include status updates, resource requests, security issues and media management.

ACTIVATION ACTION ITEMS SUMMARY

Authorize Action

- ✓ Specify who is authorized to order your hospital's 15 'til 50 MCI Plan activation by HICS position. This can be the Incident Commander or other designated individual

Coordinate Staffing

- ✓ Work with your human resources department to develop a strategy for determining staffing needs
- ✓ Staffing needs can be based on the number of patients, resources available, etc.

Make Notifications

- ✓ Identify who is responsible for notifying and organizing staff
- ✓ Determine mechanisms for issuing notifications and document the strategy for issuing alerts

Coordinate Supplies and Equipment

- ✓ Identify who is responsible for securing and positioning supplies
- ✓ Review supplies and equipment needed to activate the MCI Plan

Prepare Staff for Activation and Operation

- ✓ Activate the method for conducting staff registration
- ✓ Conduct training
- ✓ Provide staff briefings and updates
- ✓ Prepare staff for successful MCI operations

Operations Section

The operations section describes how your facility will carry out key 15 'til 50 MCI activities.

Triage

The Dual Wave Phenomenon serves as the foundation of the 15 'til 50 program philosophy. In most cases, unless your facility is located extraordinarily close to the incident, the patient load in the first 15 – 30 minutes will consist mostly of mild or walking wounded followed by the more severely injured within an hour. Also part of the Secondary Surge will be those patients or worried well that initially sought treatment with their primary physician and are decompensating to your facility after they've found their doctor's office closed. A system for triage, such as START, is vital in order for your Incident Management Team to decongest the emergency department and clear survivors with minor injuries before the potentially more severe second wave hits. Depending on the type of MCI there may be higher or lower patient volumes, varied pediatric casualties, and different acuity levels. In a typical MCI with a 20% surge, literature suggests that 20% of patients will be categorized as red, 30% yellow, and 50% green. The initial goal will be to prioritize red-tagged patients for immediate care and life saving interventions.

Table (2): START Color Coding System

Color	Acuity	Need for Treatment	Level of Care at Triage Area
Red	Emergency - Threat to life, limb or organ	Immediate	Critical Care, Advanced Cardiac Life Support (ACLS)/ Basic Life Support (BLS)
Yellow	Urgent - Significant injury or illness but can tolerate a delay in care	Delayed	ACLS if necessary, BLS, specialty experience if needed
Green	Non-Urgent - Can safely wait for treatment	Minimal/Non-Urgent	BLS, specialty care if needed
Black	Expired or expected to expire – palliative care	Care and Comfort Measures	Palliative/comfort care. Pain medication, hydration, psychological support, care of deceased

Treatment

During response, the emergency department must work closely with ancillary and support departments. As an example, of the total patient surge population, planners should assume 20% will be children, so it should be assumed that pediatric staff will be heavily involved. Another example is that of surgical planning. Of red-tagged patients, 10% will require stat, emergency



resuscitative surgery. A number of patients may require one or more surgical interventions during their hospital stay. You may consider a coordinated approach to surgical care to avoid bottlenecks in the operating room such as assigning a member of the surgical staff to the Incident Management Team to monitor the situation.

Security

In the aftermath of a no-notice/short-notice incident, the environment within your facility might be chaotic. The role of security staff will be to provide some measure of order by providing traffic control and maintaining the integrity of internal security.

Support departments such as your security staff should be trained within their 15 'til 50 responsibilities as thoroughly as your physicians or nurses. Because they are often the first people that staff or patients will come across, they should be familiar with the 15 'til 50 Plan and understand where staging areas will be located. When every minute counts you don't want congestion in the parking lot or frequent questions over the radio cluttering your communications because a member of your security team doesn't know if the emergency department is still open or where patients with minor injuries are directed.

Traffic Control

The security unit will be responsible for establishing a traffic flow pattern for both pedestrians and vehicles. A detailed map of the hospital should be used to plan separate areas of ingress and egress for emergency vehicles that will guide them towards the designated triage area. Particularly if your campus is large, your traffic flow diagrams should include locations to place cones, barriers, signs, and other indicators so staff know where to place signage during an incident.

Internal Security

Your plan should detail whether your staging area is internal or external to your facility and if certain areas of your hospital will be closed or involve controlled access. Your security plan should include details of where staff will be posted and how unit communications will be maintained.

In the case of terrorist acts, the hospital itself may be a secondary target. If terrorism is suspected hospital security should establish a secure perimeter around the hospital and hospital staff should be advised to watch for suspicious behavior.

Coordinating With Law Enforcement

If the mass casualty event triggering activation of the 15 'til 50 Plan is known or suspected to have resulted from a criminal act, law enforcement will most likely arrive at the hospital soon after the first patients arrive to take witness statements and gathering evidence. In addition to local law enforcement, the FBI may arrive if the incident is suspected of being a terrorist act.



It is also possible that the perpetrators of the event have themselves sustained, or pretended to have sustained injuries. Therefore, the facility's 15 'til 50 Plan should include procedures for coordinating with and assisting law enforcement agencies and for securing items that may be needed as evidence in the ensuing investigation and/or legal proceedings.

The specifics of the section of the plan concerning coordinating with law enforcement will vary by hospital, but should include the following elements at a minimum:

- Provision should be made for ingress, egress and parking of law enforcement vehicles. This may include designated space for a mobile command post vehicle.
- A room should be provided for use by law personnel.
- No statements or information should be released to the media unless approved by law enforcement.

Hospital personnel should be made aware that clothing, personal effects, or other items accompanying victims may be needed for evidence. Therefore, it is important that personal items be treated as potential evidence. This includes ensuring that items are described and/or photographed; labeled to identify the associated victim; and a "chain of evidence" record maintained to track their transfer from one person/unit to another.

It is recommended that hospital emergency management and security personnel confer with local law enforcement in the development of this portion of the Plan.

Patient Processing

During an MCI response it may not be practical to follow normal procedures for admission, tracking and discharge of patients. When you are developing this section of the plan, consider the following points:

- Make sure you involve staff from the admitting and discharge department(s) in the planning process
- Benchmark how your departments operate normally and how those processes will differ during a 15 'til 50 incident
- Make a detailed flow diagram detailing patient processing from intake to discharge, paying special attention to how the operations will occur, who will perform them, and where in the hospital they take place
- Determine if normal forms and record keeping procedures will be used, or if special forms and procedures will be designed specifically for 15 'til 50 situations



- If forms processing will be conducted outside the hospital, or in a space not normally used for that purpose (such as an auditorium), make sure that the appropriate electronic equipment is included on the 15 'til 50 equipment list, including electronic translation devices
- Make sure that all locations that will electronically process admissions, tracking and discharge have wireless or landline connections to hospital networks
- Develop procedures for merging 15 'til 50 records into normal hospital records systems
- Make sure that any hard copy forms (including triage tags), charts or other materials are acquired ahead of time and prepositioned with other 15 'til 50 supplies

Communications

Communications, both internally and externally to your facility, are critical for all of the units, departments, and agencies to work together as fluidly as possible. Communications plans should designate who is responsible for communications, where equipment is located, what equipment and sources are utilized, communications etiquette and protocol, and a list of key stakeholders.

Examples of communication methods include:

- 2 Way Radio Channels (UHF, VHF, etc)
- Internet/Email
- Fax
- Landlines
- Cell Phones
- GETS cards
- Satellite Radio



Communications with Hospital Command Center (HCC)

If an MCI occurs and the healthcare facility receives, or expects to receive a number of injured patients, it is probable that the HCC will have been activated. The Plan should specify responsibility for communications with the HCC and the entity that coordinates the transfer of patients from hospitals and tracks the bed availability and diversion status hospitals.

The Command Center should be notified when:

- The Incident Management Team is activated and ready to receive patients
- Resources are needed
- Deactivation of the 15 'til 50 Plan
- Occurrence of any unusual or significant unexpected event
- Any breach, or suspected breach of security (also notify the facility security and/or law enforcement agency with jurisdiction as necessary)
- Discovery of any safety hazard or other condition that could compromise operations

Communication via Public Media

Your hospital's Public Information Officer should handle all communications with public media. All staff should be instructed not to provide information to any media representative without specific authorization from the Public Information Officer.

Communications via Social Media

Communications via social media have become increasingly important in our society. While extremely valuable for communications purposes, communication via social media is virtually impossible to control, and is subject to misunderstanding and dissemination of misinformation. Social media is also a common source of rumors and speculation. Your staff should adhere to your facility's established social media policy.

Communications Regarding Incidents Resulting From Intentional Acts

If an incident is known or suspected to have occurred as a result of an intentional act, the designated representative should coordinate with the law enforcement agency having jurisdiction prior to release of any information.

Provide detailed information about how communications will occur with respect to:



- General procedures
- Staff
- Command Center, Local EOC, Multi Agency Coordination Center
- Public Media
- Social Media
- Incidents resulting from intentional acts

At-Risk Populations

During a medical surge some groups might have difficulty in accessing public health or medical services. Children, people with Access Functional Needs (AFN), whom English is a second language, are chemically dependent, or mentally ill are all potentially at-risk populations. Minnesota has for some time utilized a definition that included thinking of those considered “at risk” as having concerns with Communication, Medical, Independence, Supervision, and Transportation services, otherwise know as CMIST. CMIST is just a starting place and it cannot be assumed that at-risk populations can be readily identified, or vice versa, that the appearance of being at risk means the individual is at risk.

Generally, at-risk populations suffer from low socio-economic status, lack a strong support network, or both. It’s important to note that “at-risk” can be a subject to change and is defined by the individual’s status during the particular crisis. Pregnancy or recent immigrants are examples of this term’s fluid property.

Your facility should have protocols and considerations for at-risk populations as part of your general existing hospital plans and policies. The following are examples of some at-risk population planning considerations that might be particularly germane to a MCI:

- Ensure that your staging area, especially if external to your facility, is ADA accessible
- Consider the need for transportation services so that individuals may be rapidly discharged if cleared
- If possible, plan to have a licensed mental health professional at the staging site
- Pre-identify auxiliary aids and services necessary to meet the communications needs of all persons and include them as part of your plan or 15 ‘til 50 go-kit including translation services, visual language translation cards, or materials in braille
- Identify back-up strategies for translation services for non-English speaking patients. For example, if the phone system is unavailable during an incident, the 15 ‘til 50 MCI Plan

should address or refer to the provision of back-up interpreter services, which should also be a part of your facility's larger emergency plans. Strategies could include emergency MOUs with interpreter services or wireless access or battery powered translation equipment

- Post messages and signage in centralized locations
- Have a protocol for how you will handle patients that arrive at the staging area with service animals
- Consider how your facility would handle a pediatric surge. Refer to Los Angeles County Department of Health Services Pediatric Surge for assigned Pediatric capacity in a disaster

Family Information Center (FIC)

The FIC provides a secure and controlled area for families of patients as well as many of the at-risk populations listed above where information can be shared to facilitate family reunification and to provide access to support services (social services/mental health, spiritual care). In most hospitals, Case Management and Social Services staff will activate the FIC and staff the Patient Family Assistance Branch under Operations, but other possible departments include Pediatrics or Patient Registration. Supplies, job action sheets, sign in sheets, toys and materials for children and other items should be easily accessible and ready for deployment near the location of the FIC in your hospital. Refer to FIC Planning Guide for Healthcare Entities, June 28, 2013.



Clinics and smaller hospitals can tailor their FIC staffing strategies based on their organizational structure. For example, marketing or administration staff typically have access to contact information and could be used to contact family members. Office staff can help check-in families and help provide care services for children and unaccompanied minors.

Key operations of the FIC include:

- Performing Family Registration – All non-staff persons entering the FIC should be appropriately registered and issued a badge or wristband that offers authorized entry. Unaccompanied Minors should receive a special registration badge or other identification.
- Facilitating Reunification – FIC staff will coordinate, to the best of their ability, reunification of admitted patients with family members within their facility or at other facilities through Reddinet searches.



- Performing Family Notification – If a missing patient has been located at the hospital, the patient’s family members at the FIC should be notified of the patient’s status in private.
- Offering Support Services – FIC staff should provide whenever possible social services, childcare, mental health services, and spiritual care for family members within the FIC as well as for FIC or other response staff as appropriate.

Unaccompanied Minors FIC Sign-in and Tracking Form

The FIC Sign-In and Tracking Form is given to each family that enters the FIC in order obtain information about the patient that the family is looking for, as well as family information, to include the number of people in the FIC per family.

In any mass casualty incident, you likely will have unaccompanied minors presenting at your healthcare facility seeking information or whereabouts of loved ones (e.g. their parent/guardian is the patient). These unaccompanied minors require special considerations. Your facility should have an Unaccompanied Minors Sign-In and Tracking Form included in the FIC supplies and/or go-kit. An Unaccompanied Minors sample checklist for FIC staff is included in the Template. For sample tracking forms and additional resources for your Family Information Center, you can refer to the Family Information Center Guide for Healthcare Entities (2013) produced by the Los Angeles County Emergency Medical Services Agency and available online at their website.

Mental/Behavioral Health

Mental health must be considered as part of your 15 ‘til 50 MCI Plan. During a crisis event, everyone is psychologically affected whether survivors, first responders, hospital staff, or bystanders. Oftentimes, the victims of traumatic stress are more numerous than the number of casualties, and even for survivors, psychological wounds can persist long after their physical injuries have healed.

During a crisis, a range of mental health issues can surface, either pre-existing conditions that have been aggravated by stress (such as anxiety disorders), or novel symptoms. Staff can be highly susceptible to compassion fatigue, also referred to as secondary traumatic stress, from treating those that are themselves traumatized or suffering. Staff should be trained to recognize signs of traumatic stress that can include anger, fear, hopelessness, disconnect, diminished self-care, and temporary cognitive impairment. Your 15 ‘til 50 MCI Plan should include mental health staff as well strategies for providing stress management and psychological first aid. Self-monitoring can be done by staff through the Anticipate, Plan and Deter program.



PsySTART, or Psychological Simple Triage and Rapid Treatment, was developed by Dr. Merritt Schreiber from University of California, Los Angeles (UCLA). It is a rapid mental health triage and management strategy designed for use during a crisis event. It provides a situational awareness of "at risk" individuals and a linkage to follow on care. PsySTART uses a "floating triage algorithm" to prioritize those individuals who need to be seen first and those who need to be seen next or can be referred for assessment after the initial surge. Psychological first aid includes identification of those exhibiting acute stress reactions with immediate needs and establishing safe areas, facilitating stress-symptom reduction, linking persons to critical resources, and connecting them to social support.

Staff Support Services

Any MCI incident will create stress and anxiety among both victims and victims' families. People will need more than medical attention, in addition to mental health support as described in the previous section. Such support services may include things such as:

- Childcare for unaccompanied minors that are victims or family members
- Family reunification specialists
- Spiritual care
- Social services
- Transportation assistance
- Replacement for lost medications
- Care for service animals
- Meals and water
- Temporary sleeping arrangements

Most of these services are provided in some form during normal operations. In your planning process, try to figure out how the need for these services can escalate, and where you will find the personnel, equipment and supplies needed. As with other 15 'til 50 functions, equipment and supplies should be prepositioned if possible. Provide information on staff support services such as dependent care, transportation, mental health/spiritual care, or sleeping accommodations.

OPERATION ACTION ITEMS SUMMARY

Triage

- ✓ Plan for a 20% surge with 20% red tagged, 30% yellow, and 50% green (source: CDC)
- ✓ Ensure your plan involves ancillary and support units such as pediatrics or surgical staff

Security

- ✓ Work with your security staff to create diagrams of traffic flow, with special consideration for ingress and egress points for emergency vehicles. Mark signage, barriers, and cones
- ✓ Ensure that security personnel are thoroughly trained on the 15 'til 50 Plan, including the location of staging areas and whether certain entrances will be controlled or closed
- ✓ Have a plan for how your staff will coordinate with Law Enforcement in the event that the triggering MCI is a criminal act

Patient Processing

- ✓ Involve intake and case management staff as part of planning rapid admission, patient tracking, and discharge during an MCI

Communications

- ✓ Designate who is responsible for communications, where equipment is located, and what equipment and sources are utilized
- ✓ Outline basic communications etiquette and protocol
- ✓ Create a list of key stakeholders
- ✓ Designate a flow for communications, including the circumstances for when certain groups must be contacted

At-Risk Populations

- ✓ Plan for the needs of at-risk populations such as children, people with access and function needs (AFN)
- ✓ Especially if located outside, ensure your staging area is ADA accessible, with attention paid to providing clear pathways, utilizing space effectively, exposed power cords, etc.

Mental/Behavioral Health

- ✓ Include mental health staff as part of your 15 'til 50 planning process
- ✓ Identify a system like PsySTART to rapidly identify mental health issues in survivors
- ✓ Consider as part of your plan training staff in basic psychological first aid
- ✓ Include as part of your plan a system of supporting your staff's mental wellness

Support Services

- ✓ Plan for continuous staff support services such as dependent care, sleeping arrangements, food, and mental wellness



Transition Section

15 'til 50 operations are intended to get your organization through the first crucial hours of an MCI, long enough for you to either demobilize to normal operations or transition to ongoing incident management. Language regarding transition in your plan should include information on who has the authority to deactivate the 15 'til 50 Plan, triggers that determine deactivation, and notifying your stakeholders of the transition.

Demobilization procedures should follow the HICS Demobilization Checklist (HICS 221) or a modified version tailored for your facility. If your facility does not already have a Demobilization Checklist as part of its other emergency operations plans and policies, HICS 221 offers a useful tool to begin planning and outlining your facility's demobilization procedures in any incident. The HICS Demobilization Checklist is included as Appendix C.

Authority to Transition

The 15 'til 50 Plan should state directly, by HICS position title, who is responsible for making the decisions associated with deactivation. This could be the Incident Commander, Safety Officer, or other designated HICS authority. If your facility designates a specific hospital position as the demobilization or activation authority, include their contact information and designated replacements if they are not available. The deactivation authority could also be the same individual authorized to trigger the initial plan and response activation.

State, by position title, who has the authority to make decisions regarding the transition from 15 'til 50 to ongoing incident operations or normal hospital operations.

15 'til 50 Deactivation Trigger

The trigger for deactivation will depend largely on the type of incident and the resources you have available to you. Below are some possible triggers for 15 'til 50 deactivation:

- Your hospital no longer needs to transfer patients to other hospitals and can handle patient inflow internally
- The incident is over and no additional incident-related patients are appearing at the hospital
- The hospital has become unsafe, and must halt surge operations and transition into evacuation and/or facility shutdown
- Incident-related patients have all been diverted to another facility

While your possible trigger(s) will be included in your 15 'til 50 MCI Plan, it should be explicitly stated that often, the decision to enter deactivation is a subjective one. This is why designating the



proper decision-making authorities for deactivation is the most crucial step in your plan. The decision to deactivate your plan will always depend on the nature of the incident, the resources available, and the safety of your staff.

Notification Stakeholders

As with Activation, you will need to describe how internal staff and external stakeholders will be notified that you're transitioning to ongoing incident management or normal operations. Is there a code that you will use in your hospital? Are you coordinating with the local Emergency Operations Center(s) to let them know you're entering a new phase of your response? Be consistent with the communication protocols established for Activation.

Transition Operations

HICS Form 221 in Appendix C outlines a full checklist that should be completed as part of your 15 'til 50 Demobilization operations. This includes gathering all completed paperwork, disseminating final messages or incident summaries to staff members, completing final media and staff briefings, updating social media, notifying partner agencies, completing an inventory of remaining equipment and supplies, and completing a safety check.

TRANSITION ACTION ITEMS SUMMARY

Designate Authority

- ✓ **Specify who is authorized to order MCI demobilization. This will most likely be the individual who authorized the plan activation or another designated individual if response spans multiple labor shifts**

15 'til 50 Deactivation Trigger

- ✓ **Specify the trigger for 15 'til 50 deactivation and the transition to normal or other operations**

Stakeholder Notification

- ✓ **Review your hospital's communications protocols for notifying all staff and coordinating partner agencies that the facility has transitioned to either normal or continued emergency operations**

Demobilization Operations

- ✓ **Refer to HICS 221 (Appendix C) for a full checklist of Demobilization Action Items**



Appendix A: JIT Training Materials

JIT training materials have been provided as part of this toolkit. This includes Job Action Sheets, slide decks, videos and more.



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Appendix B: 15 'til 50 Activation Checklist

The purpose of an activation checklist is to ensure that in a crisis environment all critical functions are in place and ready to receive victims. The checklist below is an example of an activation checklist that may be used to activate the 15 'til 50 process. Using this checklist as a guide, each hospital should prepare an activation checklist appropriate to their situation and include the Activation Checklist in their plan.

Following the checklist, an explanation is provided for each checklist step.

- ☒ Decision to activate the 15 'til 50 Plan is made by the Incident Commander
- ☒ Incident Commander notifies all personnel via PBX paging "Code Triage External"
- ☒ Departments self activate according to Job Action Sheets for 15 'til 50. Add positions to checklist: Emergency Department Charge Nurse, Emergency Department External Change, Immediate Team, Delayed Team, Internal Emergency Department Charge Nurse
- ☒ Predestinated areas are set up with equipment, supplies and medications
- ☒ Incident Commander reviews Quick Start Form (incident action plan) with incident Command and General staff
- ☒ Section Chiefs distribute Job Action Sheets and conduct Just-in-Time Training as required
- ☒ Safety Officer inspects physical configuration and reviews procedures. If any safety deficiencies are identified these are reported to the Incident Commander
- ☒ Security establishes and marks ingress and egress routes for vehicles and pedestrians, and other security arrangements.
- ☒ Incident Commander or designee conducts communications check
- ☒ Unit leaders/Section Chiefs report to Incident Commander when their units/sections are "ready"
- ☒ Incident Commander declares that activation is complete, notifies participating staff, and the HCC



Decision to Activate. The Plan should clearly indicate, by position title, who is authorized to activate the Plan. This may be the HCC if activated, the Incident Commander if identified, or other appropriate authority. Keep in mind that activation may be required during evening hours, weekends or holidays; or the designated authority may not be present, so the plan should provide for alternative authorities. Persons with designated activation authority should be provided with a copy of the Plan, including the Activation Checklist on a flash drive or smart phone app so that it is readily available.

Personnel Notifications. It is recommended that all personnel who have assigned duties under the plan be notified directly, using an emergency notification system, phone tree, text, or blast email. If possible, the notification procedure should include an acknowledgement feature, so that Command Staff will know who to expect to report, and if any vacant positions need to be filled. Staff, on duty, can also be notified through the overhead paging system with a pre-determined code, such as “Code Triage External”.

Support Unit Notifications. While in most instances the emergency department staff will initially fill most of the positions involving direct contact with patients, other units in the hospital, such as Patient Transportation, Mental Health, Pharmacy, Laboratory, or Admissions, will play important support roles in the 15 'til 50 process. It should be automatic upon hearing Code Triage External, MCI that support units initiate, or be prepared to initiate, their assigned support functions.

Configuration of Facilities. The Plan should include diagrams of how the various areas (triage, treatment, etc.) should be configured. Configuration diagrams should include the location of equipment, location and content of signage, and supply storage. Configuration diagrams should also indicate patient flow through the area. Upon announcement of Code Triage External, Mass Casualty Incident that each department that has a role in an MCI activate their plan and begin set up of the pre-designated areas. Note that configuration should also include all forms or other recordkeeping tools.

Review Quick Start Form. It is recommended that an Incident Action Plan be prepared in advance using the HICS “Quick Start Form.” The Incident Commander should review the form with the Safety Officer, Liaison Officer, and Section Chiefs to ensure that key players have a common understanding of objectives and tactics. The Quick Start Form prepared in advance can be modified at this time if required by the nature of the incident.

Distribute Job Action Sheets and Conduct Just-in-Time Training. Section Chiefs should distribute Job Actions Sheets to Unit Leaders, who in turn distribute to participating staff. It is recommended that personnel who may perform leadership roles be trained and exercised in advance so that they are fully familiarized with their role. Pre-trained Section and Unit leaders will provide JIT training to their assigned staff as needed, using the JIT training material included in the Plan.



Safety Inspection. The safety of patients and hospital personnel is of primary importance; it is the responsibility of the Safety Officer to conduct a safety inspection prior to receiving patients, identify any unsafe conditions, and bring these to the attention of the Incident Commander for correction. The safety inspection should include physical safety, safe and secure storage of supplies, and procedures. The facility should not be declared “ready” until the Safety Officer is satisfied that operations can be conducted safely for patients and staff.

HICS 215A – IAP Safety Analysis form should be used to document the safety inspection and mitigation.

Traffic Control and Security. In most cases, the Security unit will be responsible for establishing a traffic flow pattern for both pedestrians and vehicles. Cones, barriers, signs, and other indicators should be used to direct pedestrians including points of ingress and egress, staging areas, parking, and speed restrictions. The Plan should include a detailed plan for traffic flow including diagrams. Separate ingress and egress should be established for emergency vehicles if possible, and arrangements should be made to accommodate multiple emergency vehicles simultaneously. The Security unit is also responsible for establishing and maintaining security for staff and patients. The Plan should also include a detailed security plan, including posting locations.

“Ready Status” Reporting. Upon determining that their functions are ready to receive patients, unit leaders should report up to Section Chiefs, who in turn will advise the Incident Commander.

“Ready” Declaration/Notifications. Once the Incident Commander is satisfied and all units are “Ready” and the operation can be conducted safely, she/he should declare activation complete and transmit both “up” and “down” notifications – down to all participating staff, and up to the HCC or other designated authority. Communication flows up and down the HICS chain of command structure.



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Appendix C: HICS Demobilization Checklist (221)

HICS 221- DEMOBILIZATION CHECK-OUT

1. Incident Name	2. Operational Period (#) DATE: FROM: _____ TO: _____ TIME: FROM: _____ TO: _____	
3. Section Demobilization Checks Use as positions and resources are demobilized. The position and the resources may only be released when the checked boxes below are signed off, all equipment is serviced and returned, and all paperwork turned in to the Documentation Unit Leader. Respective Section Chiefs must initial their sections showing approval for demobilization.		
COMMAND STAFF		
INCIDENT COMMANDER	REMARKS	INITIALS
<input type="checkbox"/> All units, branches, and sections have been demobilized. <input type="checkbox"/> All paperwork has been gathered for review and development of After Action Report. <input type="checkbox"/> Final message to staff, media, and stakeholders has been developed and disseminated. <input type="checkbox"/> All clinical operations have returned to normal or pre-incident status. <input type="checkbox"/> Hospital Command Center and Emergency Operations Plan are deactivated.		
PUBLIC INFORMATION OFFICER	REMARKS	INITIALS
<input type="checkbox"/> Final media briefing is developed, approved, and disseminated. <input type="checkbox"/> Final staff and patient briefings are developed, approved, and disseminated. <input type="checkbox"/> Social media is updated with current status.		
LIAISON OFFICER	REMARKS	INITIALS
<input type="checkbox"/> All stakeholders and external partners are notified of Hospital Command Center deactivation/return to normal operations.		
SAFETY OFFICER	REMARKS	INITIALS
<input type="checkbox"/> Final safety review of facility is completed and documented. <input type="checkbox"/> All potential hazards have been addressed and resolved. <input type="checkbox"/> All sites/hazards have been safely mitigated/repared and are ready to be used. <input type="checkbox"/> Appropriate regulatory agencies are notified. <input type="checkbox"/> All safety specific paperwork is completed and submitted.		
MEDICAL / TECHNICAL SPECIALIST (TITLE)	REMARKS	INITIALS
<input type="checkbox"/> Position-specific roles and responsibilities have been deactivated. <input type="checkbox"/> Response-specific paperwork is completed and submitted to Documentation Unit Leader.		
MEDICAL / TECHNICAL SPECIALIST (TITLE)	REMARKS	INITIALS
<input type="checkbox"/> Position-specific roles and responsibilities have been deactivated. <input type="checkbox"/> Response-specific paperwork is completed and submitted to Documentation Unit Leader.		
MEDICAL / TECHNICAL SPECIALIST (TITLE)	REMARKS	INITIALS
<input type="checkbox"/> Position-specific roles and responsibilities have been deactivated. <input type="checkbox"/> Response-specific paperwork is completed and submitted to Documentation Unit Leader.		



Purpose: Ensure all resources and supplies used in response and recovery are returned to pre-incident status
Origination: Hospital Incident Management Team (HIMT) personnel designated by Incident Commander
Copies to: Command Staff, Section Chiefs, and Documentation Unit Leader

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HICS 221- DEMOBILIZATION CHECK-OUT

OPERATIONS SECTION		
STAGING AREA	REMARKS	INITIALS
<input type="checkbox"/> All supplies and equipment staged for response are returned to storage or pre-response state. <input type="checkbox"/> All personnel are debriefed and returned to daily work site.		
MEDICAL CARE BRANCH	REMARKS	INITIALS
<input type="checkbox"/> All procedures and appointments are rescheduled. <input type="checkbox"/> All evacuated patients have been repatriated and family members notified. <input type="checkbox"/> All clinical information/procedures/interventions have been documented in the electronic medical record. <input type="checkbox"/> Alternate care sites have been deactivated and physical sites returned to pre-response operations. <input type="checkbox"/> Medical supplies and equipment utilized in the response have been returned to pre-response state. <input type="checkbox"/> Staffing patterns have returned to pre-response state. <input type="checkbox"/> All units within the branch are debriefed and deactivated.		
INFRASTRUCTURE BRANCH	REMARKS	INITIALS
<input type="checkbox"/> All damage assessments are completed and final report submitted to Operations and Planning Section Chiefs. <input type="checkbox"/> Repairs to infrastructure and equipment are complete or a new state of readiness is established by Operations Section Chief. <input type="checkbox"/> Utility services are in pre-response state. <input type="checkbox"/> Resupply of critical resources is underway. <input type="checkbox"/> All units within the branch are debriefed and deactivated.		
SECURITY BRANCH	REMARKS	INITIALS
<input type="checkbox"/> Facility and/or campus lockdown is suspended. <input type="checkbox"/> Hospital personnel used to augment security staff are debriefed and demobilized. <input type="checkbox"/> Additional security measures used in the response are now discontinued. <input type="checkbox"/> All units within branch are debriefed and deactivated.		
HAZMAT BRANCH	REMARKS	INITIALS
<input type="checkbox"/> Decontamination operations are concluded and all supplies, equipment, and personnel are returned to a pre-response state. <input type="checkbox"/> Water collected in decontamination operations is collected and disposed of safely. <input type="checkbox"/> Authorities are notified of the decon operations, including water collection. <input type="checkbox"/> Personnel involved in decon are referred to Employee Health for surveillance. <input type="checkbox"/> All units within branch are debriefed and deactivated.		
BUSINESS CONTINUITY BRANCH	REMARKS	INITIALS
<input type="checkbox"/> All supplies and equipment used in relocated services have been returned. <input type="checkbox"/> Interruptions in data entry have been resolved and documentation recovered. <input type="checkbox"/> All units within branch are debriefed and deactivated.		



Purpose: Ensure all resources and supplies used in response and recovery are returned to pre-incident status
Origination: Hospital Incident Management Team (HIMT) personnel designated by Incident Commander
Copies to: Command Staff, Section Chiefs, and Documentation Unit Leader

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HICS 221- DEMOBILIZATION CHECK-OUT

PATIENT FAMILY ASSISTANCE BRANCH	REMARKS	INITIALS
<input type="checkbox"/> All supplies and equipment used in relocated services have been returned. <input type="checkbox"/> All units within branch are debriefed and deactivated.		
PLANNING SECTION		
RESOURCES UNIT	REMARKS	INITIALS
<input type="checkbox"/> All tracking forms are complete and submitted to Documentation Unit Leader. <input type="checkbox"/> All tracking tools are demobilized and returned to storage.		
SITUATION UNIT	REMARKS	INITIALS
<input type="checkbox"/> All tracking forms are complete and submitted to Documentation Unit Leader. <input type="checkbox"/> All tracking tools are demobilized and returned to storage.		
DOCUMENTATION UNIT	REMARKS	INITIALS
<input type="checkbox"/> All paperwork created or used in the response has been submitted. <input type="checkbox"/> All paperwork is catalogued and correlated for review.		
DEMOBILIZATION UNIT	REMARKS	INITIALS
<input type="checkbox"/> All paperwork, including the approved Demobilization Plan, is submitted to Documentation Unit Leader.		
LOGISTICS SECTION		
SERVICE BRANCH	REMARKS	INITIALS
<input type="checkbox"/> All communications equipment is returned to readiness. <ol style="list-style-type: none"> 1. Radios and batteries are placed in charging stations. 2. Voice and text messages are reviewed and deleted. 3. Extra disaster telephones are returned to storage. 4. Satellite phones are returned and placed on chargers. 5. Hospital Command Center communication equipment is returned to storage. <input type="checkbox"/> All deployed information technology (IT) equipment is returned and inspected; all event specific data is removed and archived. <input type="checkbox"/> All food/water stores are returned to daily operations levels. <input type="checkbox"/> Disposable food preparation and delivery supplies are removed from service. <input type="checkbox"/> All units within branch are debriefed and deactivated.		
SUPPORT BRANCH	REMARKS	INITIALS
<input type="checkbox"/> Supplies and equipment used in response are inspected, cleaned, and returned to storage or daily use. <input type="checkbox"/> All equipment requiring calibration or repair is entered into preventive maintenance/service program. <input type="checkbox"/> All units within branch are debriefed and deactivated.		
FINANCE / ADMINISTRATION SECTION		
TIME UNIT	REMARKS	INITIALS
<input type="checkbox"/> All timesheets and other documentation tools are collected and provided to Documentation Unit Leader.		
PROCUREMENT UNIT	REMARKS	INITIALS
<input type="checkbox"/> All order forms, expense sheets, and other documentation tools are collected and provided to Documentation Unit Leader.		



Purpose: Ensure all resources and supplies used in response and recovery are returned to pre-incident status
Origination: Hospital Incident Management Team (HIMT) personnel designated by Incident Commander
Copies to: Command Staff, Section Chiefs, and Documentation Unit Leader

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HICS 221- DEMOBILIZATION CHECK-OUT

COMPENSATION / CLAIMS UNIT	REMARKS	INITIALS
<input type="checkbox"/> All timesheets and other documentation tools are collected and provided to Documentation Unit Leader. <input type="checkbox"/> All insurance forms are completed and submitted per policy.		
COST UNIT	REMARKS	INITIALS
<input type="checkbox"/> All time sheets and other documentation tools are collected and provided to Documentation Unit Leader. <input type="checkbox"/> All expense reports are completed. <input type="checkbox"/> All outstanding expenses, bills, purchase orders, check cards, bank cards have been resolved.		
ALL POSITIONS	REMARKS	INITIALS
<input type="checkbox"/> All paperwork generated during the response and recovery is submitted to the Documentation Unit Leader. <input type="checkbox"/> All response and recovery equipment related to your role has been repaired, charged, restocked, and returned to storage. <input type="checkbox"/> Daily supervisor is notified of your deactivation and return to normal duties.		
4. Prepared by <div style="display: flex; justify-content: space-between;"> <div> PRINT NAME: _____ POSITION: _____ DATE/TIME: _____ </div> <div> SIGNATURE: _____ FACILITY: _____ </div> </div>		



Purpose: Ensure all resources and supplies used in response and recovery are returned to pre-incident status
Origination: Hospital Incident Management Team (HIMT) personnel designated by Incident Commander
Copies to: Command Staff, Section Chiefs, and Documentation Unit Leader

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HICS 221- DEMOBILIZATION CHECK-OUT

- PURPOSE:** The HICS 221 - Demobilization Check-Out ensures that resources utilized during response and recovery has been returned to pre-incident status.
- ORIGINATION:** The HICS 221 is completed by Hospital Incident Management Team (HIMT) personnel designated by the Incident Commander.
- COPIES TO:** Delivered to the applicable Command Staff and Section Chief(s) for review and approval then forwarded to the Demobilization Unit or the Planning Section. All completed original forms must be given to the Documentation Unit Leader. Personnel may request to retain a copy of the HICS 221.
- NOTES:** HIMT personnel are not released until form is complete and signed by their Section Chief. If additional pages are needed, use a blank HICS 221 and repaginate as needed. Additions may be made to the form to meet the organization's needs.

NUMBER	TITLE	INSTRUCTIONS
1	Incident Name	Enter the name assigned to the incident.
2	Operational Period	Enter the start date (m/d/y) and time (24-hour clock) and end date and time for the operational period to which the form applies.
3	Section Demobilization Checks	As demobilization actions are taken, check off each appropriate box (or indicate "N/A"), and ensure Section Chief signs or initials approval before resource is released.
4	Prepared by	Enter the name, Hospital Incident Management Team (HIMT) position, and signature of the person preparing the form. Enter date (m/d/y), time prepared (24-hour clock), and facility.



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Appendix D: Job Aids

Job aids are included on the following pages for biological, chemical, or radiological incidents. Additional job aids are also provided for an MCI involving trauma/burn victims.

BIOLOGICAL EMERGENCIES JOB AID A Summary Guide for the Management of Biological Emergencies			
	PHASE	PERSONNEL	JOB ACTION
D	Detection	ED Nurse or Physician	<ul style="list-style-type: none"> The most common findings which should help lead to the detection of a biological disaster from an intentional event or from an emerging infectious disease may include: (A) ILI (Influenza-Like Illness) – Most cases of ILI are not caused by influenza but by other viruses; (B) A single case of an unusual illness or an unexplained outbreak of a known illness; (C) A rapid increase in the number of otherwise healthy individuals exhibiting common symptoms, seeking medical treatment; (D) A cluster of previously healthy individuals exhibiting similar symptoms who live, work, or recreate in a common geographic area; (E) An unusual presentation of a known infectious disease; (F) An increase in reports of dead or sick animals or (G) Any individual with a recent history (within 2-4 weeks) of international travel who presents with symptoms of high fever, rigors, delirium, unusual rash, extreme myalgia, prostration, shock, diffuse hemorrhagic lesions or petechiae, and/or extreme dehydration related to vomiting or diarrhea with or without blood loss.
I	ICS	Incident Commander	<ul style="list-style-type: none"> Upon determination of a multiple casualty biological event, activate HICS positions and emergency operations plan (EOP) as needed
S	Safety and Security	Employee Health and Well-being Unit Leader	<ul style="list-style-type: none"> If appropriate, monitor all in-coming employees for signs/symptoms of illness Ensure that all personnel who could potentially be exposed to a contaminant are protected by appropriate level of PPE. (All personnel must have completed a medical evaluation before donning PPE if it includes APR or PAPR respirators) Ensure all persons using PPE are evaluated after doffing of Level C PPE and receive appropriate rehabilitation, according to policy
		Security Branch Director	<ul style="list-style-type: none"> Assess security needs and capabilities and follow guidance from Operations Section Chief regarding possible victim screening and visitor restriction (e.g., no children under 16 years of age; no visitors with influenza-like illnesses)
		Safety Officer	<ul style="list-style-type: none"> Monitors and ensures the appropriate isolation procedures are followed Monitors staff use of appropriate personal protective equipment and infection control procedures
A	Assessment	Medical/Technical Specialist	<ul style="list-style-type: none"> Assesses and/or monitors situation updates from: Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), state Department of Public Health (DPH), local Department of Public Health and facility-based (inpatient and staff) sources Provides guidance to the Command Staff regarding: method of transmission, risks for cross-contamination or infection to others and methods designed to limit the spread of the infection
		Operations Section Chief	<ul style="list-style-type: none"> Works with Medical/Technical Specialist, Safety Officer and Logistics Section Chief to develop infection control guide to limit the spread of the infection Shares information and plans with Branch and Unit Leaders to assure safety and infection control plans are properly and completely implemented
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Assesses ongoing patient needs and capacities, and ongoing infection control needs and resources, and reports to Medical Care Branch Director Assesses need for additional bed capacity due to patient surge
S	Support	Casualty Care Unit Leader	<ul style="list-style-type: none"> Ensures appropriate infection control procedures are followed by all staff, patients, and visitors Establishes area(s) for the cohorting of patients with the signs and/or symptoms associated with the presumed or known infectious agent Requests assistance from the laboratory department for evidence collection, if necessary
		Inpatient Unit Leader	<ul style="list-style-type: none"> Ensures appropriate infection control procedures are followed by all staff, patients and visitors Establishes area(s) for the use of cohorting of patients with the signs and/or symptoms associated with the presumed or known infectious agent. Manages and promotes rapid admission to appropriate inpatient care areas as well as early patient discharge, if indicated
		Logistics Section Chief	<ul style="list-style-type: none"> Ensures an adequate supply of all resources necessary for patient care activities
T	Triage and Treatment	Operations Section Chief	<ul style="list-style-type: none"> Works with Medical/Technical Specialist, Safety Officer and Logistics Section Chief to develop infection control guidelines to limit the spread of the infection. Shares plans and information with department managers to ensure infection control and treatment plans are properly and completely implemented
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Ensures appropriate infection control procedures are followed by all staff, patients and visitors Uses established triage guidelines to prioritize patients according to severity of injury or illness Ensures appropriate treatment of patients based on appropriate treatment guidelines
		Inpatient Unit Leader	<ul style="list-style-type: none"> Manages and promotes rapid admission to appropriate inpatient care areas and provides continuity of care for all inpatients Provides for early patient discharge, if indicated
E	Evacuate	Casualty Care Unit Leader	<ul style="list-style-type: none"> In consultation with the senior emergency department physician prepare the ED by making prompt disposition decisions: discharge to home, or admission to hospital or secondary distribution to another facility for continued care (e.g., pediatric, long term care patients)
		Inpatient Unit Leader	<ul style="list-style-type: none"> In consultation with the Medical Care Branch Director, prepare the various inpatient units by making prompt disposition decisions: discharge to home, or admission to hospital or secondary distribution to another facility for continued care (e.g., pediatric, long term care patients) Implement internal surge plans as necessary
R	Recovery	Mental Health Unit Leader	<ul style="list-style-type: none"> Aid recovery by addressing the behavioral health needs of patients, visitors, and health-care personnel (see Behavioral Health EOP). If needed, enlist the services of social services, pastoral care, psychiatry, child life, employee assistance services, and external behavioral health services
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Monitors and/or relieves staff for signs/symptoms of illness, exposure or signs of excessive fatigue, stress Ensure all unneeded equipment and supplies are cleaned and returned to its original location
		Section Chiefs	<ul style="list-style-type: none"> Maintain a continuous level of readiness by monitoring staffing patterns, relieving staff showing signs of excessive fatigue or stress, monitoring staff for signs/symptoms of illness, directing used or unneeded equipment and supplies to be cleaned and returned to original location, and maintaining an accurate accounting of all staff time and other expenses

BIOLOGICAL EMERGENCIES JOB AID

A Summary Guide for the Management of Biological Emergencies

Isolation, placement and transport of patients with probable biopathogens

	Biological Agents									Viral Agents				Biotoxins			Misc. Biologicals				
CDC Bioterrorism Agents/Diseases by Category	Anthrax (A)	Bubonic Plague (A)	Pneumonic Plague (A)	Tularemia (A)	Brucellosis (B)	Q Fever (B)	Glanders (B)	Food/Water Safety Threats (B)	Melioidosis (B)	Smallpox (A)	Viral Hemorrhagic Fever (A)	Viral Encephalitis (B)	SARS-CoV	Botulism (A)	Ricin and Abrin (B)	Trichothecene (T2) Mycotoxin	Influenza	Bacterial Meningitis	Methicillin Resistant Staphylococcus aureus (MRSA)	Vancocillin Resistant Enterococci (VRE)	Unprotected abscess or
A – Agents with high risk to National Security																					
B – Agents easy to disseminate with high morbidity/low mortality																					
Isolation Precaution																					
Contact	①				①		②	X		X	X		X						X	X	X
Droplet			X							X	③		X				X	X			④
Airborne										X			X								
N95 Required										X			X								
Patient Placement																					
No Restriction	X			X		X						X		X	X	X					
Private Room		X	X		X		X			X	X		X					X	X	X	X
May Cohort		X	X				X	X					X				X		X	X	
Negative Pressure Room										X	⑤		X								
Patient Transport																					
No Restriction	X			X		X		X				X		X	X	X					
Essential movement only		X	X		X		X		X	X	X	X	X								X
Mask patient to minimize droplet contamination			X							X	⑥		X				X	X		⑤	
Notify receiving unit before transport	X		X		X		X	X		X	X		X				X	X	X	X	X

① Contact precautions with extensive skin involvement or lesions than cannot be covered

② Contact precautions required when skin involved

③ Airborne Precautions with for prominent cough, vomiting, diarrhea or hemorrhage

④ Add Droplet Precautions for the first 24 hours of appropriate antibiotic therapy if invasive Group A streptococcal disease is suspected.

⑤ Patient must wash hands with antibacterial soap, wear a gown, avoid touching common surfaces (elevator or TV buttons).

NOTE: ALL PATIENTS receive **STANDARD PRECAUTIONS** in addition to any recommended transmission based (airborne, droplet, contact) precautions.

TRAUMA / BURN EMERGENCIES JOB AID

A Summary Guide for the Management of Trauma or Burn Emergencies

	PHASE	PERSONNEL	JOB ACTION
D	Detection	ED Nurse or Physician	<ul style="list-style-type: none"> Obtain as much information as possible regarding potential source of contamination Notifies the Administrator on Duty (AOD) and the regional EMS communications center
I	ICS	Incident Commander	<ul style="list-style-type: none"> Upon determination of a multiple casualty trauma/burn event, activate HICS positions and emergency operations plan (EOP) as needed
S	Safety and Security	Security Branch Director	<ul style="list-style-type: none"> Assess security needs and capabilities and follow guidance from Operations Section Chief regarding possible victim screening and visitor restriction Establishes secure ingress and egress for vehicles delivering victims
		Safety Officer	<ul style="list-style-type: none"> Assign a safety officer to the Emergency Department as necessary Monitors staff use of appropriate safety and infection control procedures
A	Assessment	Medical/Technical Specialist	<ul style="list-style-type: none"> Provides guidance to the Incident Commander and Operations Section Chief regarding: <ul style="list-style-type: none"> Appropriate methods of treating casualties based on their severity Number of casualties needing immediate surgery or other treatments and the number of casualties that could have delayed surgery or other treatments Number of pediatric casualties Determination of criteria for transferring casualties to other facilities (trauma centers, burn centers, pediatric centers, etc.)
		Operations Section Chief	<ul style="list-style-type: none"> Shares information and plans with Branch and Unit Leaders to assure emergency treatment plans and victim dispositions are properly implemented
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Assesses ongoing patient needs and capacities, and ongoing trauma/burn specific needs and resources, and reports to Medical Care Branch Director Assesses need for additional bed capacity due to patient surge
S	Support	Casualty Care Unit Leader	<ul style="list-style-type: none"> Maintains contact with the regional EMS communications centers Establishes area(s) for the cohorting of patients based on triage categories
		Inpatient Unit Leader	<ul style="list-style-type: none"> Manages and promotes rapid admission to appropriate inpatient care areas as well as early patient discharge, if indicated
		Logistics Section Chief	<ul style="list-style-type: none"> Ensures an adequate supply of all resources necessary for patient care activities
T	Triage and Treatment	Operations Section Chief	<ul style="list-style-type: none"> Shares plans and information with Branch and Unit Leaders and department managers to ensure treatment plans are properly and completely implemented
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Uses established triage guidelines to prioritize patients according to severity of the injury Ensure that contaminated victims with immediate life-threatening injuries receive life-saving treatments Assesses and treats traumatic and or burn injuries based on appropriate treatment guidelines
		Inpatient Unit Leader	<ul style="list-style-type: none"> Manages and promotes rapid admission to appropriate inpatient care areas and provides continuity of care for all inpatients Provides for early patient discharge, if indicated
E	Evacuate	Casualty Care Unit Leader	<ul style="list-style-type: none"> In consultation with the senior emergency department physician, prepare the ED by making prompt disposition decisions: discharge to home, or admission to hospital or secondary distribution to another facility for continued care (e.g., pediatric, burn, long term care patients)
		Inpatient Unit Leader	<ul style="list-style-type: none"> In consultation with the Medical Care Branch Director, prepare the various inpatient units by making prompt disposition decisions: discharge to home, or admission to hospital or secondary distribution to another facility for continued care (e.g., pediatric, burn, long term care patients) Implement internal surge plans as necessary
R	Recovery	Mental Health Unit Leader	<ul style="list-style-type: none"> Aid recovery by addressing the behavioral health needs of patients, visitors, and health-care personnel (see Behavioral Health EOP). If needed, enlist the services of social services, pastoral care, psychiatry, child life, employee assistance services, and external behavioral health services
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Relieve staff showing signs of excessive fatigue or stress Ensure all unneeded equipment is cleaned and returned to the staging area, or returned to its original location
		Section Chiefs	<ul style="list-style-type: none"> Maintain a continuous level of readiness by monitoring staffing patterns, relieving staff showing signs of excessive fatigue or stress, directing unneeded equipment and supplies to be cleaned and returned to original location, and maintaining an accurate accounting of all staff time and other expenses

TRAUMA / BURN EMERGENCIES JOB AID

A Summary Guide for the Management of Trauma or Burn Emergencies

Blast Injuries

Pearls for Clinical Practice

- Expect an “upside-down” triage - the most severely injured arrive after the less injured, who by-pass EMS triage and go directly to the closest hospitals
 - If structural collapse occurs, expect increased severity and delayed arrival of casualties
 - Clinical signs of blast-related abdominal injuries can be initially silent until signs of acute abdomen or sepsis are advanced.
 - Standard penetrating and blunt trauma to anybody surface is the most common injury seen among survivors. Primary blast lung and blast abdomen are associated with a high mortality rate. “Blast Lung” is the most common fatal injury among initial survivors
 - Isolated tympanic membrane rupture is not a marker of morbidity; however, traumatic amputation of any limb is a marker for multi-system injuries.
 - Air embolism is common, and can present as stroke, MI, acute abdomen, blindness, deafness, spinal cord injury, or claudication. Hyperbaric oxygen therapy may be effective in some cases
 - Determinants of Injury from Blasts
 - Size of the explosion – larger blasts create a larger pressure differential which cause injury and structural damage
 - The initial pressure wave from a high energy explosive is a sharp overpressure, followed by a slight negative pressure before returning to baseline
 - Distance from the blast – the further the victim from the center of the blast, the less injury they might experience
 - Protection – solid walls can provide protection from the pressure wave, shrapnel, and heat
 - If the victim is in front of the wall, the pressure wave will hit them in the front, bounce off the wall and hit them again in the back
 - If in a corner of two walls, the pressure wave may hit the victim three times
 - Casualties may have increased chances of survival if they are in an open field, rather than being in a confined room
- Body armor may increase the amount of trauma to lungs

Parkland Formula

IV fluid

Lactated Ringer's Solution

Fluid calculation:

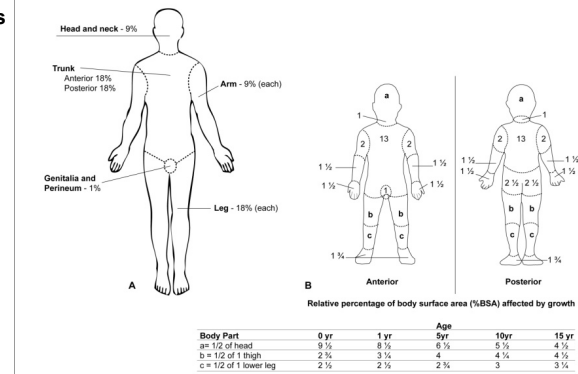
4 x weight in kg x %TBSA burn
 Give 1/2 of that volume in the first 8 hours
 Give other 1/2 over next 16 hours

Warning: Despite the formula suggesting cutting the fluid rate in half at 8 hours, the fluid rate should be gradually reduced throughout the resuscitation to maintain the targeted urine output, (i.e., do not follow the second part of the formula that says to reduce the rate at 8 hours, adjust the rate based on the urine output).

Example of Fluid Calculation

100-kg man with 80% TBSA burn
 Parkland formula:
 $4 \times 100 \times 80 = 32,000 \text{ ml}$
 Give 1/2 in first 8 hours = 16,000 ml in first 8 hours
 Starting rate = 2,000 ml/hour

Rule of Nines



RADIOLOGICAL EMERGENCIES JOB AID A Summary Guide for the Management of Radiological Emergencies			
	PHASE	PERSONNEL	JOB ACTION
D I S A S S E S S M E N T	Detection	ED Nurse or Physician	<ul style="list-style-type: none"> Obtain as much information as possible regarding potential source of contamination Notifies the Radiation Safety Officer, the Administrator on Duty (AOD) and the regional EMS communications center
	ICS	Incident Commander	<ul style="list-style-type: none"> Upon determination of a multiple casualty radiological event, activate HICS positions and emergency operations plan (EOP) as needed
S	Safety and Security	Medical/Technical Specialist	<ul style="list-style-type: none"> Provide radiation specific guidance regarding: (A) establishing perimeters for areas used for triage, treatment, decon, and storage of contaminated items; (B) Distribution of personal radiation monitoring devices and instructions for use; (C) preventive measures against cross-contamination Ensures safety of all persons through oversight of radiation survey, decontamination and monitoring of radiation exposure limits Ensures all staff and victims are surveyed with Geiger counter before leaving the Decontamination Zone Ensures that personnel (ED staff) who may treat potentially contaminated patients use Modified Level D PPE appropriately
		(Radiation Safety Officer)	
		Employee Health and Well-being Unit Leader	<ul style="list-style-type: none"> Ensure that all personnel on the decontamination team have completed a medical evaluation and screening before donning Level C PPE Ensure all persons using PPE are medically evaluated after doffing of Level C PPE and receive appropriate rehabilitation, according to policy
		Security Branch Director	<ul style="list-style-type: none"> Assess security needs and capabilities and follow guidance from Operations Section Chief regarding possible victim screening and visitor restriction Establishes secure ingress and egress for vehicles delivering victims Ensures that a security officer, donned in Modified Level D PPE is stationed inside the Hospital Decontamination Zone
A	Assessment	Safety Officer	<ul style="list-style-type: none"> Monitors the integrity of the decontamination unit and related equipment Ensures that all personnel including decontamination team members appropriately use personal protective equipment and control procedures Ensures that perimeters of all areas used to triage, treat, or decontaminate victims, or used to store contaminated items are clearly demarcated Based on guidance from the Radiation Safety Officer, ensures all staff and victims are surveyed with Geiger counter before leaving the Decontamination Zone
		Medical/Technical Specialist	<ul style="list-style-type: none"> Ensures assessment and/or monitoring for potential radiation contamination in victims and staff Assess the need for preventive measures to protect against cross-contamination of staff, patients, visitors, equipment, and hospital areas
		Operations Section Chief	<ul style="list-style-type: none"> Works with Medical/Technical Specialist, Safety Officer, and Logistics Section Chief to develop safety plan designed to limit the risk of cross-contamination Shares information and plans with Branch and Unit Leaders to assure safety and control plans are properly and completely implemented
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Assesses ongoing patient and resource needs and capacities and reports to Medical Care Branch Director Assesses need for additional bed capacity due to patient surge
S	Support	Casualty Care Unit Leader	<ul style="list-style-type: none"> Maintains contact with the regional EMS communications centers Ensures appropriate contamination control procedures are followed by all staff, patients, and visitors Requests assistance from the laboratory department for laboratory analysis, and evidence collection, if necessary
		Inpatient Unit Leader	<ul style="list-style-type: none"> Manages and promotes rapid admission to appropriate inpatient care areas as well as early patient discharge, if indicated
		Logistics Section Chief	<ul style="list-style-type: none"> Ensures an adequate supply of all resources necessary for patient care activities
T	Triage and Treatment	Operations Section Chief	<ul style="list-style-type: none"> Works with Medical/Technical Specialist, Safety Officer and Logistics Section Chief to develop contamination control guidelines to provide for safety Shares plans and information with department managers to ensure treatment plans are properly and completely implemented
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Ensure that the administration of life-saving treatment to potentially contaminated victims is NEVER delayed in favor of decontamination Administer radiation countermeasures, including internal decontamination agents, as soon as possible Assess all potentially radiation-exposed patients for acute radiation syndrome
		Inpatient Unit Leader	<ul style="list-style-type: none"> Ensure the continued assessment of all potentially radiation-exposed patients for acute radiation syndrome Manages and promotes rapid admission to appropriate inpatient care areas as well as early patient discharge, if indicated
E	Evacuate	Casualty Care Unit Leader	<ul style="list-style-type: none"> In consultation with the senior emergency department physician prepare the ED by making prompt disposition decisions: discharge to home, or admission to hospital or secondary distribution to another facility for continued care (e.g., pediatric, long term care patients)
		Inpatient Unit Leader	<ul style="list-style-type: none"> In consultation with the Medical Care Branch Director, prepare the various inpatient units by making prompt disposition decisions: discharge to home, or admission to hospital or secondary distribution to another facility for continued care (e.g., pediatric, long term care patients) Implement internal surge plans as necessary
R	Recovery	Mental Health Unit Leader	<ul style="list-style-type: none"> Aid recovery by addressing the behavioral health needs of patients, visitors, and health-care personnel (see Behavioral Health EOP). If needed, enlist the services of social services, pastoral care, psychiatry, child life, employee assistance services, and external behavioral health services
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Monitors and/or relieves staff for signs/symptoms of injury, exposure or signs of excessive fatigue, stress Ensures all staff coming from a decontamination zone must complete technical decon, surveyed with Geiger counter and evaluated in the rehab area Ensure all unneeded equipment and supplies are cleaned and returned to its original location
		Section Chiefs	<ul style="list-style-type: none"> Maintain a continuous level of readiness by monitoring staffing patterns, relieving staff showing signs of excessive fatigue or stress, directing unneeded equipment and supplies to be cleaned and returned to original location, and maintaining an accurate accounting of all staff time and other expenses

RADIOLOGICAL EMERGENCIES JOB AID

A Summary Guide for the Management of Radiological Emergencies

Treatment Principles in Radiation Emergencies		Management of Radiation Sickness Based on Early Symptoms	
Unit	Treatment Principles		
Radiation injury and other traumatic injury	<ul style="list-style-type: none"> • Patient may require spinal immobilization or analgesics for severe pain prior to decontamination • All open wounds are contaminated until proven otherwise by radiation survey • If surgery is indicated, it should be performed within 48 hours of severe whole-body radiation exposure • Serial CBCs should be obtained every 6 hours and absolute lymphocyte counts monitored over a 24-48 hour period to estimate radiation injury, if resources permit 	No vomiting	<div><100 rads</div> <div>Outpatient care</div>
Radiation injury without traumatic injury	<ul style="list-style-type: none"> • Supportive care is the mainstay of emergency treatment of acute radiation injury • Serial CBCs should be obtained every 6 hours and absolute lymphocyte counts monitored over a 24-48 hour period to estimate radiation injury, if resources permit • Ingestion of certain radioactive agents may require that internal decontamination be initiated in the ED 	Vomiting >2 hrs. after exposure	<div>100-200 rads</div> <div>Maybe followed closely as an outpatient</div>
Radiation exposure	<ul style="list-style-type: none"> • Serial CBCs should be obtained every 6 hours and absolute lymphocyte counts monitored over a 24-48 hour period to estimate radiation injury, if resources permit 	Vomiting 1-2 hrs. after exposure	<div>200-400 rads</div> <div>Hospitalization recommended</div>
Acute radiation illness	<ul style="list-style-type: none"> • Hospitalization may be required for management of radiation sickness 	Vomiting in <1 hr Diarrhea, hypotension, hyperthermia, erythema, (central nervous system >10 Gy)	<div>>400 rads</div> <div>Hospitalization required</div>

Components of Modified Level D Personal Protective Equipment

Item	Rationale
Double Gloving	Contaminated outer gloves are easily removed, leaving the healthcare worker "clean" and protected by inner gloves
Two layers of surgical gowns	Contaminated outer gown is easily removed, leaving the healthcare worker "clean" and protected by inner gown
Goggles	Standard Precautions item
Cap	Standard Precautions item
Face shield or mask	Standard Precautions item
Plastic shoe covers	Protects footwear from contamination
Personal dosimeters (e.g., pen or thermoluminescent dosimeters)	Provides a measure of radiation dose to the upper body
Ring dosimeters	Provides a measure of radiation dose to the hands

CHEMICAL EMERGENCIES JOB AID A Summary Guide for the Management of Chemical Emergencies			
	PHASE	PERSONNEL	JOB ACTION
D	Detection	ED Nurse or Physician	<ul style="list-style-type: none"> Obtain as much information as possible regarding potential source of contamination Notifies the Administrator on Duty (AOD) and the regional EMS communications center
I	ICS	Incident Commander	<ul style="list-style-type: none"> Upon determination of a multiple casualty chemical event, activate HICS positions and emergency operations plan (EOP) as needed
S	Safety and Security	ED Charge Nurse	<ul style="list-style-type: none"> Establish contaminated and non-contaminated triage areas Assign medical Decon Team for contaminated triage unit and for ambulatory and non-ambulatory decontamination areas as needed Ensure all personnel who may be exposed to contaminated patients don Level C PPE
		Employee Health & Well-Being Unit Leader	<ul style="list-style-type: none"> Ensure that all personnel on the decontamination team have completed a medical evaluation and screening before donning Level C PPE Ensure all persons using PPE are medically evaluated after doffing of Level C PPE and receive appropriate rehabilitation, according to policy
		Security Branch Director	<ul style="list-style-type: none"> Assess security needs and capabilities and follow guidance from Operations Section Chief regarding possible victim screening and visitor restriction Establishes secure ingress and egress for vehicles delivering victims
		Safety Officer	<ul style="list-style-type: none"> Monitors the integrity of the decontamination unit and related equipment Ensures that all personnel including decontamination team members appropriately use personal protective equipment and control procedures Ensures that perimeters of all areas used to triage, treat, or decontaminate victims, or used to store contaminated items are clearly demarcated
A	Assessment	Medical/Technical Specialist	<ul style="list-style-type: none"> Once the chemical agent is known, use at least three authoritative references to determine the risks/hazards Provides guidance to the Incident Commander and Operations Section Chief regarding potential of injury from the chemical agent, preventive measures to protect against cross-contamination of staff, patients, and visitors and hazard-specific patient treatment guidance
		Operations Section Chief	<ul style="list-style-type: none"> Works with Med/Technical Specialist, Safety Officer, and Logistics Section Chief to develop safety plan designed to limit the risk of cross-contamination Shares information and plans with Branch and Unit Leaders to assure emergency treatment plans and victim dispositions are properly implemented
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Assesses ongoing patient needs and capacities, and ongoing contamination-specific needs and resources, and reports to Medical Care Branch Director Assesses need for additional bed capacity due to patient surge
S	Support	Casualty Care Unit Leader	<ul style="list-style-type: none"> Maintains contact with the regional EMS communications centers Ensures appropriate personal protection procedures are followed by staff, victims, and visitors Requests assistance from the laboratory department for evidence collection, if necessary
		Inpatient Unit Leader	<ul style="list-style-type: none"> Manages and promotes rapid admission to appropriate inpatient care areas as well as early patient discharge, if indicated
		Logistics Section Chief	<ul style="list-style-type: none"> Ensures an adequate supply of all resources necessary for patient care activities
T	Triage and Treatment	Operations Section Chief	<ul style="list-style-type: none"> Works with Med/Technical Specialist to develop contamination control guidelines designed to provide safety for staff, patients, visitors, and victims Shares plans and information with Branch and Unit Leaders and department managers to ensure treatment plans are properly and completely implemented
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Uses established triage guidelines to prioritize patients according to severity of the injury Ensure that contaminated victims with immediately life-threatening injuries receive life-saving treatments based on appropriate algorithms Ensures appropriate treatment of patients based on appropriate treatment guidelines
		Inpatient Unit Leader	<ul style="list-style-type: none"> Manages and promotes rapid admission to appropriate inpatient care areas and provides continuity of care for all inpatients Provides for early patient discharge, if indicated
E	Evacuate	Casualty Care Unit Leader	<ul style="list-style-type: none"> In consultation with the senior emergency department physician prepare the ED by making prompt disposition decisions: discharge to home, or admission to hospital or secondary distribution to another facility for continued care (e.g., pediatric, long term care patients)
		Inpatient Unit Leader	<ul style="list-style-type: none"> In consultation with the Medical Care Branch Director, prepare the various inpatient units by making prompt disposition decisions: discharge to home, or admission to hospital or secondary distribution to another facility for continued care (e.g., pediatric, long term care patients) Implement internal surge plans as necessary
R	Recovery	Mental Health Unit Leader	<ul style="list-style-type: none"> Aid recovery by addressing the behavioral health needs of patients, visitors, and health-care personnel (see Behavioral Health EOP). If needed, enlist the services of social services, pastoral care, psychiatry, child life, employee assistance services, and external behavioral health services
		Casualty Care Unit Leader	<ul style="list-style-type: none"> Monitors and/or relieves staff for signs/symptoms of injury, exposure or signs of excessive fatigue, or stress Ensures all staff coming from a decontamination zone must complete technical decon, and evaluated in the rehab area Ensure all unneeded equipment and supplies are cleaned and returned to its original location
		Section Chiefs	<ul style="list-style-type: none"> Maintain a continuous level of readiness by monitoring staffing patterns, relieving staff showing signs of excessive fatigue or stress, directing unneeded equipment and supplies to be cleaned and returned to original location, and maintaining an accurate accounting of all staff time and other expenses

CHEMICAL EMERGENCIES JOB AID

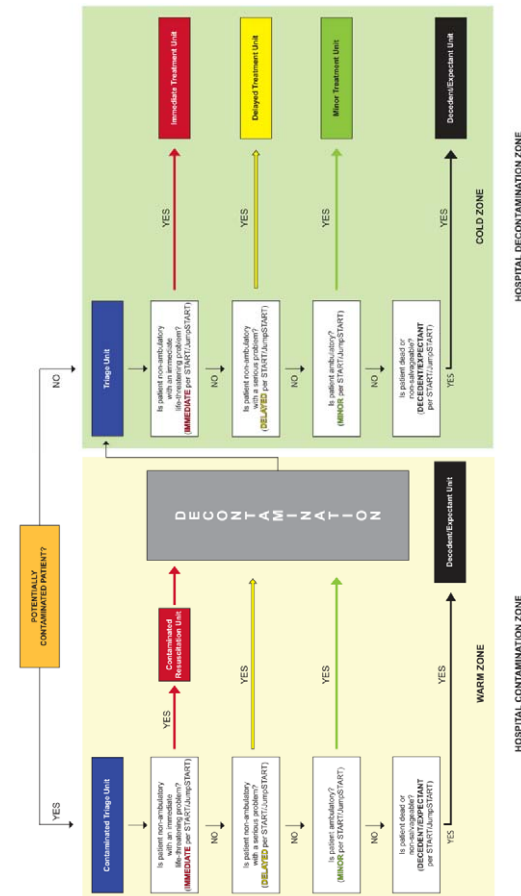
A Summary Guide for the Management of Chemical Emergencies

Hazard Risk Assessment Worksheet

Instructions: Using the scenario provided, use three (3) chemical information resources to complete this worksheet. Use this worksheet to determine the appropriate level of PPE required to protect an individual from the stated chemical.

Product: _____ Physical State: _____

Hazards		Values
Flash Point/Flammability Definition: Minimum temperature which liquid forms enough vapor to ignite/ease with which substance will ignite		
IDLH Definition: Immediate danger to life and health – maximum exposure which person could escape within 30 minutes without ill effects		
Vapor Density Definition: Density of gas relative to the density of air which by definition is 1 at 68° F (may be referred to as RGasD in some references)		
Water Solubility Definition: Solubility in water at 68° F, % by weight (i.e., g/100mL)		
Physical Properties	Description	
Health Effects	Inhalation	
	Ingestion	
	Skin Contact	
	Eye Contact	
	Other	
Personal Protection	Respiratory Protection	
	Skin Protection	
	Eye Protection	
	Level of PPE necessary	





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Appendix E: Equipment And Supplies Checklist

Below is a sample list of equipment and supplies for 15 'til 50 deployment. This is not prescriptive, only an example provided to work from. Hospital administrators and staff will need to tailor each list depending on the extent of your mobile triage site and your expected capacity.

Table (3): Go-Kit Equipment

#	Item	Quantity	Location	Status	✓
1.	Clipboard	5 per go-kit	Inside go-kit box	Accounted for	Clipboard
2.	Copy of the 15 'til 50 Plan	5 per go-kit	Inside go-kit box	Accounted for	Copy of the 15 'til 50 Plan
3.	Extra directional signage (left, right, up, down arrows, space to write in locations)	10-20 copies	Inside go-kit boxes for Triage and Treatment areas	Accounted for	Extra directional signage (left, right, up, down arrows, space to write in locations)
4.	Job Action Vest Inserts for each section (including a few blanks)	5-10 per go-kit	Inside go-kit box	Accounted for	Job Action Vest Inserts for each section (including a few blanks)
5.	Job Action Vests for each section	5-10 per go-kit	Inside go-kit box	Accounted for	Job Action Vests for each section

#	Item	Quantity	Location	Status	✓
6.	Mobile Triage Layout Maps (laminated)	5 per go-kit	Inside go-kit box	Accounted for	Mobile Triage Layout Maps (laminated)
7.	Pens	10	Inside go-kit box	Accounted for	Pens
8.	Personal Protective Equipment (Safety Goggles, Gowns, Latex and non-latex gloves, shoe covers, and N95 masks)	Extra supplies for at least 5 people	Inside go-kit boxes for relevant areas	Accounted for	Personal Protective Equipment (Safety Goggles, Gowns, Latex and non-latex gloves, shoe covers, and N95 masks)
9.	PsyStart Triage Evaluations	50 per go-kit	Inside go-kit box	Accounted for	PsyStart Triage Evaluations
10.	Quick Triage Flow-charts and/or Medication Algorithms	10-20 Laminated copies of common complaint/treatment algorithms	Inside go-kit boxes for Triage and Treatment areas	Accounted for	Quick Triage Flow-charts and/or Medication Algorithms
11.	Radios (For Trained Staff)	2 per go-kit	Located in the 1st floor storage room – Locked Cabinet #4	Must be retrieved and placed into go-kits before deployed	

#	Item	Quantity	Location	Status	✓
12.	START Triage Tags	50 per go-kit	Inside go-kit box	Accounted for	
13.	Triage Tape	1 roll of each color (Red, Green, Yellow)	Inside go-kit box	Accounted for	
14.	Triage Tarps (Fire Marshall Approved)	1 of each color (Red, Green, Yellow)	Inside go-kit box	Accounted for	

Table (4): Mobile Triage Setup Equipment

#	Item	Quantity	Location	Status	✓
1.	Assorted Bandage Packs	10 boxes	Inside Storage Unit 1	Accounted for	
2.	Batteries (Non-rechargeable lithium manganese dioxide)	5	On the "Other Materials" shelf in Storage Unit 1	Accounted for	



#	Item	Quantity	Location	Status	✓
3.	Bleach	3 buckets of Clorox Bleach	Inside Storage Unit 3	Accounted for	
4.	Bottled Water	10 packs of 12 per pack	Inside Storage Unit 2	Accounted for	
5.	Bungee Cords	5 packs of 3 per pack	On the "Other Materials" Shelf in Storage Unit 1	Accounted for	
6.	Cadaver Bags	30	Inside the bin labeled "Post Mortem"	Accounted for	
7.	Canopies	5-10	Inside the Mobile Triage Storage Unit 2	Accounted for	
8.	Canvas Stretchers	10	Inside the bin labeled "Canvas Stretchers" in Unit 1	Accounted for	



#	Item	Quantity	Location	Status	✓
9.	Caution Tape	5 rolls	Inside the bin labeled "Traffic Control"	Accounted for	
10.	Chalk	2 packs of 10 pieces per pack	On the "Other Materials" Shelf in Storage Unit 1	Accounted for	
11.	Cleaning Tissues	10 boxes – 100 per box	Inside the bin labeled "Treatment supplies"	Accounted for	
12.	Clipboards	10-20	Inside the box labeled "Clipboards, Pens, Paper"	Accounted for	
13.	Copy of the 15 'til 50 Plan	10 copies per storage unit	Inside the "Documents" Storage Bin or at Patient Check-In Desk	Accounted for	
14.	Decon Doffing Bins	3	Inside Storage Unit 3	Accounted for	



#	Item	Quantity	Location	Status	✓
15.	Decon Wash Kits for Patients	6 boxes of 3 kits per box	Inside the Decon Doffing Bins	Accounted for	
16.	Directional Signs (large pop-up easels)	5-10	Inside the Mobile Triage Storage Unit 1	Accounted for	
17.	Directional Signs (printed and laminated)	20	Inside the bin labeled "Signs"	Accounted for	
18.	"Doff-it" Personal Privacy Kits	10 packs	Inside the Decon Doffing Bins	Accounted for	
19.	Drinking Water Packets	50	Inside the bin labeled "Water and Food"	Accounted for	
20.	Dry Erase Markers	5 packs of 10 per pack	On the "other materials" shelf in Unit 1	Accounted for	

#	Item	Quantity	Location	Status	✓
21.	Flashlights / Lanterns	25	Inside the bin labeled "Flashlights / Lanterns"	Accounted for	
22.	Floodlights	3	Inside Storage Unit 3	Accounted for	
23.	Gurneys	10-20	Borrowed from ED and other departments	Must be retrieved during deployment	
24.	Injection Needles (various sizes)	7 boxes (50 per box)	Inside Storage Unit 2	Accounted for	
25.	IV Lines	20	Inside the bin labeled "IV supplies"	Accounted for	
26.	Job Action Vest Inserts for all positions (and blank extra copies)	2-5 for each position	Inside the bin labeled "Inserts"	Accounted for	



#	Item	Quantity	Location	Status	✓
27.	Job Action Vests for all sections (except Command)	50 total (ensure enough to cover org chart and extras)	Inside the bin labeled "Vests"	Missing from the storage unit	
28.	Meals for all	9 cases (125 servings per case)	Inside Storage Room 503	Must be retrieved if needed	
29.	Medical Waste Disposal Bags	5 packs of 100 per pack	Inside the Medical Waste Disposal Buckets in Storage Unit 1	Accounted for	
30.	Medical Waste Disposal Buckets (Red)	3	Inside Storage Unit 1	Accounted for	
31.	Mobile Generators	3	Inside Storage Unit 2	Accounted for	
32.	Mobile Triage Layout Maps (laminated)	10 copies per storage unit	Inside the bin labeled "Documents"	Accounted for	

#	Item	Quantity	Location	Status	✓
33.	Oxygen Tanks	20	Located within Room 134	Must be retrieved during deployment	
34.	Powered Air Purifying Respirator (PAPR) Vests	5	Inside the bin labeled "PAPR" in Unit 2	Accounted for	
35.	Pop-up Cots	30-50	Inside Mobile Triage Storage Units 1 and 2	Some are stored in basement level Storage room – need to be retrieved	
36.	Portable Mini-Refrigerators	2	Inside Storage Unit 1	Accounted for	
37.	Portable Shower	3	Inside the Mobile Triage Storage Unit 2, in the "Extra Equipment Bin"	Accounted for	
38.	Post Mortem Kits	5	Inside the bin labeled "Post Mortem"	Accounted for	

#	Item	Quantity	Location	Status	✓
39.	Power Cords	10 (3-4 of various lengths)	On the “Other materials” shelf in Unit 1	Accounted for	
40.	PPE – Eye Protection Goggles	10 boxes – 2 pairs per box	Inside the bin labeled “PPE”	Accounted for	
41.	PPE – Face Shields	10 boxes – 5 face shields per box	Inside the bin labeled “PPE”	Accounted for	
42.	PPE – Gloves (Large)	5 boxes – 200 gloves per box	Inside the bin labeled “PPE”	Accounted for	
43.	PPE – Gloves (Non-latex, small and large)	5 boxes – 200 gloves per box	Inside the bin labeled “PPE”		
44.	PPE – Gloves (Small)	5 boxes – 200 gloves per box	Inside the bin labeled “PPE”	Accounted for	

#	Item	Quantity	Location	Status	✓
45.	PPE – Gowns	10 boxes – 10 gowns per box	Inside the bin labeled “PPE”	Accounted for	
46.	PPE Guidelines (Instructional Sheets and Posters for each piece)	10 copies of each instructional page	Inside the bin labeled “PPE”	Accounted for	
47.	PPE – Head Covers	10 boxes – 10 head covers per box	Inside the bin labeled “PPE”	Accounted for	
48.	PPE – Helmets	15	On the shelf above the “PPE” bin	Accounted for	
49.	PPE – N95 Masks	5 boxes – 10 masks per box	Inside the bin labeled “PPE”	Accounted for	
50.	PPE – Respirators (Disposable)	10 boxes – 10 disposable respirators per box	Inside the bin labeled “PPE”	Accounted for	



#	Item	Quantity	Location	Status	✓
51.	PPE – Respirators (Half Mask)	10	Inside the bin labeled “Respirators”	Accounted for	
52.	PPE – Shoe Covers	10 boxes – 10 shoe covers per box	Inside the bin labeled “PPE”	Accounted for	
53.	Procedural Packs / Trays (Angiographic Tray, Biopsy / Centesis Basic Kit, Medication Delivery Packs, Spinal Procedure Kit, Vein Closure Tray, and Myelogram Tray)	2-3 of each	Inside the bin labeled “Procedural Kits” in Storage Unit 2	Accounted for	
54.	Radios	10-20 radios, depending on staffing plans	Located in the 1- floor storage room – Locked Cabinet #4	Must be retrieved during deployment	
55.	Sheets	50	Inside the bin labeled “Sheets”	Accounted for	
56.	Shovels	3	Inside Storage Unit 3	Accounted for	

#	Item	Quantity	Location	Status	✓
57.	Shower Trailer / Decontamination Trailer	1	Located behind the Hoover Memorial Clinic	Must be moved and setup next to the staging area	
58.	Soiled Linens Cart	1	Located in the Laundry Room in the Basement	Must be retrieved during deployment	
59.	Supply Carts	10	Located within the ED	Must be retrieved during deployment	
60.	Traffic Cones	50	Inside Storage Unit 3	Accounted for	
61.	Trailer-Pull "Power Mover"	1	Located to the left of the Decontamination Trailer	Accounted for	
62.	Trash Bags	5 boxes of 10 bags per box	On the "Other Materials" shelf in Unit 1	Accounted for	



#	Item	Quantity	Location	Status	✓
63.	Triage Tape	5 rolls of each color (Red, Green, Yellow)	Inside the bin labeled "Tarps"	Accounted for	
64.	Triage Tarps (Red, Green, Yellow)	3 of each color	Inside the bin labeled "Tarps"	Accounted for	
65.	Water Bottles (5 Gallon)	5	Inside Storage Room 503	Must be retrieved during deployment	
66.	Water Pumps (Manually operated)	5	Inside Storage Room 503	Must be retrieved during deployment	
67.	Wheelchairs	10-20	Borrowed from ED and other departments	Must be retrieved during deployment	
68.	Whiteboards	4 Large	Borrowed from ED and other departments	Must be retrieved during deployment	



#	Item	Quantity	Location	Status	✓
69.	Ziploc Bags (small and large)	10 packs of 100 per pack	On the “Other materials” shelf in Unit 1	Accounted for	

Table (5): Command Center Equipment

#	Item	Quantity	Location	Status	✓
1.	Blank HICS Forms	5 copies of each	Inside the “Forms” bin	Accounted for	
2.	Blank Job Action Vest Inserts	10	Inside the bin labeled “Vests”	Accounted for	
3.	Copies of EOPs, Incident Response Guides, other hospital plans and policies	1 copy of each	Should be readily available in the Command center	Accounted for	
4.	Copy of the 15 ‘til 50 Plan	10 copies	Inside 1 st drawer of Cabinet #2 in the Command Center	Accounted for	
5.	Folders	1 for each Command position	Inside the bin labeled “Folders and Job Action Sheets”	Accounted for	
6.	Job Action Sheets	1 copy for each HICS position	Inside the folders in the “Folders and Job Action Sheets” bin	Accounted for	
7.	Job Action Vest Inserts - Finance/Admin	10	Inside the bin labeled “Vests”	Accounted for	



#	Item	Quantity	Location	Status	✓
8.	Job Action Vest Inserts - Command	10	Inside the bin labeled "Vests"	Accounted for	
9.	Job Action Vest Inserts - Planning	10	Inside the bin labeled "Vests"	Accounted for	
10.	Job Action Vest Inserts – Logistics	10	Inside the bin labeled "Vests"	Accounted for	
11.	Job Action Vest Inserts – Operations	10	Inside the bin labeled "Vests"	Accounted for	
12.	Job Action Vests – Command (Blue)	10	Inside the bin labeled "Vests"	Accounted for	
13.	Job Action Vests – Finance/Admin (Orange)	10	Inside the bin labeled "Vests"	Accounted for	
14.	Job Action Vests – Logistics (Green)	10	Inside the bin labeled "Vests"	Accounted for	
15.	Job Action Vests – Operations (Red)	10	Inside the bin labeled "Vests"	Accounted for	
16.	Job Action Vests – Planning (Yellow)	10	Inside the bin labeled "Vests"	Accounted for	
17.	Mobile Triage Layout Maps (laminated)	10 copies	Inside 1- drawer of Cabinet #2 in the Command Center	Accounted for	
18.	Radios	10-20 radios, depending on staffing plans	Located in the 1- floor storage room – Locked Cabinet #4	Must be retrieved during deployment	



Appendix F: Mass Causality Predictor

Every facility is different in terms of size, assets, and function within the healthcare community. In order to accurately determine logistical needs specific to the event and your facility, the CDC created a Mass Casualty Predictor formula predicated on the Dual Wave Phenomenon. Think of the phenomenon truly like a tsunami. The further away the impact, the more time you'll have before the first wave hits your shores. If the event happens within a mile of your facility, expect the waves to come crashing down on your facility in quick succession. The window of time between the two waves is a vital period for your staff to clear less wounded patients through your hospital in order to make room for the more resource intensive critically injured.

According to the CDC, when trying to determine how many casualties to expect, it is important to remember that casualties present quickly and that approximately half of all casualties will arrive at the hospital within a 1-hour window. The 1-hour window begins when the first casualty arrives at your hospital. To predict the total number of casualties you can expect, double the number of casualties received in the first hour. That total will be an estimate. There are many factors that may affect the accuracy of this prediction such as: transportation difficulties and delays, security issues that may hinder access to victims, and multiple impacts or secondary impacts (e.g. building collapse after an explosion).

CDC MASS CASUALTY PREDICTOR

Total Expected Casualties = # of casualties arriving in a one hour window multiplied by 2.
Approximately 50% of acute casualties may arrive at closest medical facilities within 60 minutes. 50-80% may arrive within 90 minutes. Most arrive within 1-4 hours.



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Appendix G: What Are The Staffing Requirements for 15 'til 50?

The 15 'til 50 program is a flexible and modular system that fits easily within the HICS incident management structure. As such, the number of personnel required to achieve the objective of increased capacity during a surge is dictated by available resources and the severity of the incident. The following table represents how you might structure your 15 'til 50 staffing plan. The activation criteria for each level should be determined by your own hospital's resources and environment.

Table (6): Sample 15 'til 50 Staffing Levels

Staffing	Minimum Activation	Level I (10-30 patients)	Level II (30-50 Patients)	Level III (50 + Patients)
Clinical/Licensed	5	10	15	20
Support	15	20	25	30



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Appendix H: How Is Each Department Involved In 15 'til 50?

The 15 'til 50 model emphasizes the strong role that ancillary and support departments play in a mass casualty incident. The table below lists various departments within hospitals, their role during a 15 'til 50 MCI, staff, supplies, and role within HICS.

Table (7): Department roles in 15 'til 50

Department	Role	Staff	Supplies	HICS
Behavioral Health	Provide PsySTART services in the Triage and Treatment areas	Any available staff, social services, chaplains	PsySTART triage forms	Behavioral Health Unit Leader and/or Social Services Appointee
Blood Bank	Fill supply orders as requested	Blood Bank Tech on duty or designee	Blood Products	N/A
Case Management	Increase bed surge capacity from a low of 10% of the current bed inventory to a high of 35% of the current bed inventory to accommodate an influx of patients resulting from a mass casualty incident Coordinate discharge of patients meeting criteria for rapid discharge for inpatients and emergency department patients with physicians Establish a patient discharge area to free beds until patients can be discharged or transferred and transported in a lobby or other lounge area Coordinate activities to expedite discharge including transportation Assist in the Family Information Center by providing psychological first aid Provide PsySTART assessments	Case managers on duty	Phones Laptops Additional supplies for the FIC	Director may be assigned to the role of Medical Care Branch Director or Inpatient Care Unit Leader
Central Supply/Supply Chain	Restock supplies as requested	Staff on duty or as requested	Per request	Logistics and/or Planning Sections
Chaplain	Provide mental health and spiritual care services Support Family Information Center activities and Expectant or Palliative Care services	Staff on duty or on call	N/A	Patient and/or Family Assistance



MASS CASUALTY INCIDENT GUIDE

Department	Role	Staff	Supplies	HICS
Emergency Department	Organize a coordinated emergency department response and fill all Code Triage treatment functions	All available as assigned	Pre-designated supply caches and/or treatment supply carts	N/A – Only if available
Engineering	Conduct facility assessments (as needed) Assist with setup of triage and treatment areas Perform utilities assessments	Any available as assigned	Facility blueprints Maps Appropriate tools	Infrastructure Branch Director Safety Officer Operations Chief Subordinate roles
Environmental Services	Respond to waste and/or spill management requests Assist with room and/or bed turnover	Any available as assigned	N/A	Director
Food and Nutrition	Ensure food and water supplies are available for staff, patients, and visitors throughout the MCI event	Any available as assigned	As ordered / as needed for the event	Food Services Unit Leader / Director
Health Information	Reconcile disaster forms and input into computerized records and/or electronic health records	Any available as assigned	N/A	Director / Document Leader
Hospital Command Center	Coordinate deployment of staff, internal/external operational communications, and the procurement and management of all resources and equipment	All available as assigned	Per designated caches: Job Action Sheets Writing Materials All relevant hospital plans (EOPs, 15 'til 50, etc.)	Incident Commander Command Staff
Human Resources	Manage the labor pool and the health and well-being of responding staff	Any available as assigned	Labor pool supplies Resources for staff	Director or Supervisor as assigned to Support Branch Director
Infection Control	Discuss infection control measures that need to be implemented for the protection of all	IC Nurse	N/A	Medical Technical Specialist. Biological/Infections
Inpatient Nursing	Assist Case Management staff in assessing patients who meet the criteria for rapid discharge and or downgrade to a lower level of care Setup and oversee patient discharge areas. Report to the Emergency Department for care of patients arriving	Available RNs and CNAs from each Nursing unit. Some RNs and CNAs from each unit should remain to handle transports	Job Action Sheets Writing Materials Extra Forms	Triage and/or Treatment Unit staff under Casualty Care Unit Leader



MASS CASUALTY INCIDENT GUIDE

Department	Role	Staff	Supplies	HICS
Laboratory	Provide all necessary functions for blood and fluid analysis	Any available as assigned	Transport supplies	N/A
Nursing	Serve as the IC or MT Specialist	Admin on call, Admin in charge, or House Supervisor on Duty	Radio(s) Bed Status Report	Incident Commander Med Tech Specialists
Pharmacy	Provide pharmaceutical services using satellite carts to external triage sites.	Pharmacist to Triage Pharmacy Tech to ED	Pre Stocked Med Carts Deploy to: Mobile Triage Area Internal Treatment Areas	Director may be assigned a Medication Staging Unit Leader position
Public Relations	Provide communications to staff, media, visitors, patients, and external agencies	Personnel on call	N/A	Public Information Officer
Radiology	Provide all necessary radiological diagnostic services for an MCI	Management Supervisor Techs	C-Arms Portable X-Rays PACS Carts Deploy to: Mobile Triage Area, Internal Treatment Areas	N/A
Registration	Ensure registration of all incoming patients during an MCI event	Any available as assigned	Registration supply boxes	Director or Designee for Patient Tracking
Respiratory	Provide RC to patients PRN	Any available as assigned	N/A	Director Med Tech Specialists
Safety and Security	Provide safety and security measures and ensure they are maintained during the event, ensuring the safety of all involved responders, patients, visitors, etc.	Any available and on duty	N/A	Safety Officer and/or Manager
Social Services	Provide PsySTART evaluation to patients Assist at the Family Information Center and with Expectant and/or Palliative Care	Any available as assigned	Supplied by Case Management	Patient or Family Assistance and Family Reunification
Staffing Office	Continue staffing office functions to coordinate staffing needs as requested by Incident Command	N/A	N/A	N/A

Department	Role	Staff	Supplies	HICS
Surgery	Identify available physicians, anesthesiologists, first assists and other surgery staff Obtain estimated ending times of each surgical procedure in progress Obtain time estimated of available recovery beds Cancel all elective cases on schedule when directed Check with each surgeon in the unit for their availability should they be needed Provide direct patient care based on acuity and medical necessity Establish accurate vacant bed list Establish patient assessment for discharge, transfer to lower level of care Assign appropriate staff to Labor Pool Activate telephone tree upon request of Command Center or request notification of staff through Emergency Notification System	Charge Nurse to emergency department Anesthesiologist to mobile triage or internal treatment areas	N/A	N/A
Transport	Provide transportation services to all areas of external triage and assist with internal transport of patients transferring to a lower level of care	All available transporters	Find all available gurneys and wheelchairs Deploy to: Staging Area or Mobile Triage Area	N/A
Trauma	Expand quickly the capacity and capability beyond normal operations to meet an increased demand for medical care in the event of a multiple casualty incident (MCI), bioterrorism or other large-scale public health emergencies Assist inpatient triage – to identify patients who can be downgraded, transferred to other healthcare facilities, or discharged Assist Emergency Department triage to identify patients who meet criteria for intensive care or surgery Facilitate patient movement utilizing the triage criteria	All available trauma staff	N/A	N/A
Volunteers	Assist management of an MCI incident by accepting an alternate assignment	Volunteers on duty	N/A	Runners

Appendix I: Sample Unaccompanied Minors Action Items Checklist

The following checklist was taken from the Family Information Center Planning Guide for Healthcare Entities:

- ☒ Assign an Unaccompanied Minors Specialist in the FIC
- ☒ Establish an Unaccompanied Minors Safe Area
- ☒ Establish security measures to ensure the safety and security of the Safe Area
- ☒ Consider instances that the minor may need to be escorted out of the FIC, such as to use the restroom
- ☒ Ensure that there is a plan for assessing mental health needs of unaccompanied minors
- ☒ Implement enhanced procedures to document the identity of unaccompanied minors, including physical description; information provided by the minor; description of clothing and jewelry; distinguishing scars, birthmarks, and tattoos; and photographs.
- ☒ Take a photograph of the unaccompanied minor and attach it to his/her medical record
- ☒ If not already in place, establish protocols and safeguards for the release of unaccompanied minors to adults
- ☒ The following considerations may be implemented with regard to the registration and badging of unaccompanied minors:
 - Document identification information including name, gender, age, triage tag number, and the location of the unaccompanied minor within the facility
 - Provision of an identifying wristband attached in addition to the FIC identification badge



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Appendix J: HICS Incident Action Plan Quick Start

The following pages contain IAP Quick Start forms.



HICS INCIDENT ACTION PLAN (IAP) QUICK START
COMBINED HICS 201—202—203—204—215A

1. Incident Name 2015/10/15 Mass Casualty Incident	2. Operational Period (#1) DATE: FROM: 2015/11/19 TO: 2015/11/19 TIME: FROM: 1000 to 1400
3. Situation Summary Santa Clarita Sheriff report 5 active shooters at 6 Flags Magic Mountain amusement park. Survivors are being transported to HMNH. HMNH EOP activated. Overhead page for Code Triage External drill. 15 Til 50 for Mass Casualty Incident initiated. HCC activated by IC. HICS 201	
4. Current Hospital Incident Management Team (fill in additional positions as appropriate) <div style="display: flex; justify-content: space-around; align-items: center;"><div style="border: 1px solid black; padding: 5px; text-align: center;">Public Information Officer Maria Orem</div><div style="border: 1px solid black; padding: 5px; text-align: center;">Incident Commander Joey Zaraga</div><div style="border: 1px solid black; padding: 5px; text-align: center;">Medical-Technical Specialists Dee Phillips</div></div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"><div style="border: 1px solid black; padding: 5px; text-align: center;">Liaison Officer Bryan Harris</div><div style="border: 1px solid black; padding: 5px; text-align: center;">Safety Officer Joe Calubaquib</div></div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"><div style="border: 1px solid black; padding: 5px; text-align: center;">Operations Section Chief Penny Hammer</div><div style="border: 1px solid black; padding: 5px; text-align: center;">Planning Section Chief Jill French</div><div style="border: 1px solid black; padding: 5px; text-align: center;">Logistics Section Chief Oscar Camargo</div><div style="border: 1px solid black; padding: 5px; text-align: center;">Finance / Administration Section Chief</div></div>	



Purpose: Short form combining HICS Forms 201, 202, 203, 204, and 215A
Origination: Incident Commander or Planning Section Chief
Copies to: Command Staff, Section Chiefs, and Documentation Unit Leader

IAP Quick Start | Page 1 of 2

HICS INCIDENT ACTION PLAN (IAP) QUICK START COMBINED HICS 201—202—203—204—215A

5. Health and Safety Briefing Identify potential incident health and safety hazards and develop necessary measures (remove hazard, provide personal protective equipment, warn people of the hazard) to protect responders from those hazards. **HICS 202, 215A**

Obtain situational awareness for incident from SCV Sheriff (# casualties), scope, effect, or potential effect of the disaster to the facility and to the facility safety and operational systems.

Coordinate with law enforcement responding to HMNH campus.

Provide local law enforcement with critical HMNH information with per-staged information packet and equip.

Security institutes:

- a. Traffic and pedestrian plan implemented by security
- b. All ED entrance's locked down
- c. Internal Triage is closed

Coordinate with the Hospital Command Center's Liaison Officer and the local law enforcement agency to establish protocols for providing evidence, interviewing patients, and collecting forensic information or data. These protocols should be briefed to ALL triage and treatment area staff once established

Coordinate with the Hospital Command Center's Liaison Officer and Public Information Officer about the need for any joint media coverage, messaging, or press conferences with local law enforcement

Safety Officer will evaluate areas for MCI triage and treatment to ensure they are safe and follow health and safety standards. Safety practices (e.g., sharps disposal, linen control, trash control, biohazard materials control, electrical safety, water, temperature, etc.) in nontraditional areas are followed.

Traffic and pedestrian flow for MCI implemented by Security. Barriers and signage set up to prevent entry into area

Identify PPE needed for the incident or decontamination needed for the incident.

Identify if a chain of custody the survivors is needed for the incident.

Assess: size (# casualties), scope, effect, or potential effect of the disaster to the facility and to the facility safety and operational systems.

6. Incident Objectives

HICS 202, 204

6a. OBJECTIVES	6b. STRATEGIES / TACTICS	6c. RESOURCES REQUIRED	6d. ASSIGNED TO
Confirm/validate incident	Validate the incident.	Reddinet, LA County Public Health Department, News media, Departments involved, Law enforcement, other trusted sources	Incident Commander
Determine notifications and HICS assignments	Medical Alert Center Levels of notification: AOD and Admin, Triage Alert group Staff, Patients/visitors, Sheriff Assign needed HICS positions	Emergency Notification System Command Aware or telephone	IC, who can instruct scribe to do notification on Everbridge Incident Commander



Purpose: Short form combining HICS Forms 201, 202, 203, 204, and 215A
Origination: Incident Commander or Planning Section Chief
Copies to: Command Staff, Section Chiefs, and Documentation Unit Leader

IAP Quick Start | Page 2 of 2



HICS INCIDENT ACTION PLAN (IAP) QUICK START
COMBINED HICS 201—202—203—204—215A

6a. OBJECTIVES	6b. STRATEGIES / TACTICS	6c. RESOURCES REQUIRED	6d. ASSIGNED TO
Maintain patient tracking	Registration staff initiate patient tracking on HICS 254 and submit copies to HCC every 10 minutes	HICS 254, registration forms	Registration
Provide continuity of care for non-incident patients	Diversion Rapid Discharge	Rapid discharge, diversion for ED for non incident related patients, discharge staging area	ED Case Management
Maintain communications with healthcare and public safety response partners	Provide Sheriff with HMNH critical information	Give Critical Incident kit to law enforcement. HMNH 2 way radio on IC 1 channel, master key, maps/floor plans, location of security CCTV monitoring room, phone/contact list of key hospital personnel, location of HCC, copy of notification sent to staff	Security Branch Director
Ensure the safety of patients, staff, and visitors	Notification of patients and visitors	Traffic barriers, signs	Security Branch
Coordinate the hospital response with the law enforcement incident command system	See safety plan above	HMNH radio channel for Sheriff Traffic barriers and signage Security directing traffic	Security Branch
Return to normal operations as quickly as possible	Demobilization triggers may include: Patient inflow has reached within 5%-10% of the day-to-day average Hospital no longer needs to transfer patients to other hospitals and can fully handle patient inflow internally Incident has stabilized and no additional incident-related patients are arriving at the hospital All remaining incident-related patients have been diverted to another facility	Communication to all unit leaders from the HCC that transition to normal operations will begin. Schedule a debrief	All Unit Leaders Incident Commander

7. Prepared by

PRINT NAME: _____ SIGNATURE: _____

DATE/TIME: _____ FACILITY: _____



Purpose: Short form combining HICS Forms 201, 202, 203, 204, and 215A
Origination: Incident Commander or Planning Section Chief
Copies to: Command Staff, Section Chiefs, and Documentation Unit Leader

**HICS INCIDENT ACTION PLAN (IAP) QUICK START**
COMBINED HICS 201—202—203—204—215A

- PURPOSE:** The Incident Action Plan (IAP) Quick Start is a short form combining HICS Forms 201, 202, 203, 204 and 215A. It can be used in place of the full forms to document initial actions taken or during a short incident. Incident management can expand to the full forms as needed.
- ORIGINATION:** Prepared by the Incident Commander or Planning Section Chief.
- COPIES TO:** Duplicated and distributed to Command and General staff positions activated. All completed original forms must be given to the Documentation Unit Leader.
- NOTES:** If additional pages are needed for any form page, use a blank HICS IAP Quick Start and repaginate as needed. Additions may be made to the form to meet the organization's needs.

NUMBER	TITLE	INSTRUCTIONS
1	Incident Name	Enter the name assigned to the incident.
2	Operational Period	Enter the start date (m/d/y) and time (24-hour clock) and end date and time for the operational period to which the form applies.
3	Situation Summary	Enter brief situation summary.
4	Current Hospital Incident Management Team	Enter the names of the individuals assigned to each position on the Hospital Incident Management Team (HIMT) chart. Modify the chart as necessary, and add any lines/spaces needed for Command staff assistants, agency representatives, and the organization of each of the General staff sections.
5	Health and Safety Briefing	Summary of health and safety issues and instructions.
6	Incident Objectives	
	6a. Objectives	Enter each objective separately. Adjust objectives for each operational period as needed.
	6b. Strategies / Tactics	For each objective, document the strategy/tactic to accomplish that objective.
	6c. Resources Required	For each strategy/tactic, document the resources required to accomplish that objective.
	6d. Assigned to	For each strategy/tactic, document the Branch or Unit assigned to that strategy/tactic.
7	Prepared by	Enter the name and signature of the person preparing the form. Enter date (m/d/y), time prepared (24-hour clock), and facility.

15 'TIL 50...



Henry Mayo
Newhall Hospital



PROVIDENCE
Little Company of Mary
Medical Center
Torrance



Constant &
Associates

15 'til 50

Mass Casualty Incident

Plan Template

TEMPLATE INSTRUCTIONS

The Plan Template provides an easy-to-populate document that can be used to create a Mass Casualty Incident (MCI) Plan for your facility.

This Plan Template should be used in conjunction with the companion 15 'til 50 MCI Guide. The Guide offers step-by-step instruction on how to develop your plan. For each section and subsection within this Plan Template, corresponding page numbers are provided to the Guide with tips and an explanation of the information that should be provided in that area. Bracketed text is provided where healthcare facility specific information should be inserted.

Insert healthcare entity name
Insert plan version number
Insert date of last revision
Insert healthcare entity logo

Acknowledgments

See Guide, p. 20

Development of the 15 'til 50 MCI Plan was sponsored by [Insert Sponsoring Organization or Individual] and developed by [Insert Name].

Project Contributors provided strategic guidance regarding guide development, validation, and implementation.

[Include Names of Contributing Agencies, Organizations and Individuals]

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Acronyms

See Guide, p. 20

Introduction

Overview

See Guide, p. 20

Working at full capacity on a daily basis, hospitals around the country often find that there isn't a comprehensive plan in place that specifies what will happen within the first 15 minutes of a MCI. [Insert Hospital Name] convened a Planning Team to address this gap at our facility and as part of the research phase came across the "15 'til 50" MCI response program. The 15 'til 50 program is designed to enable hospital staff to receive a surge of 50 or more patients within 15 minutes of notification of a MCI. This includes the rapid deployment of staff, supplies, and equipment to successfully active and operate MCI triage and treatment areas. The program utilizes the Hospital Incident Command System (HICS) and can be initiated using existing hospital supplies and equipment.

Purpose

See Guide, p. 20

The purpose of this 15 'til 50 Plan is to prepare [Insert Hospital Name] to rapidly deploy staff, supplies, and equipment in the event of an MCI. The plan covers pre-incident measures such as coordination and procurement of equipment. It also covers the phases of incident management: activation, operation, and transition into either ongoing emergency operations or demobilization. It is applicable to events that test medical surge capacity. The planning framework falls within what the CDC describes as the "Dual Wave Phenomenon" in which the larger group of less severely injured walking wounded typically arrive within 15-30 minutes of an incident, followed within an hour or two by a second wave of more severely injured who will require pre-hospital emergency transportation.

Scope

See Guide, p. 20

This plan is intended to supplement pre-existing Emergency Operations Plans (EOP), which have been created using an all-hazards model. Therefore, this plan may be used for any type of incident, whether the cause is natural, human-induced, or a technological event. This plan applies to all departments, personnel, and agents of [Insert Hospital Name].

Assumptions

See Guide, p. 21

Assumptions that the Planning Team made when constructing the plan include:

- [Insert Hospital Name] already has emergency plans, procedures and policies in place. This plan is meant to supplement, not replace existing plans
- "15 minutes" is counted from the moment the plan is activated/initiated, not from the moment the incident starts

- Your 15 'til 50 MCI response plan will involve multiple departments [Insert Hospital Name], not just the Emergency Department
- For the first 15 minutes, and perhaps longer, response will have to be conducted by staff on duty using existing equipment and supplies
- Less seriously injured casualties who self-transport, or are transported by friends and family typically arrive before those who are most seriously injured
- The Hospital Command Center (HCC) and HICS will be activated immediately following notification of an MCI

Pre-Incident

Training and Exercise Schedule

See Guide, p. 22

[Insert Hospital Name] Multi-year Training and Exercise Schedule [Year]

Department	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Department 1												
Department 2												
Department 3												
Department 4												
Department 5												

Supplies and Equipment

See Guide, p. 24 and 63

[Insert Hospital Name] has procured and prepositioned caches specifically for 15 'til 50 activation. These include:

- 15 'til 50 "Go-Kits"
- Mobile Storage Units/Trailers
- Command Center Supplies

A detailed list of supplies and equipment for each element above can be found in [Insert Appendix Number]. The lists were created based on [Insert Hospital Name]'s capacity. Supplies are located [Insert Locations of Supply Caches]. A map of the facility with caches marked is included as [Insert Appendix Number] within this plan. All prepositioned supplies and equipment for the 15 'til 50 program will not be used for day-to-day operations. [Position Within Hospital] will re-evaluate supplies [annually/bi-annually/monthly] as well as after each and every exercise and incident.

See Supplies and Equipment Appendix for a full list of resources.

Activation

The notification of a MCI may come to the hospital in any one of numerous formats; 'walking wounded' arriving at the hospital, a staff member noticing a breaking news story on the television, or messaging from a regional government agency. It might be immediately obvious that [Hospital Name] will be handling an MCI, or the scope of the MCI might not be clear for some time. Regardless of how [Hospital Name] is informed of an MCI, the decision must be made to activate the 15 'til 50 Plan.

Authorization to Activate

See Guide, p. 25

Regardless of time or staffing, the decision to activate the 15 'til 50 plan will be made by the [designate position title that ultimately determines to activate the MCI. This may be the Incident Commander or other designated HCC staff] in conjunction with [insert the title of any other personnel who should also be involved in determining the plan should be activated]. Information to consider when determining whether the 15 'til 50 Plan should be activated includes:

- Location of the incident and its proximity to [Hospital Name] and other healthcare facilities
- Type of incident
- Number of persons injured in the incident, and the severity of those injuries
- The need to quickly triage injured persons and/or the need to coordinate their transportation to other healthcare facilities

Notification

See Guide, p. 25

When the [position title] and [position title] have determined that an MCI has occurred and that the hospital must prepare for surge capacity, [position title] will announce the activation to all department heads via [intercom, verbally, via the established phone tree, etc.].

As the 15 'til 50 Plan involves all hospital departments, it is important that all departments be made explicitly aware that the 15 'til 50 Plan is being activated. To accomplish this, the code over the intercom will explicitly state "Attention all staff, a [code triage] has been called. All staff are to report to their positions and prepare to support [code triage]."

In addition to hospital personnel who must be notified that the plan has been activated, the following external partners should be notified that the hospital is responding to an MCI and that surge plans have been activated:

[Tailor the following chart for organizations, departments, or personnel outside the hospital that must be notified that the 15 'til 50 and/or surge plans have been activated.]

Organization/Department	Point of Contact	Contact Information (phone, email, etc.)	Position Responsible for Notifying
[Fire Department]			
[Hospital CEO]			
[Police Department]			
[City or Special District EMS]			
[Hospitals with which we have mutual aid]			
[Other area hospitals]			
[Ambulance company]			

Coordinate Staffing and Prepare Staff for Activation

See Guide p. 26

Upon announcing that the 15 'til 50 Plan is activated, staff assigned 15 'til 50 responsibilities should grab their activation kits, which contain [vests, job action sheets, and admissions forms]. Staff should also immediately begin following their specific protocols and procedures, including reporting to their assigned location/supervisor, and carrying out tasks that directly support the 15 'til 50 effort.

As the Plan is activated, [Case Management] will immediately begin working with physicians and nursing staff to begin the rapid discharge of inpatients and Emergency Department patients. The goal of this step is to free up as much hospital space as possible in order to accommodate the influx of survivors expected related to the MCI.

Upon activating the 15 'til 50 Plan, the process of recalling key hospital staff and personnel must also begin. After internal notification to all departments and on-site personnel, the [Planning and Logistics Section Chiefs] should quickly assess the current staffing and determine the need for additional personnel. Considerations when determining the number and type of staff to recall include:

- Type of incident
- Type of injuries
- Anticipated number of patients
- Anticipated length of incident response
- Anticipated role of ancillary and support departments

Using established procedures for recalling hospital staff (see [Insert Appendix Number]) the [Logistics Section Chief] will make notifications and ensure adequate personnel are recalled to support ongoing surge capacity in the Hospital. While the initial 15 'til 50 response will likely be handled by staff already at the Hospital, it is important to begin making notifications and requesting additional personnel as soon as the decision is made to activate the plan.

[Logistics] will also keep a list of key contact information for all personnel involved in incident response.

[Tailor this chart for to show which positions shift into a new role under the 15 'til 50 Plan. Include position titles during daily operations, position titles during 15 'til 50, and physical location they are to report to.]

Daily Position Title	15 'til 50 Position Title	15 'til 50 Location
[Charge Nurse]	[Triage Unit Leader]	[Triage and Treatment Area]
[Facilities Supervisor]	[Logistics Section Chief]	[HCC]
[Nurse Supervisor]	[Incident Commander]	[HCC]

Deploy Supplies and Equipment

See Guide, p. 27

Upon activation of the Plan, the [Logistics Section] will begin distributing, deploying, allocating, and tracking resources. [Logistics] must deploy staff to [location where 15 'til 50 supplies are stored] and unlock containers, release necessary materials, track which resources are being sent to the triage site, and ensure the proper flow and tracking of all resources released. [Logistics] will set up direct lines of communication to the Incident Commander and the [Triage Unit Leader].

Hospital Command Center

See Guide, p. 28

Upon activation of the 15 'til 50 Plan, the HCC will be activated. [Position title] is responsible for activating the HCC following procedures set forth in the HCC Plan. Logistics will supervise the distribution of radios, ensuring each radio is signed out and tracked before being released. Upon arriving at and activating the HCC, [position title] will notify the [position title, likely Triage Unit Leader] that the HCC is open and that resource requests and information will be sent to the HCC.

Operations

Triage

See Guide, p. 29

Some special challenges faced in MCI triage could include:

- Mixed Chemical, Biological, Radiological, Nuclear, or Explosive (CBRNE) casualties
- Responder protection and safety
- Crime scene management and evidence preservation

Therefore, all 15 'til 50 triage staff will abide by the following actions during triage:

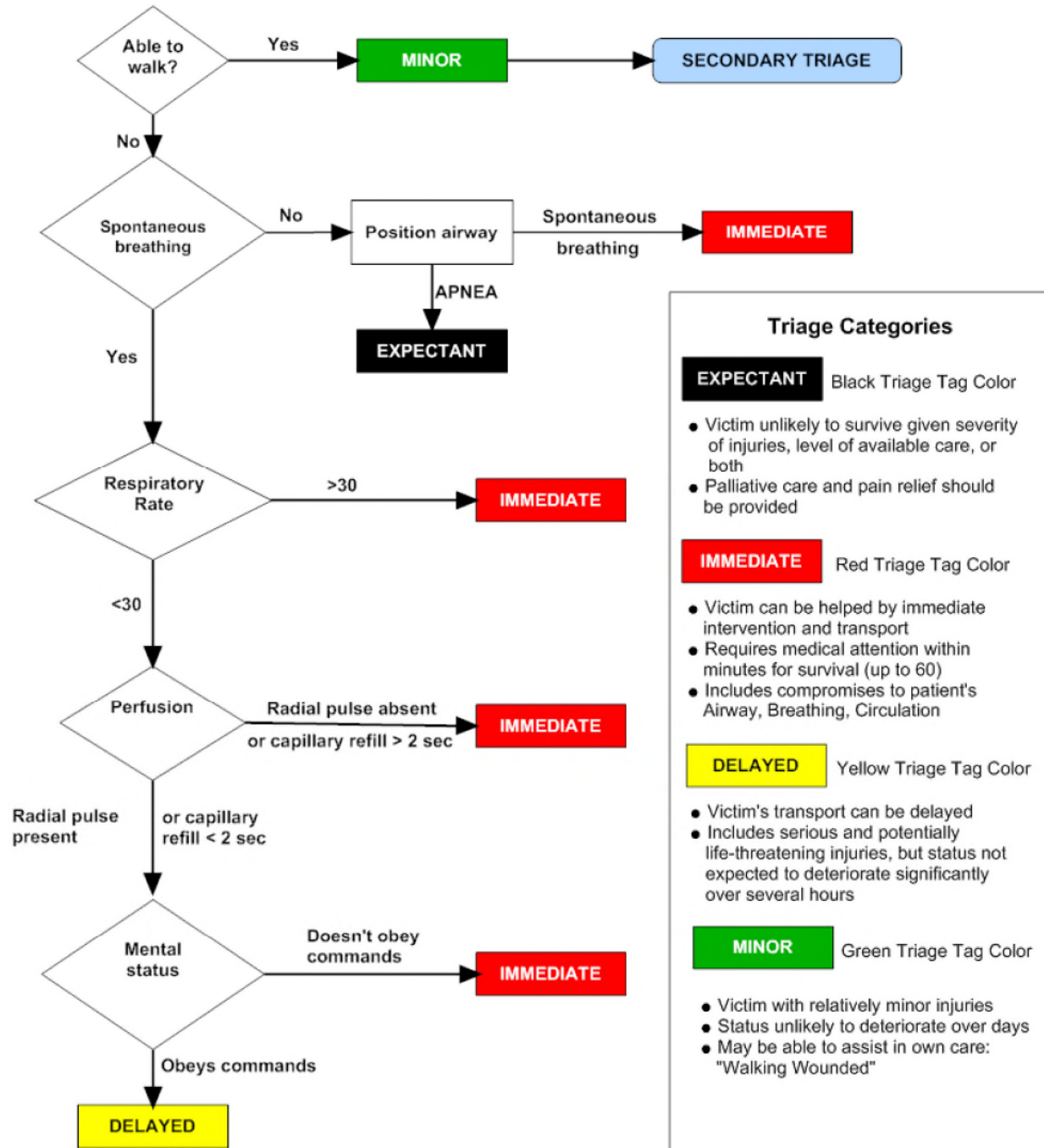
- Evaluate each patient individually before making decisions
- Determine any possible hazards associated with each patient (i.e. CBRNE hazards)
- Use appropriate Personal Protective Equipment (PPE) as necessary
- Remain in the appropriate areas (do not leave your assigned zone unless directed otherwise)
- Never make a triage decision based on a perception that there are too many “Reds” or not enough “Greens,” no matter what your capacity is
- Always lean on the side of higher priority. For example, if unsure of whether the patient is green or yellow, the patient should be tagged yellow
- Preserve items as much as possible, including the patient’s personal items or clothing, for use in later evidence processing if necessary

The basics of your S.T.A.R.T. Triage process include the following:

- Separate the patients into ambulatory and non-ambulatory
 - If not already included in your triage site setup, triage staff might want to demarcate a separate line for nonambulatory patients coming in on gurneys, using traffic cones and caution tape
- Initial Patient Assessment (should take less than one minute for each patient)
 - Interview each patient (or accompany EMT or paramedic) for the main complaint and the location from which the patient is coming from
 - Tag each patient (omit personal information on the tag for now and concentrate only on the main complaint, the need for decontamination, and the type of injury) according to the following:
 - Confirmed deceased – Tag Black
 - Unresponsive – Tag Red
 - Severe bleeding or severe injury – Tag Red
 - Minor injuries – Tag Yellow or Green
 - Walking Wounded – Tag Green
 - Possibility of CBRNE-related injury – Note for Primary or Secondary Decon

- Secondary (Advanced) Patient Assessment
 - Depending on the surge of patients, the 15 'til 50 triage staff may have the resources and time to perform a full assessment for better triaging during their initial assessment. However, if there is a large surge of patients, triage staff will separate into two groups: those who conduct initial triage and tagging, and those who make the rounds of the tentative treatment areas to measure the following:
 - Respiratory Status
 - No respiration – check for obstruction
 - Still no respiration – Tag Black
 - $R > 30$ – Tag Red
 - $R < 30$ – Check perfusion
 - Perfusion
 - No pulse – Tag Black
 - $P > 2$ seconds – Tag Red
 - $P < 2$ seconds – Check mental status
 - Mental Status
 - Those who cannot follow simple commands – Tag Red
 - Those who can follow simple commands – Tag Yellow or Green
 - Be sensitive to those who:
 - Don't speak English
 - Have hearing deficiencies
 - Have mental impairment
 - Re-tag patients as necessary and direct them to the appropriate treatment area

See the following page for a depiction of triage.



Treatment

See Guide, p. 29

Once patients have moved past the Triage area and have been directed to either Immediate, Delayed, Minor, or the Morgue, treatment will follow the orders/discretions of the treatment area MD.

[All 15 'til 50 Treatment staff will complete the following priority items before moving on to administrative items:

- Direct or move the patient to an available cot, chair, or section of the treatment area
- Take vital signs and record on the triage tag
- Open the airway and insert any necessary Oropharyngeal Airways (OPA)
- Stop the bleeding
- Elevate the legs for shock
- Administer oxygen
- Identify necessary specialties (i.e. general surgery, anesthesiology, radiology) who may need to consult on the patient
- Identify necessary medications or treatment recommendations and report to the Treatment Unit Leader
- Identify patients recommended for transport to other areas of the hospital or other facilities and report to the Treatment Unit Leader

Once initial treatment has been made, staff can complete the following items for each patient:

- Ask the patient for their name, age, and personal information
- Fill out the [Insert your hospital's appropriate quick admit form] and assign a patient ID #
- Bag all personal items in a Ziploc bag and label with the patient's ID # and include the tear-off Personal Property Receipt from the Triage Tag (if available)
- Fill out any necessary x-ray or test request forms and drop into the appropriate box
 - Radiology or x-ray staff should have a box or boxes in the treatment areas designated for quick test requests. These staff should periodically check the boxes and assign staff to transport those patients to the appropriate areas
- Provide the patient with water or food if necessary
- Provide patient privacy if possible and/or appropriate. Staff can use tents, sheets, portable showers, or whatever is on hand to provide privacy
- Refer separated family members to the Family Information Center (FIC) or hotline]

The Treatment Unit Leader will regularly report the status of Treatment Area capacity, recommended patient transports, treatment area resource requests, staffing capacity, and security issues.

Security

See Guide, p. 30

Upon activation of the 15 'til 50 Plan, hospital security staff will immediately begin the process of setting up traffic control, internal security, and law enforcement coordination, before assisting with setup of the mobile triage site.

One of the most important aspects of MCI response is the management of ingress and egress routes to the mobile triage area. Hospital security will first coordinate with the HCC to confirm the location of the mobile triage area, and which ingress and egress routes will be used. The egress route used to evacuate patients from existing departments must be separate from the ingress routes used to process incoming patients when the MCI Plan is active. Initial actions for hospital security staff are categorized and outlined in more detail below:

Traffic Control

- Confirm the location of the mobile triage site with the HCC
- Confirm the lockdown and/or evacuation of hospital departments in coordination with the HCC, ED staff, and Triage and Treatment Unit Leaders
 - For example, the ED should be locked to incoming patients (who will now be redirected to the mobile triage site) and the waiting room evacuated and redirected to the mobile triage location
- Retrieve traffic cones, caution tape, and directional signage from the [mobile triage equipment storage (located in Storage Unit 3)]
- Establish ingress routes for emergency vehicles arriving at the mobile triage site and demarcate with appropriate signs and equipment
- Establish ingress routes for incoming pedestrians and “walking wounded” arriving at the mobile triage site and demarcate with appropriate signs and equipment
- If not already existing, create a traffic flow map and send a copy to the HCC and the Triage and Treatment Unit Leaders

Internal Security

- Post security staff according to the established ingress and egress routes, taking into consideration the safety of the facility (i.e. if the hazard was an earthquake that affected the integrity of hospital facilities) and estimates of incoming surge amounts. Coordinate with the HCC and Engineering
- Ensure that all security staff are equipped with radios
- Ensure that security personnel are posted in the Family Information Center, the Treatment Area, and the Triage Area
- Establish a secure perimeter around the hospital
- Advise all hospital staff to be on the alert for suspicious behavior [use “Code Alert” on the Intercom to notify staff]

Law Enforcement Coordination

- Activate any existing MOU agreement with local law enforcement to call in additional security personnel, especially if the hospital may be considered a secondary target of terrorist attacks
 - Contact [insert local law enforcement agency] to activate the MoU and request an additional [six deputies] to assist with triage and treatment area security
 - Ensure incoming law enforcement personnel have parking and identification
 - The Security Branch Director will be in charge of debriefing incoming law enforcement personnel on internal processes, flow maps, radio protocols, and role assignments
- Coordinate with the HCC's Liaison Officer and the local law enforcement agency to establish protocols for providing evidence, interviewing patients, and collecting forensic information or data. These protocols should be briefed to ALL triage and treatment area staff once established
- Coordinate with the HCC's Liaison Officer and Public Information Officer (PIO) about the need for any joint media coverage, messaging, or press conferences with local law enforcement

Patient Processing

See Guide, p. 31

Patient processing involves the ongoing efforts of intake and case management staff to facilitate rapid admission, patient tracking, and discharge throughout triage. Intake and case management staff in the Treatment Unit will complete the following priority items for each patient:

- [Ensure that the [insert your hospital's appropriate rapid admission form] forms have been completely and accurately completed for each patient
- Fill out PsySTART triage tags for each individual to evaluate possible mental health crises or emergencies
- Ensure that personal property is tagged and stored in an appropriate location
- Facilitate the discharge process for minor or delayed treatment patients
- Monitor the treatment areas for possible HIPAA violations (i.e. forms lying out where other patients can easily read or view them)
- Monitor for low quantities of admit forms or triage tags
- Follow-up with patients regularly and check for patients who can be moved to a lower treatment area or discharged
- Report intake or discharge information to the Treatment Unit Leader]

Communications

See Guide, p. 32

HCC staff is in charge of overall communications throughout all areas of the hospital. The Triage and Treatment Unit Leaders will serve as the main points of contact between the mobile triage area and the command center. As such, both of these positions will need to be equipped with radios as early as possible in the 15 'til 50 activation process. If radios are not deemed appropriate or viable based on the needs of the incident, the Incident Commander at the HCC must establish an alternate means of communication and notify all hospital staff immediately.

The Liaison Officer will serve as the primary point of contact for other agencies, including the local public health department, the local Emergency Operations Center (EOC), the entity that coordinates the transfer of patients, local fire and law enforcement personnel, and the FBI for federal investigations or the CDC for specific public health emergencies. The Liaison Officer will notify relevant agencies when the 15 'til 50 process has been activated, and when it has been deactivated. The Liaison Officer will schedule regular status update phone calls with each agency to keep them apprised of the incident and any requests for assistance.

The [Planning Section Chief] is responsible for collecting regular [(at least every 5 minutes during site setup, and every 10-20 minutes during triage and treatment operations)] radio status updates from the Triage and Treatment Unit Leaders, the on-duty staff in each hospital department, and hospital security staff. Status updates will include:

- The status of site setup
- The status of any missing equipment
- The number of incoming patients
- Safety issues
- Security violations
- Requests for assistance

The PIO will take charge of all communications with the public and the media, in coordination with the FIC. All other staff need to refrain from speaking with the media or posting incident details to social media. Requests regarding patient information or missing family members will be directed to the Family Information Center's hotline. As soon as 15 'til 50 has been activated, the Public Information Officer will coordinate with the Liaison Officer and other PIOs at other agencies to draft media messaging, notify internal staff of policies for speaking to the media, and begin rumor control.

At Risk Populations

See Guide, p. 34

During a medical surge some patients might have difficulty in accessing public health or medical services. Children, people with access or functional needs, those for whom English is a second language, those who are chemically dependent or mentally ill are all potentially at-risk populations.

All Triage and Treatment staff should look out for potential at risk individuals within the arriving patient population, and in addressing them accordingly or referring them to the appropriate staff.

Children or unaccompanied minors will be referred to treatment specialists as well as the Family Information Center for family reunification. If a child is with a parent, they will not be separated unless the child is interfering with treatment. The Family Information Center will be supplied with toys, books, and coloring books to keep children occupied while waiting for family members. Staff at the Family Information Center will fill out Unaccompanied Minors forms when applicable and assist with family reunification. See the “Family Information Center” section below for more information.

For those with *access and functional needs*, staff will make every effort to accommodate their needs. The Triage and Treatment Area will take every reasonable action to achieve full accessibility. The Treatment Unit Leader and Triage Unit Leader are responsible for evaluating the site for accessibility issues during site set-up, and providing solutions or recommendations. If extra equipment is necessary, requests will be communicated to the Command Center through the Unit Leaders.

Portable translator equipment and/or volunteer staff translators are included in the 15 'til 50 setup for *those for whom English is a second language*. If a patient arriving at triage does not speak English, sign language will be utilized when possible, and translation (through equipment or personnel) will be requested through the Unit Leaders.

Those *who are chemically dependent or those with existing mental impairments* will also need to be accommodated. Case management staff that have been appropriately trained [insert relevant hospital experience and/or training for your facility] will be activated as part of surge staffing to consult on patients with these pre-existing conditions and to check on them regularly.

Family Information Center (FIC)

The FIC provides a secure and controlled area for families of patients as well as many of the at-risk populations listed above, away from medical treatment areas, where information can be shared to facilitate family reunification, and to provide access to support services (social services/mental health, spiritual care). Case Management and Social Services staff will activate the FIC under the Operations Section as the Patient Family Assistance Branch, in coordination with Pediatrics and/or Patient Registration department personnel. Supplies, job action sheets, sign in sheets, toys and materials for children and other items are located in the FIC go-kit and are ready for deployment in any 15 'til 50 activation. [Insert location of FIC supplies/go-kit here].

Immediately following activation of the 15 'til 50 Plan, the FIC will be activated. Any medical surge incident will call for family information and reunification resources.

FIC Activation

Initial activation includes minimum staffing for FIC functions and provide for escalation of staffing as required. Activities listed herein are part of coordinated emergency operations as directed by the Incident Commander or designee.

The Incident Commander, along with other Command staff, will determine based on the nature of the incident, the extent of staffing needed to support the activation and operation of the Family Information Center. The FIC is supported by departments across the healthcare facility, including facility maintenance, procurement, security, and others. Activities such as patient tracking and next of kin (NOK) notification will be conducted in accordance with existing policies and procedures.

Sample FIC Checklist (from: Family Information Center Planning Guide for Healthcare Entities)

- Command center initiates call down of pre-identified FIC Staff
- Logistics Section secures pre-identified FIC location and prepares for occupancy
- Logistics Section obtains and positions equipment and supplies
- A call center is established as part of the FIC or existing center is augmented to handle increased volume. The healthcare facility operator is given the extension for the call center and staff are prepped to begin receipt of telephone inquiries
- The FIC is inspected for safety issues; identify and correct any safety hazards. FIC staff report to the FIC, register, and obtain authorized entry badges, forms and supplies
- Security established security procedures
- Position directional signage at the facility entrance and elsewhere as needed to direct family members to the FIC
- Designated JIT Trainer conducts JIT Training if necessary and available

- The Family Reunification Unit Leader (or equivalent position) notifies hospital administration and the Command Center that the FIC and call center are activated
- The Command Center notifies all staff that the FIC and call center are activated
- The Command Center notifies the local EMS Agency or Emergency Management Agency EOC, and local media (if necessary) that the FIC is activated

Sample Unaccompanied Minors Action Item Checklist (from: *Family Information Center Planning Guide for Healthcare Entities*):

- Assign an Unaccompanied Minors Specialist in the FIC
- Establish an Unaccompanied Minors Safe Area
- Establish security measures to ensure the safety and security of the Safe Area
- Consider instances that the minor may need to be escorted out of the FIC, such as to use the restroom
- Ensure that there is a plan for assessing mental health needs of unaccompanied minors
- Implement enhanced procedures to document the identity of unaccompanied minors, including physical description; information provided by the minor; description of clothing and jewelry; distinguishing scars, birthmarks, and tattoos; and photographs.
- Take a photograph of the unaccompanied minor and attach it to his/her medical record
- If not already in place, establish protocols and safeguards for the release of unaccompanied minors to adults
- The following considerations may be implemented with regard to the registration and badging of unaccompanied minors:
 - Document identification information including name, gender, age, triage tag number, and the location of the unaccompanied minor within the facility
 - Provision of an identifying wristband attached in addition to the FIC identification badge

Mental and Behavioral Health

See Guide, p. 36

15 'til 50 utilizes the PsySTART triage system to rapidly triage mental health status during an MCI. This triage strategy will help identify individuals who are experiencing a mental health crisis or emergency, and those who are at risk for chronic mental health disorders.

Triage staff (those assigned to Secondary Assessment or those from Case Management) will use the PsySTART triage forms to measure the following:

- Impact of severe/extreme stressors
- Severe or extreme exposure to traumatic incidents (i.e. death, suffering, delays in treatment or evacuation, exposure to toxic agents)
- Traumatic loss (loss of family, including missing family members)

- Secondary impacts (home loss, relocation, job loss, decreased social support)
- Injury or illness (missing limbs, extended health risks)
- Expressed peri-traumatic severe panic (subjective risk)
- Practical considerations for case management (housing, unaccompanied minors)

Staff Support Services

See Guide, p. 37

MCI incidents will create a significant amount of stress on responders and staff. Case management staff should monitor the triage and treatment area staff for the following and report cases to the appropriate Unit Leaders:

- Responder fatigue, panic, or depression
- Confusion or tension among Triage or Treatment staff
- Supplies of food and water for staff as well as patients
- Responder injuries and safety issues
- Fears about contamination and/or CBRNE-related dangers
- Concerns from staff about the safety and well-being of family members
- Lack of adequate staff leading to responder stress and difficulties prioritizing treatment

Transition

Transition marks the time that hospital operations move from triaging and treating a surge of patients back into more standard operations. The transition period allows for resources to be demobilized and personnel to return to their normal positions. The following steps will be taken in order to ensure a measured demobilization and transition into standard hospital operations, and is a crucial step in proper surge response.

Authority to Transition

See Guide, p. 39

The decision to transition from surge/MCI response into normal daily operations will be made by [the Incident Commander, or other designated authority] based upon information received from the HCC and the Triage Unit Leader. The decision to transition will be made based on information about the MCI, the ongoing threat or hazard, the inflow of patients to the triage and treatment area, and the availability of resources and space in the hospital. In most situations, the decision to transition to normal operations will be a subjective decision based on available information. However, depending on the size, type, and scope of the situation, “demobilization triggers” may be used to determine that a transition to normal operations should take place. These “demobilization triggers” include:

- [Patient inflow has reached within 10% of the day-to-day average]
- Hospital no longer needs to transfer patients to other hospitals and can fully handle patient inflow internally
- Incident has stabilized and no additional incident-related patients are arriving at the hospital
- All incident-related patients have been diverted to another facility]

Upon deciding that transitioning to normal operations is in the best interest of the hospital and patients, [the Incident Commander] will set a specific time to begin demobilization, and communicate this time to all unit leaders and the HCC. It should be noted that not all areas will necessarily transition at the same time. If establishing staggered transition times, a list of areas and times should be developed and distributed to all unit leaders and the HCC.

Notify Stakeholders

See Guide, p. 40

Notification of internal hospital personnel will follow much the same procedures as activating the 15 'til 50 Plan. Upon the decision to begin Transition, [the Incident Commander] will verbally, either in person or over the radio, tell all unit leaders that the operation is moving into transition at the designated time. If Transition is staggered at different times for different units, a written schedule should be developed and distributed

to all unit leaders in a timely manner. Regardless of whether Transition times are staggered or not, all unit leaders should be reminded that they must officially notify the [Incident Commander] when their unit has 'closed' and fully transitioned to normal operations. As such, the [Incident Commander] will be the last position to demobilize.

External stakeholders must also be notified of transitioning operations and demobilization. The HCC will notify external stakeholders, via the [Liaison Officer] position, that operations are transitioning back to normal status. All external stakeholders that were involved in response efforts or coordinating with the hospital will be notified. This includes, but is not limited to, [local ambulance companies, County Emergency Medical Services, and hospital executives].

Lastly, off-duty hospital personnel should also be informed of the changing status of hospital operations. Staff not at the facility should be notified via the phone tree that hospital operations are transitioning at the designated time, and that at that time normal schedules and responsibilities will be back in place. [Logistics] is responsible for activating the phone tree and ensuring that all personnel are notified of the changing status of operations.

Transition Operations

See Guide, p. 40

Demobilization procedures will follow the [HICS 221 Demobilization Checklist]. All units and personnel should follow demobilization procedures, including tracking and returning resources, demobilizing personnel back to their regular positions and responsibilities, and collecting all paperwork. All resources must be received and tracked by [Logistics]. The [HCC] should collect all paperwork. [Note: If your facility does not already have a Demobilization Checklist as part of its other emergency operations plans and policies, use the HICS 221 Demobilization Checklist provided in the 15 'til 50 Toolkit as a starting point.]

Upon the decision to begin Transition and notification of stakeholders, the [Public Information Officer] should be briefed on hospital operations and response to the MCI. The [Triage Unit Leader] and [Incident Commander] should work with the PIO to prepare a message detailing overall patient intake, ongoing family information and next-of-kin notification efforts and the successes of the response. The public message during or immediately following Transition should specify that hospital operations are returning to normal, and that regular appointments and intake procedures will be followed henceforth. During and immediately following Transition, the PIO should receive a full briefing on all elements of hospital response, in order to ensure that they are fully able to answer questions in the future.

As part of transition, a designated time and place for a staff debrief or hot wash should be detailed. If the MCI response effort has been short and involved only one operational period, this hot wash should take place immediately after the end of operation. If the MCI response has spanned multiple shifts or days, a designated debrief time should be set with sufficient notice so as to ensure that as many staff participants can attend as possible. The [Incident Commander] will set the date, time, and location of the debrief or hot wash, and will communicate this to all unit leaders. [Logistics] will also set up a conference call line for those who need to participate in the hot wash/debrief but are unable to attend in person. The [Incident Commander] will lead the hot wash/debrief. Depending on the size and scope of the incident, it may be necessary to schedule more than one hot wash/debrief.

Appendices

The appendices can be tailored to your medical center's specific needs. Below are sample appendices that might be considered.

JIT Training

Activation Checklists

Demobilization Checklist

Job Aids for CBRNE Incidents

Equipment and Supplies Checklist

Staffing Requirements

Departmental Roles

Unaccompanied Minors Checklist

Job Action Sheets

Surge Intake Forms

Organization Chart

Hospital Map

Equipment and Supplies Map

Triage and Treatment Map

Coalition Surge Test

An Exercise for Assessing and Improving Health Care Coalition Readiness

HANDBOOK FOR PEER ASSESSORS AND TRUSTED INSIDER

March 2016

PREFACE

The Coalition Surge Test is a user-friendly peer assessment no-notice exercise that helps health care coalitions identify gaps in their surge planning. No-notice exercising is important in assuring that health care coalitions can transition quickly and efficiently into “disaster mode” and provide a more realistic picture of readiness than pre-announced exercises. The exercise is designed to be challenging and is intended to support continuous improvement. It is *not* intended to assess individual performance or compliance with federal or other requirements.

The audience for this document is the small assessment team that plans and administers the exercise and a “trusted insider” (i.e., a member of the assessed coalition who agrees to assist in planning). Because it is a no-notice exercise, the players will receive most of their instructions from the assessment team on the day of the exercise. This document briefly describes the motivation behind the exercise, the resources it requires, and instructions on how to use it. Detailed step-by-step instructions, along with data collection and reporting tools, are provided in two accompanying Microsoft Excel tools.

Development of the exercise was sponsored by the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. The exercise was developed by the RAND Corporation and was informed by pilot tests at four health care coalitions. Users are encouraged to share comments and suggestions for improvement with [Chris Nelson via email](mailto:cnelson@rand.org) at RAND (cnelson@rand.org).

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ABBREVIATIONS

Acronym	Definition
AAR	after-action report
EMS	emergency medical services
EVAC	evacuating facility assessor
FAQs	frequently asked questions
LEAD	lead assessor
POC	point of contact
RHCC	regional health care coordination center
WebEOC	web-based emergency operations center

INTRODUCTION

The Coalition Surge Test (called “the exercise” below) is a user-friendly peer assessment no-notice exercise that health care coalitions can use to identify gaps in their surge planning. Use of the exercise is voluntary and can be initiated by any member of a coalition.

The exercise scenario involves simulated evacuation of up to three hospitals or other patient care facilities and take four or five hours from start to finish. It is designed to support coalitions in identifying strengths, gaps, and corrective actions. While facility evacuations are perhaps not the most common type of surge situation, they have happened several times during natural disasters (e.g., Hurricane Sandy) and usually involve enough patients to stress entire coalitions, which is a key purpose of this exercise.

The Coalition Surge Test is a user-friendly peer assessment no-notice exercise that helps coalitions identify gaps in their surge planning.

The exercise is designed for use by peer assessors selected by the coalition—anyone with enough coalition expertise to provide meaningful feedback, but with enough distance to provide an objective assessment, may make a suitable peer assessor. The exercise is also designed to work in a broad range of coalitions, including those that do not play an active, coordinating role during responses. It is important to bear in mind, however, that this exercise is *not* designed to assess any individual’s performance or compliance with federal or other requirements.

This handbook provides a *brief* overview of the Coalition Surge Test, the capabilities it tests, key features, and staff and resource requirements. Detailed information needed to run the exercise (including step-by-step instructions, scripts, and data collection tools) is provided in Excel tools, described below.

Overview. The exercise tests a coalition’s ability to work in a coordinated fashion to find appropriate destinations for patients in a simulated evacuation of up to three patient care facilities. The entire exercise will last approximately four or five hours and proceeds as follows:

- **Phase 1: Functional exercise (90 minutes).** Exercise play during the first phase lasts 90 minutes, but a 60-minute advance warning is given before the exercise begins. Specifically, at T minus 60 (i.e., 60 minutes before the official exercise start time), the assessment team calls the evacuating patient-care facilities to inform them that they need to stand up their hospital command centers. After this notification (and during the 60 minutes prior to start of the exercise), an assessment team of one or (optionally) two assessors arrives at each evacuating facility to inform leadership of the need to evacuate within approximately four hours (assessors may add scenario details relating

to the reason for the evacuation but should encourage players to accept the need to evacuate and not spend time questioning the decision to do so). Evacuating facilities are instructed to take a current patient census and to work (using whatever communication mechanisms it would during a real evacuation) to find appropriate destinations and transportation for each patient. However, there will be *no movement of actual patients*. A patient will be considered “placed” when (1) there is verbal or written (i.e., email) agreement from another facility that it can provide an appropriate destination for the patient, and (2) players have identified transportation assets that could move patients to their new locations (note that players are not asked to match transportation assets to each individual patient). Phase 1 ends when all patients are placed or after 90 minutes, whichever comes first.¹

- **Phase 2: Facilitated discussion (90 minutes).** After a break (which can be up to several hours), the next phase is devoted to a facilitated discussion that explores issues raised during Phase 1, including more detailed transportation planning, the capacity of receiving hospitals, patient tracking and public information, the needs of at-risk patients, and continuity of operations. Players may remain at their duty stations and participate via teleconference, web-based emergency operations center (WebEOC), or another communication platform.
- **Phase 3: Hotwash (30–45 minutes).** A hotwash concludes the exercise and consists of an assessment of strengths and weaknesses and corrective action planning.

“No-Notice” Features of the Exercise. The exercise is designed to test the coalition’s ability to respond to a significant incident without prior notice. This helps reduce the temptation to ensure that the “A-team” is on duty during the exercise. Moreover, it helps prepare coalitions for incidents (e.g., transportation accidents, bombings) that occur without prior warning. Thus, members of the coalition should be notified that an exercise will occur within a two-week window, but they will not know the exact date and time. Assessors will select which facilities will play the role of “evacuating” facilities, but they should not divulge this information to coalition members. As a result, facilities will *not* know ahead of time whether they are playing the role of “evacuating” or “receiving” facility. Moreover, no attempt should be made ahead of time to determine which coalition partners the evacuating facility/facilities will call for help. Indeed, an important purpose of the exercise is to see whether the evacuating facility knows whom to call and whether it is able to communicate with them at a moment’s notice. Initially, coalitions may wish to run the exercise during “normal business hours.” Over time, however, they may wish to try running it during evenings, weekends, and holidays.

¹ Note that the purpose of counting placed patients is increase realism and seriousness of play by forcing players to communicate about specific patients, locations, and assets. Given the simplifications built into the exercise, therefore, the numbers produced by the exercise should be regarded only as approximations.

In short, the exercise is designed to be challenging. Some coalitions may not be able to launch and complete the exercise in the allotted time. However, struggling with a challenging exercise may be more helpful in the long run than succeeding with an easier exercise. The exercise is not intended to assess individual performance or compliance with federal or other requirements. This is underscored by the decision to have coalitions select their own peer assessors, instead of using outside assessors. Select assessors who you trust and who can provide tough but constructive feedback.

Applicable to Coalitions Without Active Response Role. Some coalitions have regional command or coordination centers designed to play an active role during a response, but others do not. As noted above, evacuating facilities should act as they would during a real evacuation to find spaces, whether this involves coordinating with a coalition command center, reaching out to receiving facilities individually, or otherwise. For the purposes of this exercise, *coalition* denotes a collection of facilities and partners working together to improve regional response, not a specific organizational structure.

Capabilities Tested. The exercise simulates a hospital/facility evacuation, but its ultimate goal is to use this scenario to test a set of more generally applicable capacities, including emergency operations coordination, information-sharing, and medical surge capacity. More specifically, it tests the following:

- An evacuating facility and its coalition partners ability to rapidly shift into disaster mode.
- Whether an evacuating facility knows whom to contact upon learning of the need to evacuate, and whether it can reach them at a moment's notice.
- A coalition members' ability to communicate and coordinate quickly to find and match available beds and transportation resources with those needing to be evacuated (this may or may not involve an activated coalition command center)
- A coalition's ability to perform these tasks with existing on-site staff without excessive guidance or prompting from leadership.

Resources Required. The exercise requires the following players, peer assessors, and resources:

- *Trusted insider.* A "trusted insider" will serve as an internal point of contact (POC) for the coalition. Once the coalition has decided to run the exercise, this person should have the authority to recruit peer assessors, ensure that the necessary permissions have been obtained, and ensure that peer assessors have access to evacuating facilities and (if relevant) to the regional health care coordination center (RHCC). The trusted insider will know the exact date and time of the exercise but should not divulge it to other coalition members or staff.

- Players.** The functional exercise portion of the exercise requires each evacuating facility to involve a minimal complement of personnel to staff the facility's command center. Players will be asked to obtain a current patient census and to work with coalition partners to identify appropriate destinations and transportation for all patients. Other players include whomever the evacuating facility (or facilities) chooses to contact after the start of the no-notice exercise, as well as emergency medical services (EMS) or other entities responsible for patient transport. In some (but not all) coalitions, this may include staff in a coalition command center or other regional coordination center, state or local public health and emergency management agencies, and others. As a result, it may not be possible to predict with certainty who will participate in the exercise. Each facility contacted to place evacuating patients will need to provide at least one staff member who can respond authoritatively to evacuating facility requests to place patients. Note that the need to judge the "appropriateness" of destinations will require at least some players with strong clinical backgrounds. These players should also participate in the facilitated discussion portion of the exercise (via teleconference, WebEOC, or another platform). In addition, coalitions should include any other partners needed to have a robust discussion of the topics described in the three "Discussion" tabs found in the LEAD Excel tool.

Table 1. *Personnel Required*

Players	Peer Assessors
<ul style="list-style-type: none"> Minimal complement of command staff at each evacuating facility One senior staff member at each facility receiving simulated patients EMS/patient transport staff 	<ul style="list-style-type: none"> A LEAD assessor in the regional coordination center or other appropriate location An EVAC assessor at each evacuating facility A Trusted Insider who serves as an internal point of contact for the coalition

Peer assessors. The exercise requires an evacuating facility assessor (EVAC) at each evacuating facility to observe activity during the 90-minute functional exercise. In addition, a lead assessor (LEAD) is needed to launch the exercise (see below) and facilitate the discussion in Phase 2 of the exercise. The LEAD assessor works with the trusted insider to identify the best location from which to execute these functions. For instance, if the coalition plans call for standing up a regional command center, the LEAD should be stationed there. *The LEAD assessor may recruit someone to assist with the note-taking and logistics, especially during the facilitated discussion.*

No assessors are required for facilities that receive patients or for organizations providing transportation.

The peer assessors should be available for a total of eight hours to accommodate any

last-minute planning immediately before the exercise and continued conversations after the hotwash. The assessment team is responsible for selecting the exact date and time of the exercise. As noted above, in order to maximize the “surprise” element, the *assessment team should not divulge the date and time to anyone in the coalition*. However, they should work with the trusted insider (see below) to identify a two-week window that can be shared with coalition members.

- *Laptop computers.* Each LEAD and EVAC assessor needs a laptop to operate the Excel tools provided (see below). The devices should be capable of running Excel “off-network” in order to ensure full functionality during the exercise. In addition, for each evacuating facility, EVAC should provide printed paper copies of three simple tables (described below) to facility command staff.
- *Physical space for the facilitated discussion.* While many participants may join by phone or WebEOC, coalitions may wish to convene at least some of the players in a single location (e.g., a coalition command center). Be mindful of the fact that some command centers are arranged in rows, which might make face-to-face discussion difficult. If this is the case, you may wish to select a different location for the discussion.

Tools and Training Materials. Table 2 provides a complete list of tools and materials provided with the Surge Test.

Table 2. Tools and Materials Included in the Surge Test

Before the Exercise	During the Exercise
<ul style="list-style-type: none"> • Handbook for Peer Assessors and Trusted Insider (this document) • Preparation Checklist for the Trusted Insider (Appendix A of this document) 	<ul style="list-style-type: none"> • LEAD Tool: Excel tool for LEAD assessor • EVAC Tool: Excel tool for EVAC assessors (one per evacuating facility)

- *Handbook for Peer Assessors and Trusted Insider.* This is the document you are reading right now, which provides an introduction and overview of the exercise. It will be useful to the trusted insider and other coalition partners, members of the assessment team, and anyone else interesting in learning about the exercise. However, this manual is intended to provide only the “big picture” of the exercise. Detailed directions on running the exercise and collecting data are contained in to the Excel tools described below.
- *Preparation Checklist for the Trusted Insider.* This document (located in Appendix A in this handbook) describes what the trusted insider should do once the coalition decides to use the Coalition Surge Test. Most importantly, the trusted insider selects an assessment team and works with LEAD to identify a two-week (or longer) window during which the exercise may occur and provides a list of patient care facilities to the assessment team, along with

information on the number of beds and (if possible) an average daily census. The assessment team will use this information to decide which hospitals will be selected to serve as “evacuating” hospitals. Others may be asked during the exercise to serve as “receiving facilities.”

- *LEAD and EVAC Excel tools.* The Excel tools are used by the peer assessors before and during the exercise itself. Each tool includes sequentially organized tabs that may be viewed by clicking on each tab’s name at the bottom of the screen. Each Excel tool includes the following components:
 - *Overview.* This tab contains a summary of the overall flow of the exercise and details how each assessor’s activities relate to what the other assessors are doing.
 - *Preparation.* This tab contains a checklist that tells assessors exactly what they need to do to prepare for the exercise, whom they need to work with, and when they need to do it.
 - *Sequentially organized tabs for each part of the exercise.* The remaining tabs contain detailed instructions for each phase of the exercise, including the functional exercise, facilitated discussion, and hotwash. The tools provide detailed checklists, scripts (to be used when assessors must communicate information to players), places to enter data, and simple data displays.

BEFORE THE EXERCISE

Preparation for the exercise should normally begin one to six months before the exercise. As noted above, the Excel tools and materials described above provide detailed checklists to guide pre-exercise planning. The purpose of this section is not to repeat all the information in the checklists, but to provide a short narrative describing the most important activities. Readers should consult the Excel tools for more detailed instructions.

The trusted insider identifies the assessment team and informs the coalition of the upcoming no-notice exercise. The trusted insider will inform coalition members that a no-notice exercise is coming, but he or she should not divulge the exact date and time. Appendix B provides a brief communication template that describes the general requirements of the exercise, but without divulging details that might compromise the exercise’s no-notice character. Next, the trusted insider will create two lists and share them with the assessment team:

- *Evacuating facilities.* The trusted insider creates a list of patient care facilities (e.g., hospitals, skilled nursing facilities) that could play the role of evacuating facilities during the exercise. Select facilities that are likely to produce enough evacuating patients to stress the whole coalition. Identify backup facilities as well, in case some decline to participate when called. Include information on bed count and average daily census, which might help the assessment team select evacuating facilities. The LEAD Excel tool provides a table for organizing this information.
- *Participants for the facilitated discussion.* The Trusted Insider assembles contact information for all coalition partners who should be involved in the facilitated discussion. The list should include all personnel needed to have a robust discussion of transportation planning, ensuring the capacity of receiving facilities, patient tracking and public information, needs of at-risk patients, and continuity of operations. The LEAD tool provides a table for organizing this information. The trusted insider will use this list to contact facilitated discussion participants immediately after the evacuating facilities have been notified.

The assessment team plans (*but does not divulge*) exercise details. The assessment team (led by the LEAD assessor) will use facility information provided by the trusted insider to identify a facility (or set of facilities) whose evacuation would adequately stress the coalition. As a rule of thumb, assessors should seek to identify facilities whose evacuation would surge the coalition to 20 percent above normal capacity.² The LEAD tool assists in selecting a specific exercise time and date and identifying evacuating facilities. The LEAD assessor is also responsible for ensuring that other assessment team members have access to exercise tools and for convening a “check-in” meeting with the assessment team and the trusted insider approximately one week before the exercise.

The LEAD assessor and trusted insider select a location from which they can observe and facilitate the exercise. LEAD should work with the trusted insider to identify an appropriate location for running the facilitated discussion and hotwash, and both parties should assemble at that location 60 minutes before the start of the functional exercise. If the coalition’s plan calls for standing up a regional command center, LEAD should be positioned there.

² For instance, if the total bed capacity of patient care facilities in the coalition is 100, the exercise should seek to “evacuate” a hospital with at least 20 beds. This is only a rough rule of thumb, and assessors should not worry excessively about what counts as a bed.

DURING THE EXERCISE

Immediately Before the Exercise. Assessment team members should assemble at their locations for the exercise. Specifically:

- Each EVAC assessor should be stationed near the hospital or other facility that has been selected to play the role of “evacuating facility” (there should be one EVAC assessor for each evacuating facility).
- The LEAD assessor and trusted insider should be stationed at the chosen location (see “Before the Exercise” above), and both should assemble at that location 60 minutes before the start of the functional exercise.

The two groups of assessors should verify that they can maintain telephone and text contact with each other and go over any last-minute details that need to be resolved before the exercise.

Initiating the Functional Exercise Portion of the Exercise. The LEAD assessor places a telephone call to a POC at each selected evacuating facility and informs him or her that the exercise will begin in 60 minutes (however, the assessor should instruct the evacuating facility not to begin exercise play until the assessment team arrives). If the first facility declines, LEAD should call another facility on the list provided by the trusted insider.

Upon establishing contact with the evacuating facility POC and confirming participation, LEAD will call or text each EVAC assessor and instruct him or her to proceed to the evacuating facility/facilities. Upon arriving, each EVAC will meet the facility POC and proceed to the hospital/facility command center. Once in the command center, each EVAC will deliver spoken instructions to the assembled players (using a script provided in the EVAC tool) and provide three simple Microsoft Word worksheets (accessed by double-clicking the Word icon at the bottom of the “Preparation” tab in the EVAC tool) that the hospital will use to record its current patient census, destinations, and transportation for patients. Each EVAC will answer any questions and then press the Start button in the EVAC tool, which will start the 90-minute exercise clock.

If the facility does not contact a regional coordinating center, the assessment team should make no attempt to encourage them to do so.

Notifying Players of the Time for the Facilitated Discussion. After LEAD notifies the evacuating facility (or facilities), he or she will instruct the trusted insider to make contact with a predetermined group of coalition members, informing them that an exercise has begun and inviting them to participate (via conference call, WebEOC, or other platform) in Phase 2 at a designated time. The notification can be made by group email, group text, or telephone, at the discretion of the coalition insider. The facilitated discussion may be scheduled immediately

following the functional exercise or later in the day. The trusted insider should advise on which approach is likely to result in high attendance.

Key Activities During the Functional Exercise. Once play has begun, the evacuating facility should focus on contacting the coalition members it would contact in a real evacuation scenario. Each EVAC can answer procedural questions but should otherwise sit back and observe throughout the 90-minute duration. During functional exercise play, each EVAC should record observations about the evacuating facility activities using a qualitative checklist provided in the EVAC tool. *If the facility does not contact a regional coordinating center, the assessment team should not attempt to encourage them to do so.*

Activities During the Facilitated Discussion Portion of the Exercise. After the functional exercise has ended and players have called into the conference line at the designated time for the facilitated discussion, LEAD will explain (using a script in the Excel tool) that this phase of the exercise will review key patient placement and transportation decisions made during the functional exercise and conduct a deeper discussion of several issues related to those decisions. The discussion proceeds in three parts. First, LEAD asks the evacuating facilities to briefly review (1) their patient census at the beginning of the exercise and (2) which facilities agreed to take their patients. Other players are invited to note discrepancies, and this is followed by a guided discussion that involves all participants. Next, LEAD asks for similar information about transportation of patients, again followed by a broader discussion among participants. Finally, the discussion turns to patient tracking and communication, at-risk populations, and continuity of operations.

During the facilitated discussion, each EVAC should note strengths and gaps in performance and should be prepared to share observations during the hotwash.

Hotwash. Immediately after Phase 2 of the exercise, LEAD will facilitate a hotwash, using an outline provided in the LEAD Excel tool. The tool provides a brief summary of the objectives of the exercise, a summary of patient movement during the functional exercise, and a discussion outline. During the discussion, LEAD will invite the EVAC at each evacuating facility to provide insights observed from his or her vantage point. Similarly, the input of the players directly involved in the exercise will be critical in determining the reasons behind the strengths and weaknesses of the response efforts, as well as potential lessons learned and corrective actions.

AFTER THE EXERCISE

Assessors and players are encouraged to use learnings from the hotwash in preparing a written after-action report (AAR) on the exercise. The “Hotwash” tab of the LEAD tool contains a link to a simple AAR template.

THINGS TO KEEP IN MIND

We highlight a few important things to keep in mind throughout the exercise:

- **Avoid excessive prompting.** In order to simulate a true surge event, players should be allowed to act exactly as they would should such an event occur. As such, assessors and the trusted insider should avoid prompting the players during the exercise. Assessors will be encouraged to give feedback during the hotwash.
- **Note vague or inconsistent statements/actions for follow-up during the hotwash.** In addition to collecting the data listed in the Excel tools, peer assessors should remain on the lookout for vague or unrealistic statements. For example, a general claim that school buses could be used to transport ambulatory patients might warrant additional discussion at some point during the exercise to ascertain whether formal agreements are in place between the school system and coalition members. Use your professional judgment and experience in identifying claims that seem worth additional scrutiny.
- **Deliver text marked “read” verbatim.** It is very important to read any text in the tool that is marked “read” verbatim. In many cases, this text conveys critical assumptions that will make it easier for the players to respond to the scenario. Because reading scripts can be awkward for highly trained professionals, we have tried to limit their length and use them only when absolutely necessary. In other parts of the exercise, assessors are invited to customize the material based on the flow of the discussion.

Peer Assessors: Throughout the exercise, avoid prompting, note vague statements for the hotwash, and deliver text in the tool that is marked “read” verbatim.

APPENDIX A

PREPARATION CHECKLIST FOR THE TRUSTED INSIDER

Below is a checklist to be used by the trusted insider to prepare for the Coalition Surge Test. Checklists for the LEAD and EVAC assessors are provided in the accompanying Excel tools.

TIME FRAME	ACTIONS
One to six months before the exercise	<ul style="list-style-type: none"> <input type="checkbox"/> Get the necessary approvals to run the exercise. <input type="checkbox"/> Notify coalition members of the exercise and the two-week window during which it will happen (see Appendix B for sample notification). <ul style="list-style-type: none"> - Do not divulge the specific date and time or any information about which facility/facilities will be evacuating. - Assist with key planning considerations, such as other exercises or major local activities that LEAD/EVAC should be aware of when setting the date and location. <input type="checkbox"/> Recruit peer assessors (LEAD, EVAC). <ul style="list-style-type: none"> - Provide this handbook and Excel tools to each assessor. - Consider recruiting optional additional assessors to assist with note-taking. <input type="checkbox"/> Provide a list of patient care facilities to LEAD to help select evacuating facilities. <ul style="list-style-type: none"> - Provide supporting information (e.g., bed counts, average daily census) that will help ensure that the selected facilities can produce enough patients to stress the coalition. <input type="checkbox"/> Assemble a list of participants (and their contact information) for the facilitated discussion phase of the exercise. <ul style="list-style-type: none"> - Assemble contact information, including backup numbers where possible, for the day of exercise. Bring a copy of the list the day of the exercise so you can notify participants of the facilitated discussion time and call-in logistics. - Select individuals who can address capacity of receiving facilities, transportation planning, at-risk patients, patient tracking/communication, and continuity of operations. - See specific discussion topics provided in the “Discussion” tabs of the LEAD tool. <input type="checkbox"/> Arrange to use a call-in number, WebEOC, or other platform to host the facilitated discussion phase of the exercise. <input type="checkbox"/> Be available to assist the assessment team, as needed.
At least one week before the exercise	<ul style="list-style-type: none"> <input type="checkbox"/> Communicate with the assessment team to: <ul style="list-style-type: none"> - Finalize the exact date and time of the exercise (within the two-week window). - Review roles and responsibilities. - Assist in finalizing the list of evacuating facilities (and backups). - Plan how assessors will travel to relevant facilities (including contingency plans in case a facility declines to participate).

APPENDIX B

SAMPLE NOTIFICATION FOR COALITION PARTNERS

Sometime within the next [two] weeks, the [name of coalition] will run a four-hour no-notice coalition exercise that will focus on communication and cooperation between members. No-notice exercises do a better job of simulating the reality of rapid-onset incidents than other exercises and are encouraged by the U.S. Department of Health and Human Services Hospital Preparedness Program (who sponsored the development of this exercise).

The exercise will consist of three parts:

- Phase 1. A 90-minute simulated functional exercise that plays out in real time
- Phase 2. A 90-minute facilitated discussion that occurs via conference call
- Phase 3. A 30- to 45-minute hotwash to debrief.

Your institution may or may not be asked to participate in the real-time Phase 1, and the degree of participation will vary considerably across participants. Your facility may be contacted at any time during the 90 minutes of real-time play.

Phase 2 is a facilitated discussion, held by conference call, designed to cover aspects of the scenario not covered in the real-time phase and to give coalition members who were not involved in real-time play a chance to participate. All coalition members are encouraged to participate in this call. Shortly after the Phase 1 exercise begins, each coalition member's predesignated point of contact will receive notification (via phone, text, or email) of the exact time that the conference call will begin and how to call in to participate. (Note that the conference call may not directly follow the real-time play.) The facilitated discussion will last 90 minutes, and a 45-minute hotwash debrief (Phase 3) will follow it.

In order to maintain the element of surprise, coalition members will not know the exact date and time of the exercise, what the scenario is, or what their role in the exercise will be. There will be no moulaged patients, and real patients will not be moved or otherwise disturbed. The exercise is designed to provide a robust test of how well a coalition can function in an emergency situation, while minimizing the burden on participants.

Your institution's participation is greatly appreciated. Please contact [name] at [e-mail address] or [extension] if you have questions or concerns.

Sincerely,

[name and title]



Inter Facility Transfer Tool Kit

for the Pediatric Patient



Acknowledgements

A special thank you to members of the Emergency Nurse Association (ENA) Pediatric Committee and members of the Pediatric Special Interest Group of the Society of Trauma Nurses (STN) for participating in the building of this inter facility transfer tool kit.

ENA members contributing to this product include:

Deena Brecher, MSN, RN, APRN, ACNS-BC, CEN, CPEN	Dale Wallerich, MBA, BSN, RN, CEN Senior Associate Institute for Quality, Safety and Injury Prevention Emergency Nurses Association
Sue Cadwell, MSN, RN, NE-BC Director ED Initiative, Clinical Services Hospital Corporation of America	
Kathy Szumanski, MSN, RN, NE-BC Director, Institute for Quality, Safety and Injury Prevention, Emergency Nurses Association	Michael Vicioso, MSN, RN, CPEN, CCRN Chair, Pediatric Special Interest Group Emergency Nurses Association

STN members contributing to this product include:

Anne Blevins, RN, MSN, CEN Pediatric Trauma Clinician Tampa General Hospital, Florida	Nathan Selstad RN, BSN, CCRN, CPEN Program Manager EMS/Trauma Education Children’s Hospitals and Clinics of Minnesota, Minnesota
Lisa Gray, RN, BSN, CPN Director, Trauma Services St. Mary’s Level II Adult and Pediatric Trauma Centers, Indiana	Sally Snow, RN, BSN, CPEN, FAEN Trauma Program Director Cook Children’s Medical Center, Texas
Diana Ropele, MSN, RN Trauma Manager Helen DeVos Children’s Hospital, Michigan	

Emergency Medical Services for Children (EMSC) National Resource Center (NRC) staff members contributing to this product include:

Diana Fendya, MSN (R), RN, Trauma/Acute Care Specialist EMSC National Resource Center	Suzanne Sellman, MA Senior Communication Specialist/Designer EMSC National Resource Center
Jaclynn Haymon, MPA, RN Director Planning and Communications EMSC National Resource Center	

Additional contributors include:

Shari Herrin, MSN, RN, MBA, CEN Clinical Manager, Pediatric ED Cardon Children’s Medical Center Banner Health System	Sheila Giles RN,CPN Burn Program Coordinator Nationwide Children’s Hospital
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Introduction

Dear Healthcare Partners:

Scarcity of pediatric medical specialists for critically ill and injured children often requires today’s providers and medical systems to plan for the inter facility transport of pediatric and neonatal patients. In 2012, more than 10,500 severely injured children were transferred to access higher levels of care and specialty services.¹

Moving a very sick or critically injured infant or child from one facility to another facility is both complex and stressful to the child, family and staff. Preplanned processes can reduce the strain of unfolding events, ensure that the handoff of the pediatric patient’s care is smooth, and increase the safety of the transfer.

The Emergency Nurses Association (ENA), the Society of Trauma Nurses (STN), and the Emergency Medical Services for Children (EMSC) National Resource Center (NRC) have collaborated to ensure that hospitals and providers can better address these important processes. Resources included in this tool kit support efforts in establishing agreements or memorandums of understanding to facilitate transfer of children to specialty resources when needed. Additionally, the tool kit will aid in the development of pediatric transfer guidelines to assist staff as they work to ensure safe and timely inter facility transfer. Contents are reflective of both current literature and the best practices of hospitals around the country.

Background and Significance:

Consider the following:

- Approximately 27% of all emergency department visits consist of children younger than age 18;² and rural or remote facilities care for approximately 89% of all pediatric emergencies.³
- Though research has shown outcomes for critically ill and injured children are optimized at hospitals with specific pediatric resources and expertise,^{4,5} pediatric specific critical care areas are only available in 10% of all hospitals.⁶
- Therefore, transfer of critically ill and injured children from receiving emergency departments to pediatric specialty facilities is an essential component of pediatric emergency care.⁷
- Additionally, the [2009 Joint Policy Statement of Guidelines for Care of Children in the Emergency Department](#), issued by the American College of Emergency Physicians, the American Academy of Pediatrics, and the Emergency Nurses Association states that hospitals lacking higher levels of pediatric care should have transfer guidelines and agreements for transfer of children to pediatric specialty facilities.⁸

Overview of Toolkit Materials

The tool kit consists of 10 sections, each of which provides guidance on specific components associated with inter facility transfer. Users may find all sections helpful or may prefer to focus on individual sections depending on one’s unique situation.

Though designed as a kit to aid in developing organized transfer processes for the pediatric patient, all of the information in the kit has applicability for all patients requiring transfer for specialty resources.

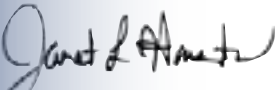
Examples or templates may be utilized as is or revised to meet the requirements of individual facilities. A case study section includes two real life scenarios that involve pediatric transfer and the complexities that ultimately impacted patient/family outcomes.

Toolkit Sections

- Section 1 – Introduction to the Tool Kit
- Section 2 – An Algorithm for Developing Inter Facility Transfer Processes – the algorithm will serve as a guide to facilitate tool kit use in the development of inter facility transfer agreements and guidelines.
- Section 3 – Standards and Regulation Considerations Associated with Inter Facility Transfer – includes important often complex concerns the provider may have in regards to the Emergency Medical Treatment and Labor Act (EMTALA), the Health Insurance Portability and Accountability Act (HIPAA), as well as Joint Commission considerations. Additionally the user will find a table listing states with regulations requiring hospitals to have transfer processes in place for services that they cannot provide.
- Section 4 – Talking Points for Establishing Inter Facility Transfer Agreements– identifies important points for addressing the need for inter facility transfer agreement and guidelines as discussions occur with hospital leadership.
- Section 5 – Inter Facility Transfer Agreements – contains examples of several types of agreements and a memorandum of understanding that the user can download and adapt for institutional use.
- Section 6 – Inter Facility Transfer Guidelines – includes examples of hospital transfer guidelines, including: pediatric triage considerations, i.e. patients to be considered for possible transfer; preparation for transfer, i.e. consent to be signed; and a transfer checklist.
- Section 7 – Family Considerations – provides numerous resources addressing cultural considerations and family-centered care.
- Section 8 – Follow-up Communications and Quality Improvement Planning – addresses opportunities to improve and build upon organized transfer processes.
- Section 9 – Inter Facility Case Presentations – presents two pediatric case scenarios reflective of the complexities associated with inter facility transfer.
- Section 10 – Inter Facility Transfer Library – contains manuscripts and documents supporting organized transfer processes, as well as a glossary.

We are thankful for the efforts and work of the collaborative group in developing this tool kit. Additionally, we thank you, the user, for accessing this tool and helping to ensure both timely and safe transfer of children when specialty care is needed.

Sincerely,



Janet Houston, MHA
EMSC Manager
Dartmouth Hitchcock Med. Ctr.
New Hampshire



Joan Eberhardt, RN, MA, FAEN
Administer, Time Critical Diagnosis
System and Chief Nurse, Disaster
Medical Assistance Team
State of Missouri
Trauma/ED Educator



Marla Vanore, RN, MHA
Clinical Director
Trauma and Injury Prevention
Programs
Children’s Hospital of Philadelphia

Footnotes

¹American College of Surgeons, Committee on Trauma, Pediatric National Trauma Data Base Report, 2012. <http://www.facs.org/trauma/ntdb/pdf/ntdb-pediatric-annual-report-2012.pdf>

²Institute of Medicine. Emergency Care for Children. Growing Pains. Washington, DC: The National Academies Press; 2007. Committee on the Future of Emergency Care in the United States Health System.

³Gausche-Hill M, Schmitz C, Lewis RJ. Pediatric preparedness of US emergency departments: a 2003 survey. Pediatrics. 2007;120

⁴Kanter RK. Regional variation in child mortality at hospitals lacking a pediatric intensive care unit. Critical Care Medicine 2002;30:94Y99.

⁵Pracht EE, Tepas JJ 3rd, Langland-Orban B, et al. Do pediatric patients with trauma in Florida have reduced mortality rates when treated in designated trauma centers? Journal of Pediatric Surgery. 2008;43:212Y221.Joint policy statement guidelines for care of children in the emergency department. Pediatrics. 2009;124:1233Y1243

⁶Kimberly Middleton. Advance Data. (2006) Availability of Pediatric Services and Equipment in Emergency Departments: United States, 2002-03. US Department of Health and Human Services.

⁷Woodward GA, Insoft RM, Pearson-Shaver AL, et al. The state of pediatric interfacility transport: consensus of the second National Pediatric and Neonatal Interfacility Transport Medicine Leadership Conference. Pediatric Emergency Care. 2002;18:38Y43.

⁸Joint policy statement guidelines for care of children in the emergency department. Pediatrics. 2009;124:1233Y1243.

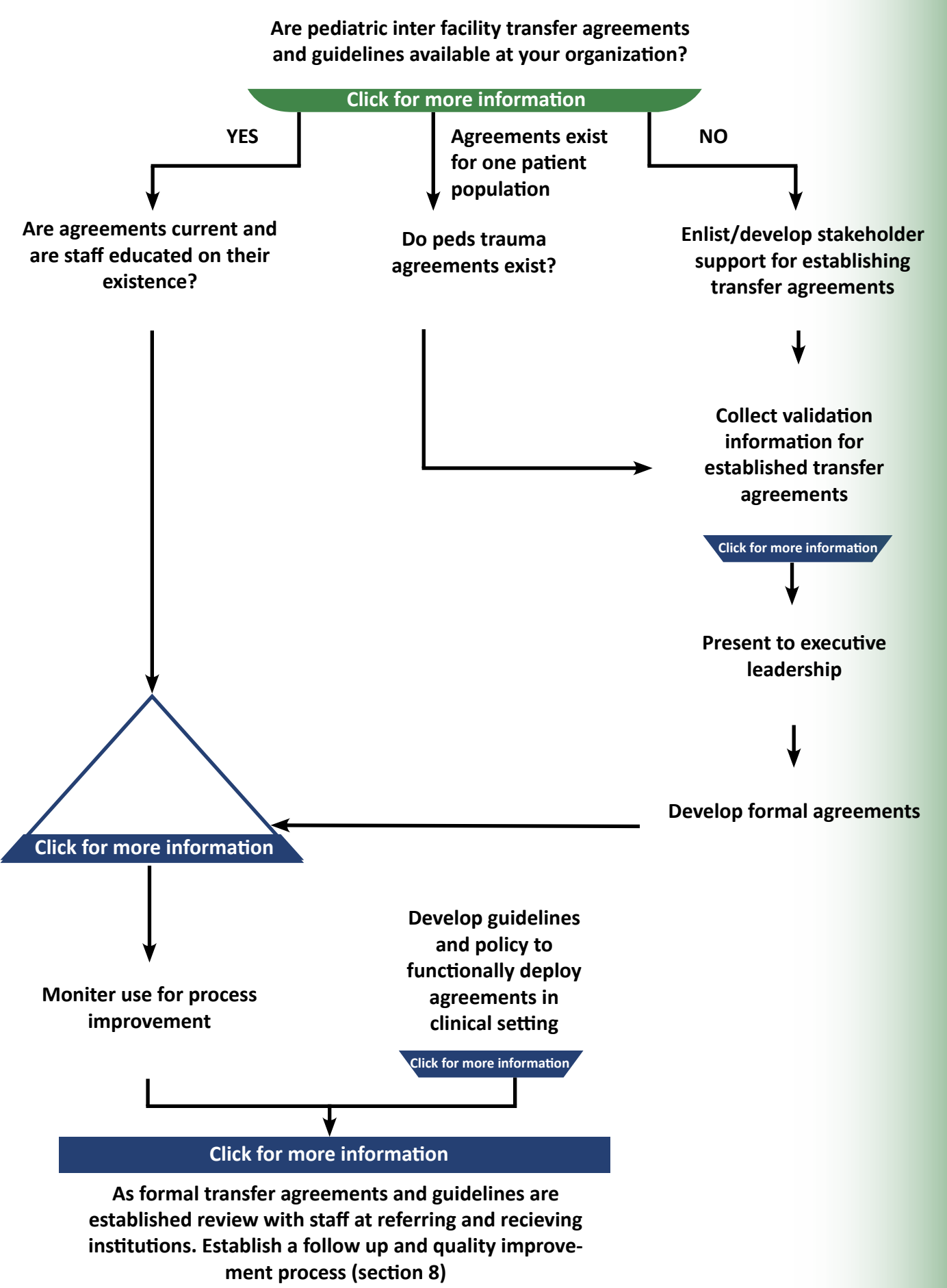
The Inter Facility Transfer Tool Kit for the Pediatric Patient is funded by a grant through the Health Resources and Services Administration, Maternal and Child Health Bureau, EMSC (EMSC) Program. Cooperative agreement number # U07MC09174-05-02: EMSC National Resource Center at Children’s National Medical Center, Washington, D.C.

Section Two

Algorithm for Developing Inter Facility Transfer Processes

Evidence based practice suggests rapid triage and transfer of critically ill and injured pediatric patients is crucial to reducing the overall mortality and morbidity of this patient population. Organized processes may also be paramount when mass casualty incidents quickly overwhelm existing standard operating procedures. The overarching goal of the pediatric inter facility transfer toolkit is to help facilities establish agreements and develop guidelines for ensuring safe and expeditious transfer of the pediatric patient when higher level(s) of care and resources are required and when mass casualty necessitates patient movement outside of traditional local or regional patient flows.

This section provides a mapping algorithm that a facility or an individual within a facility may find useful as they work to establish inter facility transfer processes. The Agreement and Guideline Algorithm provides a step-by-step process for the establishment of agreements and guidelines while referencing examples and information from other toolkit sections. The algorithm has been constructed to be used by any facility regardless of size or scope of service.



Rules and Standards and Inter Facility Transfer

Section Three

Appropriate transfer of pediatric patients from one facility to another requires thoughtful design, thorough planning, and ongoing monitoring. Inter facility transfer programs are subject to review related to compliance with key laws, elements of performance defined in accreditation programs, and prevailing professional standards and guidelines. Variability in state laws makes it necessary for inter facility transfer design teams to have a knowledge base of the legal requirements of their state.

Licensed health care professionals participating in care responsibilities during transfer events also have personal accountability for assuring that they are practicing within the boundaries of their scope of practice and license. A primary starting point for any inter facility transfer program for pediatric patients is an awareness of the policies and procedures currently in existence with the facility.

While all laws, regulations, and standards are subject to ongoing revisions over time, the following list provides identified areas of importance related to rules and regulations.

1. [Emergency Medical Services for Children Performance Measures 76 and 77](#). The EMSC Program has identified two performance measures in the establishment of inter facility transfer agreements and guidelines.
2. [The Emergency Medical Treatment and Labor Act \(EMTALA\)](#). This act became a federal law in 1986 and was designed to prevent hospitals from refusing to treat patients or transferring them to public hospitals when they were unable to pay. For more information, read a [Legal Issues in Inter Facility Transfer: EMTALA Issue Brief](#) is available.
3. Certificate of Transfer. Under EMTALA, a hospital may not transfer an individual with an unstabilized emergency medical condition unless a physician signs a certification stating that the benefit to the individual of receiving treatment at another medical facility outweighs the risk of being transferred. Certificates of transfer are required by the Centers for Medicare and Medicaid Services in order for reimbursement to occur.



4. [The Health Insurance Portability and Accountability Act](#). This act set standards for the use and disclosure of protected health information as well as measures to ensure proper storage and transmission of medical records.
5. [Federal Aviation Administration](#). Federal regulations related to air medical transport are available under the Federal Code of Regulations and apply to patients being transported by air.
6. State and Territorial Regulation (see the EMSC NRC's [State and Territorial Regulations Authorizing Pediatric Interfacility Transfer Guidelines or Agreements](#)). Wide variations of state laws and regulations exist related to the provision of emergency care. In some instances, the interfacility transport process is specified in state regulations. In addition, when referral crosses state lines there may be specification in state regulation that apply.
7. [Standards of Practice](#). Defined standards of emergency care, including transfer needs for adult and pediatric nurses, have been identified by the Emergency Nurse Association.
8. The American Nurses Association, the Joint Commission Accreditation of Hospitals, and the Centers for Medicare and Medicaid Services also have standards addressing transfer of patients (see [Standards Addressing Organized Inter Facility Transfer Processes](#).)
9. The following professional organizations address the need for organized transfer processes through a variety of educational offerings.
 - [Trauma Nurse Core Course](#)
 - [Emergency Nurse Pediatric Course](#)
 - [Transport Nurse Advanced Trauma Course](#)
 - [Advanced Trauma Care for Nurses](#)
 - [Rural Trauma Team Development Course](#), Chapter 7, Transfer to Definitive Care
 - [Advanced Trauma Life Support](#), Chapter 13, Transport:
10. [Emergency Nurses Association's 2010 Inter Facility Position Statement](#)

Talking Points for Establishing Interfacility Transfer Agreements

The documents provided in this section are designed to provide support for the establishment of inter facility transfer agreements to streamline the transfer of critically ill children from general emergency departments to facilities offering more specialized pediatric care.

Some particular points of interest include:

- Establishing a relationship between facilities via transfer agreements and guidelines may help to mitigate unnecessary transfers of children.
- Emergency Medical Treatment and Active Labor Act (EMTALA) implications associated with transfers may be avoided by establishing transfer agreements. While the Centers for Medicare and Medicaid Services (CMS) clearly articulates the duty of specialty hospitals to accept patients from more general facilities, the courts have been more ambiguous – sometimes articulating the failures of transferring facilities to adequately stabilize patients.
- An organized inter facility transfer process with clearly articulated steps and roles may improve outcomes in critically ill or injured children.
- Inter facility transfer agreements and guidelines may assist the physician ahead of time in the selection of an appropriate destination and mode of transport for critically ill and injured children.
- The Emergency Nurses Association (ENA) and the Society of Trauma Nurses support the use of transfer agreements and guidelines to facilitate rapid and safe transfer of all patients.



Published Documents Supporting the Need for Inter Facility Transfer Processes

- [EMSC Face Sheet on Performance Measures 76 and 77](#) (EMSC NRC) – Provides an overview of the advantages of having transfer agreements in place, as well as the requirements for transfer guidelines.
- [Inter Facility Transports](#) (Blackwell, TH) – The transfer process, including stabilization of the patient and transfer of the unstable patient, is covered in this manuscript. Supports coordination of the process, communication, and review of transfers for appropriateness. Outlines considerations for selection of mode of transport.
- [Position Statement Care of the Patient During Inter Facility Transfer](#) (ENA) – Supports the use of transfer agreements to facilitate rapid, safe transfer.
- [Organized Inter Facility Transfer Process](#) (Fendya, et al) – Calls for a closer look at the effect of transfer agreements and guidelines on timely pediatric transfers.
- [Inter Facility Transfers of Non-critically Ill Children](#) (Li, et al) – Speaks to the number of transfers that were either discharged from the tertiary center emergency department or within 24 hours of the transfer. Points out the importance for transfer criteria and addressing the readiness of emergency departments to care for children.
- [Transfer Agreements Help Hospitals Comply With Antidumping Laws](#) (Kingsolver, JC) – Provides a legal overview of the value of transfer agreements.
- [Issue Brief June 2009](#) (EMSC NRC) – Supports transfer agreements and guidelines through discussion of EMTALA implications when transferring both inpatients and unstable emergency department patients in the context of uncertainty with court rulings vs. CMS interpretations.
- [Issue Brief May 2010](#) (EMSC NRC) – Discusses EMTALA liability issues that can arise in the case of an inter facility transfer. Supports transfer guidelines and agreements and their importance in establishing the terms of the transfer to clarify respective duties and methods for assuring the proper execution of those duties.

Inter Facility Transfer Agreements and Memorandums of Understanding

Specialty care for children, i.e., pediatric neurosurgeons and pediatric specific critical care units, is often limited in availability. Many hospitals do not have the specialty resources needed to care for critically ill and injured children. It is essential that hospitals lacking pediatric specialty care proactively identify partnering facilities capable of providing the needed resources while identifying and streamlining effective transfer processes.

An inter facility hospital agreement and memorandum of understanding (MOU) may be defined as a written document of understanding between a referring facility (e.g., community hospital) and another hospital. The agreement identifies collaborative roles in the provision of additional needed care resources and specific duties as they relate to the inter facility transfer of patients. Often they include guidelines that outline procedural and administrative policies for transferring critically ill patients to facilities that provide specialized care or services not available at the referring facility.

A pediatric specific agreement or MOU formalizes arrangements for consultation and the timely transport of the pediatric patient to additional care resources. Having established hospital transfer agreements or MOUs can also provide opportunities to craft transfer guidelines to expedite the safe movement of patients to the essential resources when time may be critical.

This section contains several blank examples of hospital agreements as well as MOUs that have been utilized to ensure that arrangements and access to specialty resources are available to pediatric patients.

Example agreements in this section include:

- Generic Patient Transfer Agreement #1
- Generic Patient Transfer Agreement #2
- Specific Service Pediatric Transfer Agreement (Trauma and Non-Trauma Pediatric Patient)
- Hospital Inter-System/Network Transfer Agreement
- Pediatric Inter Facility Transfer Memorandum of Agreement



Generic Patient Transfer Agreement #1

This type of agreement is common between smaller community hospitals and larger facilities or medical centers where additional care resources may be available. The agreement is not restrictive to a specific patient population (i.e., pediatric) or diagnosis (i.e., burns). The collaborative relationship covers all patients needing additional resources not readily available at the receiving institution.

GENERIC PATIENT TRANSFER AGREEMENT #1

TRANSFER AGREEMENT BETWEEN _____ HOSPITAL And _____ HOSPITAL

THIS AGREEMENT effective as of _____, 20012 is entered into by and between _____ Hospital and _____ (hereinafter referred to as "Hospital").

WHEREAS, both parties desire, by means of this Agreement, to facilitate the timely transfer of patients and information necessary and/or useful in the care and treatment of transferred patients; and to insure the continuity and quality of care and treatment appropriate to the needs of patients at _____ HOSPITAL and/or _____ Hospital by utilizing the knowledge and resources of both parties in a coordinated and cooperative effort.

NOW THEREFORE, in consideration of the mutual advantages accruing to the parties hereto and their respective patients and in consideration of the mutual covenants hereinafter set forth, the parties, with the intention to be legally bound, agree as follows:

I. Conditions of Transfer

Each party agrees to exercise its best efforts to provide for the admission of any patient transferred from the other facility provided that:

- A licensed physician who is a member of the medical staff of either party has designated that such transfer is medically appropriate.
- All conditions and requirements of admission to the admitting facility are met, including confirmation of acceptance of the patient.
- Adequate bed space is available in the admitting facility to accommodate the patient.
- The transferring facility has received confirmation from the admitting facility that the admitting facility will accept the patient.

II. Admission Priorities

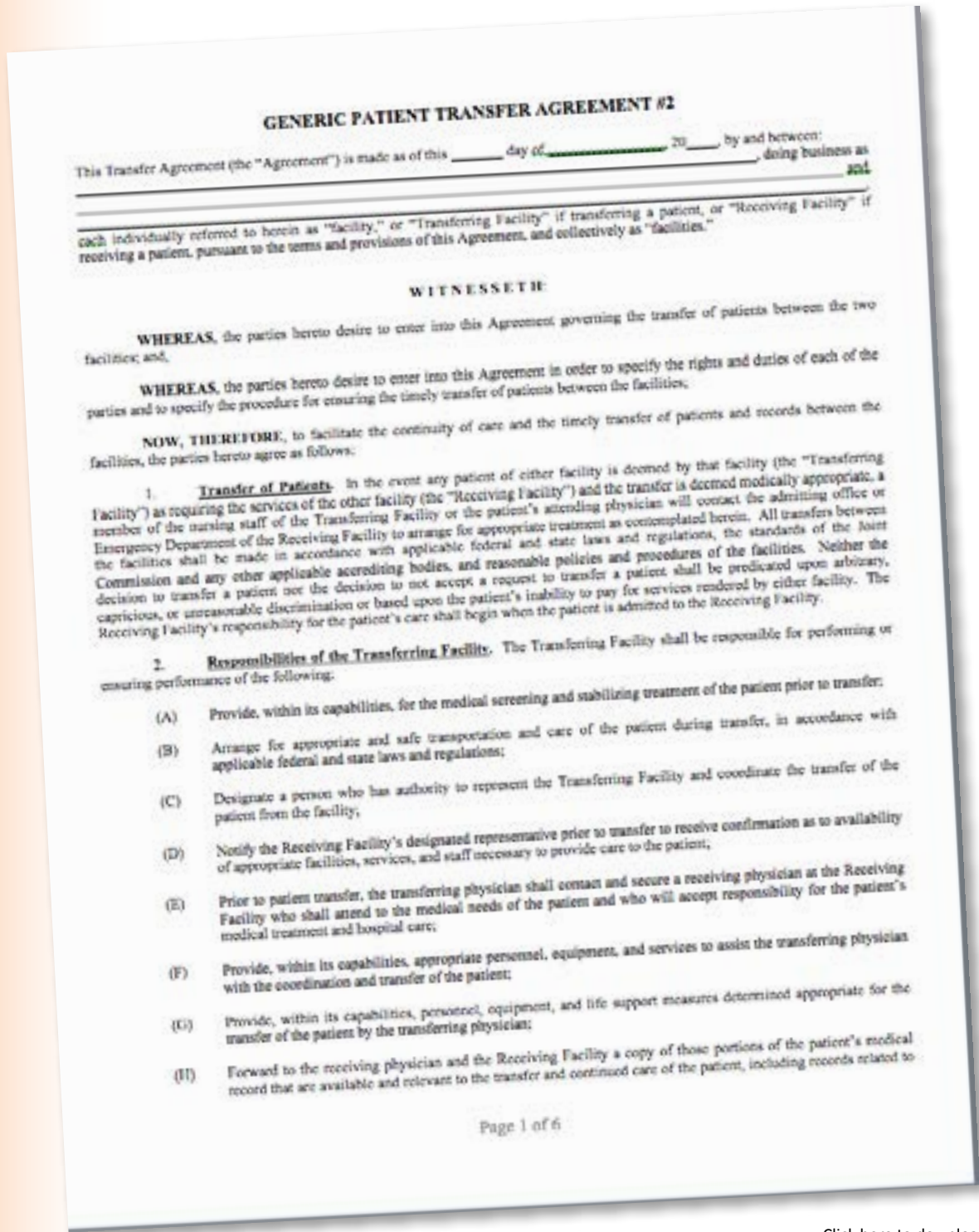
The parties agree that they and members of their medical staffs (referring physicians) will abide by the following notification procedures when patients are transferred:

- Under non-emergent circumstances, the referring physician shall contact the prospective attending physician at the admitting facility, who in turn will contact the admissions department of the admitting facility. The admissions department shall then contact the transferring facility when an appropriate bed for the transferring

Click here to download
"Generic Patient Transfer
Agreement #1" to your
desktop.

Generic Patient Transfer Agreement #2

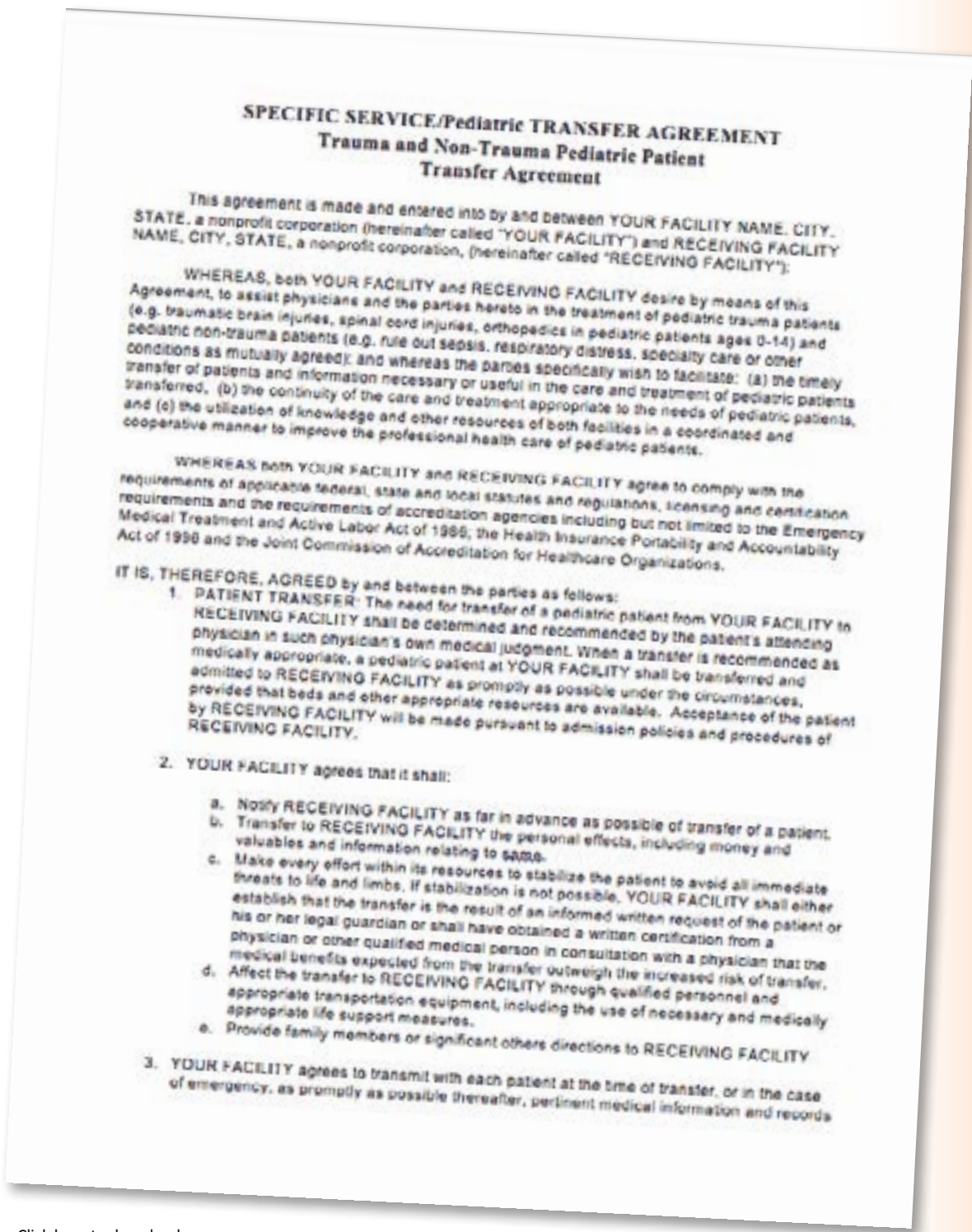
This type of agreement is common between smaller community hospitals and larger facilities or medical centers where additional care resources may be available. The agreement is not restrictive to a specific patient population (i.e., pediatric) or diagnosis (i.e., burns). The collaborative relationship covers all patients needing additional resources not readily available at the receiving institution.



Click here to download "Generic Patient Transfer Agreement #2" to your desktop.

Specific Service Pediatric Transfer Agreement (Trauma and Non-Trauma Pediatric Patient)

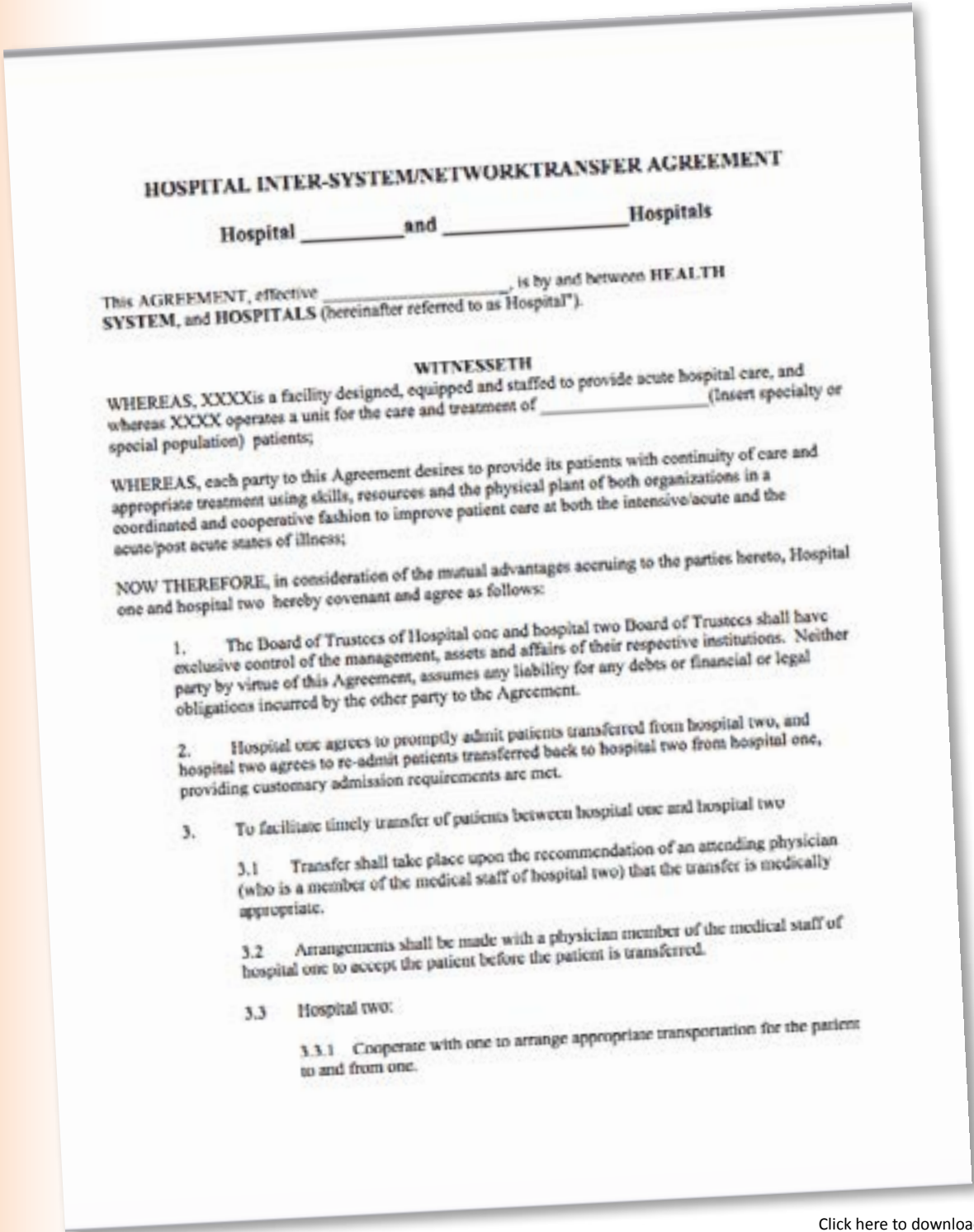
This type of agreement would be made between a facility with minimal pediatric resources and a children's hospital or a hospital with extensive pediatric resources. The transferring facility desires a collaborative working relationship between themselves and a hospital with specific pediatric resources.



Click here to download "Specific Service Pediatric Transfer Agreement" to your desktop.

Hospital Inter-System/Network Transfer Agreement

This type of agreement might be used by members of a multi-hospital system in which two or more hospitals are owned, leased, sponsored, or contract managed by a central organization. A network agreement may be in place when a group of hospitals, physicians, other providers, insurers and/or community agencies work together to coordinate and deliver a broad spectrum of services to their community.

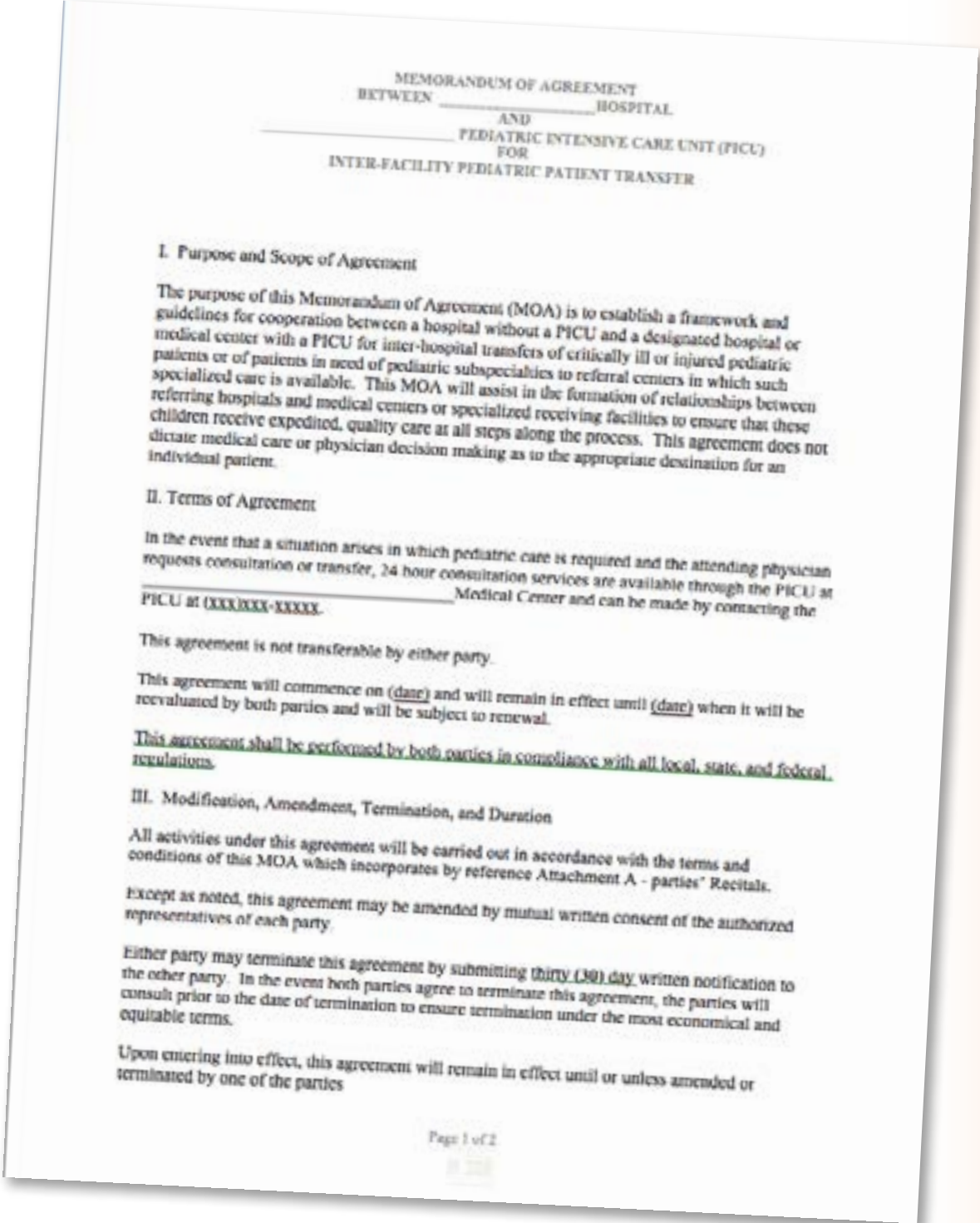


Click here to download
"Hospital Inter-System/
Network Transfer
Agreement" to your
desktop.



Pediatric Inter Facility Transfer Memorandum of Agreement

A Memorandum of Understanding (MOU) may more easily be established between two institutions as opposed to a formal transfer agreement. MOUs or Memorandum of Agreements are developed when two facilities want to work together on a common goal or action but do not want to enter into a formal agreement, i.e., ensuring access to pediatric specialty care when needed.



Click here to download
"Pediatric Inter Facility
Transfer Memorandum
of Agreement" to your
desktop.



Inter Facility Guidelines for Pediatric Transfer

As defined by the EMSC Program (see [EMSC performance measure 76](#)), safe and timely transfers to a specialty care center are better coordinated through the presence of inter facility transfer guidelines. These guidelines should include the following components:

- Defined process for initiation of transfer, including the roles and responsibilities of the referring facility and referral center (including responsibilities for requesting transfer and communications).
- Process for selecting the appropriate care facility.
- Process for selecting the appropriately staffed transport service to match the patient's acuity level (level of care required by patient, equipment needed in transport, etc.).
- Process for patient transfer (including obtaining informed consent).
- Plan for transfer of patient medical record.
- Plan for transfer of copy of signed transport consent.
- Plan for transfer of personal belongings of the patient.
- Plan for provision of directions and referral institution information to the family.

Effective stabilization and timely transport of a critically ill and/or injured child is very important in the reduction of further harm and negative outcomes. Severely ill and injured children have the potential to deteriorate quickly, making initial stabilization and identification or triage of those requiring additional resources important in developing transfer processes.

This section includes the following resources:

1. Examples of pediatric triage criteria/considerations for children often benefitting from transfer for additional medical care and resources.

- Pediatric Critical Care
- Pediatric Surgery
- Pediatric Burns

2. Example transfer checklists for referral, care considerations during actual transfer, and essential patient information to accompany the patient:

- Patient medical record and testing information
- Care giver information, both referring and receiving information
- Transport information
- Parent information including consents and directions



Pediatric Critical Care: Example Considerations for Transfer

The following criteria are to serve as guidelines for directing the transfer of critically ill or injured patients to a higher level of care. Exceptions can be made upon consideration of the individual patient's needs, and after consultation with nursing, subspecialists, and attending physicians involved. Availability of appropriate support services, including radiology and laboratory/pathology services, in a timely fashion may determine necessity of transfer.

The parent(s), primary care physician, physician of record, and consultants have the final say in the location of the care of the patient, taking in to account the following criteria:

The following patients should be considered for transfer to a higher level of care:

1. Patient with multi-organ system failure
2. Patient requiring constant bedside attendance for six hours or more
3. Patient requiring ongoing input from a subspecialist or the subspecialist requests transfer to another facility
4. Patient requiring cardiovascular surgical input or attention
5. Patient with renal failure requiring dialysis
6. Transplant recipient patient with transplant-related clinical issues
7. Patient with specific infectious diseases (e.g. HIV) that require pediatric ID input
8. If for any reason it is in the patient's best interest to be transferred to another facility (e.g. social, insurance, equipment only available at another facility, etc)

In addition, the following factors may also impact determination of the appropriate location for the care of a patient:

1. Pediatric Intensive Care Unit divert status
2. Admissions and transfers from emergency departments
3. Trauma patients' disposition is at the discretion of the Trauma Service
4. Nursing or support personnel feel patient's status or needs exceeds their comfort level

This list of guidelines will be under constant review, and criteria can be added or removed, depending on further evolution of the patients' needs.

Pediatric Surgery: Example Considerations for Transfer

The following criteria are intended to serve as guidelines for directing the transfer of pediatric surgical patients to a higher level of care. Exceptions can be made upon consideration of the individual patient’s needs, and after consultation with nursing, subspecialists, and attending physicians involved. Availability of operating room time and appropriate support services, including radiology and laboratory/pathology services, in a timely fashion may determine necessity of transfer.

The pediatric surgeons have the final say in the location of the care of their patients, taking in to account the following criteria:

- Neonates
1. Patients with known cardiac defects in utero should be delivered at the tertiary care center

2. The following conditions should be sent to tertiary care center after delivery due to the issues of complex surgery, multiple surgical procedures, and the need for multiple consultants
 - Omphalocele
 - Gastroschisis
 - Trachoesophageal Fistula
 - Congenital Diaphragmatic Hernia
 - Spinal defects
 - Bowel obstructions

3. Patients having the following surgical conditions may be appropriate to stay at a general pediatric care facility, depending upon patient condition and facility capabilities.
 - Patent ductus arteriosis
 - Hernia repair
 - Lumps and bumps
 - Perforated necrotized bowel (This is on a case-by-case basis. Stable babies with a perforation may be operated on at the surgeon’s discretion. Sicker babies will be transferred. A neonatologists must agree to be in house for six hours or longer if these cases are to be done.)

4. Surgeon will schedule anesthesia if not same day admission.

• Empyema (This is on a cases-by-case basis. Sicker children requiring ventilator support pre-op or with significant signs of sepsis should be considered for transfer to _____. More stable patients may be operated on at _____ at the surgeons discretion but an intensivist must be present in house post-op for at least six hours to address any respiratory issues, unless mutually agreed upon by the surgeon and intensivist.)

• Appendectomy

• Foreign bodies of the airway and esophagus (assuming adequate endoscopy carts are maintained)

• Intussusception (assuming an attempt at a therapeutic barium enema can be obtained by a trained pediatric radiologist prior to surgery.)

3. Those surgical patients needing the following conditions should be considered for transfer to _____ for PICU placement:
 - Multi-organ system issues (two or more systems or oncology)
 - Ventilator support expected to be needed for greater than 48 hours
 - Need for bedside physician presence for six hours or longer

4. Trauma patients will be managed by the trauma surgeons and managed by the pediatric intensivist. Pediatric surgery may be consulted and will treat or transfer based on collaboration with the trauma surgeon and intensivist.

5. The surgeons of _____ agree to make in-house consults on all requested patients unless it is clear that the patient meets transfer criteria and waiting for the consult would only delay appropriate medical care.

Infants, Toddlers, Children

1. Patients presenting to the emergency department will be stabilized and treated.

2. Patients requiring the following surgery will be admitted to _____ unless appropriate clinical support is not available.
 - Hernia repair
 - Abscesses
- Pediatric Burns: Example Considerations for Transfer to Burn Center
- The following criteria are to serve as guidelines for directing the transfer of pediatric burn patients to a burn center. Exceptions can be made upon consideration of the individual patient’s needs, and after consultation with nursing, subspecialists, and attending physicians involved. Availability of appropriate support services, including social service, pediatric nutritionist, and rehabilitation, may also determine necessity of transfer.
- The following patients should be considered for transfer to a burn center:
1. Partial thickness burns greater than 10% total body surface area (TBSA)

2. Burns that involve the face, hands, feet, genitalia, perineum or major joints

3. Third degree burns in any age.

4. Electrical burns, including lightning

5. Chemical burns

6. Inhalation injury

7. Burn injury with preexisting medical disorder

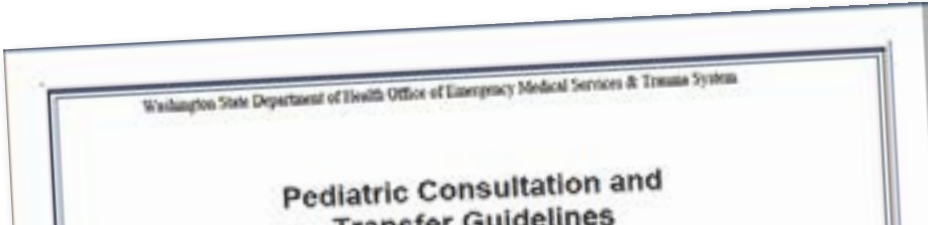
8. Burn injury with associated trauma

9. Burn injury in patients that require special social, emotional, and/or long-term rehabilitative intervention
- The figure is a 'Burn Chart' titled 'Total Body Surface Area by Age Group (in %)' on the left. It contains three diagrams of children representing different age groups: 'Age 1-4', 'Age 5-9', and 'Age 10-14'. Each diagram shows the percentage of body surface area for various body parts: Head (8.5%), Neck (1%), Chest (13%), Back (13%), Arm (5.5%), Hand (1%), Leg (13%), and Foot (1%). Below the diagrams, there are 'Burn Fluid Resuscitation Guidelines'. For burns > 10% TBSA, the guidelines specify fluid volume based on weight (< 20kg and > 20kg) and provide formulas for calculating fluid needs. It also includes instructions on administering fluid volume in the first 8 hours and the next 16 hours, and a note about pre-hospital fluids. A source note at the bottom right states 'TBSA% Calculations Source: Lund and Browder' and 'First degree is not to be calculated in TBSA%'. A small inset shows a hand with the palm and fingers labeled as 1% each.
- Click here to download “Pediatric Burn Center Referral Criteria/Guidelines for Stabilization” to your desktop.
-
- 20
- 21

Pediatric Inter Facility Consultation and Transfer Guidelines

In 2005, the EMSC Program established 10 performance measures to guide the activities of state EMSC grantees. Performance measures 76 and 77 address the need for hospitals to have inter facility transfer guidelines and agreements in place for the pediatric patient. The goal of the measures is to ensure that all children have access to pediatric specialty care that is not available at every hospital.

The following states and their EMSC Advisory Committees developed inter facility transfer guidelines to provide assistance to hospitals as they develop their own transfer processes.

- California EMSC: [Interfacility Pediatric Trauma and Critical Care: Consultation and/or Transfer Guidelines](#)
 - Maryland EMSC: [Maryland EMS Inter-hospital Transfer Resource Manual](#)
 - South Dakota EMSC and Sanford, University of South Dakota Medical Center: [Pediatric Consultation and Transfer Guidelines](#)
 - Washington State Department of EMS and Trauma Systems: [Pediatric Consultation and Transfer Guidelines](#)
- 

In addition, the Pennsylvania Trauma Systems Foundation shared its [Required Inter Facility Transfer and Consultation](#) guidelines. The Trauma Center Association of America (TCAA) also shared its [Pediatric Trauma Inter Facility Transfer Guidelines](#). The TCAA guidelines define physiologic and anatomic criteria for transfer of pediatric patients. The guidelines also include details on how to recognize the patient needing transfer, the responsibilities of the transferring facility, collaboration with receiving trauma surgeon, expeditious transfer modes, and recommendations regarding limiting diagnostic testing, especially imaging diagnostics.

Washington State Department of Health Office of Emergency Medical Services & Trauma System

Pediatric Consultation and Transfer Guidelines

Introduction

Hospitals that are designated trauma centers must have transfer guidelines in place as part of the designation process. In response to the many requests for a template or guideline, the Pediatric Technical Advisory Committee for the State of Washington put together a compilation of guidelines that hospitals may utilize as their own transfer guidelines.

The transfer guidelines were developed in accordance with published standards (internet and print) across the nation at other trauma centers, a publication from the AAP (American Academy of Pediatrics) as well as published NHTSA (National Highway and Transportation Safety Administration) standards in regards to mode of transport. The transfer guidelines are meant to be inclusive of pediatric critical illness as well as pediatric trauma.

The following guidelines are not part of WAC (Washington Administrative Code) and are merely a template that facilities may adopt in order to fulfill requirements for trauma designation or simply to facilitate development of appropriate pediatric inter-facility transfer guidelines.

The Department of Health does not mandate Washington State Designated Trauma Services to use these guidelines, but offers them to assist Trauma Services in the development of their own guidelines. The Department recognizes the varying resources of different services and that approaches that work for one trauma service may not be suitable for others. The decision to use these guidelines in any particular situation always depends on the independent medical judgment of the physician.

Page 1 of 11 Pediatric Consultation and Transfer Guidelines 4/25/08
Washington State Department of Health, Office of Emergency Medical Services & Trauma System

Example Inter Facility Transfer Guideline Checklists

PEDIATRIC INTERFACILITY TRANSFER FORM									
DATE:		AGE:		MEDICAL RECORD NUMBER #					
DIAGNOSIS:									
ARRIVAL MODE TO THE ED... PRIVATE VEHICLE <input type="checkbox"/> AMBULANCE <input type="checkbox"/>									
ASSESSMENT PRIOR TO THE TRANSFER:									
CNS		RESPIRATORY STATUS		CARDIOVASCULAR		MUSCULOSKELETAL		VITAL SIGNS	
ALERT	<input type="checkbox"/>	INTUBATED	<input type="checkbox"/>	IV	<input type="checkbox"/>	CERVICAL COLLAR	<input type="checkbox"/>	BP	
CONSCIOUS	<input type="checkbox"/>	TRACHEOTOMY	<input type="checkbox"/>	VO	<input type="checkbox"/>	BACK BOARD	<input type="checkbox"/>	PULSE:	
GLASGOW COMA SCALE ()		CRICOTHYROTOMY	<input type="checkbox"/>	CENTRAL LINE	<input type="checkbox"/>	EXTREMITY:		RESP RATE:	
		PULSE OXIMETER	<input type="checkbox"/>					TEMP:	
A & P U		OXYGEN: L SUMINO MASK		OTHER:		OTHER:			
MODE OF TRANSPORT: AMBULANCE <input type="checkbox"/> AIR TRANSPORT <input type="checkbox"/> OTHER (SPECIFY) _____									
LEVEL OF PROVIDER TRANSPORT: BLS <input type="checkbox"/> ALS <input type="checkbox"/> ALS <input type="checkbox"/> ACCOMPANIED BY: MD <input type="checkbox"/> RN <input type="checkbox"/> OTHER <input type="checkbox"/>									
RECEIVING FACILITY:					SENDING MD:				
REASON FOR TRANSFER: 1. NEED FOR HIGHER LEVEL OF CARE 2. NEED FOR SPECIALTY CARE 3. FAMILY/D REQUEST 4. INSURANCE					5. OTHER (EXPLAIN)				
PRIVATE MD NOTIFIED?					YES NO N/A COMMENTS				
CONSULTATION WITH TERTIARY CARE CENTER?									
TRANSFER SHEET DOCUMENTATION COMPLETED?									
IS TOTAL TIME IN ED < 3 HOURS? IF NOT, PLEASE COMMENT.									
CONDITION OF PATIENT AT TIME OF TRANSFER DOCUMENTED?									
Patient belongings given to family member for transfer to receiving institution.									
Family given directions to receiving hospital and accepting MD name and contact information.									

Transfer Checklist	
Respiratory Complications	
Date and Time:	
Patient Name/Age:	
Ventilator/Breath applied to _____ (Location of tube)	
Size WT (in kg)	
Height in cm	
Head circumference if less than 2 years of age:	
Chief Complaint:	
Referring MD: _____ Accepting Facility: _____ Accepting MD: _____	
Consent:	
AMPLE History:	
A: Allergies	
M: Medications	
H: Past medical history	
L: Last meal	
E: Events leading up to injury	
CHECKLIST	
<input type="checkbox"/> Working Diagnosis	
<input type="checkbox"/> Interventions/Treatments Thus far:	
<input type="checkbox"/> Physical Findings and Assessment:	
<input type="checkbox"/> Airway Assessment (once any patient presenting symptoms)	Normal/breath sounds clear and equal Noisy breathing Stridor Chesting Extubated Wheezes
<input type="checkbox"/> Breathing (once any patient presenting symptoms)	SpO2 Normal - Room air/O2 at mask _____ Increased work of breathing Altered LOC
<input type="checkbox"/> Circulation (once any patient presenting symptoms)	Cyanosis/dyscoloration Poor perfusion Weak/absent pulses Cap refill _____ sec (Marked)
<input type="checkbox"/> Disability	GCS E: _____ V: _____ M: _____ Pupils _____ (size, reactivity) Sustained Activity Pupils self _____ bulging _____ non-applicable
<input type="checkbox"/> Exposure (any pre-examination/examination)	Report Deformity
<input type="checkbox"/> Abnormal Lab Findings	

AUTHORIZATION FOR TRANSFER - PAGE 1

Patient's Name (please print) _____ Date _____ Medical Records Number _____

PHYSICIAN

I. Reason for transfer: _____

II. Patient Condition (Check one of the following):

☐ Patient does not have an emergent medical condition.
This patient has been examined and does not have an emergent medical condition (includes severe pain, active labor, psychiatric disturbances or symptoms of substance abuse), such that the absence of immediate medical attention could result in serious jeopardy to the health of the individual or serious dysfunction of any bodily part or organ.
Note: If this section applies, only page 1 of this form must be completed.

☐ Patient has been stabilized
This patient has been examined, does have an emergent medical condition which has been stabilized such that, within reasonable medical probability, no material deterioration of this patient's condition is likely to result from or occur during transfer.
Medical Risks: _____
Medical Benefits: _____
Note: If this section applies, only page 1 of this form must be completed.

☐ Patient has not been stabilized
This patient has been examined and does have an emergent medical condition which has not been stabilized.
Note: If this section applies, the entire 2 page form (including section six) must also be completed.

III. Receiving Facility (Complete all of the following):

☐ The receiving physician has agreed to accept this patient at the receiving facility and provide appropriate medical treatment.
Name of receiving physician: _____ Time: _____

☐ The receiving facility has available space, has qualified personnel for the treatment of this patient, has agreed to accept the transfer and shall provide appropriate medical treatment.
Name of receiving facility: _____ Time: _____
Person/Title accepting for facility: _____ Time: _____
Nursing report given to: _____

IV. Mode/Support/Treatment During Transfer (Complete Applicable Items):

Mode of transportation for transfer: ☐ BLS Ambulance ☐ ALS Ambulance ☐ Helicopter ☐ Private Car

☐ Transport Team ☐ Other: _____ B/P _____ O2 Sat _____ % RA ☐ O2 Initiator

Time: _____ T _____ P _____ R _____

Support/Treatment during transfer: ☐ Cardiac Monitor ☐ Oxygen - amt: _____ ☐ Restraints - Type: _____

☐ IV Type: _____ ☐ Route: _____ ☐ Pulse Oximeter ☐ IV Pump

☐ Patient ID applied (location) _____ Other: _____

V. Accompanying Documentation (Check Appropriate Items):

The receiving facility was provided a copy of all appropriate medical records pertaining to this patient's condition:

☐ Emergency Department Record ☐ Nurses Notes ☐ Lab Tests

☐ Medication Record ☐ History & Physical ☐ ENG

☐ X-Ray/Diagnostic Films ☐ Copy of Transfer Form ☐ Other: _____

VI. Family Considerations:

☐ Patient Belongings Given to Family ☐ Patient Belongings Transferred with Patient

☐ Name of Accepting Physician and Accepting Facility Info Given to Family _____

☐ Family Given Directions to Accepting Facility _____

VII. Requests/Consents for Non-Emergent or Stable Patient (Complete Appropriate Items):

This patient who does not have an emergent medical condition or whose medical condition has been stabilized acknowledges and understands the risks and benefits described in section I: ☐ requests ☐ consents to the transfer.

Signature of: ☐ Patient ☐ Responsible person: _____ Relationship: _____

Witness: _____ Second Witness: (if only telephone/patient mark) _____

☐ Parent/Responsible person transporting the patient by private car has been instructed to go directly to accepting facility

SIGNATURES Physician _____ Nursing _____

WHITE - CHART YELLOW - RECEIVING FACILITY PINK - TRANSPORTATION

AUTHORIZATION FOR TRANSFER

Page 1 of 2

PATIENT LABEL

Click here to download
"Authorization for
Transfer" to your
desktop.



Cultural and Family Considerations in Inter Facility Transfer

Family-centered healthcare is an approach to patient care characterized by mutually beneficial collaboration between patient, family, and health professionals. Children rarely enter an emergency department or health care setting alone. A family member/caretaker or an entire family may accompany them. Therefore, family-centered care is paramount when caring for the pediatric patient.

Families have the greatest influence over the health of their children and should be considered essential partners in both the planning and implementation of health plans. Numerous professional organizations have developed position statements supporting family-centered care for the pediatric patient. During high stress situations, illness or injury necessitating emergency care, family-centered care can be both comforting to patient and family while helpful to providers delivering care.

Local community emergency departments and hospitals are often the first destination for many ill or injured children – most pediatric emergency visits occur in community or local emergency departments. Community hospitals are often close to home and perceived as comforting when care is provided by neighbors and trusted friends who are known in the community.

Transfer of the pediatric patient for additional specialty services can cause additional concern and stressors on both the child and family unit. As community providers discuss the need for transfer and the process that will unfold, it is important that this discussion be on a level that family and child, if appropriate, can understand while being culturally sensitive.

The links below may be helpful in accessing information on family-centered care, health literacy, and cultural competency to aid in development of your facility's transfer guidelines and family transfer information sheets. Additionally, a separate list of published resources sharing information on family considerations and concerns as they relate to facility transfer is provided.

- [Family-Centered Care in the Emergency Department: A Self-Assessment Inventory](#). Developed by the Emergency Nurses Association, this tool addresses Family Participation in Care; Family Support; Information and Decision Making; Service Coordination and Continuity; Personnel Practices and Training; Environment and Design, among other important components of family-centered care.
- [Family Presence During Invasive Procedures and Resuscitation in the Emergency Department](#). Developed by the Emergency Nurses Association in 1995 and reapproved in 2010.



- [MCH Definition of Family-centered Care](#). Posted to the Family Voices website, this Maternal and Child Health Bureau document defines family-centered care and lists the principles of family-centered care for children.
- [Family Self-Assessment Tool Kit – Provider Guide](#). Developed by Family Voices, this tool is designed to increase outpatient health care settings’ and families’ awareness about the implementation of family-centered care and to provide an organized way for health care settings to assess current areas of strength and identify areas for growth, plan future efforts, and to track progress.
- [Health Literacy and Cultural Competency](#). Maintained by the Agency for Healthcare Research and Quality, this website contains patient guides to encourage more patient/family involvement in self healthcare, as well as fact sheets, podcasts, and video presentations.
- [Health Literacy Interventions and Outcomes](#), by Berkman et al. This article provides a systematic review of health care service use and health outcomes of individuals with low health literacy and the interventions designed to improve outcomes.
- [Improving Patient Safety Through Informed Consent for Patients with Limited Health Literacy](#), by Wu HW et al. This document shares recommendations to guide health care organizations striving to meet the requirement for an effective informed consent process.
- [Clear Communication: A NIH Health Literacy Initiative](#). Maintained by the National Institutes of Health, this website provides an overview of health literacy, a 2010 Healthy People Objective, and includes numerous resources and tools to assist in developing communication strategies for a range of diverse audiences.
- [Health Literacy Online](#). Developed by the Department of Health and Human Services’ Office of Disease Prevention and Health Promotion, this online guide provides tools for developing health websites and includes a downloadable guide to writing and designing easy-to-use health websites.

Documents Addressing Family Considerations as Related to Inter Facility Transfer

- [Safety Threats and Opportunities to Improve Interfacility Care Transitions; Insights from Patients and Family Members](#), by Jeffs L., et al. *Patient Prefer Adherence*. 2012;6:711-8. doi: 10.2147/PPA.S36797. Epub 2012 Oct 5. This paper explores family members detected safety threats across care transitions and strategies that may improve care transitions from acute care hospitals to complex continuing care and rehabilitation health care organizations.
- [The cost of family-oriented communication before air medical inter facility transport](#), by Macnab et al. *Air Med Journal*. 2001 Jul-Aug;20(4):20-2. Communication with parents by

transport teams can ease stress associated with transferring children to tertiary care. This paper reports on a study conducted to determine the duration of family-oriented visits prior to transfer and potential additional costs and benefits.

- [Should parents accompany pediatric inter facility ground ambulance transports? Results of a national survey of pediatric transport team managers](#), by Woodward, et al. *Pediatric Emergency Care*. 2001 Feb;17(1):22-7. Reports results of a survey of parents and specialty transport team members regarding value of parents accompanying the pediatric patient during inter facility transport, a period of time of family unit high stress.



Quality Improvement and Follow up Considerations Surrounding Inter Facility Transfer

Inherent safety risks and costs are associated with the transfer of patients. When a pediatric patient is transferred to access specialty care, the team providing care for child and family has been extended beyond the referring facility to include transfer providers, EMS, and potentially a specialty team, as well as the care providers at the receiving facility. Monitoring transfer processes for opportunities of improvement while providing follow-up communications on patient outcome and condition are important components for the collaborative team of both referring and receiving institutions. Additionally, each transfer should be reviewed to assure that it was appropriate. Inappropriate patient transfers can tax scarce resources and can be inconvenient to families.

Quality improvement or performance improvement has many definitions. Below are some of the more common descriptions of the process.

Mosby's Medical Dictionary, 8th edition. © 2009, Elsevier

Continuous Quality Improvement (CQI) seeks to improve the provision of services with an emphasis on future results. Like total quality management, CQI uses a set of statistical tools to understand subsystems and uncover problems, but its emphasis is on maintaining quality in the future, not just controlling a process.

Once a process that needs improvement is identified, a team of knowledgeable individuals is gathered to research and document each step of that process. Once specific expectations and the means to measure them have been established, implementation aims at preventing future failures and involves the setting of goals, education, and the measurement of results. If necessary, the plan may be revised on the basis of the results, so that the improvement is ongoing.

Centers for Disease Control and Prevention

Quality improvement in public health is the use of a deliberate and defined process, such as Plan-Do-Check-Act, which is focused on activities that are responsive to community needs and improving population health. It refers to a continuous and ongoing effort



to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality services or processes which achieve equity and improve the health of the community. (Source: Riley et al, "Defining Quality Improvement in Public Health", JPHMP, 2010, 16(10), 5-7.)

Systems performance improvement is defined as positive changes in capacity, process and outcomes of public health as practiced in government, private and voluntary sector organizations. Performance improvement can occur system-wide as well as with individual organizations that are part of the public health system. It involves strategic changes to address public health system (or organizational) weaknesses and the use of evidence to inform decision making. (Source: National Public Health Performance Standards Program)

Performance management is the practice of actively using performance data to improve the public's health. This involves the strategic use of performance standards, measures, progress reports, and ongoing quality improvement efforts to ensure an agency achieves desired results. Ideally, these practices should be integrated into core operations, and can occur at multiple levels, including the program, organization or system level. (Source: Turning Point Performance Management Collaborative, 2003.)

Health Resources Services Administration

Quality improvement includes regular measurement of care processes and outcomes to analyze the performance of the system of care. It involves the implementation of solutions to improve care and the monitoring of their effectiveness, with the goal of achieving optimal health outcomes for patients. Ongoing cycles of change and re-measurement are implemented to test and try different ideas to determine which practices result in improved care.

Quality improvement activities in clinics can range from a single team focusing on improving one aspect of care to a comprehensive quality improvement program with many teams working on a wide variety of improvement projects, with a well-established plan and an oversight committee.

The methods of quality improvement are based on core principles that are readily translated into a practical approach and integrated into the clinical care delivery system.

Joint Commission on Accreditation

Performance Improvement is the systematic process of detecting and analyzing performance problems, designing and developing interventions to address the problems, implementing the interventions, evaluating the results, and sustaining improvement.

Quality Improvement Tools

This section contains the following tools for guiding quality improvement activities around patient transfer:

- System Performance Improvement Committee Transfer Follow-up Guidelines
- Routine Follow-up Communication Form between a Trauma Center and a Referring Facility
- Routine Follow-up Letter between a Trauma Center and a Referring Facility

System Performance Improvement Committee Transfer Follow-Up Guidelines


Purpose: To provide consistent feedback and follow up for trauma patients transferred within the Regional network.

Guideline: Receiving trauma center will complete a transfer follow-up tool and forward the document to the transferring facility within 30 to 45 days of the transfer.

Procedure:

1. The patient's initials will be used as the identifier with the date and time of transfer.
2. Injuries identified in the trauma evaluation will be listed.
3. Disposition from the emergency department are to be listed.
4. Operative procedures will be listed (initial operative intervention).
5. Patient's status during the first 48 hours will be defined.
6. Compliance to EMTALA regulations will be reviewed.
7. Performance improvement measures will be reviewed.
8. Feedback, transfer review tool will be forwarded to the Regional Outreach coordinator within 14 days (business days) of the transfer.

Click here to download
"System Performance
Improvement Committee
Transfer Follow-up Guide-
lines" to your desktop.



PRIVATE AND CONFIDENTIAL

Thank you for transferring the following patient to _____ Hospital for emergency medical care. Please find a brief follow up summary of the patient's visit below.

NAME:

DOB:

INJURY DETAILS:

TRAUMA ALERT LEVEL:

ATTENDING PHYSICIAN:

INJURY DATE: **ARRIVAL DATE:** **D/C DATE:**

HOSPITAL DISPOSITION:

ISS:


DIAGNOSES:

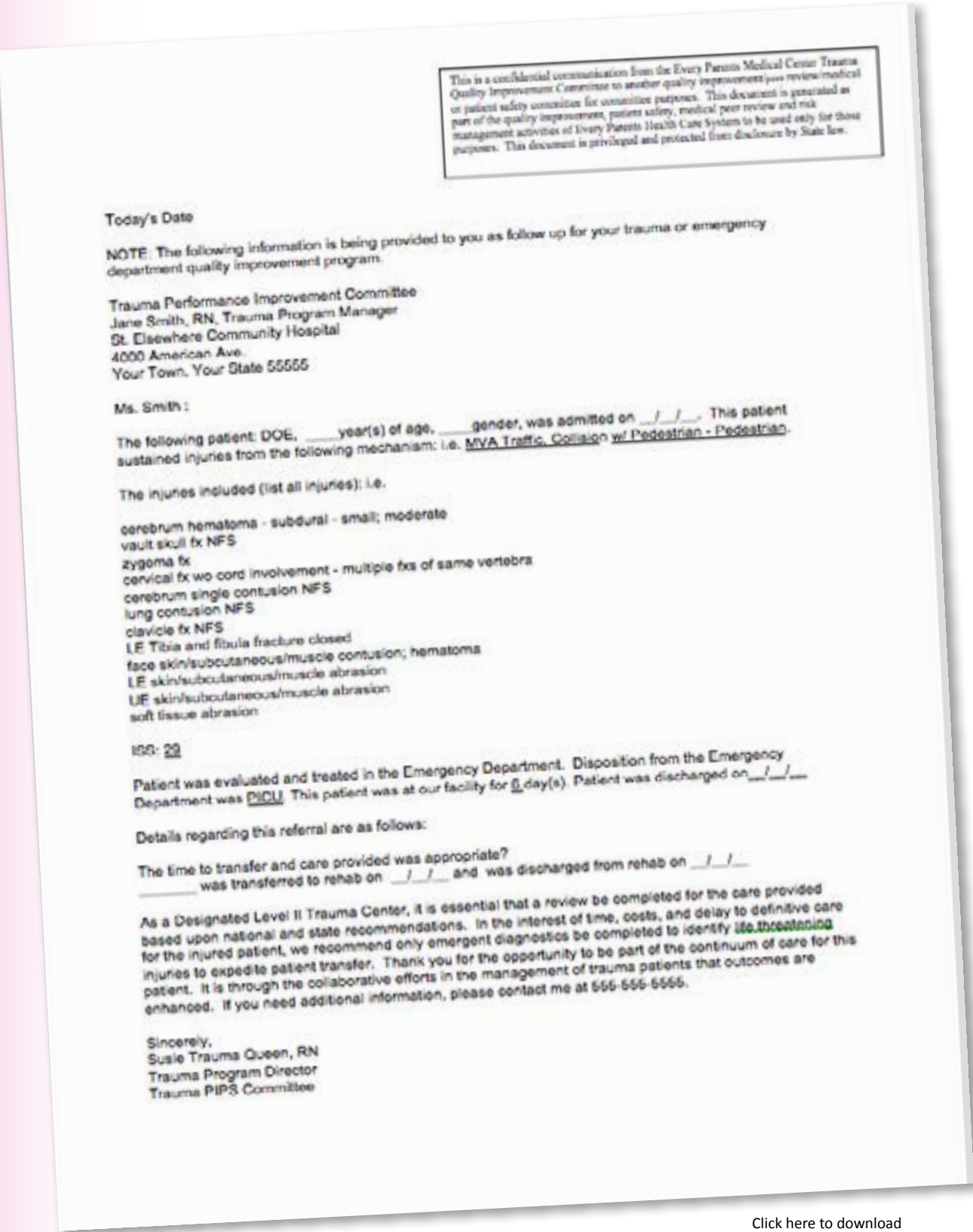
OPERATIVE PROCEDURE:

We appreciate your confidence in our team to continue the care of this patient.

NOTE: All information in this letter is privileged and confidential and is for the sole use of the intended recipient. The recipient is responsible for maintaining the confidentiality of this information and using the information only for authorized purposes. If you have received this communication in error, please notify us immediately and destroy all copies of the original message.

Click here to download
"Routine Follow- up
Communication Form be-
tween a Referring Facility
and a Trauma Center" to
your desktop.





Click here to download
"Routine Follow- up
Letter between a Trauma
Center and a Referring
Facility" to your desktop.



Pediatric Case Presentations and Inter Facility Transfer

This section of the tool kit features two actual situations in which inter facility transfer was required to access pediatric specialty resources. Both cases provide a vehicle to envision the complexities of inter facility transfer and support the necessity for comprehensive transfer plans at all facilities that include inter facility transfer agreements and guidelines.

Case Study One: 8-month-old with Abdominal Injury

The first case is one in which a mother shares the story of her toddler's injury, the local emergency department providing care, the early identification of the need for pediatric specialty services, and the difficulties encountered while trying to transfer the child, which may have been eliminated if an organized transfer processes had been in place.



As an educated mother of two children, Melanie Jarreau, MBA, never fathomed that her local hospital would not be equipped to provide her child with the appropriate life sustaining treatment necessary for her to overcome injuries sustained in an accident. Her local regional hospital lacked the resources her child needed, necessitating her transfer to a larger facility. However, it was a lack of planning and preparation that ultimately cost her daughter her life.

In September of 2003 her 8-month-old child, Skylar Grayce, sustained an abdominal injury as a result of an adult tripping and falling on her. Shortly after the accident Skylar began demonstrating signs of shortness of breath. Melanie immediately took her to her pediatrician. He examined her briefly and requested she be directly admitted to the local hospital for observation and x-rays. After an almost two hour wait for x-rays, Melanie learned that Skylar sustained an internal abdominal injury requiring surgical repair.

The local hospital did not have pediatric surgeons on staff nor a pediatric intensive care unit (PICU), which physicians believed Skylar would need for aftercare. Therefore, it was decided that it would be in Skylar's best interest to transfer her to a hospital with resources that could better accommodate her unique pediatric needs.

Upon learning the extent of Skylar's injuries and being informed that she would have to be transferred, Melanie was a little uneasy to say the least. However, after speaking to friends and loved ones, she was reminded they were less than an hour away from two of the best pediatric hospitals in the state. Melanie was a little relieved and confident that Skylar would now receive the best possible care. Melanie was not prepared for the time and effort it would take for a hospital to accept and take care of her baby.

The first hospital was contacted. After an hour the hospital responded that it was not in a position to accept Skylar because of a full PICU and two other babies were awaiting admission. A second hospital was contacted and they agreed to accept Skylar. Melanie quickly learned that the accepting hospital would be sending their own transport team to pick her up because they were better equipped to care for Skylar

in the event something went wrong during the transport. That sounded okay in theory but the roundtrip would take two hours. Two additional hours of critical time would pass.

Three hours after receiving word from the accepting hospital the transport team arrived. They began examining Skylar and preparing her for transport. Once Skylar arrived at the accepting hospital she was prepped and went into surgery approximately ten hours after the initial examination by medical personnel. It took surgeons two hours to repair her internal injuries. She fought a strong battle over the next few days and the hospital provided extensive resources to help her recovery, including extra corporeal membrane oxygenation, a heart-lung bypass procedure. In spite of these extreme efforts, her body could not fight any longer. Due to complications, Skylar's life support was terminated on a Sunday afternoon at 3:10 p.m.

Skylar's death did not result from the accident. It was the result of precious time lost in her treatment. She died of heart failure caused by the extra stress placed on her heart when her body went into septic shock during the 10 hour wait for treatment. This loss of life could have been prevented had Skylar received the proper medical care in a timely fashion. Since her death, Skylar's family has spent countless hours on raising public awareness on the importance of hospital inter facility pediatric transfer agreements and how not having those in place impacted Skylar's short life.

"It is imperative that our children receive the proper medical attention in a timely manner to better improve their chances of survival. I urge you to get involved now before you too fall victim to a lack of system organization as my family did. We lost our precious daughter, but we have vowed to do everything possible to prevent any further loss of life, especially the lives of children. Your advocacy can help save a child's life!"

– Melanie Jarreau (Skylar's mom)

Case Study Two: 16-month-old with Popcorn Aspiration

The second case identifies the value of triage criteria being included as part of facility transfer guidelines while also emphasizing the need for follow up communications with referring facilities. Loop closure and identification of opportunities to improve care are important benefits and elements of the transfer process.

A 16-month-old toddler presents to the multigenerational emergency department at 4:00 pm following a choking episode after eating popcorn at a Halloween Party at his church around 1:00 pm. He is alert, speaking clearly at his baseline, shows no respiratory distress, no cyanosis, and no drooling. He is able to drink apple juice without difficulty. For more information about this case study, download the slide set ["Looked Who Popped Into Your ED... A Pediatric Transfer Case Scenario."](#)



Inter Facility Transfer Library Resources

Care of the critically ill or injured child can present a challenge for all providers on the emergency care team. This is especially true in community hospitals where the opportunity to care for critically ill or injured children is infrequently. The anxiety provoking event can be compounded tenfold when suddenly the team realizes they don't have the resources necessary to provide definitive care and they have no plan in place to facilitate moving the patient to another care facility where the resources of personnel, equipment, and services are available.

Anticipation and preparation can play a huge role in helping facilities prepare, in advance, so that transfer of the patient can be done in an organized and seamless manner. Having pre-arranged transfer agreements and pre-established criteria detailing which patients may need to be transferred can decrease the anxiety in the heat of battle.

The library section of the Inter Facility Transfer Tool Kit is a rich resource for the development of a robust plan for interfacility transfer of pediatric patients. Transferring and receiving facilities alike can find applicable resources. In this section, the following resources can be found:

- Supporting manuscripts related to inter facility transfer
- Transfer criteria established by states and regions to guide providers in making decisions regarding what patients may need to be considered for transfer.
- Links to courses that help personnel become prepared to care for children in a variety of clinical settings.
- Resources that reference the need for organized inter facility transfer processes.

Resource Tools

[American College of Emergency Physicians Policy, Appropriate Interhospital Patient Transfer](#). This policy statement outlines the characteristics of an appropriate interfacility transfer, highlighting the legal requirements of the Emergency Medical Treatment and Active Labor Act (EMTALA). It specifically focuses on the medical screening exam and the patient stabilization requirement within the capabilities of each healthcare facility.

[Guide For Interfacility Patient Transfer](#). Developed by the National Highway Traffic Safety Administration, this document can be used to provide general guidance, references, and ideas for conducting a systematic assessment of the processes and personnel supporting inter facility transfer and how they can be enhanced to provide optimal delivery of care.



[Clear Communication: A NIH Health Literacy Initiative](#). This website provides an overview of health literacy, a 2010 Healthy People Objective. It also provides numerous resources and tools to assist in development of communication strategies for a range of diverse audiences.

[Emergency Medical Treatment and Labor Act \(EMTALA\)](#). This act became a federal law in 1986 and was designed to prevent hospitals from refusing to treat patients or transferring them to public hospitals when they were unable to pay.

[Emergency Nurses Association, 2010 Position Statement on Inter Facility Transfer](#). This statement supports the use of organized transfer processes including establishment of agreements.

[Emergency Nurse Standards of Practice](#). Defined standards of emergency care, including transfer needs, for adult and pediatric nurses have been identified by the Emergency Nurse Association.

[EMSC Fact Sheet on Performance Measures 76 and 77](#). The EMSC Program has identified two performance measures in the establishment of inter facility transfer agreements and guidelines. This fact sheet provides an overview of the advantages of having transfer agreements in place as well as the components that should be included in transfer guidelines.

[Family-Centered Care in the Emergency Department: A Self-Assessment Inventory](#)

[Family Presence During Invasive Procedures and Resuscitation in the Emergency Department](#)

[Family Self-Assessment Tool Kit – Provider Guide](#)

[Federal Aviation Administration](#). Federal regulations related to air medical transport are available under the Federal Code of Regulations and apply to patients being transported by air.

[Health Insurance Portability and Accountability Act \(HIPAA\)](#). This act set standards for the use and disclosure of protected health information as well as measures to ensure proper storage and transmission of medical records.

[Health Literacy and Cultural Competency](#). This Agency for Healthcare and Research-supported website provides tools for providers to improve patient communications. The site also contains patient guides to encourage more patient/family involvement in self-healthcare. The website includes fact sheets, podcasts and video presentations.

[Health Literacy Online](#). This site provides tools for developing health websites and includes a downloadable guide to writing and designing easy-to-use health web sites.

[Issue Brief June 2009](#). This fact sheet focuses on transfer agreements and guidelines through a discussion of Emergency Medical Treatment and Active Labor Act (EMTALA) implications when transferring both inpatients and unstable emergency department patients in the context of uncertainty with court rulings vs. CMS interpretations.

[Issue Brief May 2010](#). This fact sheet discusses EMTALA liability issues that can arise in the case of an inter facility transfer. Supports transfer guidelines and agreements and their importance in establishing the terms of the transfer in order to clarify respective duties and methods for assuring the proper execution of those duties.

MCH Definition of Family Centered Care

[National Highway Traffic Safety Administration Guide for Interfacility Patient Transfer](#). This document is intended for EMS agencies providing interfacility transfers at the local, state, and regional levels, as well as those involved in transfer planning. It can be used to provide general guidance, references, and ideas for conducting a systematic assessment of the processes and personnel supporting interfacility transfers, and how they can be enhanced to provide optimal patient care.

[Pediatric National Trauma Data Base \(NTDB\) Report, 2012](#). This report provides recent data collected from NTDB contributing trauma centers inclusive of major mechanisms of injury, injury severity scores, discharge status including transfer to pediatric trauma centers etc.

[Standards Addressing Organized Inter Facility Transfer Processes](#). This resource identifies those states having regulatory standards in place requiring hospitals to have agreements/guidelines in place which may help validate the need for organized processes when approaching hospital administrators.

[Advanced Trauma Care for Nurses \(ATCN\)](#). This course is designed for the registered nurse interested in increasing his/her knowledge in the management and care of the multiple trauma patient.

[Advanced Trauma Life Support \(ATLS\)](#). This course teaches a systematic, concise approach to the early care of the trauma patient. It is helpful in guiding care for the injured patient in emergency departments.

[Emergency Nursing Pediatric Course \(ENPC\)](#). This national standardized 16-hour course is designed to provide the learner with pediatric emergency nursing knowledge and psychomotor skill experience. The content is presented through lecture material, accompanying slide presentations, and dedicated time for learning and practicing six psychomotor skill stations.

[Rural Trauma Team Development Course \(RTTDC\)](#). This course focuses on rural receiving facilities and the fundamental elements of injury resuscitation. Course content includes key concepts relative to organization of the trauma receiving area, utilization of available resources and regional system relationships in a way that is straightforward and easy to understand.

[Trauma Outcomes and Performance Improvement Course \(TOPICS\)](#). This course is designed for all members of the trauma team who participate in the on-going assessment, evaluation and improvement of trauma care. TOPIC focuses on the on-going assessment of the continuum of trauma care with a structured review of process and discussions of strategies to monitor trauma patient outcomes.

[Trauma Nurse Core Course \(TNCC\)](#). This course is a standardized, 16-20 hour course integrating the trauma nursing process into the content while providing the learner with core-level trauma knowledge and psychomotor skill experience.

[Transport Nurse Advanced Trauma Course \(TNATC\)](#). This three-day educational experience focuses on care of the trauma patient during initial resuscitation and transport. Course content includes: transport physiology, safety, neurological trauma, shock, thoracic and abdominal trauma, trauma in pregnancy, pediatric trauma, legal aspects of transport, burn trauma, airway and ventilator management and crisis management.

[American Academy of Pediatrics Manual, 3rd, Guidelines for Air & Ground Transport of Neonatal & Pediatric Patients](#). This manual provides guidelines for health care professionals who make decisions about the emergency inter facility transport of children. Though focused on pediatric specialty teams this text

also includes valuable information on legal considerations of transfer/transport and quality improvement as well as family centered care.

[EMSC Performance Measure Manual](#). This manual contains information on all 2006 EMSC Performance Measures. Performance Measure 76 and 77 address the need for all hospitals to have inter facility transfer agreement available for pediatric patients as well as guidelines that include specific components to facilitate safe, timely and family centered transfer.

[Health Literacy Interventions and Outcomes](#), by Berkman et al. This resource provides a systematic review of health care service use and health outcomes of individuals with low health literacy and the interventions designed to improve outcomes. Disparities in health outcomes and effectiveness of interventions among different sociodemographic groups were also examined.

[Institute of Medicine. Emergency Care for Children. Growing Pains](#). Convened in 2003, the Institute of Medicine examined the emergency care system in the United States to create a vision for the future while making recommendations for improvements. Findings and recommendations were presented in three reports. The pediatric report describes the challenges of emergency care for children and their impact on the outcomes of critically ill and injured children.

[Inter facility Transports, Seminars in Respiratory and Critical Care Medicine](#), by Blackwell TH. 2002 Feb. 21;(1)11-8. The transfer process, including stabilization of the patient and transfer of unstable patients is covered in this manuscript. Importance of communication coordination and the review of transfers for appropriateness is also stressed.

[Organized Inter facility Transfer Processes](#), by Fendya DG, et al. *Pediatric Emergency Care* 2011;27;900-6. doi: 10.1097/PEC.0b013e318230277e. While providing national information on availability of hospital transfer agreements and guidelines this manuscript calls for a closer look at the effect of transfer agreements and guidelines on timeliness of pediatric inter facility transfers.

[Regional Variation in Child Mortality at Hospitals Lacking A Pediatric Intensive Care Unit](#), by Kanter RK. *Critical Care Medicine* 2002;30:94Y99. This paper explores regional variation in failure to utilize existing regional pediatric intensive care units (PICUs) and impact on pediatric mortality.

[Inter facility Transfers of Non-critically Ill Children to Academic Medical Centers](#), by Li J, et al. *Pediatrics* 2012 July 130 ;(1);83-92. doi: 10.1542/peds.2011-1819. Epub 2012 Jun 4. This paper addresses the number of transfers that were either discharged from the tertiary center ED or within 24 hours of the transfer and thus emphasizes the importance for transfer criteria and addressing the readiness of EDs to care for children.

[Safety Threats and Opportunities to Improve Interfacility Care Transitions; Insights from Patients and Family Members](#), by Jeffs L., et al. Patient Prefer Adherence. 2012;6:711-8. doi: 10.2147/PPA.S36797. Epub 2012 Oct 5. This paper explores family members perceived safety threats across care transitions and strategies that may improve care transitions from acute care hospitals to complex continuing care and rehabilitation health care organizations.

[Transfer Agreements Help Hospitals Comply With Antidumping Laws](#), by Kingsolver JC. *Kentucky Hospital Magazine*, 1990 Summer;7(3):22-3. Provides a legal overview of the value of transfer agreements.

[The Cost of Family-oriented Communication before Air Medical Inter Facility Transport](#), by Macnab AJ, et al. *Air Med Journal*. 2001 Jul-Aug;20(4):20-2. Communication with parents by transport teams can ease stress associated with transferring children to tertiary care. This paper reports on a study conducted to determine the duration of family-oriented visits prior to transfer and potential additional costs and benefits. Golden Hour, The Handbook of Advanced Pediatric Life Support, 3rd edition, Nichols D. et al, Pennsylvania, Pa: Elsevier, Inc.;2011. Contains a nice section on transfer of the pediatric patient including guidelines to assist staff in both administrative components and patient care considerations.

[Policy Statement Guidelines for Care of Children in the Emergency Department](#). This policy statement focuses on the essential resources (medications, equipment, policies, and education) and staff to ensure that hospital emergency departments are prepared to care for and – when necessary -- transfer children of all ages, from neonates to adolescents. The guidelines are consistent with the recommendations of the Institute of Medicine’s (IOM) 2006 report Future of Emergency Care in the United States Health System.

[The state of pediatric interfacility transport: Consensus of the second National Pediatric and Neonatal Interfacility Transport Medicine Leadership Conference](#), by Woodward GA, Insoft RM, Pearson-Shaver AL, et al. *Pediatric Emergency Care*. 2002;18:38Y43.

[Should parents accompany pediatric inter facility ground ambulance transports?](#), by Woodward GA, et al. *Pediatric Emergency Care*. 2001 Feb;17(1):22-7. Reports results of a survey of parents and specialty transport team members regarding value of parents accompanying the pediatric patient during inter facility transport, a period of time of family unit high stress.

[Improving Patient Safety Through Informed Consent for Patients with Limited Health Literacy](#), by Wu HW, et al. National Quality Forum; 2005. This document shares recommendations to guide health care organizations striving to meet the requirement for an effective informed consent process.

Glossary

Certificate of Transfer - Under the Emergency Medical Treatment and Labor Act (EMTALA), a hospital may not transfer an individual with an unstabilized emergency medical condition unless a physician signs a certification stating that the benefit to the individual of receiving treatment at another medical facility outweighs the risk of being transferred. Note that a hospital’s EMTALA obligations apply to individuals who present at a hospital seeking emergency care and are subsequently diagnosed with an emergency medical condition; they do not, however, apply to hospital inpatients, whether such patients are admitted after being diagnosed with an emergency medical condition or are admitted for elective (non-emergency) diagnosis or treatment.

Family-centered Care – An approach to patient care characterized by mutually beneficial collaboration between patient, family, and health professionals.

Inter Facility – The movement of a patient from one facility to another, such as from one hospital to another hospital; from an urgent care center to a hospital; or from a hospital to a rehabilitation center.

Inter Facility Agreement – A recorded document of understanding and intention between two or more parties with respect to the effect upon their relative rights and duties as they relate to inter facility transfer of patients.

Inter Facility Guideline – Defines the process/steps and responsibilities that should be addressed by care-takers when planning to transfer a patient to another facility for additional care resources. These processes ensure both organized and safe transfer of the patient.

Injury Severity Score (ISS) – An established medical score to assess trauma severity. It correlates with mortality, morbidity, and hospitalization time after trauma. It is used to define the term major trauma.

Memorandum of Agreement (MOA) or Memorandum Cooperative Agreement (MCA) – A document written between parties who agree to cooperate on a project or meet an agreed upon objective.

Memorandum of Understanding (MOU) – A document describing a mutual agreement between two or more parties. It expresses a union of parties for an intended common line of action.

Pediatric Patient – Generally defined as a newborn to less than 18 years. Note that the definition of the pediatric patient may be state and/or hospital specific. The following classifications are commonly used for the pediatric patient.

- Neonate is defined as a newborn to 3 months of age.
- Infant is defined as a 3 - 18 month old baby.
- Child is defined as 18 months to 12 years of age.
- Adolescent is defined as 13 years through 17 years of age.

Performance Improvement – The systematic process of detecting and analyzing system performance problems, designing and developing interventions to address the problems, implementing the interventions, evaluating the results, and sustaining improvement.

Quality Improvement – A recognized method for the analysis of performance and disciplined efforts to improve it. Quality improvement includes regular measurement of care processes and outcomes to analyze performance.

Regional Quality Improvement – Quality improvement initiatives within a service area, geographic area, state, or municipality that involves multiple facilities or care service organizations.

Regulation – A rule put forth by a government or a non-government, administrative entity that mandates a certain enforceable code of practice; a regulating principle.

Standard – An authoritative statement by which the quality of practice, service, or education can be evaluated.

Tertiary Pediatric Care Facility – Pediatric tertiary care facilities provide highly specialized pediatric equipment, pediatric critical care capabilities, and pediatric medical subspecialists. Tertiary pediatric care facilities are often affiliated with medical schools and serve as teaching centers for pediatric subspecialists. Children will often be referred from smaller hospitals to a tertiary pediatric hospital for major operations, consultations with sub-specialists and, when required, sophisticated intensive care.

Transfer Triage Criteria – A process for quickly identifying or sorting injured or ill patients who may require additional resources and thus would benefit from transfer to another facility.

Pediatric Surge Planning



Train the Trainer

**Developed by: Rady Children's Hospital in partnership
with San Diego County Healthcare Disaster Council**

About RCHSD

Rady Children's Hospital-San Diego, **the largest children's hospital in California, is a 442-bed pediatric-care facility** providing the largest source of comprehensive pediatric medical services in San Diego, Southern Riverside and Imperial counties.

We are dedicated to excellence in care – **the latest technology, the best equipment, the most progressive research, the finest teaching** – because that's the right thing to do for every child. We offer programs and services that will never be reimbursed by insurance, simply because our families deserve the best.

Through Rady Children's network of physicians, kids can receive specialized clinical and primary care services at **more than 30 satellite locations throughout the county**. Rady Children's physician network offers a broad range of services, from speech, physical and occupational therapies to child guidance and child protective services.

RCHSD Pediatric Surge Taskforce:

Chris Abe, RN
LesleyAnn Carlson, RN, MSN
Lisa McDonough, BSN, RN, CEN, CPEN
DJ Phalen, BSPH, EMT-1
Don Kearns, MD., MMM
Mary Hilfiker, Ph.D., MD.
John Bradley, MD
Sue Cox, RN, MS, CPEN, PHN
Ken Schnell, PharmD
Barent Mynderse, LCSW, MBA
Matt Parker, CST
Michael Clark, PharmD
Maria Guzman



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Section 1:

Why Pediatric Surge Training?

In a disaster event there can be:

Massive injuries: Communication disruption. Utility failure. Freeway blocked. Cellular repeaters down. Mass evacuation...In the event of a catastrophic natural disaster or terrorist attack, hospitals are the front lines and victims from all ages will arrive for care. Children under the age of 18 comprise nearly 25% of the US population and have specific and complex planning and emergency response needs.

In the hours and day following a catastrophic disaster, the surge of injured patients may exhaust local medical resources quickly. As healthcare professionals, we are responsible for ensuring a rapid and competent response to the most catastrophic disaster at a moment's notice...this includes care for pediatrics.

Critically injured children often require entirely different treatments, strategies, and drugs. Their bodies respond differently from adults. Typically, general acute care facilities do not stock adequate supplies for treating large numbers of ill and injured children. Emergency response plans rarely address triage of pediatric patients.

Pediatric Special Needs

In any event with mass casualties – *children cannot be treated like little adults*. Children are more physically and psychologically vulnerable than adults to trauma, biological agents, chemical agents, and other assaults on their bodies.

Children have special vulnerabilities. All staff responsible for their care must be aware of these differences. For example:

- Children are more susceptible to dehydration and shock, more vulnerable to radiation, and suffer greater effects from skin/inhaled agents. They must be treated with medications using weight-based dosing and appropriately sized equipment.
- Depending on the development level some pediatric victims cannot respond to disaster triage protocols (e.g. "If you can hear my voice, walk to the white tent.")
- Many pediatric patients are non-verbal and non-ambulatory. Available personnel or family members are essential in providing companionship and direction.
- Children require special considerations to ensure their safety
- Children are often frightened, crying or exhibit uncooperative behavior when arriving. Volunteers, child life or mental health staff must provide support for these children. This is particularly a problem when separated from their family.
- The Personal Protective Equipment safeguarding healthcare workers may frighten many small children.


- Pediatric patient decontamination is challenging as children chill easily. They may become hypothermic, requiring warm water during the washing component of decontamination. Many small children cannot follow directions, self-decontaminate, wash thoroughly or manipulate equipment.
- Pediatric disaster victims have unique psychological needs. Rapid psychological assessment is important to allay fear and panic.

Pediatric Surge Train the Trainer

Pediatric surge planning involves identifying knowledge gaps and insufficiency of pediatric specific supplies. The purpose of this Pediatric Surge Training Course is to help prepare general acute care facilities to the challenges of pediatrics. The course is designed for a target audience that has knowledge of disaster planning.

The Emergency Preparedness Team at Rady Children's Hospital prepared this manual. This team includes physicians, nursing, behavioral health, surgeon, safety supervisor, trauma, pharmacy, security and disaster planning experts. The curriculum development team conducted in-depth research of best practices and other existing curricula to bring best practice.

The goal of this curriculum is to prepare hospitals and clinics have the tools to respond more effectively in a disaster which involves a surge of child victims.

 <input type="checkbox"/> P O L I C Y/PROCEDURE <input type="checkbox"/> STANDARDIZED PROCEDURE <input type="checkbox"/> PLAN <input type="checkbox"/> GUIDELINE	CURRENT EFFECTIVE DATE 3/9/2011	REVISED DATE NEW	MANUAL:
	TRACKING #		
	TITLE: PEDIATRIC SURGE PLAN		
PERFORMED BY:			

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1.0 **PURPOSE:**

Important Basic Information Regarding Surge Planning

Emergencies are a threat to any health care organization regardless of the size, scope or location. A single emergency can affect demand and the ability to provide services, and multiple emergencies that occur concurrently or sequentially can adversely affect patient safety and the hospital's ability to provide care, treatment, or services for an extended length of time. (RCHSD)

Challenges to an Effective Response to Patient Surges

To respond effectively to pediatric patient surges, RCHSD must 1) recognize the incident in its early stages, 2) activate existing surge capacity plans, 3) adequately prepare for consequence management after such incidents, utilize our existing Hospital Incident Command Structure (HICS) and 4) provide adequate logistical support for increased patient volume.

Guidelines for Pediatric Hospital Responses to Increased Patient Volume

Activation of the surge capacity plan should be performed either on hospital notification (from police, emergency medical services control, public health officials, or another established mechanism) that a mass casualty event has occurred, or once clinicians in the ED have made the determination of need.

Reluctance to Activate the Surge Capacity Plan

Activation of the surge capacity plan signals the absolute need for transition from normal hospital operations to a disaster footing. Because of the unknown extent and expense of the response, however, clinicians may hesitate to activate the plan. Alternatively, emergency physicians and staff who have become inured to severely crowded conditions may be unaware that activation of the surge capacity plan is warranted when there is a large influx of pediatric patients.

Logistics: Deployment of Hospital Personnel

Effective surge capacity plans require brisk responses at institutional and departmental levels that are supervised by a designated team of individuals following a defined command structure. An organized and well-communicated response can support well-designed surge capacity plans, heighten the benefit of disaster drills, improve the efficiency of hospitals operations, and foster the delivery of good quality patient care.

RCHSD Response to Patient Surge

The surge of children will require significant changes in every aspect of hospital operations. Individuals already within a hospital may need to be relocated to allow efficient operations during a surge.

Hospital service elevators are assigned for the transport of patients. Access to these dedicated elevators should be limited by security staff; their use is restricted to hospital staff.

Employee Response during a Surge of Pediatric Patients

Every department at RCHSD has a staff call back system that includes a phone tree, which is an algorithm by which all employees can be contacted in the event of a mass casualty incident. Once the Incident Commander in conjunction with the Chief Operating Officer of his designee has identified a patient surge, the EOC will direct PBX to send out a DNT/Com page with directions. The directions will address the need for evaluation by every department management to evaluate staffing needs and implement their call back plan as needed. An important element of the disaster notification process is to make staffing requests for: 1) staff who can immediately respond to the disaster; 2) staff who will be responsible for relieving the current staff at the next operational period, ; 3) staff who is not being requested, but should remain on alert in case they are needed and which staff are available for the requested resources for the labor pool.

Each department has disaster response action cards (DRACS) which describe individual responsibilities in the event of a disaster. All employees should report to their immediate supervisors on site and receive their assignment.

It may become necessary to use outside personnel or volunteers to assist with both clinical and non-clinical elements of the disaster response. For clinical licensed professionals, regulatory agencies like the Joint Commission has instituted clear

disaster privileging protocols. Federal programs like Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) and local Medical Reserve Corps programs are an attempt to organize potential health care responders should the need arise. These medical volunteers will be credentialed through Human Resources or the Medical Staff per policy

Any non-employee volunteers responding to support the incident by adding the logistic, supply and material distribution, administrative functions, or other forms of emergency response must be clearly identified as disaster volunteers and assigned a supervisor who will oversee their activities. This group of support personnel is typically protected from civil liability by falling under “Good Samaritan” laws. Table 2 describes the responses of individual departments and workgroups within the hospital during a surge of bioterror patients.

The Emergency Department (ED)

As with any disaster, the ED bears the brunt of the patient inflow into a health care facility. ED operations, the efficiency of which is severely compromised by overcrowding, are further hampered by intentional capacity-to-demand mismatch promoted by hospital administrations to ensure that inpatient bed spaces are never wasted. Hospital administrations, credentialing organizations, and Federal, State, and local agencies need to eliminate or minimize ED overcrowding to ensure good quality patient care in the event of a natural disaster or terrorist attack.

Critical Care

A dramatic number of patients exposed to a bioweapon may become critically ill. An excessive volume of high-acuity children will place extreme pressures on the clinicians staffing intensive care units, particularly if critically ill patients have significant respiratory illness or involvement of multiple organ systems. Critical care staff may be required to assist in patient resuscitation in the ED as well as other inpatient and outpatient departments.

Respiratory Care and Radiology

Patient surges may overwhelm the ability of respiratory therapists to provide adequate care to critically ill children. Excess patient load, especially patients with significant respiratory demands, may prevent the adherence to hospital standards for ventilator management, respiratory care, and pulmonary toilet. Hospitals may lack an adequate number of positive-pressure ventilators to affect the degree of activation of a pediatric surge capacity plan. Moreover, respiratory therapists may be at increased risk for infection during procedures such as orotracheal intubation and administration of nebulized therapy. To mitigate this risk strict adherence to Infection Control policies and use of Personal Protective Equipment (PPE) is critical and can decrease the risks attrition of the available workforce.

Nursing

The numbers of patients who can be admitted to hospital floors is typically determined

by the ratio of nurses to patients. In the event of a surge of high-acuity children, nursing staff may need to provide care for greater numbers of sicker patients, at least until additional staff can be mobilized through the surge capacity plan. Provision of nursing care documents should address the change in level of care during disasters as compared to normal operations.

Ancillary Staff (Security, Engineering and Environmental Services, and Public Affairs)

Controlling the flow of patients, families, and visitors into a health care facility is vitally important after a disaster. A breach of hospital security can lead to unnecessary exposure of staff to infected victims, spread of disease, and contamination of “clean” hospital areas. Engineering services may be needed to construct ventilation barriers that can isolate entire floors from the remainder of the facility. Adequate disposal of contaminated materials by environmental services personnel is necessary to avoid contamination of hospital areas. Lastly, centrally controlling communication messages sent to staff, patients, and the public is an important role for Public Information Officer as it improves the response by providing clear, consistent communication while decreasing rumors.

Logistics: Insufficient Resources for Communicable Disease Control

Both pediatric and general hospitals may have insufficient resources to control the spread of communicable diseases. Surges of patients may overwhelm the number of respiratory isolation rooms and permit the spread of airborne pathogens into “clean” hospital areas, a problem that would be exacerbated by inadequate air exchange ensured by antiquated heating-ventilation-air conditioning (HVAC) units. If multiple patients are cohorted in multi-bed rooms, the distance between beds may be insufficient to prevent the spread of airborne pathogens. In locations such as the ED, there are many challenges to preventing the spread of infectious agents. RCHSD ED has a mix of single rooms and also some ward rooms for evaluation and treatment. The multiple patient rooms are separated only by a curtain and patients will share a common bathroom. These rooms have adequate sinks and supplies for handwashing and care. These rooms can also be temporarily set up with portable negative pressure ventilation for isolation.

Logistics: Maintaining an Adequate Supply of Hospital Stocks

During a surge of patients the availability of adequate supplies are the main focus for the Supply Chain Management (SCM) Department. An increased volume of critically ill patients may completely deplete available supplies of ventilators, respiratory isolation gowns, N95 respirators, sheets, medications, intravenous supplies, and other material. For example, to prevent the spread of disease from patients requiring respiratory support after infection with an airborne pathogen, clean gowns, N95 respirators, and bag-valve mask devices (“ambubags”) must be used for each patient. Furthermore, clinicians should change gowns, gloves, and N95 respirators when entering each patient room to avoid the spread of disease. The SCM Department will collaborate with the Emergency Preparedness team to utilize the emergency supplies on campus at RCHSD.

and with coordinating with the request to obtain critical supplies through the San Diego County EOC.

Communication:

During an emergency event and specifically in an event there is a surge in patients, communication is key to success and coordination. Communication needs to be well coordinated during the event, drilled and be in established process that all employees are familiar with. RCHSD's communication plan includes:

Types	Actions and Responsibilities
Initial Activation	In the event of an emergency situation the person who assumes the Incident Commander role first contacts PBX and provides specific instructions for use of DNT/Comm Paging and overhead paging. This may include direction for picking up or distribution of 2-way radios.
Communication Tools	Include: Overhead paging, brown phones, regular phones, web paging, use of Intranet and Internet, outlook emails, Meditech emails, satellite phones, cell phones, 800 megawatts radio, runners, WEBEOC, Trauma system
Radios	Used to report urgent, critical information to Command Center. Limited to urgent communication.
Intranet/Internet	Post information such as important phone numbers, community and staff can ask questions, posting of updated information regarding event, posting open and closed business status.
Phones, Brown phones	Routine utilization, used for reporting to command center as needed. Brown phones are utilized for regular phone failure.
Telephone Tree	Each department creates and manages their own departmental communication in an emergency event. Telephone tree is test at least twice a year.

During a drill or activation the Command Center communicates with main hospital departments but also off site businesses. The off-site departments are to report into the Command Center with updates regarding staffing needs, patient status and bed availability, supply and equipment needs, facility status, etc... The units that are within an adult facility are covered under their disaster plan but keep RCHSD updated on status and needs. Urgent Care, clinics and Children's Primary Medical Group (CPMG has a Command Center) reports form their Command Center to RCHSD Command Center.

Activation of the Surge Capacity Plan: The Hospital Incident Command System (HICS)

- Hospital Command Group

Activation of RCHSD Hospital Incident Command System (HICS) can be initiated by:

- * Emergency Department Charge Nurse in response to notification by the San Diego County Trauma System or by influx of patients into the Emergency Department in greater numbers or type of diagnosis.
- * House Supervisor in response to concern over resource availability that includes: space, equipment, supplies, staffing or bed availability or notification of a community incident.
- * Hospital Administrator or Safety Officer: In response to any situation that may affect the organization resources and appropriate response is to activate HICS for coordination, planning and implementing a response.

Once a surge capacity plan is activated, a defined group of individuals known as the **Hospital Command Group (HCG)** (Figure 1) should convene in a location identified as the Emergency Operations Center (EOC). The HCG typically receives valuable input from the emergency department or other Medical Technical Specialist: and is comprised the Administrator on-call (Incident Commander), Public Information Officer, Safety Officer, Liaison Officer, as well as other members of hospital leadership. Although the exact responsibilities of each member are unique to the specific disaster plans for each health care facility, the HCG has responsibility to:

- Coordinate the institutional response to the surge capacity plan
- Receive, interpret, and communicate information from emergency medical services and public health communication networks, including updates of the facility's bed capacity.
- Coordinate hospital activities during activation of surge capacity plan
- Rapidly discharge inpatients capable of outpatient or delayed management
- Monitor the flow of disaster patients as they move through the hospital's systems
- Receive and communicate information between hospital departments
- Ensure that elective admissions are postponed, depending on the scope of the disaster
- Formulate plans for the next operational period
- Determine recovery strategies and devolution of the surge capacity plan

Each member should be clearly identified by means such as a vest with the wearer's responsibility written on it (e.g. Medical Technical Specialist: Medical Safety Officer). Each member should also read his/her facility-specific Job Action Sheets that delineate individual responsibilities during the disaster. The ED Disaster Team Leader (physician leadership based in the ED) should designate a predetermined location in the ED as the ED Disaster Command Post. Here, the ED-based strategies are formulated and management objectives are defined. These strategies are shared with the HGC staff to better coordinate surge activities outside of the ED. Once the surge capacity plan is activated, each member

of the HCG should immediately attend a status/action plan meeting in the EOC. Any communication with patient families or the press must remain under the control of the Public Information Officer who works with the Incident Commander and the Medical Technical Specialist: Medical Staff Officer. Once convened, the HCG priorities should include:

- Ensure that primary response and support departments (nursing, critical care, radiology, respiratory care, security, janitorial services, etc.) have received the alert and are prepared.
- Receive briefing from the Situation Team Leader regarding patient census and bed status.
- Consider canceling elective procedures and admissions.
- Ensure Logistics Section Chief is able to deploy resources as needed.
- Ensure contact with senior hospital executives.
- Activate the Documentation Team Leader individual to maintain the Incident Action Plan for post-incident debrief notes.

The EOC should be stocked with sufficient supplies to ensure operations of the HCG. Supplies should include communication sets, clerical supplies, redundant communication systems, mobile communication assets, HICS Incident Team Chart, hospital and city emergency contact directories. WebEOC and Bed Tracking site log-in information, disaster related tracking forms, hospital charts, patient flow board, and reference Job Action Sheets, area maps, copies of vendor memoranda of understanding, and risk communication templates and protocols.

Communication tools at RCHSD are designed to collaborate with other networks used by the police, emergency medical services, and fire departments. Tactical radio channels such as those used for local communications have many different configurations. Some systems are dedicated EMS channels, some share channels with fire or police operations, and others have special channels for on-scene operations. In a small event, such as a motor vehicle crash, first response agencies may operate on a single channel. As operational complexity increases, incident commanders should decide the point at which communications transition from a RCHSD single channel to include the use of resources utilizing through the county that bring their amateur radio skills and equipment on site.. The use of tactical channels prevents the overload of the primary EMS channel and prevents interference between agencies with different primary function. The incident commander or Medical Technical Specialist: Medical Staff Officer from the ED and other agencies should, however, communicate on a pre-designated (mass casualty incident) channel when needed.

Emergency department communication use multichannel portable radios that have talk around capacity, although these systems are susceptible to missed messages if a dispatcher transmits over direct messages. . Training on the use of RCHSD radios is done with key department staff and as needed with may disaster event. The Emergency Preparedness Team coordinates the process of keeping radios ready for use by keeping an adequate supply of batteries for portable radios should be readily available to keep communications open as long as necessary And rotating the charge and radio devices to keep batteries

ready for use. Second, it is important to use plain English and avoid coded language. This decreases the amount of radio traffic by eliminating phrases such as “at this time” or “be advised” and greatly decreases the potential for miscommunication. Third, radio users should remember to release the key the radio for a full second before speaking, then depress the speak key to ensure the beginning of the message is not missed.

Not all mass casualty incidents demand a hospital-wide response. For example, incidents that involve one or two clinical areas that can be handled with normal hospital staffing and are resolved in less than 8 hours can be often handled with improved coordination between clinical services. In these limited cases, a Labor Pool can be staffed with minimal personnel to assist the activated HICS members with information management and to relieve workload on specific services (e.g., patient transport or radiology). Examples of these incidents include: alteration of ED operations without immediate threat to life or property, one or two operational areas involved (e.g., ED and radiology), considerable media attention, or an initial response to an unconfirmed external emergency.

Triage

RCHSD Emergency Department utilizes a standard pediatric triage system. The use of standardized triage algorithms will provide guidance for triage personnel making potential life and death decisions that otherwise might be influenced by emotional issues.

Depending on the volume of children arriving at RCHSD, clinicians may elect to use one of two assessment tools. In the event of very large numbers of patients arriving at an ED simultaneously, the Pediatric Assessment Triangle (PAT) suggests the urgency with which treatment should be initiated (Attachment 2). This assessment tool relies on appearance of the patient to determine the severity of illness, the need for treatment, and the response to therapy. By using only visual and auditory assessments to develop an initial impression of a pediatric victim, PAT allows clinicians to rapidly identify patients with physiological instability without using sophisticated monitoring techniques. The components include appearance, peripheral perfusion, and respiratory effort. The PAT is a simple tool that may be applied during any patient encounter; clinicians should practice applying PAT during routine emergency care to increase familiarity with the method.

Slower patient arrival and intake may permit the use of another assessment tool, the JumpSTART Pediatric Multiple Casualty Incident Triage system (Attachment 2, 3). This triage protocol is based on an assessment of respiration, perfusion, and mental status (RPM). The JumpSTART system is modified from a triage system developed for adults; the modification to pediatric triage is based on known differences between adults and children in terms of risk and patterns of respiratory failure/arrest. Unless there is a clear external airway obstruction or compression, or internal obstruction from a foreign body, respiratory failure in adults usually follows massive head injury or circulatory failure. In this context, an apneic adult has likely suffered sufficient cardiac insult to preclude successful resuscitation in a mass casualty setting. In children, however, circulatory collapse often follows respiratory failure. Children may develop apnea relatively rapidly for mechanical reasons (e.g., weak respiratory musculature or inhibition of diaphragmatic excursion), rather than after a prolonged period of hypoxia.

Step 1: All children who can walk should be directed toward an area of designated for **minor** injuries, where secondary triage will occur. Secondary triage should, at a minimum, employ the RPM components of the JumpSTART algorithm. Infants who are developmentally unable to walk should be screened at initial site using the JumpSTART algorithm; an infant who satisfies all of the “delayed” criteria may be triaged to the minor category.

Special consideration should be given to children with medical conditions that prevent ambulation (e.g., mental retardation-cerebral palsy). These individuals can be triaged in a manner similar to infants. Clinicians should be aware, however, that patients with chronic respiratory problems may have an elevated respiratory rate at baseline. Moreover, an assessment of the neurological examination may prove difficult without an understanding of baseline function. Emergency personnel should, therefore, attempt to retrieve information from any available source.

Step 2A: Nonambulatory patients should be assessed for the presence of spontaneous breathing. Any patient with spontaneous respiratory effort should then have respiratory rate determined. Any patient with duration of apnea of greater than 10 seconds must have the airway assessed; any obvious foreign bodies should be removed by finger sweep. Otherwise, the airway should be opened by maneuvers such as chin lift/jaw thrust. If the patient regains spontaneous respiratory effort, the triage officer or his designee classifies the patient as **immediate** (red tag) and moves on.

Step 2B: If spontaneous respirations do not return upper airway opening, the triage officer or his designee should palpate for peripheral pulses in the radial, brachial, and dorsalis pedis arteries. The absence of peripheral pulses warrants a triage category of deceased.

Step 2C: If there is a palpable peripheral pulse, the triage officer or his designee will administer five rescue breaths using a bag-valve-mask device. The use of a mouth-to-mask device, as suggested by some protocols, is contraindicated in patients suffering exposure from airborne bioterror agents. If ventilatory trial fails to trigger spontaneous respiration, the child is classified as deceased. Make the decision to terminate efforts based on overall situation and available resources.

Step 3: At this point in the triage protocol, all patients have spontaneous respirations. Patients with a respiratory rate of 15-45 breaths per minute move to Step 4. Patients with respiratory rates less than 15, greater than 45, or with irregular breathing are classified as **immediate** (red tag), and the triage officer or his designee moves on.

Step 4: At this point in the triage protocol, all patients have been determined to have adequate respiratory effort and rate. The triage officer or his designee should now assess perfusion by palpation of peripheral pulses. Because of terrorist attack may occur during winter months, and decontamination will be performed out-of-doors in a potentially cold environment, capillary refill should not be used to assess perfusion. The palpation of pulses is a tactile method that adapts well to poor environmental conditions. If there are

palpable peripheral pulses, the triage officer or his designee assesses mental status (STEP 5). If there are no palpable pulses, the patient is classified as **immediate** (red tag), and the triage officer or his designee moves on.

Step 5: For all patients at this point, the triage officer performs a developmentally-tailored “AVPU” assessment. If the child is **a**lert, responds to **v**oice, or responds appropriately to **p**ain (e.g. localizes the painful stimulus or pushes it away), the patient is classified as **delayed** (yellow tag). If the child does not respond to voice and responds inappropriately to pain (e.g. makes noise or moves in a non-localizing fashion), has decorticate posturing, or is truly unresponsive, the patient is classified as **immediate** (red tag).

Recognize Limitations of Care

Finally, avoid resource allocations to unsalvageable patients. Decision criteria regarding decrease acuity includes pre-established physiologic criteria using START/JumpSTART algorithm, injuries incapability with survival, objective emotional components plus recognizing capabilities and resource limitations when deciding to terminate efforts.

Personal Protective Equipment and the Triage Location

Triage areas in medical care facilities should be considered “hot zones” - areas in which the greatest risk for contamination occurs. This designation is distinct from field MCI operations, where the triage location is considered to be a “warm zone” - an area defined by a perimeter inside which no or an acceptable level of contamination exists. Based on this definition, an entire health care facility could be considered a “warm zone,” which poses a risk of exposure to contaminated victims and equipment.

In general, early recognition of the type of exposure is based on the signs and symptoms demonstrated by patients. The type of exposure, in turn, determines the level of protective gear used by individuals in triage and patient decontamination. ED personnel handling victims contaminated with bioweapons in liquid or powder form require respiratory protection.

The location at which triage occurs will be determined in part by the number of patients presenting to the health care facility. For example, triage may occur in the ambulance bay of the emergency department, in the lobby of the hospital, or in driveways, traffic circles, or other areas normally used by vehicular traffic. Triage teams should report to the triage location determined by the Incident Commander. The exact composition of triage teams may vary with the time of day and week depending on staffing levels. The composition and number of triage teams should be codified prior to a disaster. Decisions on triage location and team composition will be made by the Incident Commander with input from ED leadership and Medical Technical Specialist.

Patient Recordkeeping

On notification of a surge of patients, the ED staff should prepare to access hospital-generated, pre-positioned trauma and supply carts and antidotes. Supplies carts brought down by the supply chain management team.

Depending on the size of the disaster, various State and regional medical supplies may be requested, as well as the U.S. Centers for Disease Control and Prevention-sponsored Strategic National Stockpile (SNS). The SNS is a national repository of antibiotics, chemical antidotes, antitoxins, life-support medications, airway maintenance supplies, and medical/surgical items. The SNS is intended to supplement and resupply State and local public health agencies in the event of a national emergency. The SNS involves a flexible response. The first line of support lies within the immediate response in "Push Packages"; these are caches of pharmaceuticals and medical supplies. Although these Federal assets are designed for delivery within 12 hours of the Federal decision to deploy SNS assets, local planners should first use available State and local resources. Clinicians wishing to access the SNS should contact their State's department of public health who will in turn call for the governor's office to request the release of the SNS.

Example: Smallpox Scenario

Smallpox is transmitted by respiratory droplets and airborne particles. For victims of smallpox, triage should be performed outdoors in a well-ventilated area. Triage teams should employ airborne, contact, and droplet precautions. This level of protection requires either a fitted N95 respirator with goggles and face shield; alternatively, a powered air purifying respirator (PAPR) hood may be used. In addition, personnel must use hair cover, shoe cover, gloves, and disposable yellow gowns or Tyvek overalls.

Triage will be performed outdoors in a well-ventilated area such as the ambulance bay or hospital driveway. Patients may need to be held in the triage area until the ED is prepared for intake of victims. Because victims may be exposed to cold in the outdoor environment, warming lights, disposable blankets, or other devices (portable forced air and water heaters) should be available for patient warming. Specific preparations that the EOC may have to make in anticipation of victim intake include moving existing non-victim patients from negative pressure rooms or the discharge or transport of all patients from the ED.

A surge of patients carrying a communicable respiratory illness will require significant modifications of standard ED disaster practice. Typically, patients from a disaster are managed in a single geographical location in the ED, while non-disaster patients ("non-disaster patient flow" or "worried well") are treated in separate areas. The arrival of patients with infections that may be spread by airborne route may compel striking changes in the management of patient surges. For example, patient volumes that outstrip the number of isolation beds place the entire ED - including its patients and staff - at risk for exposure. The influx of patients infected with an airborne agent may require that all non-disaster patients be discharged or diverted from the receiving facility to avoid exposure and spread. Alternative locations for triage and treatment are located in Appendix section and will be determined by type of exposure risk and anticipated volume of patients.

Scrupulous attention must therefore be paid to ensuring that patients remain isolated. Multiple patients with proven infection may require placement in a single respiratory isolation room, or it may even be necessary to devote the entire ED to bioterrorism treatment, with all non-disaster being diverted elsewhere.

Effective patient isolation includes observing biohazard precautions. All staff should wear respiratory isolation garb suitable for droplet precautions. Clinicians should employ airborne, droplet, and, if necessary contact precautions. This level of protection requires either a fitted N95 respirator with goggles and face shield; alternatively, a powered air purifying respirator (PAPR) hood may be used. In addition, personnel must use hair cover, shoe cover, gloves, and disposable yellow gowns or Tyvek overalls. When exiting a patient care area, clinicians should observe the following steps.

At the door just prior to exit from the patient care area:

- a) Remove gloves by peeling them off inside out. Dispose of gloves in red bag trash.
- b) Remove isolation gowns by unfastening the back and with inside outward motion pull from top downward. Dispose of gown in red bag waste.
- c) Perform personal hygiene maneuvers, particularly hand washing.

Exit room.

At the door just outside of room or in the anteroom:

- a) Remove hood respirator if used. Hood and battery pack must be cleaned before next re-use. Place the contents in a clean plastic bag.
- b) Remove face shield and discard.
- c) Remove goggles and discard.
- d) Remove N95 respirator and discard.
- e) Perform personal hygiene.

The ED air handling system should be isolated from the remainder of the hospital. Ventilation systems that recycle mixed air from the ED and the facility may disseminate airborne pathogens to the remainder of the structure and force isolation of the entire facility. In preparation for the receipt of patients exposed to airborne bioterror agents, engineering services should review ED heating/ventilation/air conditioning systems, the age of air handling filters, and the dispersal of air withdrawn from the ED. Engineering services may be required to construct barriers to limit airflow in the ED and ensure that ventilation of the ED is maximized.

Surge Stress Management

Most individuals - victims, rescue personnel, and health care workers alike - will demonstrate normal stress reactions that may persist for several days or weeks after a disaster. Approximately one-third of survivors will develop severe stress reactions that place them at risk for acute anxiety syndromes in the immediate post-event period and post-traumatic stress disorder (PTSD) in the days to weeks afterward. After a critical incident such as a surge of bioterrorism victims, stress management in the form of a mandatory meeting decreases negative effects of the incident on involved staff. The debriefing is a confidential, non-judgmental evaluation of the event, the hospital's response

to it, and the staff's feelings about involvement in the event. It also helps the staff process events related to the surge and returns the workplace to normal equilibrium. Individual sessions are sometimes indicated for staff experiencing significant levels of post event stress and may be followed by referral for Employee Assistance funded counseling. At RCHSD the Behavioral Health Crisis Response Team (BHCRT) coordinates debrief and assessment with a mix of expertise from psychiatry and social services.

Emergency Credentialing

Surges that overwhelm a medical system may impel clinicians to offer temporary services. Even if hospitals can accomplish the unlikely goal of increasing capacity by 20-30 percent, these additional beds require staffing. Granting emergency privileges may alleviate staffing demands. The Medical Staff department and Human Resources coordinate emergency credentialing. In the event of a surge, medical personnel from unaffected areas can receive temporary credentialing from the duration of an emergency. Such an approach is inexpensive, accurate, and Joint Commission-compliant. RCHSD works closely with SD County EOC for local credentialed staff.

Unique Challenges Posed by Pediatric Mass Casualty Incidents

Surge of Children with Infectious Outbreaks and Bioterrorism Incidents: Difficulties in Recognizing an Outbreak

Diseases spread by the airborne route have great epidemic potential in those without immunity to the organism, and the ability to recognize such an epidemic is inhibited by the delay between exposure to a bioweapon and the development of clinical symptoms. The ability to identify a bioweapon remains critical to the planning for and management of an outbreak; the same holds true for recognizing a natural outbreak. Experience with the outbreak of the Severe Acute Respiratory Syndrome (SARS) demonstrated that epidemiologic history and tracing patients' travels were critically important in understanding the patterns of disease spread. Unfortunately, many clinicians who work in an emergency setting receive minimal training in traditional epidemiologic methods, or they do not have the time to apply them.

Access to surveillance systems capable of informing clinicians about terrorist attacks can quicken response to a sudden surge of patients. For example, poison control centers are linked to a single nationwide database that is updated within minutes; the goal of this database is to rapidly identify and disseminate information about sentinel events back to poison control centers and then to local clinicians. Physicians who access this important information source will receive timely notification of developing outbreaks of various types.

Bioterrorism

The release of a biological weapon would disproportionately affect children through several mechanisms. With aerosolized agents (e.g. anthrax), increased respiratory minute ventilation in children (500 ml/Kg/min) compared with adults (140 ml/Kg/min) results in the child's exposure to a relatively greater inoculum. The high vapor density of bioaerosols, such as those potentially used to disseminate airborne pathogens, places their highest concentration close to the ground in the lower breathing zone of children. The more permeable skin of newborns and children in conjunction with a larger surface-to-mass ratio results in greater than exposure to transdermally absorbed toxicants. Children, because of their relatively larger body surface area, lose heat quickly when showered. Consequently, skin decontamination with water may result in hypothermia unless heating lamps and other warming equipment are used. Having less fluid reserve increases the child's risk of rapid dehydration or frank shock after vomiting and diarrhea. Finally, children have significant developmental vulnerabilities. Infants, toddlers, and young children do not have the motor skills to escape from the site of a biological incident. Even if they are able to walk, they may not have the cognitive insight to decide in which direction to flee. All children are at risk of psychological injury, such as posttraumatic stress disorder, from experiencing or witnessing an act of terrorism. Most children in these events would benefit from Psychology First Aid, a model developed by the National Child Traumatic Stress Network. Some children will have more profound response to events based on relevance to the child (i.e. level of perceived threat to the child or caregivers), disruption of environment (loss of home or school), and past trauma exposure. In a mass casualty incident, children witness injuries and deaths,

possible of their parents, who would produce both short- and long-term psychological trauma requires intervention.

Children are difficult to care for by health care personnel wearing protective equipment, which is essential in the management of chemical, biological, and radiological events. Protective clothing is bulky and cumbersome; it impedes the ability of healthcare providers to perform procedures such as venipuncture or endotracheal intubation on small children.

Surge of Children with a Communicable Respiratory Illness: Emergency Department Response

All disaster patients should be triaged immediately on arrival according to the protocol described below.

Reverse Triage

Before patients can be handled safely, ED operations must have adequate bed space into which ED patients may be admitted. In a surge environment, reverse triage - the process of determining risk for discharge of inpatients - assumes a critical role. Stratifying risk into minimal (a limit of risk of adverse medical events in the next 72 hours of 3.8 percent); moderate (a limit of risk for consequential events in the next 72 hours of 33 percent); high (limit of risk of 61 percent); and very high (92 percent limit of risk) categories, patient disposition can be identified. Minimal and low risk patients may be sent home; moderate risk patients may deserve immediate transfer to another facility since they may be too sick for simple discharge home. High risk patients require highly skilled care during transport to major acute-care facilities, while very high risk patients may tolerate only ICU-capable transport - if they are stable for transport at all.

As RCHSD is the primary provider of pediatric care in San Diego and Imperial County the decision or transfer of patients to an alternative facility is challenging. In the event of a surge situation the Incident Commander will:

1. Decide criteria for discharge or transfer from the Medical Technical Specialist and Chief Operating Officer or designee.
2. Communicate the criteria for discharge and transfer to Hospitalists or Chief Resident.
3. Criteria for discharge and transfer will be based on the scenario specific to the surge event. The criteria address inpatient, outpatient and community resources.

Surge of Children with a Communicable Foodborne or Waterborne Illness: Emergency Department Response

Reverse Triage

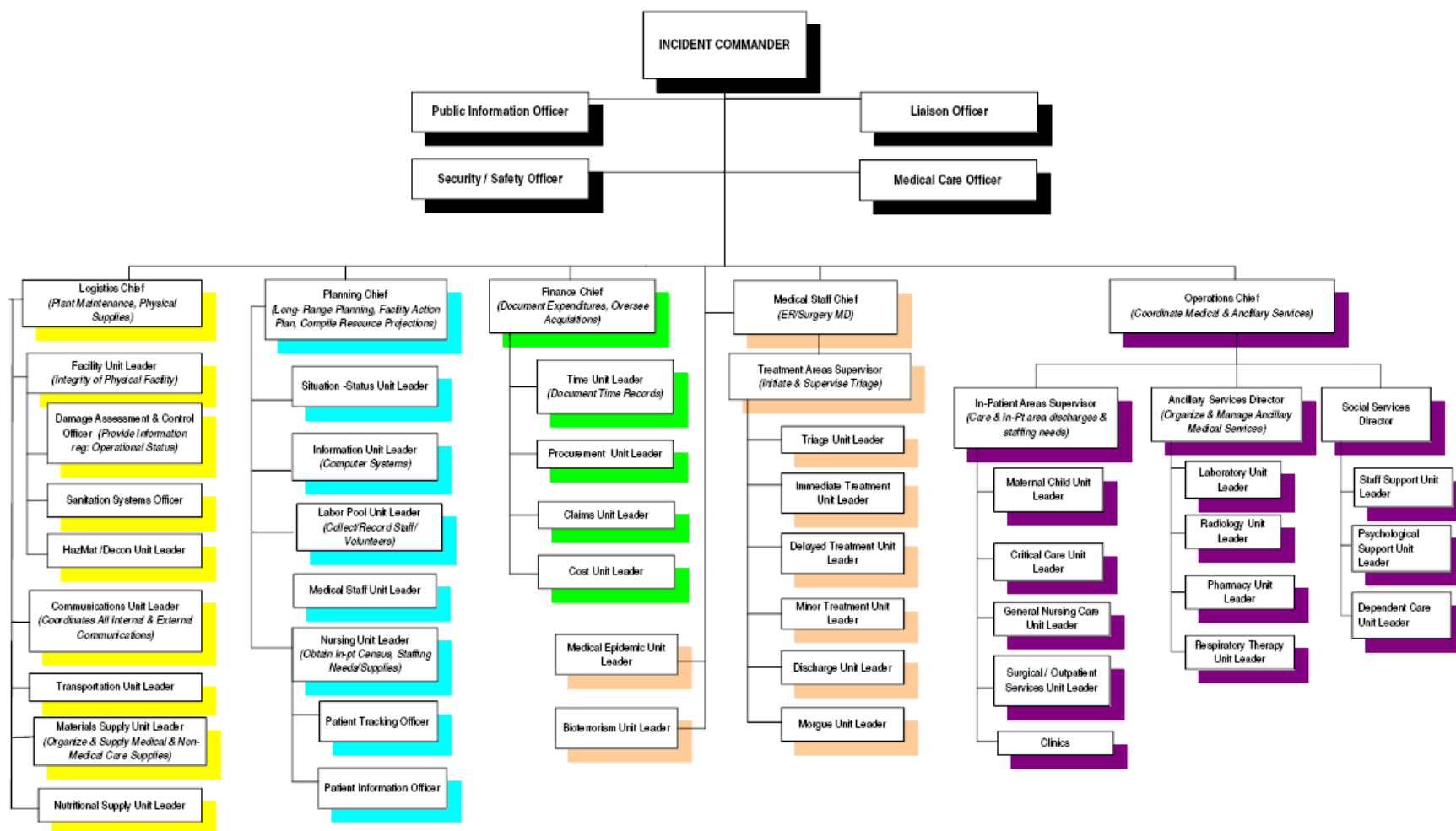
Reverse triage applies to an outbreak of communicable foodborne or waterborne illness as it would with communicable respiratory illnesses. In the event of a foodborne or waterborne pathogen release, a surge of patients may be managed along lines that mimic standard disaster plans (e.g. victims may be handled in a single geographical location of the ED if patient volume permits). Nonetheless, some variations from standard disaster practice may be required. RCHSD has a limited number of toilets for patient use. If victims suffer diarrhea, there may not be sufficient capacity to handle patient demands. Patients that use existing toilets may inadvertently contaminate the facility and increase the potential for transmission. To forestall this likelihood, every room in which a patient is assigned should have a dedicated toilet, either permanent or portable. All clinicians should follow rigorous handwashing discipline before entering and leaving patient rooms, and use gloves for all examinations. Gloved hands should not be placed on light switches, elevator buttons, keyboards, or any other surface that could promote disease spread. In the event there is not enough bathroom or commodes, toilets and commodes will be bagged to capture the waste.

Security Concerns Unique to Children

Children caught up in a surge may be separated from parents. Siblings/families should be treated together whenever possible. If separation occurs, or if members are triaged to different levels of care, hospitals will need to establish a plan to ensure the security of these patients until the family can take custody.

RCHSD has designated staff and a holding area to supervise and support unaccompanied children. General staffing guidelines – one adult per four infants or 10 preschool children or 20 school-aged children – is minimum staffing. Coordination at RCHSD is through RCHSD Child Care Center with staffing by teachers, child life specialist and other staff.

Appendix 1



Surge Capacity Alternative Location Options
*** Locations are dependent on event and number of patients**

Activity	Area
Inpatients pending discharge	Dining Rooms A, B & C as needed or old ORR starlight room.
Preoperative care/minor surgery	Main Operating Room
Emergency Department waiting room	Rose Pavilion Lobby, McDonalds
Triage and treatment of disaster patients	Emergency Department, outside tent, walking wounded, low acuity to Building 28
Waiting area for family of disaster victims	MOB 113
Expired patients	Morgue, mass fatalities use truck with added refrigeration
Patients requiring surgery	Warren Family Surgical Suite
Postoperative patients	PACU
Admitted intensive care disaster patients	Pediatric ICU, up to 54 PICU beds Addition space can be MOB DSC PACU & ACP PACU
Patients requiring radiology	Radiology
Disaster patients pending discharge	MOB 113
Labor Pool	Cafeteria
Expanded isolation options	NICU "C" - 10 beds Medical West - 40 beds DSC PACU - 40 beds Bernardy Center - 54 beds 1 st Floor Rose South Side * POM will set up additional isolation with use of containment and negative pressure machines under the direction of infection control. Bernardy Center patients would need to be relocated.

Appendix

Departmental Response during Patient Surge

Admitting/Patient Access	On notification of a surge of patients, the admitting department should follow Unidentified Patient protocols for all disaster patients; this DOE #'s involves assigning predetermined medical record numbers that are retained throughout hospitalization. The admitting department should maintain a record of all elective admissions that have been cancelled.
Anesthesia	After notification of disaster, all anesthesiology staff not immediately involved in a case should report to the Labor Pool to be assigned in patient management as needed. Operating rooms should be made ready, and plans should be made to cancel elective cases. Depending on the level of operating room activity and the volume of patients, additional anesthesiology personnel may need to be summoned.
Blood Bank	The blood bank will contact Operation Section Chief to determine if any hemorrhaging patients have arrived or are expected. The blood bank will check inventory of blood to ensure appropriate amounts are in stock. If sufficient blood is not immediately available, the blood bank will contact outside suppliers for additional material. Per protocol blood will be brought to the ED.
Clinical Laboratories	The laboratory director will notify chemistry and hematology sections of the lab. The lab should follow the Unidentified Patient Policy protocols using the pre-assigned medical record number. The disaster patient retains this number throughout hospitalization.
Medical Staff	<p>Medical Staff should provide sufficient personnel to assist in the triage, resuscitation, and management of disaster patients in the ED; manage admitted patients; and provide administrative and medical support for the discharge of inpatients.</p> <p>The Chief Resident and Hospitalist on-call will direct the residents, interns and medical staff of their assignments. The chief residents designate the staff that will assist the ED in triage/resuscitation/ED management. The chief residents will also identify those patients appropriate for immediate discharge. After details of the bioterror release are known, the chief medical residents will begin to discharge inpatients. Following discharge, the chief medical residents will review bed availability with the Hospitalist who report to the Operation Section Chief.</p>

Nursing	<p>The VP of Nursing or designee will assume responsibility for coordinating nursing activities during the disaster. Once the hospital transitions to a disaster footing to handle surges of patients, the nursing administrator will meet with the EOC. The house supervisor will assist with inpatient census management, bed availability, and nursing availability. The nursing director will prepare floor nurses for the potential for numbers of patients on medical floors that greatly exceed normal “maximum” census for that patient location.</p> <p>The VP of Nursing should also be responsible for providing adequate nursing staff for the ED and disaster discharge areas. If disaster staffing needs exceed the number of staff available in the hospital, then the nursing administrator will work with the Incident Commander to establish the Labor Pool and activate the call back process so that patient needs can be met.</p> <p>When the number of disaster patients exceeds the number of available beds, the nursing staff should transport patients suitable for early discharge to the designated discharge holding area. The nursing staff should notify Patient Access department of all early discharges.</p>
Operating rooms	<p>The Director of Surgical Services or designee in charge should report to the EOC available Ors and staff. The SS Medical Director will cancel elective/non-emergent cases. If patient volume exceeds available staff, then the director in charge should call in additional personnel.</p>
PACU	<p>The PACU Supervisor should report PACU availability to the EOC. If necessary, additional staff should be called in. If a bioterror attack produces large numbers of intubated patients that overwhelm PICU capacity, the PACU should receive PICU overflow.</p>
Pathology	<p>Pathology should oversee transport from the ED to the morgue. The route of transport from the ED to the morgue will be predetermined. If additional morgue/refrigerator space is need, the mass fatality plan will be implemented.</p> <p>Pathology staff should be responsible for paperwork related to expirations, including identification, date and time of receipt, and the person receiving the body. All casualties of the bioterror disaster - either immediate or delayed - should be referred to the medical examiner. Pathology staff should remember to use contact precautions consistent with the type of bioterror attack.</p>

Radiology	<p>The chief radiologist should be notified of the disaster. The EOC will request radiology attending and radiology additional staff to report to the ED as indicated by the type of event. In the event of airborne pathogen release, all plain films should be obtained portably in the ED. Although this approach may lead to suboptimal films, it limits exposure of the hospital and its staff to the bioterror agent. For other bioterror releases, only those patients requiring immediate studies or who are unstable for transport should receive portable studies.</p> <p>All inpatient and elective studies should be postponed until after the surge is cleared.</p>
Respiratory Care	<p>This department will oversee administration of respiratory treatments. The respiratory therapist in charge will report the EOC and determine the type and amount of supplies needed. In the event of an airborne pathogen release, respiratory therapist will need to have adequate supplies of personal protective equipment to guard against infection. The number of respiratory therapists providing care in the ED should be limited, and those individuals should not return to the main hospital until cleared to do so. Respiratory Therapist Director report through Operation.</p>
Department of Surgery	<p>All ongoing operations will be ended as expeditiously as possible. No other procedures should begin until cleared to do so. All surgical patients will be evaluated for discharge by the nurse in charge of surgical floors, in consultation with the surgical staff. The department of surgery should postpone all elective surgeries until the surge is cleared. Attending staff should remain in the operating rooms in anticipation of procedures, unless directed differently by the Incident Commander. The SS Director and Medical Director or designee in collaboration with the EOC determines when to call additional staff from home.</p>
Support Departments <ul style="list-style-type: none"> ▪ Supply Management Chain ▪ Biomedical Equipment 	<p>These departments are responsible for the distribution of material and equipment to individual departments in the hospital. On notification of a surge of patients, normal paperwork requirements should be suspended. The support department should make available sufficient personnel to distribute supplies as directed by the Incident Commander.</p> <p>The support department should keep a 48-hour supply of all supplies and equipment sufficient for the average hospital census plus an additional 100 patients.</p>

Child Life Services	Child life services should provide staff support for operations in the disaster discharge area. Child life activities should collaborate with nursing services in providing these services.
Labor Pool/Volunteer Services	A labor pool should be organized from the staff of departments and services not directly involved with the disaster. The labor pool is usually located in the cafeteria but location will be determined by the Incident Commander. The labor pool should assist in transporting specimens to the laboratories, medical records pickup, transporting/escorting patients, delivering supplies, and delivering written messages to patient care areas or assign to a clinical department as appropriate.
Pharmacy	<p>The senior pharmacist on duty should assume responsibility for transitioning to emergency operations. The senior pharmacist should notify the Director of Pharmacy, call in additional staff if needed, and contact the EOC to offer services. The pharmacy department should maintain contact with other hospitals and local pharmacies for obtaining additional supplies. All pharmacy staff should remain on duty until the surge is cleared.</p> <p>The pharmacy should maintain a 48-hour supply of all pharmaceuticals for the average daily hospital census plus an additional 100 patients.</p>
Public Affairs	Media Relations will report initially to the EOC, then may be assigned to the Emergency Department depending on the event, Media Relations will be the direct contact with the outside media, communicate patient's names and conditions to appropriate entities and coordinate all internal and external communications.
Behavioral Health Services Psychiatry, Chadwick & Medical Social Work	Behavioral Health Services should be available during and after the disaster. Anticipated services including providing treatment to patients, families, and staff; advocating for the needs of patients, families, and staff; providing education to patients, families, staff, and the media regarding psychosocial effects of terror attack; and providing consultation to schools to assist in coping with trauma. RCHSD is guided in the event of a disaster by the SMHSA funded National Child Traumatic Stress Network – Disaster and Terrorism Division.
Chaplaincy	Chaplaincy services should be made available to patients and families to assist with their spiritual issues and coping mechanisms to traumas and disasters. Additionally, Chaplaincy offers a considerable resource to the RCHSD's provider staff, to provide critical incident debriefing, support and stress reduction.
Environmental Services	Available to clean, coordinate waste stream

Information Desk	Personnel assigned to the main reception help control access and give directions to families.
Security	<p>A major responsibility of the security department should be to secure the emergency department against intrusion by unauthorized persons. Individual health care facilities must determine the level of personal protective equipment issued to security officers, as well as the level of force permissible to prevent contamination of the ED and to prevent the disruption of patient services.</p> <p>Security officers should be assigned to the triage area and the ED entrance. These officers are responsible for ensuring that only casualties, emergencies, and specifically authorized personnel enter the ED.</p> <p>One security officer should be assigned outside the main ED entrances; this person will exert initial control of persons entering the ED, and will distribute disaster dots authorized personnel. The following personnel should be authorized to enter the ED during a disaster surge: medical staff, physicians, critical care nurses, hospital administration members and support staff bringing supplies and specimen transporters.</p> <p>One security officer should be assigned to restrict access to the hospital. An additional security officer should be assigned to ambulance bays to control access. All other available security officers should manage the traffic - both private and ambulance - arriving at the hospital.</p> <p>All other entrances to the hospital should be secured so that unauthorized entry - and contamination of the hospital - is impossible. Members of the media should not enter the hospital unless accompanied by a Public Affairs representative.</p>
Safety & Infection Control	Members of the safety department should make appropriate measurements and observations to ensure the magnitude of risk of exposure to patients, employees, visitor, local community, and environment. In the event of an airborne hazard release, members of the safety department may be needed to assess air sampling and, if necessary, provide recommendations for temporary airflow barriers to ensure that the entire facility does not become contaminated.

Telecommunications	Once a disaster is declared, the telecommunications department should page all persons on the disaster notification list. After all necessary pages have been accomplished, the page operator notifies the supervisor on call who in turn notifies the telecommunications manager. The telecommunications department should direct all inquiries pertaining to the disaster to media relations. No information should be given to the public by the telecommunications staff.
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Security & Safe Pediatric Environment

PEDIATRIC SECURITY

Key points:

In addition to typical considerations of patient safety, the following are critical considerations for pediatric populations:

- **Be cautious of predatory behaviors, abuse, and kidnapping**

Security Concerns Unique to Children

Children caught up in a surge may be separated from parents. Siblings/families should be treated together whenever possible. If separation occurs, or if members are triaged to different levels of care, hospitals will need to establish a plan to ensure the security of these patients until the family can take custody.

- Have a designated staff and a holding area to supervise and support unaccompanied children. General staffing guidelines - one adult per four infants or 10 preschool children or 20 school-aged children - is minimum staffing.

Protocol to Rapidly Identify and Protect Displaced Children

- Survey all children in your hospital, medical clinic, or shelter to identify children who are not accompanied by an adult; these children have a high probability of being listed as missing by family members. Find out where they are sleeping/being held and the name and age of person(s) who is/are supervising them, if available. A sample survey form for identifying displaced child is attached.
- Place a hospital-style identification bracelet (or, ideally, a picture identification card) on the child and a matching one on the supervising adult(s), if such an adult is available. Check frequently to make sure that the wrist band matches that of the adult(s) seen with the child in the hospital or shelter. If there is no supervising adult, the child should be taken to the hospital's pre-determined Pediatric Safe Area (see following pages) where he/she can be appropriately cared for until a safe disposition or reunification can be made.
- The names of all children identified through the survey as not being with their legal guardians or who are unaccompanied should be considered at high-risk and immediately reported to the hospital's emergency operations center. Additional reporting should also be made to the National Center for Missing and Exploited Children (NCMEC) at 1-888-544-5475. The NCMEC can then cross-check them with the names of children who have been reported missing.
- After the "high risk" children have been reported, a complete list of all children names in

the hospital, clinic or shelter should be sent to NYS Hospital Emergency Resource Database System (HERDS) if activated and the information is requested. The complete list should also be sent the NCMEC in case adults and/or children have provided incorrect information about their relationship and status.

- Unaccompanied children and those who are not with their legal guardians should undergo a social and health screening taking into consideration an assessment of the relationship between the child and accompanying adult, ideally performed by a physician with pediatric experience.
1. CDC Health Advisory, “Instructions for Identifying and Protecting Displaced Children.” Sept. 28, 2005.

PEDIATRIC SAFETY

Key points:

In addition to typical considerations of patient safety, the following are critical considerations for pediatric populations:

- Be cautious of predatory behaviors, abuse, and kidnapping
- Ensure a CHILDSAFE environment: physical security, physical hazards (**childproofing**)
 - Sharps container access
 - Outlets, wires, overhead objects
 - Windows (fallout/through)
 - Doors (access/escape)
 - Chemicals
 - Pharmaceuticals
- SUPERVISION
- Tagging & Tracking
- Release policy
- Unaccompanied minors

Separation of children from families (AHRQ)

In the event of a disaster or terrorist event [or other surge], it is likely that numerous children will be separated from their parents or other caregivers. Several national organizations—including the National Center for Missing and Exploited Children and the Red Cross—work to help separated family members find each other. This issue deserves more attention in preparedness and mitigation planning. For example, pre-disaster identification of children (e.g., name tags, other forms of ID, etc)—especially for those who are not verbal or cannot give their own name, parent's name, or other critical information—should be considered. Neonates and their mothers purposefully given matching ID bracelets in hospitals immediately after delivery so the identity of the maternal-child pair is never in doubt. Similar identification of parent-child pairs at the time of separation (e.g., during rescue or evacuation) could greatly aid in the identification of the child and more accurately track and reunite children separated from their parents.

Child ID Survey

Name: _____ Hospital # _____

Age: _____ Months/Years DOB _____

Gender: Male _____ Female _____

Is the child currently accompanied by a supervising adult? Yes No

Name of currently the supervising adult? _____ Age _____

Is this person a Parent? Yes No A Grandparent? Yes No

Is this parent the usual guardian? Yes No

Was the child living with this person before the disaster? Yes No

Does the supervising adult have any proof of legal guardianship or relationship to child? Yes No

If Yes, please describe or attach a copy:

If the adult(s) is not a Parent or Grandparent, what is the relationship to this child?

Aunt/Uncle _____ Age _____

Sibling _____ Age _____

Friend _____ Age _____

Other (next-of-kin, teacher) _____ Age _____

Was the child treated for illness or have an injury? Yes No

If yes, please describe: _____

Was the child admitted to the hospital? Yes No

If Yes, give room or location _____

If No, give location or address where child is currently (lobby, Pediatric Safe Area, sent to shelter, etc.) _____

Does this child have a history of medical problems? Yes No

If yes, please list: _____

Does this child or family members have special needs? Yes No

If yes, please list: _____

PEDIATRIC SAFE AREAS

Supervised areas should also be created to cohort all unaccompanied pediatric visitors or unaccompanied released pediatric patients in one central and safe location. This central location will need to be pre-assigned and secured to ensure that minors cannot leave the area without appropriate escorts. Security personnel or other responsible staff will need to be trained to supervise and assist pediatric visitors who may be frightened or who have other mental health issues as a result of being involved in a disaster and separated from family members.

Included in this section are three forms that may be helpful for hospital planning required for a Pediatric Safe Area. These forms include:

1. **Pediatric Safe Area Checklist.** This form was adapted from the Chicago Department of Health, and outlines recommended steps to ensure that the Pediatric Safe Area is appropriately set-up to receive children.
2. **Pediatric Safe Area Coordinator Job Action Sheet (JAS).** Created for the staff coordinating these pediatric safe areas. By having a JAS, staff can readily review what steps need to be taken to prepare for the possible influx of pediatric patients. See JAS at the end of this chapter.
3. **Pediatric Safe Area Register.** This is a sample of a form that could potentially be used in the Pediatric Safe Area to monitor the arrival and departure of children. A copy of this register should be made available to the hospital EOC on a frequent basis.

Pediatric Safe Area Process/Checklist

YES	NO	ITEM
		Needle boxes are at least 48 inches off the floor?
		Do the windows open?
		Are the windows locked?
		Do you have window guards?
		Do the windows have blinds or drapes that might pose a strangulation hazard?
		Are there any water basins, buckets or sinks that might pose a drowning hazard?
		Can children be safely contained in this area (consider stairwells, elevators, doors)?
		Is the area poison proof? (Check for cleaning supplies, Hemocult developer, choking hazards or cords that should be removed or locked away.)
		Are med carts and supply carts locked?
		Should separate areas for various age groups be created?
		Have drills for managing this area been conducted with all relevant departments?
		Is there a security plan for the unit?
		Is there a plan to identify the children?
		Is there a plan for assessing the mental health needs of children?
		Are there any fans or heaters in use? Are they safe? Check all equipment.
		Is there an onsite or nearby daycare center? Could they be of help?
		Is there enough staff to supervise the number of children? (Younger children will require more staff.)
		Are there a sign-in and sign-out sheet for all children and adults who enter the area? Always check adult identification and document on sign out sheet.
		Will children need to be escorted away from safe area to bathrooms?
		Are age appropriate snacks available for children? Always check for allergies (peanuts, peanut butter, nuts)
		Are there sleeping accommodations available (i.e., foam mats on floor)?
		Are there handwashing sinks available and/or hand sanitizer?

Always have 2 staff per child if private assessment or treatment occurs.

PEDIATRIC SAFE AREA REGISTER SHEET

	Name of Child	Age	Arrival Time	Discharge Time	*Disposition	**Responsible Adult Name	Responsible Adult Signature	Contact Phone Number
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								

***Disposition:** Admit to Hospital (A); Discharged to Parent (D-P); Discharged to relative (D-R); Discharged to Other (D-O); Social Services Placement (SS); Policy (SDPD)

****Responsible Adult:** Adult responsible for child at time of discharge. PSA Coordinator should determine if child can be discharged to this adult based on hospital policy.

STAFF CHILD RATIO AND GROUP SIZE INDICATOR

These indicators only have one standard represented because in the national data base a specific state regulation that deals with staff child ratio and group size exists. Even so, the variation of these regulations among the states is great. While some states meet or almost meet these standards for staff child ratio and group size, many states do not. Of all the indicators, the greatest variation occurs in how state regulations match up with the national standard for staff child ratio and group size.

CFOC Standard (1992):

ST 002 – Child:staff ratios for centers and large family child care homes shall be maintained as follows during all hours of operation:

Age	Child-staff ratio	Maximum group size
Birth – 12 months	3:1	6
13 – 24 months	3:1	6
25 – 30 months	4:1	8
31 – 35 months	5:1	10
3 year olds	7:1	14
4 year olds	8:1	16
5 year olds	8:1	16
6 – 8 year olds	10:1	20
9 – 12 year olds	12:1	24

When there are mixed age groups in the same room, the child:staff ratio and group size shall be consistent with the age of the majority of the children when no infants or toddlers are in the mixed age group. When infants or toddlers are in the mixed age group, the child:staff ratio and group size for infants and toddlers shall be maintained.

Sample Job Action Sheet

PEDIATRIC SAFE AREA (PSA) COORDINATOR

You report to: _____ (PEDIATRIC SERVICES UNIT LEADER)
Command Center _____

Mission: To ensure that the pediatric safe area is properly staffed and stocked for implementation during an emergency, and to insure the safety of children requiring the PSA until an appropriate disposition can be made.

Immediate:

- _____ Receive appointment from Pediatric Services Unit Leader
- _____ Read this entire job action sheet
- _____ Obtain briefing from Pediatric Services Unit Leader
- _____ Ascertain that the pre-designated pediatric safe area is available
- _____ If not immediately available, take appropriate measures to make the area available as soon as possible
- _____ Gather information about how many pediatric persons may present to the area
- _____ Make sure that enough staff is available for PSA
- _____ Make sure that enough security staff is available for PSA
- _____ Make sure that there is adequate communication in PSA
- _____ Make sure that there is a sign in/out log for PSA
- _____ Make sure that all items in PSA checklist have been met; if there are any deficiencies, address them as soon as possible and report them the PSUL

Intermediate:

- _____ Ascertain the need for ongoing staff for PSA
- _____ Maintain registry of children in PSA as they arrive or are released to appropriate adult
- _____ Determine estimated length of time for the expected operational period of PSA
- _____ Maintain communication with Pediatric Services Unit Leader for planning needs
- _____ Determine if there are any medical or non-medical needs specifically needed by pediatric persons in PSA
- _____ Prepare an informational session for the pediatric persons in the PSA
- _____ Prepare to make arrangements for sleeping capacities if needed
- _____ Ascertain if there will be any additional needs required for this event (volunteers, staff, security, and equipment)
- _____ Make sure that pediatric persons have the appropriate resources (food, water, medications, age-appropriate reading materials) and entertainment for their stay
- _____ Report frequently to Pediatric Services Unit Leader concerning status of PSA

Extended:

- _____ Make sure that PSA staff have enough breaks, water, and food during their working periods
- _____ Coordinate with Psychological Support for ongoing evaluations of mental health of volunteers and pediatric persons in case of need for psychosocial resources
- _____ Document all action/decisions with a copy sent to the Pediatric Services Unit Leader
- _____ Other concerns: _____

Pediatric Age Specific Care

Managing Pediatric Patients: Age-Specific Care

1. Provide Age-Specific Care

The challenge of pediatrics is treating each age group with sensitivity to their developmental stage. The following are age-specific guidelines for care.

Note: BP is measured in mmHG Temp is measured in C°

Age	Statistics
Newborn 0-28 days	<i>Normal vital Signs and Assessment</i> Temp: 36.1 – 38 HR: 120 – 140 RR: 30 – 60 BP: Systolic 60 – 80, Diastolic: 40 – 55 <i>General</i> <ul style="list-style-type: none">▪ In ability to hold head erect▪ Sleeps 16-18 hr/day▪ Immature immune system▪ Breathes through nose instead of mouth▪ Poor temperature control▪ Responds to light, sound <i>A Newborn does feel pain as evidenced by:</i> <ul style="list-style-type: none">▪ Facial expression▪ Increased HR & BP▪ Decreased oxygen saturations▪ Sweaty palms▪ Loud crying <i>Stress indicators</i> <ul style="list-style-type: none">▪ Skin color changes▪ Poor feeding & regurgitation▪ Yawning and/or hiccups▪ Tremors▪ Fussiness and/or listlessness▪ Same indicators as pain in a child <i>Comfort Measures</i> <ul style="list-style-type: none">▪ Holding newborns close engenders security▪ Bonds with parents and develops trust

Age	Statistics
Newborn 0-28 days	<i>Miscellaneous</i> <ul style="list-style-type: none"> ▪ Limit use of tape and other adhesives ▪ Promote bonding ▪ Bundling ▪ Provide pacifier
Infants 29 days-12 months	<i>Normal Vital Signs and Assessment</i> Temp: 36.1 – 38 HR: 110 – 170 RR: 30 – 60 BP: Systolic 60 – 100, Diastolic 40 – 60 <i>General</i> <ul style="list-style-type: none"> ▪ Responds better to visual rather than spoke cues ▪ Progresses to raising head, turning, rolling over and brings hand to mouth usually by 6 months ▪ Repeats actions to fine-tune learning ▪ Short attention span ▪ Learns by imitation, exploring and playing ▪ Progresses to crawling, standing and walking alone usually by 12 months <i>Comfort Measures</i> <ul style="list-style-type: none"> ▪ Likes to follow normal routine ▪ Provide familiar objects ▪ Lessen stranger anxiety by talking softly, meeting infant at his level and avoiding sudden gestures ▪ Use a security toy or pacifier to reduce anxiety and elicit cooperation <i>Stress Indicators</i> <ul style="list-style-type: none"> ▪ Anxious and unhappy ▪ Clings to parents and cries <i>Safety Measures</i> <ul style="list-style-type: none"> ▪ Keep side rails on crib at all times ▪ Keep small objects away from infant's reach
Toddlers 1 to 3 years	<i>Normal Vital Signs and Assessment</i> Temp: 36.1 – 38 HR: 100 – 190

Age	Statistics
Toddlers 1 to 3 years	RR: 24 – 34 BP: Systolic 95-105, Diastolic 53-66 <i>General</i> <ul style="list-style-type: none"> ▪ Abdomen protrudes ▪ Gains 5-6 pounds per year and grows 3 inches per year ▪ Requires fewer calories and more protein ▪ Gains fine motor coordination ▪ Progresses to walking independently ▪ Attaches to security objects and toys ▪ Asserts self to achieve independence ▪ Very ritualistic ▪ See things only from own point of view <i>Stress Indicators</i> <ul style="list-style-type: none"> ▪ Fears separation from parents/caregivers ▪ Has a low tolerance for frustration & Pain resulting overblown responses <i>Comfort Measure</i> <ul style="list-style-type: none"> ▪ Enjoys being read to ▪ Enjoys finger foods and feeding self ▪ Likes food & drinks at room temperature ▪ Enjoys age-appropriate toys <i>Teaching Approaches</i> <ul style="list-style-type: none"> ▪ Explain procedures to the toddler just before they occur ▪ Use dolls and toys as teaching aids
Preschoolers 3 to 5 years	<i>Normal Vital Signs and Assessment</i> Temp: 36.1 – 38 HR: 70 – 130 RR: 20 – 30 BP: Systolic 92-116, Diastolic 56-75 <i>General</i> <ul style="list-style-type: none"> ▪ Growth is slow and regular ▪ Full set of teeth ▪ Increased skill and coordination ▪ Feeds and dresses self with little supervision ▪ Begins reasoning logically

Age	Statistics
Preschoolers 3 to 5 years	<ul style="list-style-type: none"> ▪ Understands right from wrong ▪ Vivid imagination ▪ Improving impulse control ▪ Socializes and plays with groups <p><i>Stress Indicators</i></p> <ul style="list-style-type: none"> ▪ Fears being left alone ▪ Fears the unknown ▪ Fears bodily injury ▪ Separation anxiety ▪ Often regresses ▪ Eating/sleeping disturbances <p><i>Comfort Measures</i></p> <ul style="list-style-type: none"> ▪ Family members are still the most important people ▪ Provide choices (foods, etc.) allowing a sense of control ▪ Offer rewards, praise cooperation ▪ Enjoys puzzles <p><i>Teaching Approaches</i></p> <ul style="list-style-type: none"> ▪ Assure preschooler that procedures and treatments are not punishment ▪ Use toys, dolls, puppets, etc. and games to teach and reduce fears ▪ Needs clear rules and boundaries ▪ Promote sense of security ▪ Use simple, neutral words during explanations
School-Age 6 to 11 years	<p><i>General Normal Vital Signs and Assessment</i></p> <p>Temp: 36.1 – 38 HR: 62 – 130 RR: 16 – 24 BP: Systolic 94-128, Diastolic 66-80</p> <p><i>General</i></p> <ul style="list-style-type: none"> ▪ Awkward with nervous energy ▪ Increase in gross and fine motor skills ▪ Increased attention span ▪ Logical reasoning ▪ Understands cause and effect ▪ Understands past and future ▪ Describes pain/discomfort in some detail

Age	Statistics
School-Age 6 to 11 years	<ul style="list-style-type: none"> Starts preferring friends to family Develops moral and ethical behavior <p><i>Stress Indicators</i></p> <ul style="list-style-type: none"> Insomnia, nightmares, etc. from anxiety Fears the unknown, bodily harm, separation and death Alternately conforms to adults standards and rebels against them <p><i>Comfort Measures</i></p> <ul style="list-style-type: none"> Enjoys reading Desires privacy Enjoys sense of control <p><i>Teaching Approaches</i></p> <ul style="list-style-type: none"> Use body outlines and models for explanations Explain logically why a procedure is necessary Describe sensations to anticipate during procedures Encourage active participation in learning Praise the child for cooperating
Adolescents 12 to 18 years	<p><i>Normal Vital Signs and Assessment</i></p> <p>Temp: 36.1 – 38 HR: 50 – 100 RR: 12 – 20 BP: Systolic 100-138, Diastolic 60-80</p> <p><i>General</i></p> <ul style="list-style-type: none"> Growth spurt lasts 2 years Easily fatigued Increased ability to use abstract thought & logic Able to handle hypothetical situations or thoughts Able to form independent opinion Develops own identity Wide mood swings <p><i>Stress Indicators</i></p> <ul style="list-style-type: none"> Risk taking behavior Challenges authority Concerned about bodily changes Depression – include screening in assessment Reluctant to admit he or she does not understand something

Age	Statistics
Adolescents	<i>Comfort Measures</i>
12 to 18 years	<ul style="list-style-type: none"> ▪ Needs, but does not ask for, adult support to cope ▪ Underlying need to please adults ▪ Desires privacy
	<i>Teaching Approaches</i>
	<ul style="list-style-type: none"> ▪ Involve in decision and approach and treat as an adult ▪ Give scientific explanations using body diagrams, etc. ▪ Encourage verbalization of feelings ▪ Offer praise appropriately

2. Provide Child Safe Environment and Patient Supervision

In a disaster situation, designate special areas for unaccompanied children. Consider adding the JAS, “Pediatric Safe Area Coordinator” to your Disaster Plan. Separate these areas from the general population and modify for child injury prevention.

Recommendations for creating these areas:

- Identify locations within the facility appropriate for housing children
- Determine the supplies required to childproof the location
- Modify adult patient care areas for pediatric patients

Registering and maintaining appropriate adult/child association is important.

3. Ensure Patient Comfort

Patient comfort services are vital, especially during or after a crisis event. Child-specific services include art, music, and child life for disaster response. Developmentally appropriate creative art, music, bibliotherapy, therapeutic beading program, and other child life activities providing comfort to the patient during his/her hospital stay are invaluable.

Train spiritual care staff to deliver disaster-appropriate services to patients and their families. Where feasible, provide animal assisted intervention to increase the comfort of patients and families. Provide ongoing support and psycho-education for patients and families regarding clinical care and patient reactions. Grant access to educational materials, DVDs, CDs and the disaster library to learn more about disasters and recovery.

4. Perform Hygiene

Infection control relies on proper hygiene maintenance during a disaster. Certain environmental measures assist in this process. Follow hand hygiene procedures and ensure availability of adequate soap, sinks and paper towel supplies. Establish diapering

protocols using Department of Health and Human Services (DHHS) documents (or similar) for guidance regarding setting up sanitary changing stations.

Supply easy-to-clean toys (hard plastic, not fuzzy). Assign young children individual sleeping mats. Provide adequate clean linens, disposable diapers and changes of clothing for infants and young children. Ensure waste or soiled linen collection units are child safe, adequate in number and constructed to permit hands-free use.

Ensure adequate supplies of cleaning and disinfecting materials. Store them in a child safe manner. Additionally, schedule regular cleaning/disinfection procedures for toilets, bathrooms, changing stations, sleeping mats and toys. Clean any reusable equipment or toys appropriately following infection control procedure.

5. Ensure Nutrition

Address nutrition needs for all patients. Maintain a five-day food supply for emergency use. Place Memorandums of Understanding (MOUs) with nearby stores, pharmacies and medical supply companies to provide the facility with immediate delivery and additional supplies.

Pediatric Dietary Needs

Health children

- *0 to 6 months*
 - Breast or bottle feed
 - Ready-to-feed formula is available for use and requires no refrigeration or preparation. Powdered formula has a longer shelf life
 - Continue offering bottles to breast-fed babies. Baby will feed from bottle eventually
- *7 to 12 months*
 - Baby cereal
 - Jarred baby food or mashed table food
 - Formula or breast milk
- *1 to 2 years*
 - Soft, bite sized pieces of foods (vegetables or mashed potatoes) and meat
 - Cow or breast milk
- *2 years and older*
 - Table food – finger foods: Avoid foods causing choking hazards such as hot dogs or grapes for the youngest children
 - Pedialyte for hydration

Children with special needs

- *0 – 12 months*
 - Infant formula infused via 60 ml syringe (bolus feeds) or pump for continuous feeds
- *12 months – 18 years*
 - Pediatric formulas
 - Enteral products if appropriate
 - Tap or bottled water

Diabetic Children

- Determined by body weight and insulin requirements
- Require between-meal snacks to control blood glucose

6. Maintain Infection Control

Use the Healthcare Inspection Control Practices Advisory Committee (HICPAC) guidelines for children who are symptomatic owing to a biological event (see below for guidelines).

The nature of an illness or exposure determines the appropriateness of isolation. Cohort patients where necessary (same exposure/same symptom). Maintaining good hand hygiene is important for staff because placing masks on infants or young children to contain respiratory droplets is impractical. Placing infants or young children in portable isolation units alone is also not practical. Young children and infants should not be left alone.

Instruct adult caregivers of children placed in isolation regarding appropriate infection control measures such as doffing and donning of gowns, gloves, masks, hand hygiene and cough etiquette. Ensure adult caregivers follow appropriate infection control measures.

Use daycare setting guidelines (DHHS) for all asymptomatic children requiring diapering, feeding, toileting and assistance with hand hygiene. Evaluate these children and separate from symptomatic children or adults as soon as possible. Cohort children similarly exposed or asymptomatic. Daycare approaches apply and hand hygiene is paramount. Educate emergency caregivers about sanitary considerations.

Begin by sorting according to age group when cohorting children in a hospital setting to accommodate sanitary needs of infants and young children (diapering, toileting, hand hygiene, feeding, cleaning). Traumatized children often regress under stress. They require additional help with sanitary needs. Small group size is associated with a lower risk of infection in childcare settings. Support infection control by aiming for recommended age appropriate staff-child ratios.

7. Manage Patient Flow

Prepare for the reception and care of potential pediatric patients by undertaking the following:

- Trigger hospital external disaster plan
- Identify and notify providers: MD, RN, Family Medicine, Emergency Medicine and Surgery

Identify equipment, drug dosing guidelines, ventilators, availability of operating rooms and pediatric ICU beds. Set up a family assistance area for victim's families and a separate area for media contact.

Staff should know the hospital's pediatric surge capacity (i.e. when the institution will run out of clinicians, equipment, medications, OR rooms or ICU beds for the number and severity of expected pediatric patients). Request transport teams, more MDs and RN staff to help as needed.

Decontaminate pediatric victims on arrival prior to entering the hospital if chemical or radioactive contamination is suspected. If the hospital lacks a decontamination shower, remove all clothing and objects from the patient while still outside and wash with warm water if possible, for several minutes. Do this for all age groups.

Keep at least 5 cribs, port-a-cribs or playpens in a storage area. You may use adult beds if the following actions are taken:

- The bed has side rails.
- Set the bed at the lowest possible height.
- Unplug so the adjustment buttons do not work.

Plan ahead for news media and a rush of anxious families. Additionally, prepare security to handle large numbers of family members and other non-medically affected individuals. Expect approximately 4 to 5 visitors/family per pediatric patient. Open a Pediatric Safe Area to care for non-injured or discharged unaccompanied children temporarily.

Make all attempts at identifying pediatric victims. Maintain and update a list frequently. Relay information to the hospital emergency operating center and/or family assistance center.

8. Coordinate Patient Transport

Prior to a surge, create patient transport guidelines. Instruct staff to follow these guidelines to reduce confusion. Create MOUs with neighboring hospitals or other hospitals with specialty capabilities.

Behavioral Health

Behavioral Health

In the midst and aftermath of a pediatric emergency children, families, and hospital staff all need emotional support. When the emergency occurs on a large scale the emotional impact of the event can be overwhelming to any and all involved.

Physical medicine and stabilization is vital but long term adverse psychological impacts can linger for a life time if not properly addressed. Significant traumas can lead to post traumatic symptoms in children and adults and can produce Post Traumatic Stress Syndrome and long term adverse health consequences years later (www.acestudy.org).

RCHSD Behavioral Health professionals are trained to support children, families, and staff.

Role of Behavioral Health Departments: In the event of a significant pediatric event or surge the first line of response to needs within the hospital and outpatient clinics is the Medical Social Work Department. Additional support can be secured from the Chadwick Center for Children and Families and the Psychiatry Department.

Medical Social Work

Immediate response to a disaster requires Medical Social Work to coordinate actions with Hospital Incident Command Center. In concert with Trauma staff, Medical Social Work will conduct an assessment to support triage activities, including:

Clinical

- On site assessment of the crisis situations
- Crisis intervention and short term trauma counseling – children and adults
- Crisis intervention and short term trauma counseling –adult (staff, parents, child caregivers)
- Clinical supervision and coordination of deployments

Non-Clinical

- Logistical support of team
- Media relations
- Internal communications
- Triage telephone line

Staffing will be supported by a Call Back system and is managed by either the Director or Supervisor of Medical Social Work Department. Social Workers from all hospital units can be deployed as needed by leadership to provide both Clinical and Non-Clinical services during the disaster. All activities will be coordinated through the Hospital Incident Command Center.

In the event of a major event or surge and demands that exceed the capacity of Medical Social Work Department, RCHSD has expanded capacity in the Behavioral Health Crisis Response Team (BHCRT).

Behavioral Health Crisis Response Team (BHCRT) mobilizations may occur in response to:

1. A major national or local event that places RCHSD staff in a state of emotional stress or crisis that exceeds the capacity of normal Human Resources and Employee Assistance Program (EAP) support.
2. A major national or local event that places significant numbers of children and/or patient families within the hospital in a state of emotional stress or crisis that exceeds the capacity of existing social work and/or child life resources.
3. A major national or local event in the community in which significant numbers of children are suffering the after effects of emotional trauma ranging from those who witness violence or who are vicarious victims of violence to those suffering emotional distress as a result of major manmade or natural disasters.

Long Term Follow-up: Children requiring mental health treatment for post traumatic stress symptoms should be referred to the Chadwick Center or Psychiatry Department.

In the aftermath of a disaster RCHSD Behavioral health professionals will often be guided by the principals of **Psychological First Aid** (see below) for child and adult patients. Critical Incident Debriefing is utilized to support Hospital staff during and after the disaster.

Important Note: Critical Incident Debriefing is not appropriate for use with children

Critical Incident Response for Staff

In an emergency, hospital staff and doctors will respond to the incident utilizing all prior training and experiences in order to deliver appropriate care to patients and families. Physicians, nurses, and allied health providers are highly trained to intervene and treat patients, regardless of the volume or acuity. Frequently in such situations, patients are triaged and treated consecutively without the opportunity for staff to process the events or consider the impact on them.

Healthcare providers are a valued resource and need to be educated, supported, assessed, and sometimes offered mental health treatment in order to allow them to continue to provide the services they deliver during and after emergencies and critical events. Emotional support intervention should be immediately available following any critical incident, event, or emergency. Resources should be made available to all providers and staff involved in the event, including physicians, nurses, CHET team, paramedics, lab,

radiology, pharmacy, transport, ancillary services, BA staff, housekeeping, etc. All staff has some relative exposure to the event in the course of completing their jobs. Implementation of support for hospital staff includes:

1. Education of key hospital staff, including House Supervisors, Department Directors, Charge Nurses, and Social Work staff on signs and symptoms of the emotional impact of the disaster or trauma on hospital staff. These staff is the first level of intervention and support to providers and are critical to assisting staff in continuing their functions and resolving issues encountered in the course of their work.
2. Screening, Assessment, and Triage of all involved staff.
3. Intervention options:
 - a. One-to-one immediate intervention on the job
 - b. Support and advise
 - c. Back up resources for staff who may have to leave shift
 - d. Offer of options to staff, including brief discussion, ongoing supervisor support, brochure, referrals, and follow-up contacts
 - e. Group critical incident debriefing for all involved in incident
 - f. Referrals to ongoing therapy, as needed
4. Resources for support:
 - a. Internal multi-disciplinary critical incident debriefing team
 - b. External, including EAP programs and Physician Well-Being Committees

What is Psychological First Aid?

Psychological First Aid is an evidence-informed¹ modular approach to help children, adolescents, adults, and families in the immediate aftermath of disaster and terrorism. Psychological First Aid is designed to reduce the initial distress caused by traumatic events and to foster short- and long-term adaptive functioning and coping. Principles and techniques of Psychological First Aid meet four basic standards. They are:

1. Consistent with research evidence on risk and resilience following trauma
2. Applicable and practical in field settings
3. Appropriate for developmental levels across the lifespan
4. Culturally informed and delivered in a flexible manner

Psychological First Aid does not assume that all survivors will develop severe mental health problems or long-term difficulties in recovery. Instead, it is based on an understanding that disaster survivors and others affected by such events will experience a broad range of early reactions (for example, physical, psychological, behavioral, spiritual). Some of these reactions will cause enough distress to interfere with adaptive coping, and recovery may be helped by support from compassionate and caring disaster responders.

Family Information & Support Center (FISC) EDUCATIONAL TOOLS for Staff

Normal Reactions to Disaster for Adults and Children

Age	Parameter	Normal Reactions May Include
All Ages	Emotional	<ul style="list-style-type: none"> • Shock • Fear • Grief • Anger • Guilt • Shame • Helplessness • Hopelessness • Numbness • Emptiness • Decreased ability to feel interest, pleasure, love
	Cognitive	<ul style="list-style-type: none"> • Confusion • Disorientation • Indecisiveness • Worry • Shortened attention span • Poor concentration • Memory difficulties • Unwanted memories • Self-blame
	Physical	<ul style="list-style-type: none"> • Tension • Fatigue • Edginess • Insomnia • Generalized aches and pains • Startles easily • Rapid heartbeat • Nausea • Decreased appetite • Decreased sex drive
	Interpersonal	<ul style="list-style-type: none"> • Difficulties being intimate • Being over-controlling • Feeling rejected or abandoned

Children's age-specific disaster response:		
Preschool	Emotional	<ul style="list-style-type: none"> • Separation fears • Temper tantrums
	Cognitive	<ul style="list-style-type: none"> • See All Ages
	Physical	<ul style="list-style-type: none"> • Regression • Fussiness • Somatic complaints • Sleep disturbances including nightmares, somnambulism and night terrors
	Interpersonal	<ul style="list-style-type: none"> • Likely to seek comfort
School-age	Emotional	All of above, plus: <ul style="list-style-type: none"> • Excessive guilt and worries about others' safety
	Cognitive	<ul style="list-style-type: none"> • Poor concentration and loss of school performance
	Interpersonal	<ul style="list-style-type: none"> • Repetitious re-telling or play related to traum
Adolescent	Emotional	<ul style="list-style-type: none"> • Depression • Wish for revenge
	Cognitive	<ul style="list-style-type: none"> • Altered view of the future
	Physical	<ul style="list-style-type: none"> • Sleeping disturbances • Eating disturbances
	Interpersonal	<ul style="list-style-type: none"> • Acting out

FISH Educational Tools for Staff # 3

Mental Health Consequences of Disaster – An Overview for Emergency Department Staff

Developmental Considerations in the Comprehension of Death in Children & Adolescents				
	Infants	Preschool	School-Aged	Adolescents
Developmental considerations	<ul style="list-style-type: none">• Object permanence• Establishing trust• Dependency for basic needs	<ul style="list-style-type: none">• Magical thinking• No concept of time• Egocentric	<ul style="list-style-type: none">• Logical thinking• Concept of time• Differentiation of self from others	<ul style="list-style-type: none">• Abstract thinking• Establishing independence• Identity formation• Feelings of omnipotence
Effect of disaster	<ul style="list-style-type: none">• Destroyed routine• Loss of loved ones			
Behavioral changes seen as result of disaster	<ul style="list-style-type: none">• Regression• Detachment	<ul style="list-style-type: none">• Post-traumatic play• Withdrawal• Apathy	<ul style="list-style-type: none">• School problems• Anxiety• Anger• Somatic complaints• Post-traumatic play	<ul style="list-style-type: none">• Risk-taking• Somatic experiences• Depression• Anger• Hostility to others• Self-doubt• Shame• Guilt
View of disaster	<ul style="list-style-type: none">• No comprehension	<ul style="list-style-type: none">• Reversible	<ul style="list-style-type: none">• Understands loss as a consequence of injury and illness	<ul style="list-style-type: none">• Full understanding
Modified from: American Academy of Pediatric Workgroups on Disasters, <i>Psychological issues for children and families in disasters: a guide for the primary care physician</i> . US Department of Health and Human Services, 1995 [DHHS Publication (SMA) 95-3022].				

FISC Educational Tools for Staff # 4

Helping Children Deal with Disasters

Listen to the child

- Ask the child what he/she knows, what they heard, or what their friends are saying
- Ask the child how they are feeling. They may feel angry, scared, sad or anxious
- Let the child know that you understand their feelings
- It is important not to laugh at the child's fears, even if they seem silly to you
- Let the child ask questions
- When the child ask questions, answer briefly and honestly
- Remember: it is OK to answer, "I don't know."

Try to make the child feel safe


- Let the child know that many people (police, teachers, doctors and our President) are working hard to:
 - Take care of the hurt people
 - Help keep us safe
- If the child is worried that his/her home is not safe, explain the nature of the event as simply as possible
- Try to keep to the child's regular routine as much as possible

Adapted from: Child Life Department, (2001) Bellevue Hospital Center Pediatric Resource Center

Source:

http://www.health.state.ny.us/facilities/hospital/emergency_preparedness/guideline_for_hospitals/support.htm#fiscd

RCHSD Capacity Management Plan

 <input type="checkbox"/> P O L I C Y/PROCEDURE <input type="checkbox"/> STANDARDIZED PROCEDURE <input type="checkbox"/> PLAN <input checked="" type="checkbox"/> GUIDELINE	CURRENT EFFECTIVE DATE December 2010	REVISED DATE December 2010	MANUAL: Clinical Care
	TRACKING # A-07		
	TITLE: MANAGING CAPACITY TO ENSURE PATIENT ACCESS		
PERFORMED BY: Management			

<u>Specialty Review</u> <input checked="" type="checkbox"/> Multidisciplinary <input type="checkbox"/> Nursing Council <input type="checkbox"/> RT Council <input type="checkbox"/> SW Council <input type="checkbox"/> Child Life <input type="checkbox"/> Human Resources <input type="checkbox"/> EOC/Safety <input type="checkbox"/> Information Services <input type="checkbox"/> Infection Control <input type="checkbox"/> Interdisciplinary Practice <input type="checkbox"/> Pharmacy & Therapeutics <input type="checkbox"/> Forms <input type="checkbox"/> Med Staff <input type="checkbox"/> Specialty Review	<u>Council Review</u> <input type="checkbox"/> Clinical Ops <input checked="" type="checkbox"/> Med Staff Executive <input type="checkbox"/> Center Ops <input checked="" type="checkbox"/> Board	<u>ACCREDITATION/STANDARD</u>
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Philosophy:

Rady Children's Hospital's specialized resources for pediatric patients will always be judiciously managed to ensure access for children for services not available through other resources in our community. Our primary focus is the care of children from birth to the 18th birthday or up to the 14th birthday if resources are in short supply. Examples of this include: lack staff, beds, or operating room capacity.

Rady Children's Hospital and Health Center recognizes its community responsibility to provide comprehensive, cost-effective, high quality medical care for ill and injured children. Furthermore, Children's recognizes its responsibility as a resource to collaborative organizations in the community relative to out-reach, education, and programs with our partners in wellness, ambulatory and in-patient acute care.

Close coordination of services within the community provides improved continuity of care and improved organization of inter-facility transfers when necessary. When transfers of patients are necessary to return a patient to a lower level of care in a family's own community or to ensure availability of staffed beds for sickest patients at Rady Children's (diversion), such transfers will be in accordance with clinical need, inter-facility patient transfer agreements and regulatory statutes. Diversion of patients who have already arrived for care at Children's will only occur when all efforts to

mobilize appropriate resources have been exhausted.
Final coordination and authority on behalf of the Hospital and Medical Staff, to approve admissions, surgical scheduling and diversion are as follows:

All Admissions:

- Shall be coordinated through Nursing Supervisor
- Final authority rests with Chief Medical Officer and Medical Director of In-Patient Services for clinical decisions and disposition. Hospital Administrator or designee will be on call for non-clinical decisions.

All Surgical Scheduling:

- All surgeries shall be scheduled through the surgery scheduling office.
- Final authority rests with the Surgery Medical Director and/or Chief Medical Officer for clinical decisions and disposition.

Trauma Service:

- If there is an imminent threat of closure to trauma, the Trauma Surgeon on service must be notified.
- The final authority for closure to trauma rests with the Trauma Surgeon on service.

Alternative RCHSD Surge Locations and Process

- Every effort is made to keep all appropriate patients on the main RCHSD campus during a surge event of high patient census.
- The Hospital Incident Command System (HICS) is used to coordinate patient placement and review of census and options.
- The Inpatient Medical Director, Chief Operating Officer and Designated Nurse Executive are the Surge leadership and utilize the HICs process. Multiple briefs are held daily within inclusion of appropriate stake holders for decision making.
- Alternative locations to be provide care are identified in the RCHSD Emergency Preparedness and also Surge policies (insert names). If the census increases greater than 5% of licensed beds California Department of Public Health Licensing Department will be notified.

The following “APPENDIX 1” delineates the tiered approach to routine as well as critical resource management.

Date Written: February 2001

Date Revised: November 2005, February 2009, December 2010

Attachment 1
Transfer Options (as of 11/30/05)

Transfer (to) Facility	Appropriate Transfer Patients
1. Balboa Naval Medical Center	Champus eligible children Acuity levels PICU, IMU & Med/Surg <u>*Must have an accepting MD to follow</u>
2. Sharp-Grossmont Hospital RCHSD Pediatric Unit. This is an RCHSD unit. Beds: 11 Surge Capacity: 14	Medical patients primarily – non-critical This is now our unit and is not a transfer out of RCHSD.
3. Palomar Hospital RCHSD NICU and Pediatric Unit NICU Beds: 12 NICU Surge: 14 Peds Beds: 17 Ped Surge: 20	Partnership with RCHSD Medical-Surgical, NICU Level II patient types Primary medical/limited surgical
4. Affiliated groups/payors: <ul style="list-style-type: none"> ▪ CPCMG North County ▪ Greybill ▪ Penn-Elm/Scripps Clinic ▪ Escondido Community Clinic under Medical Direction of CSSD Hospitalist	Medical-Surgical, NICU Level II patient types Primary medical/limited surgical <u>*Must have accepting MD to follow</u>
5. Sharp Mary Birch Hospital	Neonatal Level II services
6. Sharp Memorial Hospital <ul style="list-style-type: none"> ▪ Sharp Rees Stealy ▪ Sharp Community Medical Group ▪ Sharp Health Plan Providers 	Medical and Surgical Services Optimal transfer for teens <u>*Must have accepting MD to follow</u> Bed Reservation Agreement
7. Tri-City Medical Center <ul style="list-style-type: none"> ▪ Sharp Mission Park Medical Group ▪ Cassidy Medical Group 	Medical/Surgical, NICU Level II, primarily medical/non-critical. <u>*Must have accepting MD to follow</u>
8. Kaiser Permanente <ul style="list-style-type: none"> ▪ Permanente Medical Group ▪ Kaiser Members 	Peds IMU, Medical/Surgical and NICU Level II. <u>*Must have accepting MD to follow</u>
9. UCSD	NICU Levels II and III NICU Level II

Transfer (to) Facility	Appropriate Transfer Patients
10. RCHSD NICU at Scripps La Jolla <ul style="list-style-type: none"> ▪ NICU Beds: 14 ▪ NICU Surge: 17 11. Scripps Encinitas RCHSD NICU <ul style="list-style-type: none"> ▪ NICU Beds: 6 ▪ NICU Surge: 7 	NICU Level II

Criteria for Transfer to Alternative Inpatient Care in a General Acute Care Facility

Purpose:

Describe transfer criteria of inpatients to an adult general acute care facility in the event that Rady Children's Hospital has met surge capacity.

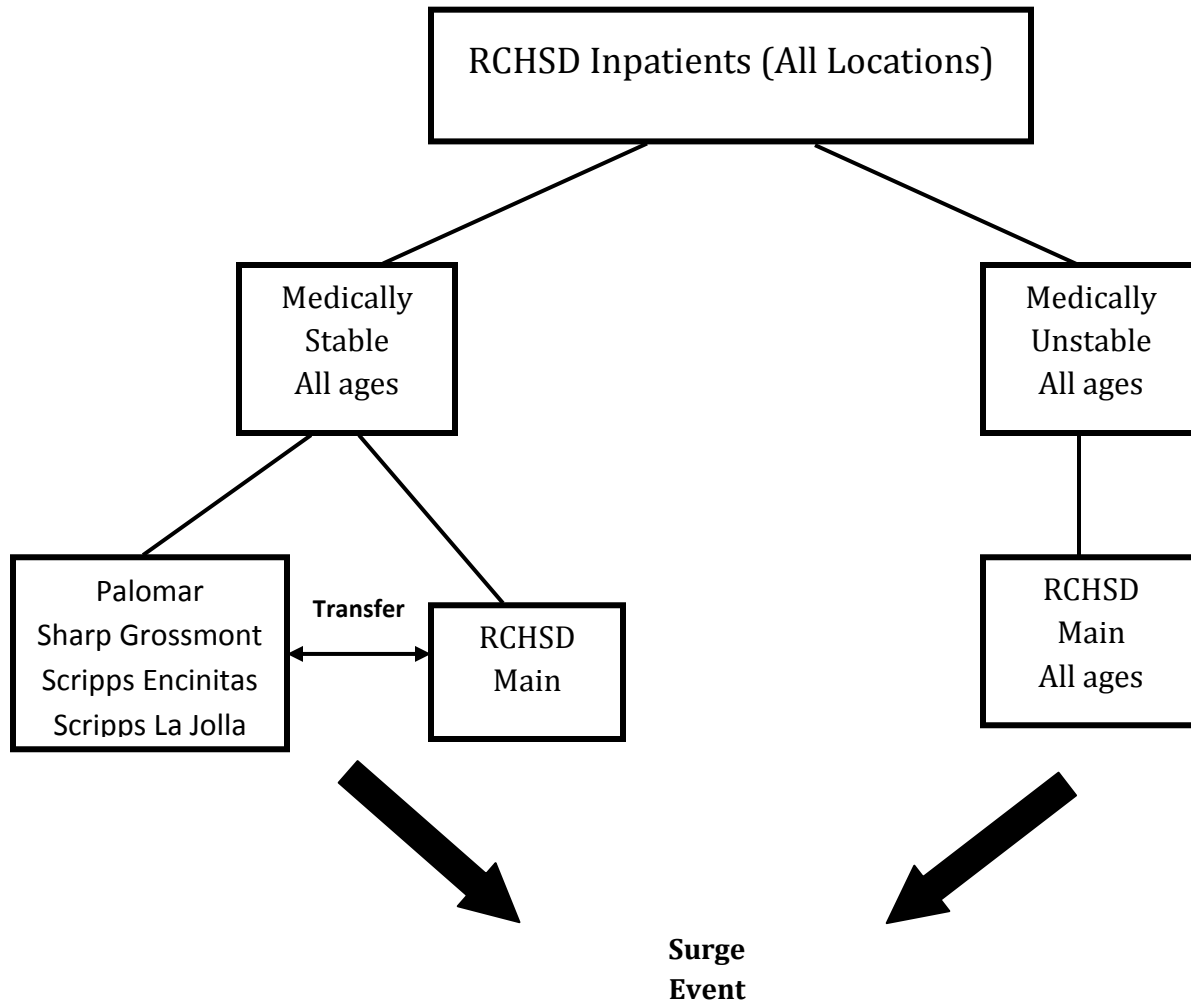
I. General Statements

1. RCHSD is the optimal provider for inpatient pediatric care for San Diego and Imperial County.
2. In the event of a surge of pediatric patients there are times patients will need to be cared for in a General Acute Care Facility.
3. Process to review inpatients and potential admissions is described in Clinical Care Manual policy A-07 Managing Capacity to Ensure Patient Access.

II. General Criteria Transfer

Assumption: RCHSD will triage to keep the most medically unstable pediatric patients within RCHSD inpatient care units. These units include the main campus, Palomar, Scripps La Jolla, Scripps Encinitas and Sharp Grossmont. Additionally transfer criteria will be reviewed by age, keeping the youngest patients who require specialized supplies, equipment and pharmaceuticals within RCHSD inpatient care areas.

Flow Chart



Criteria to Transfer to General Acute Care Facility (GAC)

List is in order of first to transfer

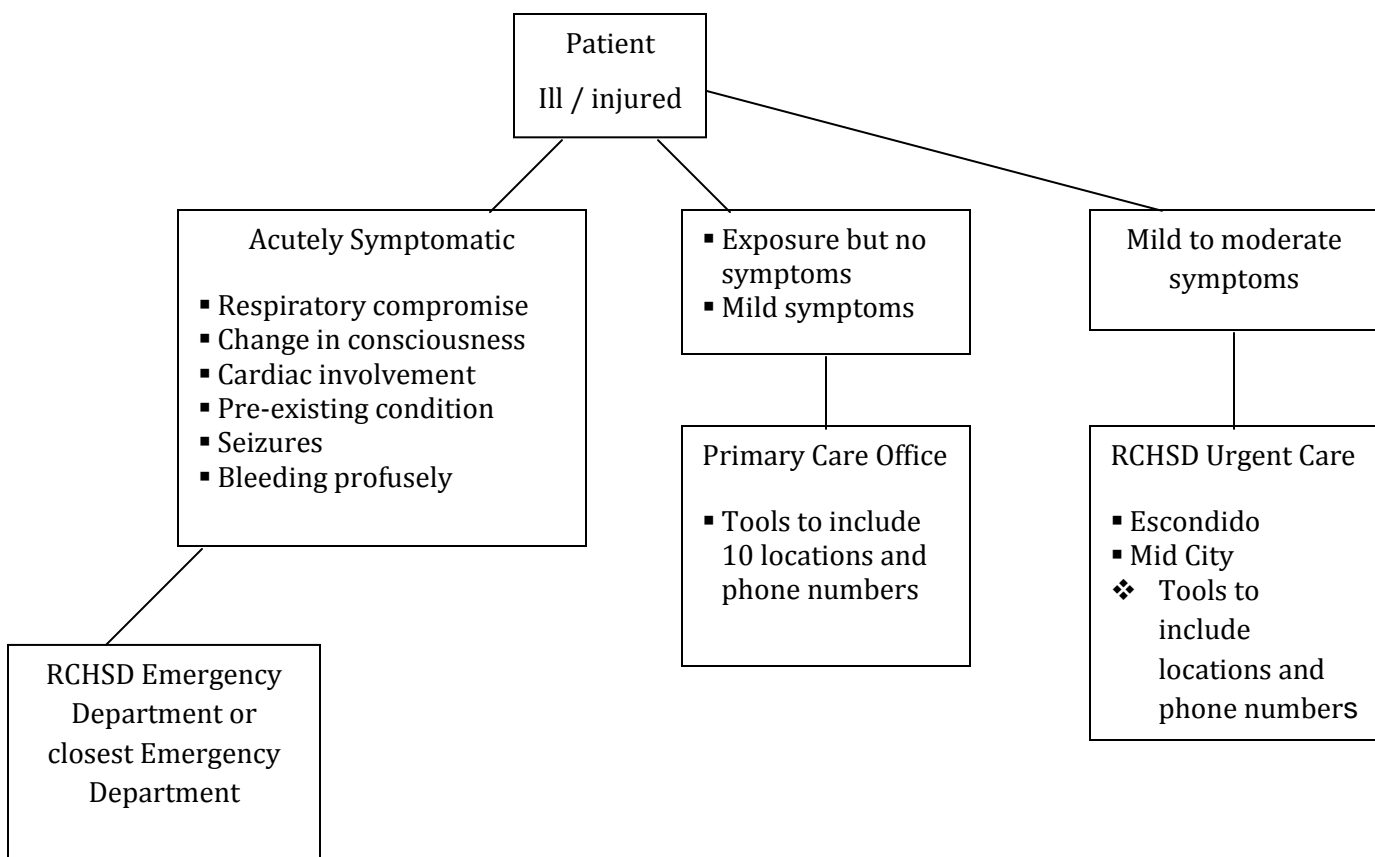
- Patients older than 14 years of age and developmentally age appropriate, medically stable condition, no special equipment needs
- Patients older than 12 years of age, developmentally age appropriate, medically stable condition, no special equipment
- Patients older than 10, then 8 with same criteria
- NICU patients to Sharp Mary Birch or UCSD if beds are available
- Patients with multiple medical issues or chronic medical conditions (cardiac, pulmonary, oncology, endocrine are examples will stay with RCHSD)
- Patients requiring specialized pediatric equipment or procedures or are medically unstable will remain with RCHSD

Surge Planning Across RCHHC

1/2011

Purpose: This document outlines surge planning options across RCHHS inpatient and outpatient locations.

Outpatient Surge: Primary goal in an event that creates a surge in outpatient visits is to triage and direct patients to appropriate locations and reserve the Emergency Department for most acutely ill.



Clinical Space and Staff: As part of the RCHSD Emergency Preparedness Plan Clinic space utilization may change. In the event of a large surge the decision may be to cancel elective clinical and use space and resources for ambulatory surge capacity. For surge planning this includes:

Location	Modified Utilization during Surge
Building 28 Main Campus	Depending on the event this space and the staff are identified as alternate care sites to triage away from the Emergency Department. This area can service as an urgent care or primary physician office. It can be designated a contaminated evaluation site or clean depending on the situation.
7920, 8010 Clinics	These clinics can be utilized as specific surge locations to include urgent care services or primary care services.
Other off site locations	All off site locations and business will be evaluated in the Command Center to be integrated into the surge plan.

❖ **See Communication Plan**

Inpatient Surge: Primary goal is to keep the most acute pediatric patients at the main hospital. The transferring of pediatric patients to other RCHSD locations or adult facilities will be coordinated through the Command Center.

RCHSD Beds within the County:

Location	Bed Capacity	Surge Capacity	Transfer Considerations
RCHSD	ICU - 54 MedSurg - 180 NICU - 49	ICU - 74 MedSurg - 212 NICU - 69 *	Priority is highest risk, highest acuity, youngest, most complex stay at RCHSD
Grossmont Peds	MedSurg - 11	MedSurg - 14	Stable, all ages
Palomar	MedSurg - 17 NICU - 12	MedSurg - 20 NICU - 14	Stable, all ages Level 2
Scripps LaJolla	NICU - 14	NICU - 17	Level 2
Scripps Encinitas	NICU - 6	NICU - 7	Level 2
Adult Facilities: ▪ Sharp ▪ Grossmont ▪ Scripps LJ ▪ Tricity ▪ Mercy ▪ UCSD			Stable Initial > 14 yrs of age then decrease by need (i.e. >12 years, >10 years)

RCHSD Satellites & Use Plan during a Surge Event

Location	Type Unit	
Grossmont Hospital Peds Beds - 11	Pediatrics	Transfer and admit stable - moderately ill pediatric patients
Palomar Ped Beds - 17 / Surge 20 NICU 12 / Surge 14	Pediatrics & NICU Level 2	Transfer and admit stable - moderately ill patients to save acute beds at main campus. Transfer stable NICU patients.
Specialty Clinics	Pediatric Outpatient	Can be used as a site for triage and treatment of ambulatory patients around county.
Scripps La Jolla NICU Beds - 14 / Surge 17	NICU Level 2	Transfer stable patients from Main NICU to accommodate sick neonates.
Scripps Encinitas NICU Beds - 6 / Surge 7	NICU Level 2	Transfer stable patients from main NICU to accommodate sick neonates.
Primary Care Medical Group Offices	Physician Offices	Triage and treat patients to keep RCHSD ED available for sicker patients. May need expanded hours.
RCHSD Urgent Care Sites	Walk-in Pediatric Urgent Cares	Expand hours and staffing to meet patient flow needs. Keep RCHSD ED available for sickest pediatric patient.

Disaster Types: Injuries & Illnesses

Key Disaster Types and Related Injury Conditions

Disaster Types and Pediatric Considerations

The table below highlights the types, symptoms, and treatment of common injuries resulting from the following disasters:

Natural Disasters

- Fire
- Flood
- Hurricane/Tornadoes
- Earthquake
- Infectious Epidemic

Manmade Disasters (SEE Terrorism Tools Section)

Chemical, Biological, Radiological, Nuclear, high-yield explosives (CBRNE) + F

Chemical

- Nerve Agents
- Toxic Industrial Chemicals
- Choking Agents
- Vesicants
- Irritants
- Cyanides

Biological

- Class A Biological Agents
- Class B Biological Agents

Radiological and Nuclear

- Ionizing
- Alpha
- Beta
- Gamma/x-rays
- Neutrons

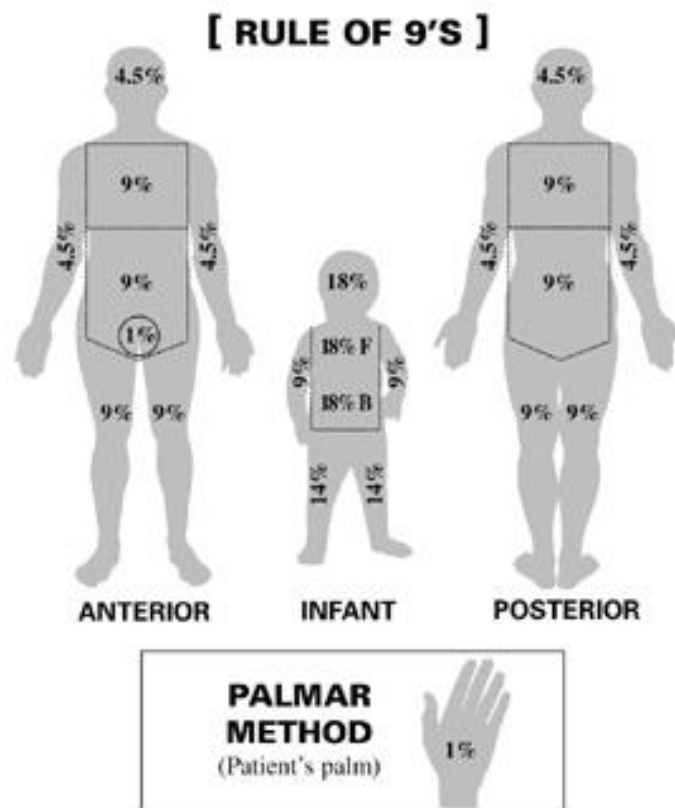
Explosive

- High Order
- Low Order

Firearms

Disasters	Specific Type	Explanation
Natural Disasters	Fire	<p>Burn management</p> <ul style="list-style-type: none"> See wildfire acute pediatric care support from UCSF PEHSU: http://www.ucsf.edu/ucpehsu/Wildfires_Acute_Phase.pdf See Environmental Health Hazards for Children in the Aftermath of Wildfires: http://www.ucsf.edu/ucpehsu/Wildfires_Recovery_Phase.pdf Larger skin to body surface area ratio Smaller airways increase risk of airway compromise with smoke inhalation Different body proportions than adult result in alterations of “rule of 9’s” for fluid resuscitation Post-Traumatic Stress Disorder (PTSD) increased risk in children

Body Surface Percentages



Disasters	Specific Type	Explanation
Natural Disasters	Flood	<ul style="list-style-type: none"> ▪ Drowning risk increased in non-swimmers ▪ Increase in respiratory infections from exposure to elements ▪ Communicable disease <ul style="list-style-type: none"> ❖ GI Infections from waterborne and food-borne illness ❖ Vector borne illness from stagnant water (Mosquitoes) ❖ Wound infections from dirty water ▪ Hypothermia: Children especially at risk ▪ Loss of shelter ▪ Separation from family ▪ Psychological damage: Children at increased risk for PTSD
	Hurricane/ Tornadoes	<ul style="list-style-type: none"> ▪ Risks similar to flood ▪ Additional risks <ul style="list-style-type: none"> ❖ Damage from blunt trauma due to flying debris ❖ Avoid windows during event
	Earthquake	<ul style="list-style-type: none"> ▪ Vulnerable to trauma: Larger head, less circulatory volume reserves ▪ Psychologically more prone to PTSD
	Infectious Epidemic	<ul style="list-style-type: none"> ▪ Children more vulnerable due to immature immune system ▪ Less fluid reserves in cases of infectious vomiting/diarrhea ▪ Children more likely to become infected due to poorer hygiene and more hand-to-mouth contact
Manmade Disasters: CBRNE Chemical	Nerve Agents	<ul style="list-style-type: none"> ▪ Types of agents <ul style="list-style-type: none"> ❖ Sarin (ex. 1995 Japanese subway attack) ❖ VX ❖ Tabun ❖ Soman ▪ Liquid or gas ▪ Routes: inhaled or absorption through skin (some healthcare workers in the Japanese subway Sarin attack were off-gassed by liquid nerve agent from victim's clothing; this shows the important of decontamination of victims with unknown exposures and working in well-ventilated space) ▪ Mechanism <ul style="list-style-type: none"> ❖ Acts of blocking enzyme (Acetylcholine esterase) that breaks down acetylcholine (Ach) at neuromuscular junction. Leads to over-stimulation of nervous system

Disasters	Specific Type	Explanation
	Nerve Agents	<ul style="list-style-type: none"> ▪ Symptoms: <ul style="list-style-type: none"> ❖ Muscarinic receptor effects: “SLUDGEM” symptoms (Salivation, Lacrimation, Urination, Defecation, GI upset, Emesis, Miosis (pupil constriction)) – 90% of receptors are this type ❖ Nicotinic effects: Muscle fasciculation (twitching), seizure, weakness, apnea: 10% of receptors are this type ▪ Treatment: use antidotes if SLUDGEM symptoms present (do not sue antidotes if symptoms are only constricted pupils/mild rhinorrhea) <p>Antidotes</p> <p><u>Antropine</u></p> <ul style="list-style-type: none"> ▪ Atropine works by blocking post-synaptic receptor from Ach. Reverses SLUDGEM symptoms ▪ Pediatric dose: 0.05 mg/kg IV/IM/IO repeat q 5-10 minutes until SLUDGEM symptoms start improving ▪ If out of atropine, <i>alternatives</i> can be used <ul style="list-style-type: none"> ❖ Glycopyrrolate <ul style="list-style-type: none"> ○ Anti-sialagogue ○ Parasympatholytic ○ Does not cross blood-brain barrier, therefore not helpful with CNS effects of agent ❖ Scopolamine <ul style="list-style-type: none"> ○ Causes deep sedation as side effect <p><u>2-PAM (a.k.a. pralidoxime)</u></p> <ul style="list-style-type: none"> ▪ 2-PAM acts by removing nerve agent from Ach-esterase. ▪ “Aging” is time it takes for nerve agent to bind covalently (permanently) with Ach-esterase. Different agents have different aging times that range from seconds to hours. After an agent’s toxic effects ▪ Pediatric dose: 50 mg/kg (2g max/hr) IV or IM ▪ Autoinjectors (Mark I): dose is 2mg atropine, 600 mg 2-PAM (use one kit in kids 3-7 yrs, 2 kits for > 8 yrs) <p>Supportive Treatments</p> <ul style="list-style-type: none"> ▪ Respiratory support <ul style="list-style-type: none"> ❖ Beta agonists (albuterol)

Disasters	Specific Type	Explanation
	Nerve Agents	<ul style="list-style-type: none"> ❖ Oxygen ❖ Ventilatory support: Expect high pressures due to airway resistance (50-70cm H2O) ▪ Seizure Control <ul style="list-style-type: none"> ❖ Benzodiazepines are drug class of choice <ul style="list-style-type: none"> ○ Midazolam 0.15-0.2 mg/kg IM or IV (max 5mg/dose) <ul style="list-style-type: none"> - less apnea if used IM (slower absorption) ○ Diazepam 0.05-0.3 mg/kg /dose PR or IV ○ Lorazepam 0.05-0.2 mg/kg IV or IM
		<p>Pediatric Consideration</p> <ul style="list-style-type: none"> ▪ Small mass means smaller doses are lethal ▪ Higher respiratory rate: Higher dose received ▪ Smaller airways, larger tongue: Increased risk of obstruction from bronchorrhea ▪ Smaller intravascular volume: Increased effects from V/D losses ▪ Immature blood-brain barrier: Increased absorption of agent into CNS ▪ Less mature metabolic systems in place for natural detox of agents (Paraoxonase: Enzyme responsible for breakdown of nerve agents). At birth levels are ½ those of adults
Manmade Disasters: CBRNE	Toxic Industrial Chemicals	<p>Types</p> <ul style="list-style-type: none"> ▪ Chlorine <ul style="list-style-type: none"> ❖ Heavier than air, rapidly disperses ❖ Bleach-like odor ❖ Liquid or gas ❖ Inhaled, ingested or absorbed through skin ❖ Skin burns, coughing, nose/throat irritation, burns eyes, dizziness, congestion, tissue swelling if ingested, lung damage ❖ Symptoms usually appear within minutes of exposure ▪ Hydrogen cyanide <ul style="list-style-type: none"> ❖ Rapidly disperses

Disasters	Specific Type	Explanation
	Toxic Industrial Chemicals	<ul style="list-style-type: none"> ❖ Bitter almond odor ❖ Liquid or gas ❖ Inhaled, ingested or absorbed through skin ❖ Skin burns, coughing, nose/throat irritation, blindness, lung damage
		<p>Pediatric Considerations:</p> <ul style="list-style-type: none"> ▪ Agents heavier than air remain lower to the ground where children tend to be. Accumulation of these agents leads to children being disproportionately affected ▪ Less pulmonary reserve, higher respiratory rate makes children more severely affected ▪ Thinner skin leads to higher absorption of agents
Manmade Disasters: CBRNE	Choking Agents	<p>Types</p> <ul style="list-style-type: none"> ▪ Phosgene <ul style="list-style-type: none"> ❖ Heavier than air, rapidly disperse ❖ Mown hay odor ❖ Solid, liquid or gas ❖ Inhaled ❖ Airway irritation, pulmonary edema, coughing occurs immediately on exposure ▪ Chlorine <ul style="list-style-type: none"> ❖ Heavier than air, rapidly disperse ❖ Bleach odor ❖ Liquid or gas ❖ Inhaled, ingested or absorbed through skin ❖ Skin burns, coughing, nose/throat irritation, burning eyes, dizziness, congestion, tissue swelling if ingested, lung damage ❖ Symptoms usually appear within minutes of exposure <p>Pediatric Consideration</p> <ul style="list-style-type: none"> ▪ Agents heavier than air remain lower to the ground where children tend to be. Accumulation of these agents leads to children being disproportionately affected ▪ Less pulmonary reserve, higher respiratory rate makes children more severely affected

Disasters	Specific Type	Explanation
	Toxic Industrial Chemicals	<ul style="list-style-type: none"> Thinner skin leads to higher absorption of agents
Manmade Disasters: CBRNE Chemical	Vesicants- always Liquid	<p>Types</p> <ul style="list-style-type: none"> Mustard Lewisite Phosgene <p>Mechanism of action</p> <ul style="list-style-type: none"> Burns skin Damages lungs Damages eyes Suppresses bone marrow (3-5 days post exposure) <p>Treatments</p> <ul style="list-style-type: none"> Flush skin/eyes with water Topical antibiotics to skin Mydriatics (dilates eyes) Oxygen Bronchodilators Ventilatory support Antidote for Lewisite: BAL (British Anti-Lewisite)- chelates arsenic component <p>Pediatric Considerations</p> <ul style="list-style-type: none"> Thinner skin Larger body surface area to volume ratio in children vs. adults: Higher dose received
Manmade Disasters: CBRNE Chemical	Irritants	<p>Types</p> <ul style="list-style-type: none"> Tear gas Pepper spray <p>Treatment</p> <ul style="list-style-type: none"> Remove victim from area of exposure Flush eyes Beta agonists to relieve respiratory symptoms <p>Pediatric Considerations</p> <ul style="list-style-type: none"> Higher respiratory rates: Higher dose received

Disasters	Specific Type	Explanation
Manmade Disasters: CBRNE Chemical	Cyanides	<p>Types</p> <ul style="list-style-type: none"> Hydrogen cyanide- a.k.a. "Zyklon B", used in Nazi gas chambers Cyanogen chloride Volatility: rapidly disperse Odor: bitter almonds Mechanism: interrupts electron transport chain in mitochondria, depleting body of energy on a cellular level Symptoms: Gasping for air, frothing, vomiting, loss of consciousness, death (occurs within seconds to minutes of exposure) <p>Treatment</p> <ul style="list-style-type: none"> If breathing: <ul style="list-style-type: none"> ❖ Remove clothing ❖ Move to well-ventilated area ❖ Oxygen ❖ IV Fluids If not breathing <ul style="list-style-type: none"> ❖ Remove clothing ❖ Move to well-ventilated area ❖ Oxygen ❖ Advanced airway (intubated or bag-valve mask ventilation) Antidotes <ul style="list-style-type: none"> ❖ Amyl nitrite pearls: Bag ventilate pearls into patient after crushing into a gauze ❖ Sodium nitrite: 0.2-0.3 mg/kg IV (max 300mg) ❖ Sodium thiosulfate: 1.65 mg/kg U IV
Manmade Disasters: CBRNE Biological	Class A Biological Agents	<ul style="list-style-type: none"> Anthrax <u>Inhalational</u> <ul style="list-style-type: none"> ❖ Most likely form of terrorism ❖ No person-to-person spread from respiratory droplets ❖ Flu-like illness ❖ CXR with wide mediastinum ❖ Treatment: Ciprofloxacin, doxycycline (amoxicillin if susceptible) x 60 days

Disasters	Specific Type	Explanation
	Class A Biological Agents	<ul style="list-style-type: none"> ❖ Vaccine available ❖ Treat exposures with 7-10 days of oral antibiotics while monitoring for symptoms and vaccination ❖ Skin infection ❖ Gastrointestinal ▪ Plague <ul style="list-style-type: none"> <u>Pneumonic</u> <ul style="list-style-type: none"> ❖ Most likely form of intentionally spread disease ❖ Person-to-person spread via droplets possible ❖ Symptoms: Cough, hemoptysis, sepsis, multi-organ failure, disseminated intravascular coagulation (DIC) ❖ Treatment: Streptomycin, gentamicin <u>Septicemic</u> <ul style="list-style-type: none"> ❖ Symptoms: Fevers, low blood pressure and shock <u>Bubonic</u> <ul style="list-style-type: none"> ❖ Symptoms: Fevers and lumps (buboes) of infected lymph nodes ▪ Tularemia <ul style="list-style-type: none"> <u>Pneumonic</u> <ul style="list-style-type: none"> ❖ Symptoms: Fever, myalgias, headache, cough → rapidly progressing respiratory failure ❖ Treatment: Streptomycin ❖ No person-to-person transmission via droplets <u>Septicemic</u> <ul style="list-style-type: none"> ❖ Symptoms: Fever, nausea, vomiting, diarrhea, hepatosplenomegaly, sepsis, multi-organ failure ❖ Treatment: Streptomycin ❖ No person-to-person transmission via droplets <u>Ulceroglandular: most common form of natural disease</u> <ul style="list-style-type: none"> ❖ <u>Septicemic</u> ▪ Smallpox <ul style="list-style-type: none"> ❖ Symptoms: Malaise, fever, vomiting, headache, backache followed by typical rash (centrifugal: face/arms/legs → trunk) ❖ Treatment: None proven, anti-virals, immunoglobulin experimental

Disasters	Specific Type	Explanation
Manmade Disasters: CBRNE	Class A Biological Agents	<ul style="list-style-type: none"> ❖ Prevention of spread: “Ring” vaccination recommended ▪ Hemorrhagic fever <ul style="list-style-type: none"> ❖ Symptoms: Fever, rash, hypotension, bleeding ❖ Treatment: Supportive, experimental: ribavirin (anti-viral) ❖ Very infectious: Double glove, gown mask ▪ Botulism <ul style="list-style-type: none"> ❖ Mechanism: Toxin inhibits release of acetylcholine from presynaptic terminal ❖ Types: Infant botulism: baby ingest pre-formed toxin ❖ Food borne: Spore present in poorly canned foods ingested ❖ Wound: Spores/toxin directly invade open wound ❖ Airborne: Not naturally occurring; would be presumed to be terrorism if occurred. Easily deactivated by water, process plants, and heat ❖ Symptoms: Descending weakness ❖ Treatment: Botulinum anti-toxin ❖ Supportive Care: Ventilation
	Class B Biological Agents	<p>Less easily spread, lower morbidity/mortality</p> <ul style="list-style-type: none"> ▪ Brucellosis ▪ Viral encephalitides ▪ Ricin ▪ Staph enterotoxin B ▪ Food/water borne pathogens
Manmade Disasters: CBRNE	Types of Radiation	<ul style="list-style-type: none"> ▪ Ionizing <ul style="list-style-type: none"> ❖ High frequency radiation ❖ Does damage to biological tissues (DNA mutation) ▪ Alpha <ul style="list-style-type: none"> ❖ 2 protons, 1 neutron, usually naturally occurring ❖ Penetrates only depth of piece of paper, so external exposure not harmful ❖ Damages if ingested or inhaled (polonium on Russian journalist in 2007)
Radiation/ Nuclear		

Disasters	Specific Type	Explanation
Manmade Disasters: CBRNE Radiation/ Nuclear	Types of Radiation	<ul style="list-style-type: none"> ▪ Beta <ul style="list-style-type: none"> ❖ Comes from radionuclides used in medicine, or byproduct of nuclear reactor ▪ Gamma/x-rays <ul style="list-style-type: none"> ❖ Emitted from radioactive particles ❖ Penetrates deeply through body tissues ▪ Neutrons <ul style="list-style-type: none"> ❖ Powerful, rare ❖ Emitted after nuclear detonation
	Sources of Radiation	<ul style="list-style-type: none"> ▪ Intentional <ul style="list-style-type: none"> ❖ “Dirty bomb”: radioactive dispersal device ❖ Damage of nuclear facility releasing nuclear waste into environment ❖ Detonation of nuclear weapon ▪ Unintentional <ul style="list-style-type: none"> ❖ Power plan disaster (Chernobyl, Three-Mile Island)
	Mechanisms of Action	<ul style="list-style-type: none"> ▪ External <ul style="list-style-type: none"> ❖ Exposure ❖ Contamination ▪ Internal <ul style="list-style-type: none"> ❖ Ingestion ❖ Inhalation
	Effects of radiation	<ul style="list-style-type: none"> ▪ Short term (days → weeks post exposure) <ul style="list-style-type: none"> ❖ Nausea/vomiting/diarrhea ❖ Bone marrow suppression ❖ Burning of skin ▪ Long term (weeks → months/years post exposure) <ul style="list-style-type: none"> ❖ Cancer risk ❖ Psychological injury
	Treatments/ Management	<ul style="list-style-type: none"> ▪ Issue protective clothing and dosimeters to staff ▪ Control ventilation ▪ Minimize time of exposure: evacuate early ▪ Maximize shielding ▪ Maximize distance from epicenter of release of radioactive material ▪ Decontamination those exposed <ul style="list-style-type: none"> ❖ Strip naked

Disasters	Specific Type	Explanation
		<ul style="list-style-type: none"> ❖ Soap/water ❖ Debride if radioactive material embedded in skin ❖ Perform surgery, in needed, within 48 hrs of exposure before bone marrow suppression ensues and impairs immunity and healing ability ▪ Potassium iodide (KI) <ul style="list-style-type: none"> ❖ Use in exposure to radioiodines (common with nuclear reactor incidents) ❖ Use ASAP after exposure or expected exposure ❖ Floods thyroid with non-radioactive iodine protecting from thyroid cancer ❖ Protection lasts 24 hrs, so repeated dosing may be needed if ongoing exposure is occurs

Potassium Iodide Dosing

Please pay attention to the number of teaspoonfuls recommended when using a potassium iodide 65 mg tablet as it is different from the number of teaspoonfuls given when using a potassium iodide 130 mg tablet.

Tablet: Recommended doses of KI for children and infants with predicted thyroid radioactivity exposures equal to or greater than 5 cGy, using 65 mg tablet preparations.

If your child is:	Give child this amount of potassium iodide (KI) *	Which is
Between 4 and 12 years old	8 teaspoonfuls (NOT tablespoonfuls)	65 mg of potassium iodide (KI)
Over 1 month through 3 years	4 teaspoonfuls (NOT tablespoonfuls)	32.5 mg of potassium iodide (KI)
An infant from birth through 1 month	2 teaspoonfuls (NOT tablespoonfuls)	16.25 mg of potassium iodide (KI)

Source: FDA, Guidance: Potassium Iodide as a Thyroid Blocking in Radiation Emergencies, December 2001.

Pediatric Considerations

- Higher breathing rates: Higher dose inhaled
- Fallout settles to ground where children are: Higher

Disasters	Specific Type	Explanation
		<p>exposure</p> <ul style="list-style-type: none"> ❖ Radioactive iodine collects in human and cow milk, which children are exposed to in proportionally higher amounts due to diet ❖ Greater number of dividing cells as they grow makes for increased risk of mutation of DNA ❖ Mental health vulnerability increased compared with adults ❖ Decontamination of children is challenging
Manmade Disasters: CBRNE	Explosives	<ul style="list-style-type: none"> ▪ Locations <ul style="list-style-type: none"> ❖ Mortality: Structural collapse > confined space > outdoor ▪ High order <ul style="list-style-type: none"> ❖ Explosion faster than speed of sound ❖ Creates pressure wave that damages organs ▪ Low order <ul style="list-style-type: none"> ❖ Explosion slower than sound ❖ Damage of tissues by burning <p>** Explosives can be attached to other types of weapons (bio, nuclear, chemical)</p>
	High Order Injuries	<p><u>Primary</u> – Damage caused by pressure wave (detonation)</p> <ul style="list-style-type: none"> ▪ Affects air-fluid interfacing organs most commonly <p>Ears</p> <ul style="list-style-type: none"> ▪ Tympanic membranes (TM's) rupture at relatively low pressure ▪ If TM's intact, less likely to have other severe primary blast injury ▪ Symptoms <ul style="list-style-type: none"> ○ Hearing loss ○ Tinnitus <p>Lungs</p> <ul style="list-style-type: none"> ▪ Most common cause of mortality in high order explosions ▪ Hemo/pneumothorax ▪ Pulmonary contusion ▪ Systematic air embolism ▪ Pneumomediastinum ▪ Symptoms

Disasters	Specific Type	Explanation
Manmade Disasters:	High Order Injuries	<ul style="list-style-type: none"> ○ Respiratory distress ○ Cough ○ Hemoptysis ○ Hypoxemia
CBRNE		
Explosive		<p>Intestines</p> <ul style="list-style-type: none"> ▪ Perforated viscus can present delayed with abdominal pain <p>Brain</p> <ul style="list-style-type: none"> ▪ Can present with headache, alteration of mental status or appear like behavioral problem ▪ Usually occurs when patient was in close proximity to epicenter of blast <p>Eye</p> <ul style="list-style-type: none"> ▪ Presents with changes in vision, eye pain, blurry vision <p><u>Secondary</u> – Damage caused by shrapnel striking body</p> <ul style="list-style-type: none"> ▪ Penetrating Injury > blunt injury <ul style="list-style-type: none"> ○ Lacerations (check front/back of patient) ○ Extremity amputation: Poor prognosis ○ Eye injury: 15 percent <p><u>Tertiary</u> – Damage caused by victim's body striking object</p> <ul style="list-style-type: none"> ▪ Blunt injury > penetrating injury <ul style="list-style-type: none"> ○ Fractures ○ Contusions <p><u>Quaternary</u>: Any other injury from explosive</p> <ul style="list-style-type: none"> ▪ Burns <ul style="list-style-type: none"> ○ Assess percentage burn surface area (BSA) burned with second/third degree burns ○ Rule of Nines ○ Pediatric victim's palm: One percent BS ▪ Smoke Inhalation <ul style="list-style-type: none"> ○ Look for signs of upper airway burn (singled nasal hair, soot around perioral area) ▪ Building collapse <ul style="list-style-type: none"> ○ Very high mortality ▪ Crush injury <ul style="list-style-type: none"> ○ Risk of acute renal failure (ARF) ○ Risk of electrolyte abnormalities from ARF

Disasters	Specific Type	Explanation
Manmade Disasters: CBRNE Explosive	High Order Injuries	<ul style="list-style-type: none"> ▪ Compartment syndrome <ul style="list-style-type: none"> ○ Assess compartments in extremity crush injury, if bleeding into compartments ○ Pressure >30 mm Hg: Likely need for fasciotomy <p><i>A note on Compartment Syndrome</i> Pressure assessment may not be possible. Other options for assessing compartment syndrome include:</p> <ol style="list-style-type: none"> 1. Pain in extremity disproportionate to injury with acute or passive movement of hand or foot 2. Loss of distal pulses 3. Pallor 4. Paresthesia of limb <ul style="list-style-type: none"> ▪ Exacerbation of existing medical condition
	Low Order Injuries	Caused by burning of layers of tissue (deflagration) <ul style="list-style-type: none"> ▪ Burns ▪ Smoke inhalation ▪ Penetrating trauma ▪ Blunt trauma
	Treatment of Injuries	<u>Primary</u> Ears <ul style="list-style-type: none"> ▪ Tympanic membranes (TM's) rupture: no specific treatment Lungs <p>* Any pulmonary injury may require advanced airway or mechanical ventilation if severe enough</p> <ul style="list-style-type: none"> ▪ Hemo/pneumothorax: Chest tube, oxygen ▪ Pulmonary contusion: Oxygen, +/- chest tube ▪ Systemic air embolism ▪ Pneumomediastinum: Oxygen Intestines <ul style="list-style-type: none"> ▪ Perforated viscous: antibiotics, surgical repair perforated intestine Brain <ul style="list-style-type: none"> ▪ Monitor intracranial pressure ▪ Elevate head of bed ▪ Maintain normal pCO₂ ▪ Neurosurgical release of intracranial bleed if needed/possible

Disasters	Specific Type	Explanation
		<p>Eye</p> <ul style="list-style-type: none"> ▪ Globe rupture: Antibiotics, ophtho consultation ▪ Hyphema: Ophtho consultation ▪ Retinal detachment: Ophtho consultation <p><u>Secondary:</u> Penetrating injury > blunt injury</p> <ul style="list-style-type: none"> ▪ Pneumo/hemothorax: Chest tube, Oxygen ▪ Treat lacerations as dirty wounds <ul style="list-style-type: none"> ○ Control bleeding ○ Tetanus ○ Delayed closure if possible ○ Consider retained foreign body before closure ▪ Extremity amputation: Control bleeding, antibiotics, orthopedic consultation <p><u>Tertiary:</u> Damage caused by victim's body striking object</p> <ul style="list-style-type: none"> ▪ Blunt > penetrating injury <ul style="list-style-type: none"> ○ Fractures: Stabilize by splinting unless neurovascular compromise ○ Contusions – r/o internal bleeding ○ Internal organ/viscous damage <p><u>Quaternary:</u> Any other injury from explosive</p> <ul style="list-style-type: none"> ▪ Burns <ul style="list-style-type: none"> ○ Stop burning process ○ Evaluate for circumferential burns which could impede blood flow to an area ○ Topical antibiotics with non-stick dressing ○ Fluid resuscitation ○ Parkland formula based on estimated BSA burned <ul style="list-style-type: none"> - # of ml = 4 x % of body surface area burned x weight (kg) <ul style="list-style-type: none"> ➤ Half of the volume administered over the first 8 hours ➤ Remaining half of volume administered over the following 16 hours ○ Intubate early if signs of upper airway obstruction are present ○ Administer pain medication

Disasters	Specific Type	Explanation
Manmade Disasters: CBRNE Explosive	Treatment of Injuries	<ul style="list-style-type: none"> ▪ Smoke inhalation <ul style="list-style-type: none"> ○ Oxygen ○ Beta agonist trial ○ Check CO level ○ Maintain airway if signs of airway burn (singled nose hair, soot periorally, carbonaceous sputum, hoarseness, noisy breathing) ▪ Building collapse ▪ Crush injury <ul style="list-style-type: none"> ○ IV hydrate ○ Watch for hyperkalemia from intracellular release ○ Mannitol or Lasix once UOP established ○ Assess kidney function/need for dialysis ▪ Exacerbation of existing medical condition (ex. Asthma attack triggered by smoke) ▪ Compartment Syndrome <ul style="list-style-type: none"> ○ Assess compartments in extremity crush injury, if bleeding into compartments ○ Pressure > 30 mm Hg: Likely need for fasciotomy <p><u><i>A note on Compartment Syndrome</i></u></p> <p>Pressure assessment may not be possible. Other options for assessing compartment syndrome include:</p> <ol style="list-style-type: none"> 1. Pain in extremity disproportionate to injury with acute or passive movement of hand or foot 2. Loss of distal pulses 3. Pallor 4. Paresthesia of limb
	Pediatric Vulnerabilities	<ul style="list-style-type: none"> ▪ Less circulating volume: Increased risk of exsanguinations ▪ Less protection of internal organs b/c less protection from ribs ▪ Larger head: More likely head trauma ▪ Psychological

BLAST INJURY/TRAUMA

<http://www.bt.cdc.gov/masscasualties/explosions.asp>

<http://www.bt.cdc.gov/masscasualties/blastessentials.asp>

Key points:

The surge created by an explosion (industrial, accidental, IED, VBIED, etc) can be rapid and devastating. In addition to preparing for a very rapid surge of patients, the following *incident specific* considerations are vital:

- **Be cautious of unexploded ordinance (UXO) in/on patients**
- As with any other possible/confirmed terrorism event, scene safety is paramount
- In addition to injury/trauma, patient may have partial to complete hearing loss & not readily follow commands

Blast Injuries: Essential Facts

Key Concepts

- Bombs and explosions can cause unique patterns of injury seldom seen outside combat
- Expect half of all initial casualties to seek medical care over a one-hour period
- Most severely injured arrive after the less injured, who bypass EMS triage and go directly to the closest hospitals
- Predominant injuries involve multiple penetrating injuries and blunt trauma
- Explosions in confined spaces (buildings, large vehicles, mines) and/or structural collapse are associated with greater morbidity and mortality
- Primary blast injuries in survivors are predominantly seen in confined space explosions
- Repeatedly examine and assess patients exposed to a blast
- All bomb events have the potential for chemical and/or radiological contamination

- Triage and lifesaving procedures should never be delayed because of the possibility of radioactive contamination of the victim; the risk of exposure to caregivers is small
- Universal precautions effectively protect against radiological secondary contamination of first responders and first receivers
- For those with injuries resulting in no intact skin or mucous membrane exposure, hepatitis B immunization (within 7 days) and age-appropriate tetanus toxoid vaccine (if not current)

Blast Injuries

- Primary: Injury from over-pressurization force (blast wave) impacting the body surface
 - TM rupture, pulmonary damage and air embolization, hollow viscous injury
- Secondary: Injury from projectiles (bomb fragments, flying debris)
 - Penetrating trauma, fragmentation injuries, blunt trauma
- Tertiary: Injuries from displacement of victim by the blast wind
 - Blunt/penetrating trauma, fractures and traumatic amputations
- Quaternary: All other injuries from the blast
 - Crush injuries, burns, asphyxia, toxic exposures, exacerbations of chronic illness

Primary Blast Injury

- **Lung Injury**
 - Signs usually present at time of initial evaluation, but may be delayed up to 48 hrs
 - Reported to be more common in patients with skull fractures, >10% BSA burns, and penetrating injury to the head or torso
 - Varies from scattered petechiae to confluent hemorrhages
 - Suspect in anyone with dyspnea, cough, hemoptysis, or chest pain following blast
 - CXR: “butterfly” pattern
 - High flow O₂ sufficient to prevent hypoxemia via NRB mask, CPAP, or ET tube
 - Fluid management similar to pulmonary contusion; ensure tissue perfusion but avoid volume overload
 - Endotracheal intubation for massive hemoptysis, impending airway compromise or respiratory failure
 - Consider selective bronchial intubation for significant air leaks or massive hemoptysis
 - Positive pressure may risk alveolar rupture or air embolism
 - Prompt decompression for clinical evidence of pneumothorax or hemothorax
 - Consider prophylactic chest tube before general anesthesia or air transport
 - Air embolism can present as stroke, MI, acute abdomen, blindness, deafness, spinal cord injury, claudication

- High flow O₂; prone, semi-left lateral, or left lateral position
- Consider transfer for hyperbaric O₂ therapy
- **Abdominal Injury**
 - Gas-filled structures most vulnerable (esp. colon)
 - Bowel perforation, hemorrhage (small petechiae to large hematomas), mesenteric shear injuries, solid organ lacerations, and testicular rupture
 - Suspect in anyone with abdominal pain, nausea, vomiting, hematemesis, rectal pain, tenesmus, testicular pain, unexplained hypovolemia
 - Clinical signs can be initially subtle until acute abdomen or sepsis is advanced
- **Ear Injury**
 - Tympanic membrane most common primary blast injury
 - Signs of ear injury usually evident on presentation (hearing loss, tinnitus, otalgia, vertigo, bleeding from external canal, otorrhea)

Other Injury

- Traumatic amputation of any limb is a marker for multi-system injuries
- Concussions are common and easily overlooked
- Consider delayed primary closure for grossly contaminated wounds, and assess tetanus immunization status
- Compartment syndrome, rhabdomyolysis, and acute renal failure are associated with structural collapse, prolonged extrication, severe burns, and some poisonings
- Consider possibility of exposure to inhaled toxins (CO, CN, MetHgb) in both industrial and terrorist explosions
- Significant percentage of survivors will have serious eye injuries

Disposition

- No definitive guidelines for observation, admission, or discharge
- Discharge decisions will also depend upon associated injuries
- Admit 2nd and 3rd trimester pregnancies for monitoring
- Close follow-up of wounds, head injury, eye, ear, and stress-related complaints
- Patients with ear injury may have tinnitus or deafness; communications and instructions may need to be written

This fact sheet is part of a series of materials developed by the Centers for Disease Control and Prevention (CDC) on blast injuries. For more information, visit CDC on the Web at: emergency.cdc.gov/BlastInjuries

Pediatric Triage Tools



Guidelines for Care of Children in the Emergency Department

This checklist is based on the American Academy of Pediatrics, the American College of Emergency Physicians, and the Emergency Nurses Association 2009 joint policy statement "Guidelines for Care of Children in the Emergency Department," which can be found online at <http://aappolicy.aapublications.org/cgi/reprint/pediatrics;124/4/1233.pdf>. Use the checklist to determine if your emergency department (ED) is prepared to care for children.

Appointed Pediatric Physician and Nurse Coordinator

- ☐ Pediatric physician coordinator is a specialist in pediatrics, emergency medicine, or family medicine, appointed by the ED medical director, who through training, clinical experience, or focused continuing medical education demonstrates competence in the care of children in emergency settings including resuscitation. See policy statement for details.
- ☐ Pediatric Nurse coordinator is a registered nurse (RN), appointed by the ED nursing director, who possesses special interest, knowledge, and skill in the emergency medical care of children. See policy statement for details.

Physicians, Nurses and Other Healthcare Providers Who Staff the ED

- ☐ Physicians who staff the ED have the necessary skill, knowledge, and training in the emergency evaluation and treatment of children of all ages who may be brought to the ED, consistent with the services provided by the hospital.
- ☐ Nurses and other ED health care providers have the necessary skill, knowledge, and training in providing emergency care to children of all ages who may be brought to the ED, consistent with the services offered by the hospital.
- ☐ Baseline and periodic competency evaluations completed for all ED clinical staff, including physicians, are age specific and include evaluation of skills related to neonates, infants, children, adolescents, and children with special health care needs. Competencies are determined by each institution's medical staff privileges policy.

Guidelines for QI/PI in the ED

The pediatric patient care-review process is integrated into the ED QI/PI plan.

- ☐ Components of the process interface with out-of-hospital, ED, trauma, inpatient pediatric, pediatric critical care, and hospital-wide QI or PI activities.

Guidelines for QI/PI in the ED, Continued

Clinical and Professional Competency

Below are the potential areas for the development of pediatric competency and professional evaluations.

- ☐ Triage
- ☐ Illness and injury assessment and management
- ☐ Pain assessment and treatment, including sedation and analgesia
- ☐ Airway management
- ☐ Vascular access
- ☐ Critical care monitoring
- ☐ Neonatal and pediatric resuscitation
- ☐ Trauma care
- ☐ Burn care
- ☐ Mass-casualty events
- ☐ Patient- and family-centered care
- ☐ Medication delivery and equipment safety
- ☐ Training and communication
- ☐ Mechanisms are in place to monitor professional performance, credentials, continuing education, and clinical competencies.

Guidelines for Improving Pediatric Patient Safety

The delivery of pediatric care should reflect an awareness of unique pediatric patient safety concerns and are included in the following policies or practices.

- ☐ Children are weighed in kilograms.
- ☐ Weights are recorded in a prominent place on the medical record.
- ☐ For children who are not weighed, a standard method for estimating weight in kilograms is used (e.g., a length-based system).
- ☐ Infants and children have a full set vital signs recorded (temperature, heart rate, respiratory rate) in the medical record.
- ☐ Blood pressure and pulse oximetry monitoring are available for children of all ages on the basis of illness and injury severity.

Produced by the AAP, the EMSC National Resource Center, and Children's National Medical Center

- A process for identifying age-specific abnormal vital signs and notifying the physician of these is present.
- Processes in place for safe medication storage, prescribing, and delivery that includes precalculated dosing guidelines for children of all ages.
- Infection-control practices, including hand hygiene and use of personal protective equipment, are implemented and monitored.
- Pediatric emergency services are culturally and linguistically appropriate
- ED environment is safe for children and supports patient- and family-centered care.
- Patient-identification policies meet Joint Commission standards
- Policies for the timely reporting and evaluation of patient safety events, medical errors, and unanticipated outcomes are implemented and monitored.

Guidelines for ED Policies, Procedures, and Protocol

Policies, procedures, and protocols for the emergency care of children should be developed and implemented in the areas listed below. These policies may be integrated into overall ED policies as long as pediatric specific issues are addressed.

- Illness and injury triage
- Pediatric patient assessment and reassessment
- Documentation of pediatric vital signs and actions to be taken for abnormal vital signs
- Immunization assessment and management of the under-immunized patient
- Sedation and analgesia for procedures, including medical imaging
- Consent including when parent or legal guardian is not immediately available
- Social and mental health issues
- Physical or chemical restraint of patients
- Child maltreatment and domestic violence reporting criteria, requirements, and processes.
- Death of the child in the ED
- Do not resuscitate (DNR) orders
- Families are involved in patient decision-making and medication safety processes
- Family presence during all aspects of emergency care
- Patient, family, and caregiver education
- Discharge planning and instruction
- Bereavement counseling
- Communication with the patient's medical home or primary care provider
- Medical imaging policies that address pediatric age- or weight-based appropriate dosing for studies that impart radiation consistent with ALARA (as low as reasonably achievable) principles.
- All-hazard disaster-preparedness plan that addresses the following pediatric issues:

- Availability of medications, vaccines, equipment, and trained providers for children
- Pediatric surge capacity for injured and non-injured children
- Decontamination, isolation, and quarantine of families and children
- Minimization of parent-child separation (includes pediatric patient tracking, and timely reunification of separated children with their family)
- Access to specific medical and mental health therapies, and social services for children
- Disaster drills which includes a pediatric mass casualty incident at least every 2 years
- Care of children with special health care needs
- Evacuation of pediatric units and pediatric subspecialty units.

- Interfacility transfer policy defining the roles and responsibilities of the referring facility and referral center.
- Transport plan for delivering children safely and in a timely manner to the appropriate facility that is capable of providing definitive care.
- Process for selecting the appropriate care facility for pediatric specialty services not available at the hospital (may include critical care, reimplantation of digits or limbs, trauma and burn care, psychiatric emergencies, obstetric and perinatal emergencies, child maltreatment, rehab for recovery from critical conditions).
- Process for selecting an appropriately staffed transport service to match the patient's needs
- Process for patient transfer (including obtaining informed consent)
- Plan for transfer of patient information (medical record, copy of signed transport consent), personal belongings, directions and referral institution information to family
- Process for return transfer of the pediatric patient to the referring facility as appropriate.

Guidelines for ED Support Services

- Radiology capability must meet the needs of the children in the community served
- A process for referring children to appropriate facilities for radiological procedures that exceed the capability of the hospital is established.
- A process for timely review, interpretation, and reporting of medical imaging by a qualified radiologist is established.
- Laboratory capability must meet the needs of the children in the community served, including techniques for small sample sizes
- A process for referring children or their specimens to appropriate facilities for laboratory studies that exceed the capability of the hospital is established

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Guidelines for Equipment, Supplies, and Medications for the Care of Pediatric Patients in the ED

- ☐ Pediatric equipment, supplies, and medications are appropriate for children of all ages and sizes, easily accessible, clearly labeled, and logically organized. See list below for the medication, equipment, and supplies.
- ☐ ED staff is educated on the location of all items.
- ☐ Daily method in place to verify the proper location and function of equipment and supplies.
- ☐ Medication chart, length-based tape, medical software, or other systems is readily available to ensure proper sizing of resuscitation equipment and proper dosing of medications.

Medications

- | | |
|--|---|
| <input type="radio"/> Atropine | <input type="radio"/> Topical, oral, and parenteral analgesics |
| <input type="radio"/> Adenosine | <input type="radio"/> Antimicrobial agents (parenteral and oral) |
| <input type="radio"/> Amiodarone | <input type="radio"/> Anticonvulsant medications |
| <input type="radio"/> Antiemetic agents | <input type="radio"/> Antidotes (common antidotes should be accessible to the ED) |
| <input type="radio"/> Calcium chloride | <input type="radio"/> Antipyretic drugs |
| <input type="radio"/> Dextrose (D10W, D50W) | <input type="radio"/> Bronchodilators |
| <input type="radio"/> Epinephrine (1:1000; 1:10 000 solutions) | <input type="radio"/> Corticosteroids |
| <input type="radio"/> Lidocaine | <input type="radio"/> Inotropic agents |
| <input type="radio"/> Magnesium sulfate | <input type="radio"/> Neuromuscular blockers |
| <input type="radio"/> Naloxone hydrochloride | <input type="radio"/> Sedatives |
| <input type="radio"/> Procainamide | <input type="radio"/> Vaccines |
| <input type="radio"/> Sodium bicarbonate (4.2%, 8.4%) | <input type="radio"/> Vasopressor agents |
| <input type="radio"/> Activated charcoal | |

Equipment/Supplies: General Equipment

- | | |
|--|--|
| <input type="radio"/> Patient warming device | <input type="radio"/> Tool or chart that incorporates weight (in kilograms) and length to determine equipment size and correct drug dosing |
| <input type="radio"/> Intravenous blood/fluid warmer | |
| <input type="radio"/> Restraint device | <input type="radio"/> Age appropriate pain scale-assessment tools |
| <input type="radio"/> Weight scale in kilograms (not pounds) | |

Equipment/Supplies: Monitoring Equipment

- | | |
|---|--|
| <input type="radio"/> Blood pressure cuffs | <input type="radio"/> Electrocardiography monitor/defibrillator with pediatric and adult capabilities including pads/paddles |
| <input type="radio"/> Neonatal | <input type="radio"/> Hypothermia thermometer |
| <input type="radio"/> Infant | <input type="radio"/> Pulse oximeter with pediatric and adult probes |
| <input type="radio"/> Child | <input type="radio"/> Continuous end-tidal CO2 monitoring device |
| <input type="radio"/> Adult-arm | |
| <input type="radio"/> Adult-thigh | |
| <input type="radio"/> Doppler ultrasonography devices | |

Equipment/Supplies: Vascular Access Supplies

- | | |
|---|---|
| <input type="radio"/> Arm boards | <input type="radio"/> IV administration sets with calibrated chambers and extension tubing and/or infusion devices with ability to regulate rate and volume of infusate |
| <input type="radio"/> infant | |
| <input type="radio"/> child | |
| <input type="radio"/> adult | |
| <input type="radio"/> Catheter-over-the-needle device | <input type="radio"/> Umbilical vein catheters |
| <input type="radio"/> 14 gauge | <input type="radio"/> 3.5F |
| <input type="radio"/> 15 gauge | <input type="radio"/> 5.0F |
| <input type="radio"/> 16 gauge | |
| <input type="radio"/> 17 gauge | <input type="radio"/> Central venous catheters |
| <input type="radio"/> 18 gauge | <input type="radio"/> 4.0F |
| <input type="radio"/> 19 gauge | <input type="radio"/> 5.0F |
| <input type="radio"/> 20 gauge | <input type="radio"/> 6.0F |
| <input type="radio"/> 21 gauge | <input type="radio"/> 7.0F |
| <input type="radio"/> 22 gauge | |
| <input type="radio"/> 23 gauge | <input type="radio"/> Intravenous solutions |
| <input type="radio"/> 24 gauge | <input type="radio"/> Normal saline |
| <input type="radio"/> Intraosseous needles or device | <input type="radio"/> Dextrose 5% in normal saline |
| <input type="radio"/> Pediatric | <input type="radio"/> Dextrose 10% in water |
| <input type="radio"/> Adult | |

Equipment/Supplies: Fracture-Management Devices

- ☐ Extremity splints
 - ☐ Femur splints, pediatric sizes
 - ☐ Femur splints, adult sizes
- ☐ Spine-stabilization devices appropriate for children of all ages

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Equipment/Supplies: Respiratory		Equipment/Supplies: Respiratory, Continued	
Endotracheal tubes <input type="radio"/> uncuffed 2.5 mm <input type="radio"/> uncuffed 3.0 mm <input type="radio"/> cuffed or uncuffed 3.5 mm <input type="radio"/> cuffed or uncuffed 4.0 mm <input type="radio"/> cuffed or uncuffed 4.5 mm <input type="radio"/> cuffed or uncuffed 5.0 mm <input type="radio"/> cuffed or uncuffed 5.5 mm <input type="radio"/> cuffed 6.0 mm <input type="radio"/> cuffed 6.5 mm <input type="radio"/> cuffed 7.0 mm <input type="radio"/> cuffed 7.5 mm <input type="radio"/> cuffed 8.0 mm	Oropharyngeal airways <input type="radio"/> size 0 <input type="radio"/> size 1 <input type="radio"/> size 2 <input type="radio"/> size 3 <input type="radio"/> size 4 <input type="radio"/> size 5	<input type="radio"/> infant <input type="radio"/> child <input type="radio"/> adult	Nasogastric tubes: <input type="radio"/> infant, 8F <input type="radio"/> child, 10F <input type="radio"/> adult, 14-18F
Feeding tubes <input type="radio"/> 5F <input type="radio"/> 8F	Stylets for endotracheal tubes <input type="radio"/> pediatric <input type="radio"/> adult	Clear oxygen masks <input type="radio"/> standard infant <input type="radio"/> standard child <input type="radio"/> standard adult <input type="radio"/> partial nonrebreather infant <input type="radio"/> nonrebreather child <input type="radio"/> nonrebreather adult	Laryngeal mask airway <input type="radio"/> size: 1 <input type="radio"/> size: 1.5 <input type="radio"/> size: 2 <input type="radio"/> size: 2.5 <input type="radio"/> size: 3 <input type="radio"/> size: 4 <input type="radio"/> size: 5
Laryngoscope blades <input type="radio"/> straight: 0 <input type="radio"/> straight: 1 <input type="radio"/> straight: 2 <input type="radio"/> straight: 3 <input type="radio"/> curved: 2 <input type="radio"/> curved: 3 <input type="radio"/> Laryngoscope handle	Suction catheters <input type="radio"/> infant <input type="radio"/> child <input type="radio"/> adult	Nasal cannulas <input type="radio"/> infant <input type="radio"/> child <input type="radio"/> adult	
Magill forceps <input type="radio"/> pediatric <input type="radio"/> adult	Tracheostomy tubes <input type="radio"/> 2.5 mm <input type="radio"/> 3.0 mm <input type="radio"/> 3.5 mm <input type="radio"/> 4.0 mm <input type="radio"/> 4.5 mm <input type="radio"/> 5.0 mm <input type="radio"/> 5.5 mm <input type="radio"/> Yankauer suction tip	Equipment/Supplies: Specialized Pediatric Trays or Kits <input type="radio"/> Lumbar-puncture tray (including infant 22 gauge, pediatric -22 gauge, and adult 18-21 gauge), lumbar puncture needles <input type="radio"/> Supplies/kit for patients with difficult airway (supraglottic airways of all sizes, laryngeal mask airway, needle cricothyrotomy supplies, surgical cricothyrotomy kit) <input type="radio"/> Tube thoracostomy tray	
Nasopharyngeal airways <input type="radio"/> infant <input type="radio"/> child <input type="radio"/> adult	Bag-mask device, self inflating <input type="radio"/> infant: 450 ml <input type="radio"/> adult: 1000 ml Masks to fit bag-mask device adaptor <input type="radio"/> neonatal	Chest tubes to include: <input type="radio"/> infant: 10-12F <input type="radio"/> child: 16-24 F <input type="radio"/> adult: 28-40 F <input type="radio"/> Newborn delivery kit, including equipment for resuscitation of an infant (umbilical clamp, scissors, bulb syringe, and towel) <input type="radio"/> Urinary catheterization kits and urinary (indwelling) catheters (6F-22F)	

PEDIATRIC ASSESSMENT

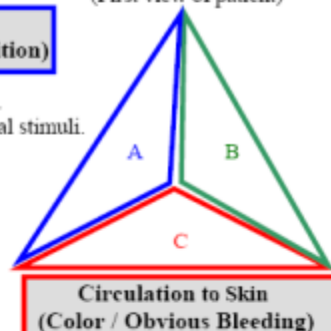


Airway & Appearance (Open/Clear – Muscle Tone /Body Position)

Abnormal: Abnormal or absent cry or speech. Decreased response to parents or environmental stimuli. Floppy or rigid muscle tone or not moving.

Normal: Normal cry or speech. Responds to parents or to environmental stimuli such as lights, keys, or toys. Good muscle tone. Moves extremities well.

General Impression (First view of patient)



Work of Breathing (Visible movement / Respiratory Effort)

Abnormal: Increased/excessive (nasal flaring, retractions or abdominal muscle use) or decreased/absent respiratory effort or noisy breathing.

Normal: Breathing appears regular without excessive respiratory muscle effort or audible respiratory sounds.

Circulation to Skin (Color / Obvious Bleeding)

Abnormal: Cyanosis, mottling, paleness/pallor or obvious significant bleeding.
Normal: Color appears normal for racial group of child. No significant bleeding.

Decision/Action Points:

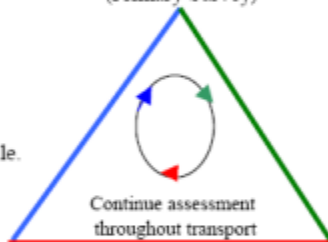
- Any abnormal findings or life-threatening chief complaint such as major trauma/burns, seizures, diabetes, asthma attack, airway obstruction, etc (urgent) – proceed to Initial Assessment. Contact ALS if ALS not already on scene/enroute.
- All findings normal (non-urgent) – proceed to Initial Assessment.

Initial Assessment (Primary Survey)

Airway & Appearance (Open/Clear – Mental Status)

Abnormal: Obstruction to airflow. Gurgling, stridor or noisy breathing. Verbal, Pain, or Unresponsive on AVPU scale.

Normal: Clear and maintainable. Alert on AVPU scale.



Breathing (Effort / Sounds / Rate / Central Color)

Abnormal: Presence of retractions, nasal flaring, stridor, wheezes, grunting, gasping or gurgling. Respiratory rate outside normal range. Central cyanosis.

Normal: Easy, quiet respirations. Respiratory rate within normal range. No central cyanosis.

Circulation (Pulse Rate & Strength / Extremity Color & Temperature / Capillary Refill / Blood Pressure)

Abnormal: Cyanosis, mottling, or pallor. Absent or weak peripheral or central pulses; Pulse or systolic BP outside normal range; Capillary refill > 2 sec with other abnormal findings.

Normal: Color normal. Capillary refill at palms, soles, forehead or central body ≤ 2 sec. Strong peripheral and central pulses with regular rhythm.

Decision/ Action Points:

- Any abnormal finding (C, U, or P)– Immediate transport with ALS. If ALS is not immediately available, meet ALS intercept enroute to hospital or proceed to hospital if closer. Open airway & provide O₂. Assist ventilations, start CPR, suction, or control bleeding as appropriate. Check for causes such as diabetes, poisoning, trauma, seizure, etc. Assist patient with prescribed bronchodilators or epinephrine auto-injector, if appropriate.
- All findings on assessment of child normal (S)– Continue assessment, detailed history & treatment at scene or enroute.

Normal Respiratory Rate:	Normal Pulse Rate:	Lower Limit of Normal Systolic BP:
Infant (<1yr): 30- 60	Infant: 100-160	Infant: >60 (or strong pulses)
Toddler (1-3yr): 24 -40	Toddler: 90-150	Toddler: >70 (or strong pulses)
Preschooler(4-5yr): 22- 34	Preschooler: 80-140	Preschooler: >75
School-age(6-12yr): 18 -30	School-age: 70-120	School-age: >80
Adolescent(13-18yr): 12 -20	Adolescent: 60-100	Adolescent: >90
	Pulses slower in sleeping child / athlete	Estimated min.SBP >70 + (2 x age in yr)

This reference card should not be considered to replace or supercede regional prehospital medical treatment protocols.

Supported in part by project grant #6 H33 MC 00036 from the Emergency Services for Children program, HRSA, USDHHS in cooperation with NHTSA Rev. 1/04

Pediatric CUPS (with examples)

Critical	Absent airway, breathing or circulation (cardiac or respiratory arrest or severe traumatic injury)
Unstable	Compromised airway, breathing or circulation (unresponsive, respiratory distress, active bleeding, shock, active seizure, significant injury, shock, near-drowning, etc.)
Potentially Unstable	Normal airway, breathing & circulation but significant mechanism of injury or illness (post-seizure, minor fractures, infant < 3mo with fever, etc.)
Stable	Normal airway, breathing & circulation No significant mechanism of injury or illness (small lacerations or abrasions, infant ≥ 3mo with fever)

Neonatal Resuscitation

Dry, Warm, Position, Tactile Stimulation.
Suction Mouth then Nose.
Call for ALS back-up. Administer O2 as needed.

Apnea/Gasping, HR <100 or central cyanosis

Ventilate with BVM @ 40-60/min

HR <60 after 30 sec BVM

Chest Compressions @ 120/min - 3:1

1/3 to 1/2 chest depth

2 thumb encircle chest or 2 fingers

ALS available & HR <60

Intubate
Epinephrine
0.01-0.03mg/kg
IV/IO/ET
1:10,000
q 3-5 min

APGAR Score

	0 pts	1 pt	2 pts
Pulse	Absent	<100	≥100
Resp	Absent	Slow Irregular	Good
Tone	Limp	Some flexion	Active motion
Reflex	None	Grimace	Cough Sneeze
Color	Blue	Pink Body Blue Limbs	All Pink

ALS Guidelines

Asystole or PEA

Assess airway & start CPR
Intubate & ventilate with oxygen

Epinephrine: 0.01 mg/kg 1:10,000 IV/ IO
0.1 mg/kg 1:1000 ET

Continue Epinephrine q 3-5 min, same dose
Consider hi dose 0.1 mg/kg 1:1000 IV/IO/ET

Consider possibility of hypoxia,
hypovolemia, hypothermia,
hyper/hypokalemia, tamponade, tension
pneumothorax, toxins/poisons/drugs or
thromboembolism & treat if present.

Bradycardia

Assess airway & give oxygen

Intubate if decreased consciousness
Start CPR if HR <60.

Epinephrine: 0.01 mg/kg 1:10,000 IV/ IO
0.1 mg/kg 1:1000 ET

Continue Epinephrine q 3-5 min, same dose

Atropine 0.02 mg/kg IV/ IO / ET
minimum dose 0.1 mg
maximum dose 0.5 mg child; 1.0 mg teen

VF or pulseless VT

Defibrillate up to 3 times as needed

2j/kg 4j/kg 4j/kg

Start CPR, intubate, ventilate with O₂

Epinephrine: 0.01 mg/kg 1:10,000 IV/ IO
0.1 mg/kg 1:1000 ET

Defibrillate 4j/kg

Amiodarone 5mg/kg IV/IO or

Lidocaine 1mg/kg IV/IO/ET or

Magnesium 25-50mg/kg IV/ IO

(for torsades de pointes or hypomagnesemia)

Defibrillate 4j/kg

Glasgow Coma Score

Infants	Children / Adults
Eye Opening	
Spontaneous	4
To speech/sound	3
To pain	2
No response	1
Verbal Response	
Coos or babbles	5
Irritable crying	4
Cries to pain	3
Moans to pain	2
None	1
Motor Response	
Spontaneous	6
Withdraws touch	5
Withdraws pain	4
Abnormal flexion	3
Abnormal extension	2
No response	1

Respiratory / Cardiac Arrest Treatment

	Infant <1yr	Child 1-8yr	Teen 9-18yr
Ventilation only	20/min	20/min	12/min
CPR method	2 fingers	1 hand	2 hand
Chest Depth	1/3-1/2	1/3-1/2	1/3-1/2
Compression Rate	≥ 100/min	100/min	100/min
Ratio	5:1	5:1	5:1

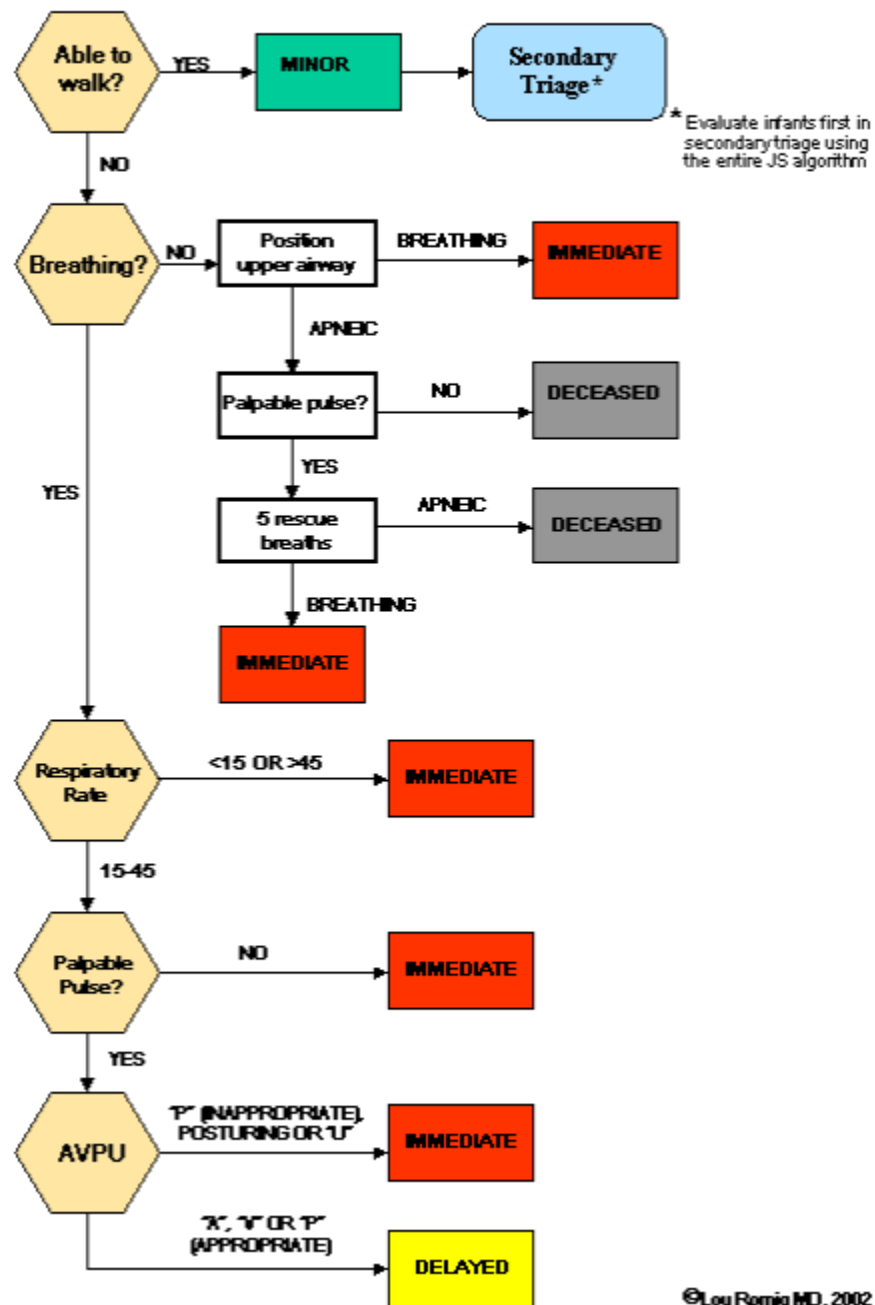
CPR should be started for HR <60.

Only AEDs with pediatric capabilities should be used on patients < 8 yrs. of age (approx. 25kg or 55lb).

This reference card should not be considered to replace or supersede regional prehospital medical treatment protocols.

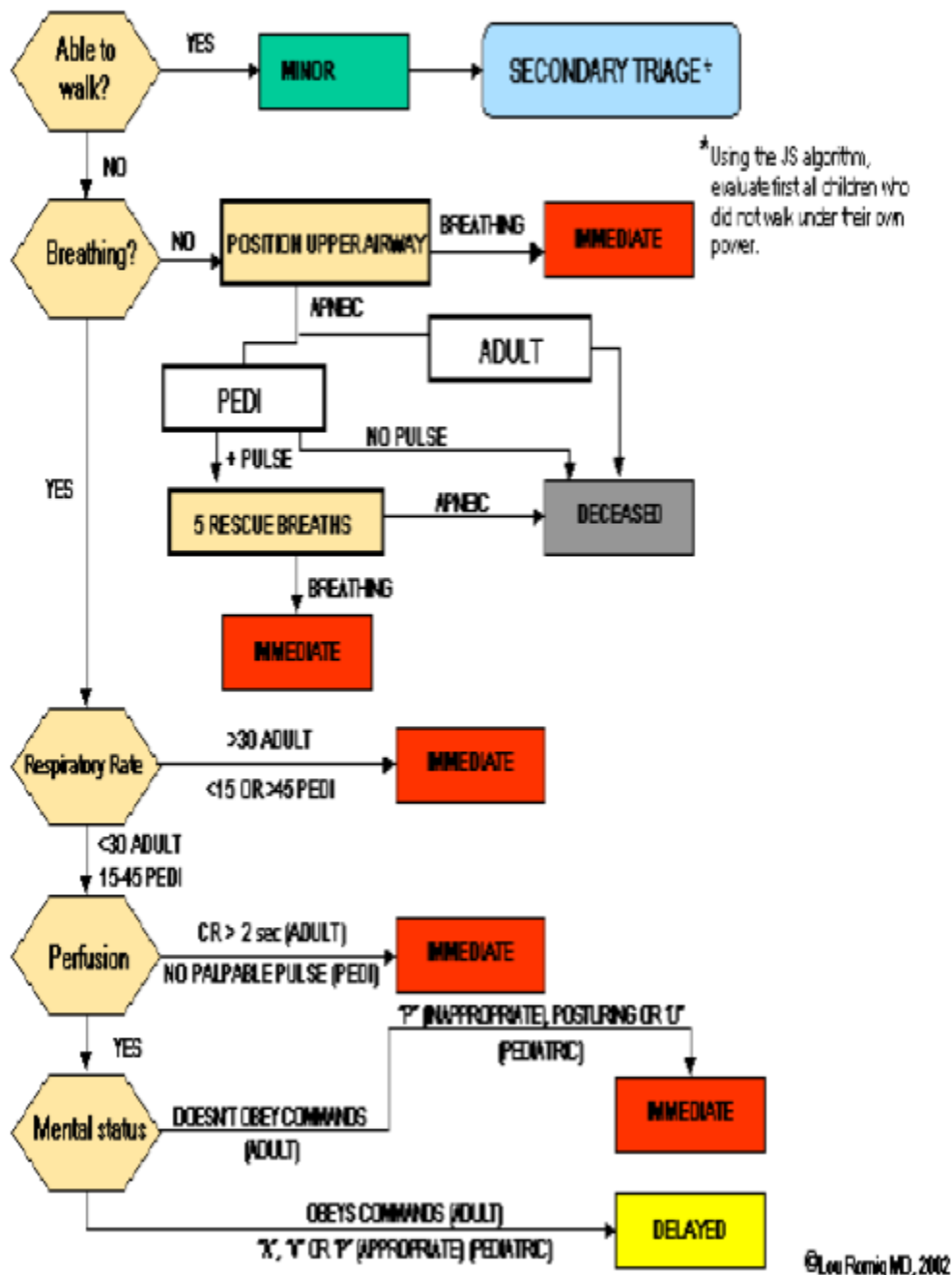
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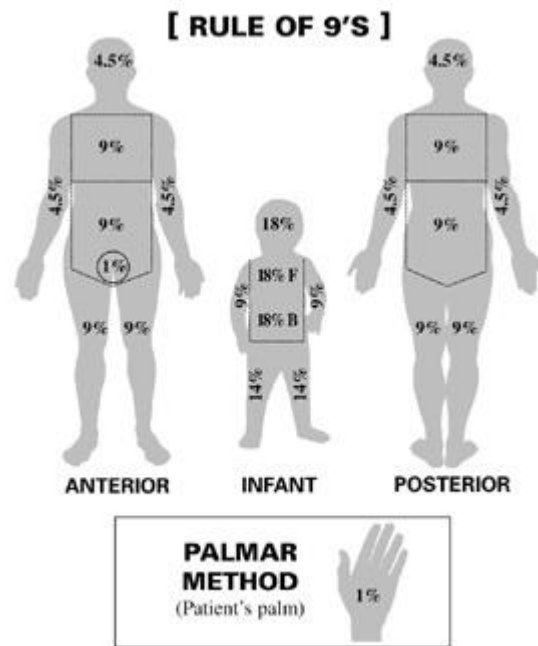
JumpSTART Pediatric MCI Triage®



©Lou Romig MD, 2002

Combined START/JumpSTART Triage Algorithm





Recommendation



Pediatric Advanced Life Support (PALS)

Children's Hospital Emergency Transport Team- Pediatric Team
CHET 858-277-3404

Vital Signs and Weight Norms for Age

Newborn:

1. Average Weight- 3.0 kg
2. Heart Rate (range)- 90-180
3. Systolic Blood Pressure- 60 (+/- 10)
4. Respiratory Rate (range)- 30 – 40

1 Month:

1. Average Weight- 4.0 kg
2. Heart Rate (range)- 80 - 160
3. Systolic Blood Pressure- 80 (+/- 10)
4. Respiratory Rate (range)- 30 – 40

3 Months:

1. Average Weight- 5.5 kg
2. Heart Rate (range)- 80-160
3. Systolic Blood Pressure- 80 (+/- 10)
4. Respiratory Rate (range)- 30 – 40

6 Months:

1. Average Weight- 7.0 kg
2. Heart Rate (range)- 80-160
3. Systolic Blood Pressure- 89 (+/- 20)
4. Respiratory Rate (range)- 30 – 40

1 Year

1. Average Weight- 10.0 kg
2. Heart Rate (range)- 80 – 160
3. Systolic Blood Pressure- 96 (+/- 20)
4. Respiratory Rate (range)- 30 – 40

2 Years

1. Average Weight- 12 kg
2. Heart Rate (range)- 80 – 130
3. Systolic Blood Pressure- 96 (+/- 20)
4. Respiratory Rate (range)- 28 – 32

3 Years

1. Average Weight- 14 kg
2. Heart Rate (range)- 80 –130
3. Systolic Blood Pressure- 99 (+/- 20)
4. Respiratory Rate (range)- 28 – 32

4 Years

1. Average Weight- 16 kg
2. Heart Rate (range)- 80 – 120
3. Systolic Blood Pressure- 99 (+/- 20)

4. Respiratory Rate (range)- 24 – 28

5 Years

1. Average Weight- 18 kg
2. Heart Rate (range)- 80 – 120
3. Systolic Blood Pressure- 105 (+/- 13)
4. Respiratory Rate (range)- 24 – 28

6 Years

1. Average Weight- 20 kg
2. Heart Rate (range)- 75 – 115
3. Systolic Blood Pressure- 105 (+/- 13)
4. Respiratory Rate (range)- 24 – 26

7 Years

1. Average Weight- 22 kg
2. Heart Rate (range)- 75 – 115
3. Systolic Blood Pressure- 105 (+/- 13)
4. Respiratory Rate (range)- 24 – 26

8 Years

1. Average Weight- 25 kg
2. Heart Rate (range)- 70 – 110
3. Systolic Blood Pressure- 112 (+/- 19)
4. Respiratory Rate (range)- 22 – 24

9 Years

1. Average Weight- 28 kg
2. Heart Rate (range)- 70 – 110
3. Systolic Blood Pressure- 112 (+/- 19)
4. Respiratory Rate (range)- 22 – 24

10 Years

1. Average Weight- 34 kg
2. Heart Rate (range)- 70 – 110
3. Systolic Blood Pressure- 112 (+/- 19)
4. Respiratory Rate (range)- 22 – 24

12 Years

1. Average Weight- 40 kg
2. Heart Rate (range)- 65 - 110
3. Systolic Blood Pressure- 112 (+/- 19)
4. Respiratory Rate (range)- 18 – 20

Pediatric Emergency Medications

Cardiovascular

1. Atropine
 - a. 0.01 – 0.02 mg/kg IV
 - b. Minimum dose 0.1 mg
 - c. Maximum dose (infant/child) 1 mg
 - d. Maximum dose (adolescent) 2 mg
2. Epinephrine
 - a. 1:10,000, 0.01 – 0.02 mg/kg IV/IO

- b. 1:1000, 0.1 mg/kg ET
- c. 0.1 cc/kg either concentration or if asystole persists after the first dose

Antiarrhythmics

1. Adenosine
 - a. 0.1 – 0.2 mg/kg IV
 - b. Maximum dose 0.2 mg/kg
2. Amiodarone
 - a. 5 mg/kg IV
 - b. Maximum dose 15 mg/kg/day
3. Lidocaine
 - a. 1 mg/kg IV
 - b. Repeat every 5 minutes as needed
 - c. Maximum dose 5 mg/kg
4. Procainamide HCL
 - a. 3 – 6 mg/kg IV over 5 minutes x 3
 - b. Maximum dose 15 mg/kg not to exceed 500 mg over 30 minutes

Antihypertensives (also see drip section)

1. Hydralazine
 - a. 0.2 mg/kg IM/IV Q4 – 6 hours
2. Labetolol
 - a. 0.25 – 1 mg/kg IV

Anticonvulsant

1. Lorazepam (Ativan)
 - a. 0.05 – 0.1 mg/kg IV
 - b. Repeat in 5 minutes if necessary x 1
2. Versed
 - a. 0.1 mg/kg
3. Phenobarbital
 - a. 10 mg/kg IV push over 1 minutes
 - b. Repeat in 5 minutes if necessary x 1
4. Fosphenytoin
 - a. 10 – 20 mg PE/kg IV x 1
 - b. PE = phenytoin equivalents
5. Phenytoin
 - a. 200 mg/kg IV over 5 – 10 minutes
 - b. Monitor for hypotension and bradycardia

Bronchodilators and Aerosols

1. Albuterol (5 mg/ml)
 - a. 0.1 – 0.5 ml in 3 ml NS by nebulizer
2. Epinephrine (1:1000)
 - a. 0.01 ml/kg SQ
 - b. Maximum dose 0.4 ml
3. Racemic Epinephrine (20 mg/ml)
 - a. 0.1 – 0.5 ml in 3 ml NS by nebulizer
4. Atrovent
 - a. 250 – 500 mcg by nebulizer

Poison Therapy (California Poison Control 858-876-4766)

1. Naloxone HCL (Narcan)
 - a. 0.01 – 0.04 mg/kg IV
 - b. For narcotic reversal
2. Activated Charcoal
 - a. 1 gm/kg PO/NG

Sedatives

1. Chloral Hydrate
 - a. 20 – 50 mg/kg PO/PR Q 4 – 8 hours
2. Diazepam (Valium)
 - a. 0.1 mg/kg IV Q 6 hours

Analgesics

1. Acetaminophen/Aspirin
 - a. 10 – 15 mg/kg PO/PR Q 4 Hours
2. Fentanyl
 - a. 1 mcg/kg IV Q 1 – 2 hours
3. Ibuprofen
 - a. 5 mg/kg PO Q 6 hours
4. Meperidine HCL (Demerol)
 - a. 0.5 – 1 mg/kg IM/IV Q 2 – 4 hours
5. Morphine Sulfate
 - a. 0.1 mg/kg IM/IV Q 2 – 4 hours
6. Codeine
 - a. 0.25 – 1 mg/kg PO Q 4 – 6 hours

Muscle Relaxants

1. Pancuronium
 - a. 0.1 mg/kg IV Q 1 – 2 hours
2. Succinylcholine
 - a. 0 – 2 years: 2 mg/kg IV
 - b. > 2 years: 1 mg/kg IV
 - c. Precede with Atropine
3. Vecuronium
 - a. 0.1 – 0.25 mg/kg IV Q 1 – 2 hours

Diuretics

1. Furosemide (Lasix)
 - a. 0.2 – 1 mg/kg PO/IM/IV
2. Mannitol
 - a. 0.25 – 1 gm/kg IV over 20 minutes

Metabolic

1. Sodium Bicarbonate
 - a. 1 – 2 meq/kg over 1 – 2 minutes (With adequate ventilation)
2. Calcium Chloride
 - a. 5 – 10 mg/kg IV slow push (may repeat)
3. Glucose
 - a. 0.5 – 1 gm/kg IV (2 – 4 cc/kg D25)
 - b. Maintenance 5 mg/kg/min

4. Insulin (regular)
 - a. Infusion: 0.1 unit/kg/hr
5. Kayexalate (sodium polystyrene sulfonate)
 - a. 1 – 2 gm/kg/dose PO/PR
 - b. 1 gm will exchange 1 meq K⁺ for 1 meq Na⁺

To Initiate Antibiotics for Meningitis and Sepsis

1. < 2 months:
 - a. Ampicillin 100 mg/kg IV AND
 - b. Cefotaxime (Claforan) 50 mg/kg IV
2. ≥ 2 months:
 - a. Ceftriaxone (Rocephin) 100 mg/kg IV
 - b. Maximum dose 2 gm

To Initiate Antibiotics for Serious Staphylococcal Infections

1. Nafcillin or Cefazolin
 - a. 50 mg/kg IV
 - b. Maximum dose 2 gm
2. Vancomycin
 - a. 10 – 15 mg/kg IV

To Initiate Antibiotics for Gram Negative/Anaerobic/Bowel Infections

1. Ampicillin
 - a. 50 mg/kg IV
 - b. Maximum dose 3 gm
2. AND Gentamicin
 - a. 2.5 mg/kg IV over 20 minutes
 - b. Maximum dose 120 mg
3. AND Flagyl
 - a. 15 mg/kg IV over 30 – 60 minutes
 - b. Maximum dose 1 gm

Medication Drips (These drugs require cardiovascular monitoring and a pediatric setting)

1. Epinephrine
 - a. 0.02 – 2 mcg/kg/min IV
2. Isoproterenol (Isuprel)
 - a. For slow A-V block or bradycardia
 - i. 0.02 – 0.2 mcg/kg/min IV
 - b. For severe asthma
 - i. 0.2 – 1 mcg/kg/min IV
3. Norepinephrine
 - a. 0.1-2 mcg/kg/min IV
4. Nitroprusside
 - a. 0.1 – 2 mcg/kg/min IV

To obtain the concentration where 1 ml/hr = 0.1 mcg/kg/min, multiply the patient's weight (in kg) by 1.5 and add this amount of drug (in mg) to 250 ml of NS or D5W:

$$1.5 \times \text{kg weight} = (x)\text{mg}/250 \text{ ml} = 1 \text{ ml/hr} = 0.1 \text{ mcg/kg/min}$$

5. Dobutamine
 - a. 2 – 20 mcg/kg/min IV

6. Dopamine
 - a. 2 – 20 mcg/kg/min IV
7. Labetolol
 - a. 5 – 20 mcg/kg/min

To obtain the concentration where 1 ml/hr = 1 mcg/kg/min, multiply the patient's weight (in kg) by 15 and add this amount of drug (in mg) to 250 ml of NS or D5W:

$$15 \times \text{kg weight} = (x)\text{mg}/250 \text{ ml} = 1 \text{ ml/hr} = 1 \text{ mcg/kg/min}$$

8. Lidocaine
 - a. 25 – 50 mcg/kg/min IV
9. Esmolol
 - a. 50 – 300 mcg/kg/min IV

To obtain the concentration where 1 ml/hr = 10 mcg/kg/min, multiply the patient's weight (in kg) by 150 and add this amount of drug (in mg) to 250 ml of NS or D5W:

$$150 \times \text{kg weight} = (x)\text{mg}/250 \text{ ml} = 1 \text{ ml/hr} = 10 \text{ mcg/kg/min}$$

Maintenance Fluids (DO NOT USE D5W)

1. D5LR, D5NS
2. Calculations of Maintenance Fluid Rate:
 - a. 1 – 10 kg: 4 ml/kg/hr
 - b. 11 –20 kg: 40 ml/hr + 2 ml/kg/hr (for every kg > 10)

Cardioversion/Defibrillation

1. Ventricular Fibrillation/Ventricular Tachycardia w/o pulse
 - a. 2 – 4 joules/kg
2. Ventricular Tachycardia w/pulse
 - a. 0.5 – 2 joules/kg (synchronized)

Intracranial Pressure Control Guidelines

1. Keep pCO₂ 30 – 35 with mild hyperventilation
2. Keep head midline
3. Paralyze (Vecuronium or Pavulon)
4. Mannitol (Must have adequate BP)
5. Give sedation as indicated if normotensive (Diazepam or Barbiturates)

Do not use hypotonic IV solutions > 20 kg: 60 ml/hr + 1 ml/kg/hr (for every kg > 20)

CHET INTUBATION

Intubation

1. Premie
 - a. Size of ETT (approximately): 2.5 – 3
 - b. Laryngoscope Blade (Miller): 0
 - c. Oral insertion length (in cm) to the gums/teeth: 7 – 10
2. Newborn
 - a. Size of ETT (approximately): 3.5
 - b. Laryngoscope Blade (Miller): 0 – 1
 - c. Oral insertion length (in cm) to the gums/teeth: 7 – 10
 - d. NG/OG: 8 fr. Feeding tube
 - e. Foley: 6 fr.

3. 6 months

- a. Size of ETT (approximately): 4
- b. Laryngoscope Blade (Miller): 1
- c. NG/OG: 8 fr. NG tube
- d. Foley: 6 fr.

Oral insertion length (in cm) to the gums/teeth = Child's age (yrs) + 10 cm

Nasal insertion length (in cm) to the nare = Child's age (yrs) + 13 – 15

4. 1 year

- a. Size of ETT (approximately): 4.5
- b. Laryngoscope Blade (Miller): 1 – 2

5. 2 years

- a. Size of ETT (approximately): 4.5
- b. Laryngoscope Blade (Miller): 1 – 2
- c. NG/OG: 10 fr.
- d. Foley: 8 fr.

6. 4 years

- a. Size of ETT (approximately): 5
- b. Laryngoscope Blade (Miller): 2

7. 6 years

- a. Size of ETT (approximately): 5.5
- b. Laryngoscope Blade (Miller): 2
- c. NG/OG: 12 fr.
- d. Foley: 10 fr.

8. 8 years

- a. Size of ETT (approximately): 6
- b. Laryngoscope Blade (Miller): 2

9. 10 years

- a. Size of ETT (approximately): 6.5
- b. Laryngoscope Blade (Miller): 2 – 3
- c. NG/OG: 14 fr.
- d. Foley: 12 fr.

10. 12 years and older

- a. Size of ETT (approximately): 7
- b. Laryngoscope Blade (Miller): 3

PALS Information (for PDA)

Summary of ABCD Maneuvers

1. Child (1-8 years old)

- a. Airway
 - i. Head tilt-chin lift (if trauma is present, use jaw thrust)
- b. Breathing
 - i. Initial: 2 breaths at 1 to 1.5 sec/breath
 - ii. Subsequent: ≈20 breaths/min
 - iii. FBAO: Heimlich maneuver
- c. Circulation
 - i. Pulse check: Carotid

- ii. Compression landmarks: Lower half of sternum
 - iii. Compression method: Heel of one hand
 - iv. Compression depth: 1 to 1.5 in. or approximately one third to one half depth of chest
 - v. Compression rate: 100/min
 - vi. Compression/ventilation ratio: 5:1 (Pause for ventilation until trachea is intubated.)
- 2. Infant (<1 year old)
 - a. Airway
 - i. Head tilt-chin lift (if trauma is present, use jaw thrust)
 - b. Breathing
 - i. Initial: 2 breaths at 1 to 1.5 sec/breath
 - ii. Subsequent: ≈20 breaths/min
 - iii. FBAO: Back blows and chest thrusts
 - c. Circulation
 - i. Pulse check: Brachial or femoral
 - ii. Compression landmarks: 1 finger width below intermammary line
 - iii. Compression method: 2 thumbs-encircled hands or, 2 or 3 fingers
 - iv. Compression depth: 0.5 to 1 in. or approximately one third to one half depth of chest
 - v. Compression rate: ≥100/min
 - vi. Compression/ventilation ratio: 5:1 (Pause for ventilation until trachea is intubated.)
- 3. Newborn (Delivery room or neonatal ICU)
 - a. Airway-
 - i. Head tilt-chin lift
 - b. Breathing
 - i. Initial: 2 breaths at 1 to 1.5 sec/breath
 - ii. Subsequent: ≈30-60 breaths/min
 - c. Circulation
 - i. Pulse check: Brachial or femoral
 - ii. Compression landmarks: 1 finger width below intermammary line
 - iii. Compression method: 2 thumbs-encircled hands or, 2 or 3 fingers
 - iv. Compression depth: 0.5 to 1 in. or approximately one third depth of chest
 - v. Compression rate: 120/min
 - vi. Compression/ventilation ratio: 3:1 for intubated newborns (2 rescuers)

Newborn Initial Assessment

- 1. Assess and support
 - a. Temperature (warm and dry)
 - b. Airway (position and suction)
 - c. Breathing (stimulate to cry)
 - d. Circulation (heart rate and color)
- 2. Always needed by newborns

- a. Assess baby's response to birth
 - b. Keep baby warm
 - c. Position, clear airway, stimulate to breathe by drying, and give oxygen (as necessary)
- 3. Needed less frequently
 - a. Establish effective ventilation
 - i. Bag and mask
 - ii. Tracheal intubation
- 4. Rarely needed by newborns
 - a. Provide chest compressions
 - b. Administer medications

Modified Glasgow Coma Scale

Child

- 1. Eye Opening
 - a. Spontaneous- score 4
 - b. To verbal stimuli- score 3
 - c. To pain only- score 2
 - d. No response- score 1
- 2. Verbal Response
 - a. Oriented, appropriate- score 5
 - b. Confused- score 4
 - c. Inappropriate words- score 3
 - d. Incomprehensible sounds- score 2
 - e. No response- score 1
- 3. Motor Response*
 - a. Obeys commands- score 6
 - b. Localizes painful stimuli- score 5
 - c. Withdraws in response to pain- score 4
 - d. Flexion in response to pain- score 3
 - e. Extension in response to pain- score 2
 - f. No response- score 1

Infant

- 1. Eye Opening
 - a. Spontaneous- score 4
 - b. To verbal stimuli- score 3
 - c. To pain only- score 2
 - d. No response- score 1
- 2. Verbal Response
 - a. Coos and babbles- score 5
 - b. Irritable cries- score 4
 - c. Cries to pain- score 3
 - d. Moans to pain- score 2
 - e. No response- score 1
- 3. Motor Response*
 - a. Moves spontaneously and purposefully- score 6

- b. Withdraws to touch- score 5
- c. Withdraws in response to pain- score 4
- d. Abnormal flexion posture to pain- score 3
- e. Abnormal extension posture to pain- score 2
- f. No response- score 1

* If patient is intubated, unconscious, or preverbal, the most important part of this scale is motor response. Motor response should be carefully evaluated.

Pediatric Trauma Score

1. Weight (kg)
 - a. >20 kg- score +2
 - b. 10 to 20 kg- score +1
 - c. < 10 kg- score -1
2. Airway
 - a. Normal- score +2
 - b. Maintained- score +1
 - c. Unmaintained- score -1
3. Systolic blood pressure (mm Hg)
 - a. >90- score +2
 - b. 50 -90- score +1
 - c. <50- score -1
4. Central nervous system
 - a. Awake- score +2
 - b. Obtunded- score +1
 - c. Coma/decerebrate- score -1
5. Open wound
 - a. None- score +2
 - b. Minor- score +1
 - c. Major/penetrating- score -1
6. Skeletal trauma
 - a. None- score +2
 - b. Closed fractures- score +1
 - c. Open, multiple fractures- score -1

Add the value of each patient characteristic. Highest possible score is +12 and lowest possible score is -6.

Classification of Pediatric Hemorrhagic Shock

Class I- Very Mild Hemorrhage (<15% blood volume loss):

1. Cardiovascular
 - a. Heart rate normal or mildly increased
 - b. Normal pulses
 - c. Normal blood pressure
 - d. Normal pH
2. Respiratory
 - a. Rate normal
3. Central nervous system

- a. Slightly anxious
- 4. Skin
 - a. Warm, pink mucous membranes and nail beds
 - b. Capillary refill brisk
- 5. Kidneys
 - a. Normal urine output

Class II- Mild Hemorrhage (15% to 25% blood volume loss):

- 1. Cardiovascular
 - a. Tachycardia
 - b. Peripheral pulses may be diminished
 - c. Normal blood pressure
 - d. Normal pH
- 2. Respiratory
 - a. Tachypnea
- 3. Central nervous system
 - a. Irritable, confused
 - b. Combative
- 4. Skin
 - a. Cool extremities, mottling
 - b. Delayed capillary refill
- 5. Kidneys
 - a. Oliguria, increased specific gravity

Class III- Moderate Hemorrhage (26% to 39% blood volume loss)

- 1. Cardiovascular
 - a. Significant tachycardia
 - b. Thready peripheral pulses
 - c. Hypotension
 - d. Metabolic acidosis
- 2. Respiratory
 - a. Moderate tachypnea
- 3. Central nervous system
 - a. Irritable or lethargic
 - b. Diminished pain response
- 4. Skin
 - a. Cool extremities, mottling or pallor
 - b. Prolonged capillary refill
- 5. Kidneys
 - a. Oliguria
 - b. Increased blood urea nitrogen (BUN)

Class IV- Severe Hemorrhage ($\geq 40\%$ blood volume loss)

- 1. Cardiovascular
 - a. Severe tachycardia
 - b. Thready central pulses
 - c. Significant hypotension
 - d. Significant acidosis
- 2. Respiratory

- a. Severe tachypnea
- 3. Central nervous system
 - a. Lethargic coma
- 4. Skin
 - a. Cool extremities, pallor, or cyanosis
- 5. Kidneys
 - a. Anuria

Drugs Used In PALS

Adenosine

1. 0.1 mg/kg (up to 6 mg)
2. 0.2 mg/kg for second dose
3. Rapid IV push
4. Maximum single dose: 12 mg

Amiodarone: for refractory pulseless VT/VF

1. 5 mg/kg rapid IV/IO
2. Maximum 15 mg/kg/day

Amiodarone: for perfusing tachycardias

1. Loading: 5 mg/kg IV/IO over 20 – 60 minutes
2. Repeat to maximum 15 mg/kg/day IV

Atropine Sulfate

1. 0.02 mg/kg IV/IO/ET
2. Minimum dose 0.1 mg
3. Maximum single dose 0.5 mg child, 1 mg adolescent
4. May double for 2ed dose

Ca+ chloride 10%

1. 20 mg/kg IV/IO
2. Slow IV bolus

Dobutamine

1. 2 – 20 mcg/kg/min
2. Titrate to desired effect

Dopamine

1. Alpha-pressor effects at higher doses > 15 mcg/kg/min

Epinephrine for bradycardia

1. IV/IO: 0.01 mg/kg (1:10,000, 0.1 ml/kg)
2. ET: 0.1 mg/kg (1:1000, 0.1 ml/kg)

Epinephrine for asystolic or pulseless arrest

1. First dose: IV/IO: 0.01 mg/kg (1:10,000, 0.1 ml/kg)
2. First dose: ET: 0.1 mg/kg (1:1,000, 0.1 ml/kg)
3. Subsequent doses: Repeat every 3 – 5 minutes during CPR
4. Consider a higher dose (0.1 mg/kg, 0.1 ml/kg of 1:1,000) for special conditions

Epinephrine Infusion

1. Initial at 0.1 mcg/kg/min
2. Titrate to desired effect (0.1 – 1 mcg/kg/min)

Glucose

1. 0.5 – 1 g/kg IV/IO

2. Maximum dose: 2 – 4 ml/kg of 25% solution
3. 5% = 10 – 20 ml/kg
4. 10% = 5 – 10 ml/kg
5. 25% = 2 – 4 ml/kg
6. In large vein

Lidocaine

1. 1 mg/kg
2. IV/IO/ET

Lidocaine Infusion

1. 20 – 50 mcg/kg/min

Magnesium Sulfate

1. 25 –50 mcg/kg IV/IO over 10 –20 minutes
2. Maximum dose: 2 g

Naloxone (Narcan)

1. If ≤ 5 years old or ≤ 20 kg: 0.1 mg/kg
2. If > 5 years old or > 20 kg: 2 mg
3. Titrate to desired effect

Prostaglandin E

1. 0.05 – 0.1 mcg/kg/min
2. Titrate
3. Monitor for apnea, hypotension, hypoglycemia, hypocalcemia

Sodium Bicarbonate

1. 1 mEq/kg dose
2. Infuse slowly and only if ventilation is adequate

Pediatric Resuscitation Supplies

Newborn/Small Infant (3 – 5 kg)

1. Resuscitation bag: Infant
2. O2 Mask: Newborn
3. Oral Airway: Infant/small child
4. Laryngoscope blade (size): 0 – 1 straight
5. Tracheal Tube (mm): Premature infant- 2.5, Term infant- 3.0 – 3.5 uncuffed
6. Tracheal Tube Length (cm at lip): 10 – 10.5
7. Stylet (F): 6
8. Suction Catheter (F): 6 – 8
9. BP Cuff: Newborn/Infant
10. IV catheter (G): 22 – 24
11. Butterfly (G): 23 – 25
12. Nasogastric tube (F): 5 – 8
13. Urinary Catheter (F): 5 – 8
14. Defibrillation/cardioversion external paddles: Infant paddles
15. Chest Tube (F): 10 – 12

Infant (6 – 9 kg)

1. Resuscitation bag: Child
2. O2 Mask: Newborn
3. Oral Airway: Infant/small child

4. Laryngoscope blade (size): 1 straight
5. Tracheal Tube (mm): 3.5 uncuffed
6. Tracheal Tube Length (cm at lip): 10 – 10.5
7. Stylet (F): 6
8. Suction Catheter (F): 8
9. BP Cuff: Newborn/Infant
10. IV catheter (G): 22 – 24
11. Butterfly (G): 23 – 25
12. Nasogastric tube (F): 5 – 8
13. Urinary Catheter (F): 5 – 8
14. Defibrillation/cardioversion external paddles: Infant paddles until 1yr or 10 kg
15. Chest Tube (F): 10 – 12

Toddler (10 – 11 kg)

1. Resuscitation bag: Child
2. O2 Mask: Pediatric
3. Oral Airway: Small child
4. Laryngoscope blade (size): 1 straight
5. Tracheal Tube (mm): 4.0 uncuffed
6. Tracheal Tube Length (cm at lip): 11 – 12
7. Stylet (F): 6
8. Suction Catheter (F): 8 – 10
9. BP Cuff: Infant/Child
10. IV catheter (G): 20 – 24
11. Butterfly (G): 23 – 25
12. Nasogastric tube (F): 8 – 10
13. Urinary Catheter (F): 8 – 10
14. Defibrillation/cardioversion external paddles: Adult paddles when ≥ 1 yr or ≥ 10 kg
15. Chest Tube (F): 16 – 20

Small Child (12 – 14 kg)

1. Resuscitation bag: Child
2. O2 Mask: Pediatric
3. Oral Airway: Child
4. Laryngoscope blade (size): 2 straight
5. Tracheal Tube (mm): 4.5 uncuffed
6. Tracheal Tube Length (cm at lip): 12.5 – 13.5
7. Stylet (F): 6
8. Suction Catheter (F): 10
9. BP Cuff: Child
10. IV catheter (G): 18 – 22
11. Butterfly (G): 21 – 23
12. Nasogastric tube (F): 10
13. Urinary Catheter (F): 10
14. Defibrillation/cardioversion external paddles: Adult paddles
15. Chest Tube (F): 20 – 24

Child (15 – 18 kg)

1. Resuscitation bag: Child

2. O2 Mask: Pediatric
3. Oral Airway: Child
4. Laryngoscope blade (size): 2 straight or curved
5. Tracheal Tube (mm): 5.0 uncuffed
6. Tracheal Tube Length (cm at lip): 14 – 15
7. Stylet (F): 6
8. Suction Catheter (F): 10
9. BP Cuff: Child
10. IV catheter (G): 18 – 22
11. Butterfly (G): 21 – 23
12. Nasogastric tube (F): 10 – 12
13. Urinary Catheter (F): 10 – 12
14. Defibrillation/cardioversion external paddles: Adult paddles
15. Chest Tube (F): 20 – 24

Child (19 – 22 kg)

1. Resuscitation bag: Child
2. O2 Mask: Pediatric
3. Oral Airway: Child/small adult
4. Laryngoscope blade (size): 2 straight or curved
5. Tracheal Tube (mm): 5.5 uncuffed
6. Tracheal Tube Length (cm at lip): 15.5 – 16.5
7. Stylet (F): 14
8. Suction Catheter (F): 10
9. BP Cuff: Child
10. IV catheter (G): 18 – 20
11. Butterfly (G): 21 – 23
12. Nasogastric tube (F): 12 – 14
13. Urinary Catheter (F): 10 – 12
14. Defibrillation/cardioversion external paddles: Adult paddles
15. Chest Tube (F): 24 – 32

Large Child (24 – 30 kg)

1. Resuscitation bag: Child/adult
2. O2 Mask: Adult
3. Oral Airway: Child/small adult
4. Laryngoscope blade (size): 2 – 3 straight or curved
5. Tracheal Tube (mm): 6.0 cuffed
6. Tracheal Tube Length (cm at lip): 17 – 18
7. Stylet (F): 14
8. Suction Catheter (F): 10
9. BP Cuff: Child/adult
10. IV catheter (G): 18 – 20
11. Butterfly (G): 21 – 22
12. Nasogastric tube (F): 14 – 18
13. Urinary Catheter (F): 12
14. Defibrillation/cardioversion external paddles: Adult paddles
15. Chest Tube (F): 28 – 32

Adult (≥ 32 kg)

1. Resuscitation bag: Adult
2. O2 Mask: Adult
3. Oral Airway: Medium adult
4. Laryngoscope blade (size): 3 straight or curved
5. Tracheal Tube (mm): 6.5 cuffed
6. Tracheal Tube Length (cm at lip): 18.5 – 19.5
7. Stylet (F): 14
8. Suction Catheter (F): 12
9. BP Cuff: Adult
10. IV catheter (G): 16 – 20
11. Butterfly (G): 18 – 21
12. Nasogastric tube (F): 18
13. Urinary Catheter (F): 12
14. Defibrillation/cardioversion external paddles: Adult paddles
15. Chest Tube (F): 32 – 40

Postarrest Treatment of Shock and Maintenance Fluid Requirements

Postarrest Shock

1. Fluid Bolus
 - a. 10 – 20 ml/kg NS or RL
 - b. Monitor response
2. Reassess - Signs of Shock Continue >
3. What is the Blood Pressure?
4. Hypotensive (decompensated) Shock?
 - a. Consider further fluid boluses
 - b. Epinephrine (0.1 to 1.0 mcg/kg/min or >
 - c. Dopamine at higher doses (up to 20 mcg/kg/min) or >
 - d. Norepinephrine (0.1 to 2 mcg/kg/min)
5. Normotensive (compensated) Shock
 - a. Consider further fluid boluses and/or >
 - b. Dobutamine (2 to 20 mcg/kg/min) and/or >
 - c. Dopamine (2 to 20 mcg/kg/min) and/or >
 - d. Low-dose Epinephrine (0.05 to 0.3 mcg/kg/min) and/or >
 - e. Inamrinone: Load with 0.75 to 1 mg/kg over 5 minutes, may repeat up to 3 mg/kg. Infusion: 5 to 10 mcg/kg/min and/or >
 - f. Milrinone: Load with 50 to 75 mcg/kg over 5 minutes, may repeat up to 3 mg/kg. Infusion: 0.5 to 0.75 mcg/kg/min

Estimation of Maintenance Fluid Requirements

1. Infants < 10 kg: Infusion of 0.2% normal saline in 5% dextrose (D5/0.2% NaCl) at a rate of 4 ml/kg per hour. For example, the maintenance rate for a 8 kg baby is as follows:
 - a. $4 \text{ ml/kg/hr} \times 8 \text{ kg} = 32 \text{ ml/hr}$
2. Children 10 – 20 kg: Infusion of D5/0.2% NaCl at a rate of 40 ml/kg plus 2 ml/kg per hour for each kilogram between 10 and 20 kg. For example, the maintenance rate for a 15 kg child is as follows:

- a. $40 \text{ ml/hr} + (2 \text{ ml/kg/hr} \times 5 \text{ kg}) = 50 \text{ ml/hr}$
- 3. Children > 20 kg: Infusion of D5/0.2% NaCl at a rate of 60 ml/hr plus 1 ml/kg per hour for each kilogram above 20 kg. For example, maintenance rate for a 30 kg child is as follows:
 - a. $60 \text{ ml/hr} + (1 \text{ ml/kg/hr} \times 10 \text{ kg}) = 70 \text{ ml/hr}$

Pediatric Bradycardia Algorithm

1. BLS Algorithm: Assess and support ABC's as needed
 2. Provide oxygen
 3. Attach monitor/defibrillator
 4. Is bradycardia causing severe cardiorespiratory compromise? (Poor perfusion, hypotension, respiratory difficulty, altered consciousness)
 5. No >
 - a. Observe
 - b. Support ABC's
 - c. Consider transfer or transport to ALS facility
 6. Yes >
 - a. Perform chest compressions if despite oxygenation and ventilation heart rate <60/min in infant or child and poor systemic perfusion
 - b. Epinephrine*
 - i. IV/IO: 0.01 mg/kg (1:10,000; 0.1 ml/kg)
 - ii. ET: 0.1 mg/kg (1:1,000; 0.1 ml/kg)
 - iii. May repeat every 3 to 5 minutes at the same dose
 - c. Atropine*
 - i. 0.02 mg/kg (minimum dose: 0.1 mg)
 - ii. May be repeated once
 - d. Consider cardiac pacing
 - e. If pulseless arrest develops, see Pulseless Arrest Algorithm
- *Give atropine first for bradycardia due to suspected increased vagal tone or primary AV block
7. During CPR
 - a. Attempt/verify: Tracheal intubation and vascular access
 - b. Check: Electrode position and contact; paddle position and contact; Pacer position and contact
 - c. Give: Epinephrine every 3 to 5 minutes and consider alternate medications: epinephrine or dopamine infusions
 - d. Identify and treat possible causes: Hypoxemia; Hypothermia Head injury Heart block Heart transplant (special situation); Toxins/poisons/drugs

Algorithm for Pediatric Tachycardia with Poor Perfusion

1. BLS algorithm: Assess, support ABC's
2. Pulse Present?
3. No >
 - a. Initiate CPR
 - b. See Pulseless arrest algorithm
4. Yes >

- a. Provide oxygen and ventilation as needed
- b. Attach monitor/defibrillator
- c. 12 lead ECG if practical
- d. Evaluate QRS duration

QRS duration normal for age (approximately ≤ 0.08 sec)(narrow complex) >

1. Evaluate the tachycardia >

Probable sinus tachycardia

1. History compatible
2. P waves present/normal
3. HR often varies with activity
4. Variable RR with constant PR
5. Infants: rate usually < 220 bpm
6. Children: rate usually < 180 bpm

Probable supraventricular tachycardia

1. History incompatible
2. P waves absent/abnormal
3. HR not variable with activity
4. Abrupt rate changes
5. Infants: rate usually > 220 bpm
6. Children: rate usually > 180 bpm
7. Consider vagal maneuvers (no delays)
8. Immediate cardioversion
 - a. 0.5 to 1 J/kg (may increase to 2 J/kg if initial dose is ineffective)
 - b. Use sedation if possible; sedation must not delay cardioversion
9. Or Immediate IV/IO adenosine
 - a. Use if IV/IO access is immediately available
 - b. Dose: 0.1 mg/kg IV/IO (maximum first dose: 6 mg)
 - c. May double dose and repeat dose once (maximum second dose: 12 mg)
 - d. Use rapid bolus technique

QRS duration wide for age (approximately > 0.08 sec)(wide complex) >

1. Evaluate the tachycardia >

Probable ventricular tachycardia

1. Immediate cardioversion
 - a. 0.5 to 1 J/kg (may increase to 2 J/kg if initial dose is ineffective)
 - b. Use sedation if possible; sedation must not delay cardioversion
2. Consider alternative medications
 - a. Amiodarone: 5 mg/kg IV over 20 to 60 minutes
 - b. Or Procainamide: 15 mg/kg IV over 30 to 60 minutes (do not routinely administer amiodarone and procainamide together)
 - c. Or Lidocaine: 1 mg/kg IV bolus (Wide complex only)
 - d. Consult pediatric cardiologist
 - e. 12 lead ECG

During the evaluation >

1. Provide oxygen and ventilation as needed
2. Support ABC's
3. Confirm continuous monitor/pacer attached

4. Consider expert consultation
5. Prepare for cardioversion (consider sedation)
6. Identify and treat possible causes: Hypoxemia; Hypoventilation; Hyperthermia; Hyper/hypokalemia and metabolic disorders; Tamponade; Tension pneumothorax; Toxins/poisons/drugs; Thromboembolism; Pain

Pediatric Pulseless Arrest Algorithm

1. BLS Algorithm: Assess and support ABC's
2. Provide oxygen
3. Attach monitor/defibrillator
4. Assess rhythm (ECG) >
 - Ventricular fibrillation/Ventricular Tachycardia >
 1. Attempt defibrillation
 - a. Up to 3 times if needed
 - b. Initially 2 J/kg, 2 to 4 J/kg, 4 J/kg*
 2. Epinephrine
 - a. IV/IO: 0.01 mg/kg (1:10,000; 0.1 ml/kg)
 - b. ET: 0.1 mg/kg (1:1,000; 0.1 ml/kg)
 3. Attempt defibrillation with 4 J/kg* within 30 to 60 seconds after each medication
 - a. Pattern should be CPR-drug-(CPR)-shock (repeat) or CPR-drug-(CPR)-shock-shock-shock (repeat)
 4. Antiarrhythmic
 - a. Amiodarone: 5 mg/kg bolus IV/IO or
 - b. Lidocaine 1 mg/kg bolus IV/IO/ET or
 - c. Magnesium: 25 to 50 mg/kg IV/IO for torsades de pointes or hypomagnesemia (maximum: 2 g)
 5. Attempt defibrillation with 4 J/kg* within 30 to 60 seconds after each medication
 - a. Pattern should be CPR-drug-(CPR)-shock (repeat) or CPR-drug-(CPR)-shock-shock-shock (repeat)

*Alternative waveforms and higher doses are class Indeterminate for children

Not Ventricular fibrillation/Ventricular Tachycardia (includes pulseless electrical activity and asystole) >

1. Epinephrine
 - a. IV/IO: 0.01 mg/kg (1:10,000; 0.1 ml/kg)
 - b. ET: 0.1 mg/kg (1:1,000; 0.1 ml/kg)
2. Continue CPR up to 3 minutes

During CPR >

1. Attempt/verify: Tracheal intubation and vascular access
2. Check: Electrode position and contact, paddle position and contact
3. Give: Epinephrine every 3 – 5 minutes (consider higher doses for second and subsequent doses)
4. Consider alternative medications: vasopressors, antiarrhythmics, buffers
5. Identify and treat possible causes: Hypoxemia; Hypovolemia; Hypothermia; Hyper/hypokalemia and metabolic disorders; Tamponade; Tension pneumothorax; Toxins/poisons/drugs; Thromboembolism;

PALS Guidelines

Pediatric Pulseless Arrest Algorithm

Pediatric Advanced Life Support

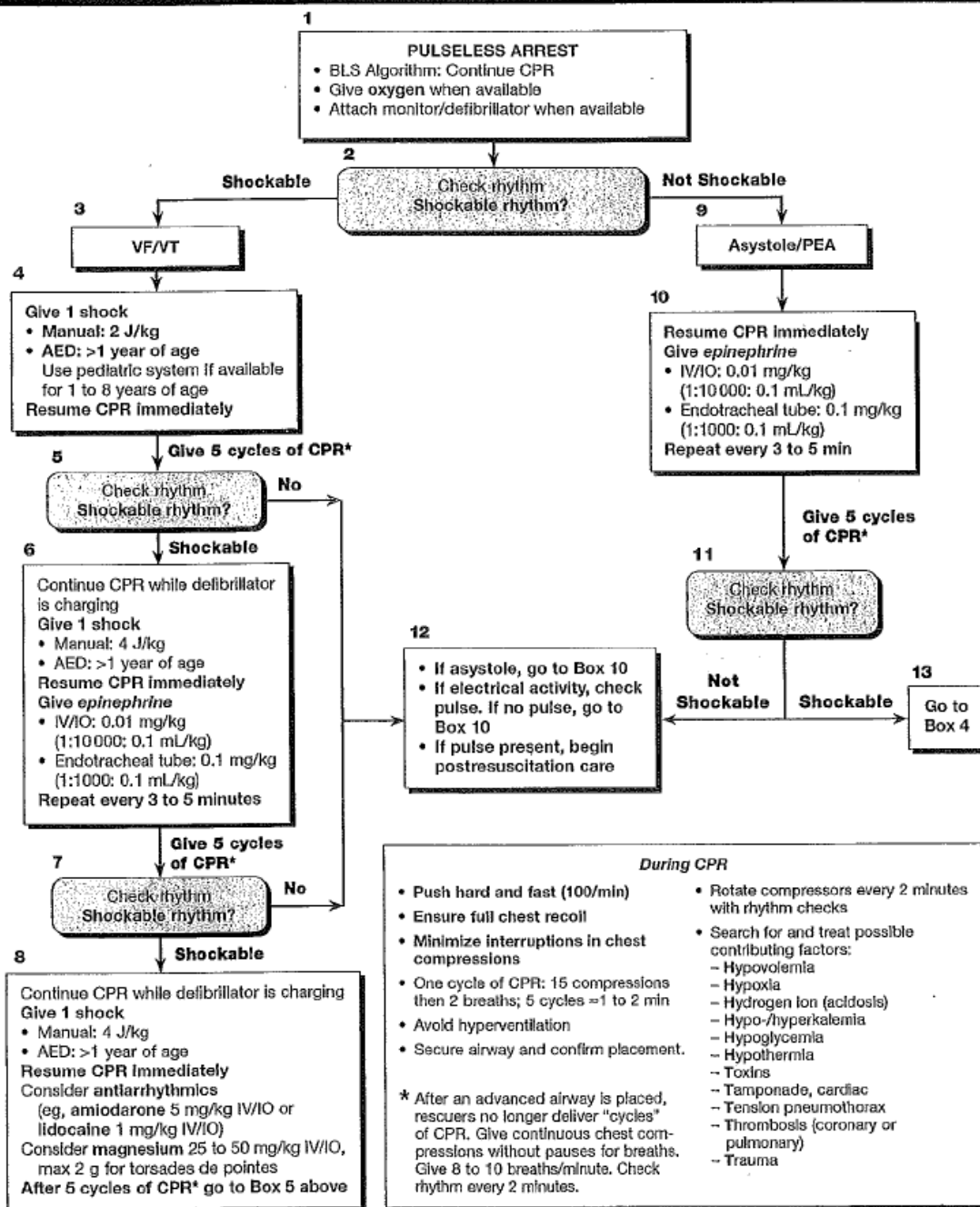
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Pediatric Pulseless Arrest Algorithm

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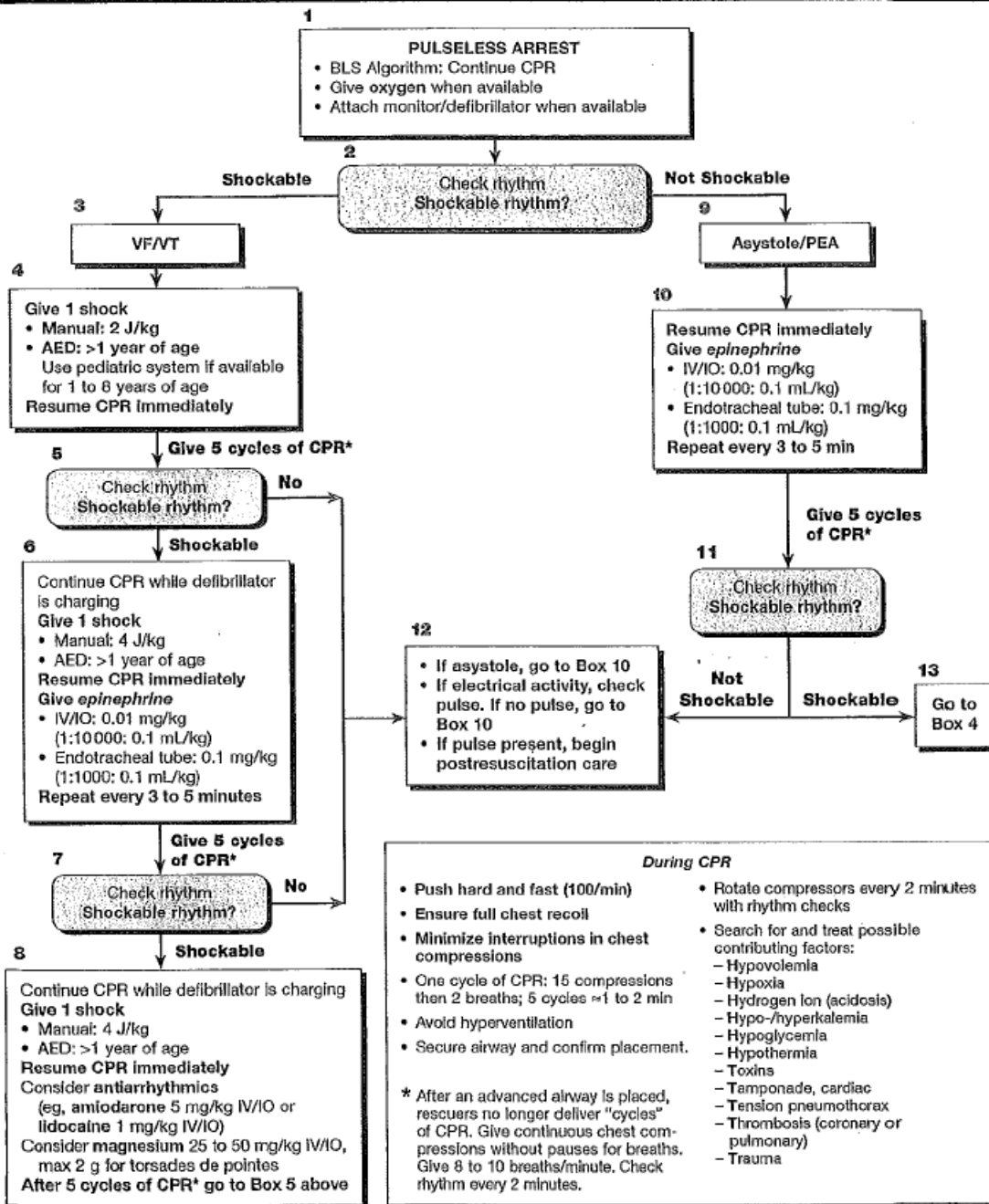
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Pediatric Tachycardia With Pulses and Adequate Perfusion Algorithm

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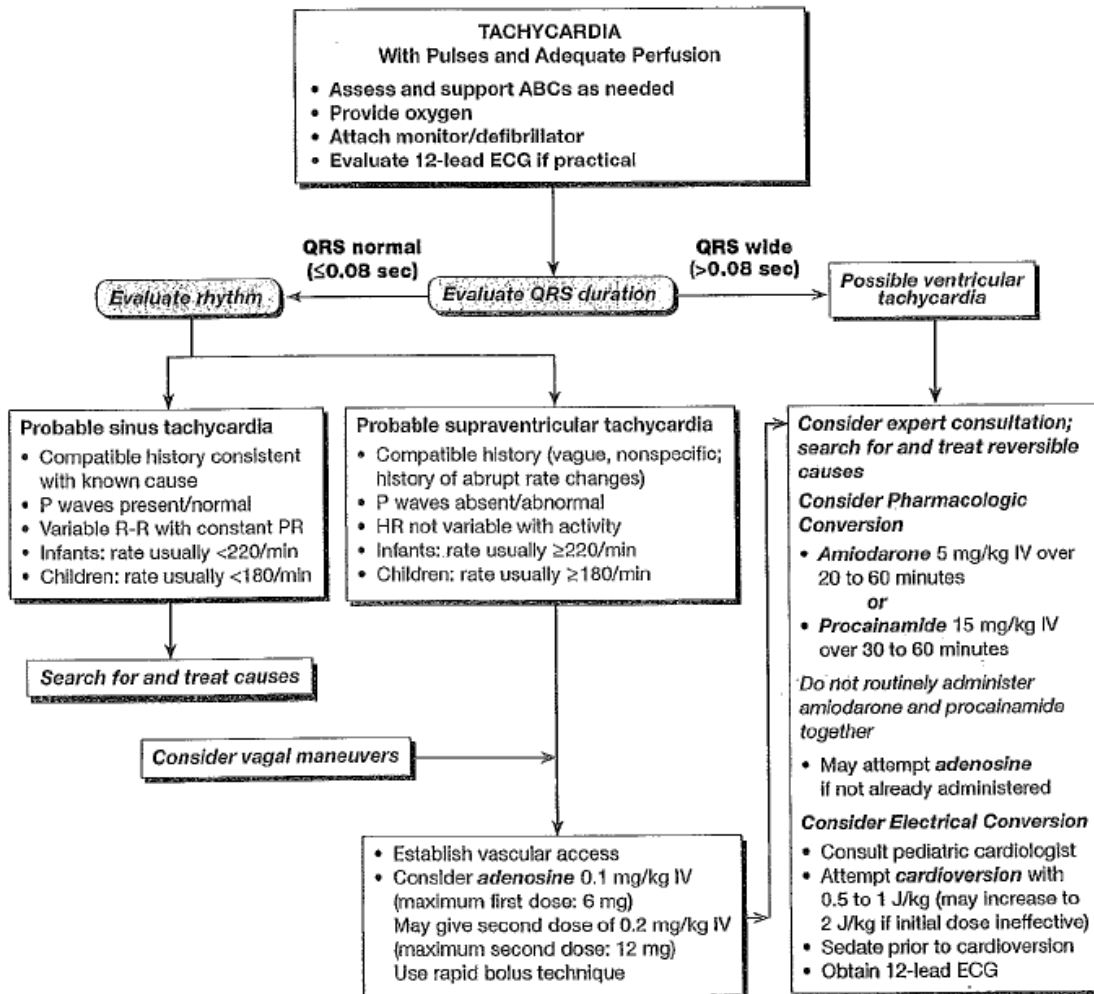
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Pediatric Tachycardia With Pulses and Poor Perfusion Algorithm

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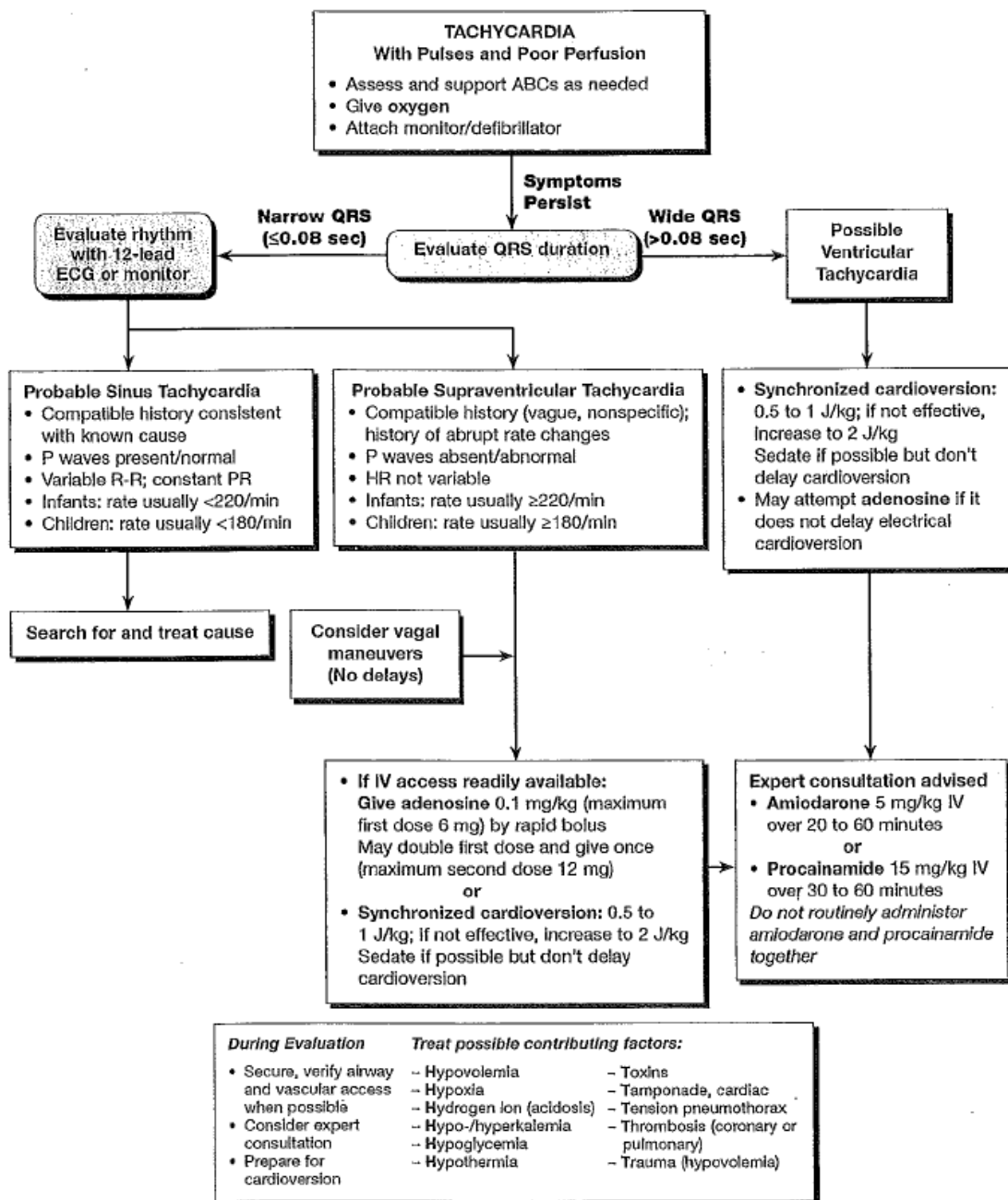
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Pediatric Septic Shock Algorithm

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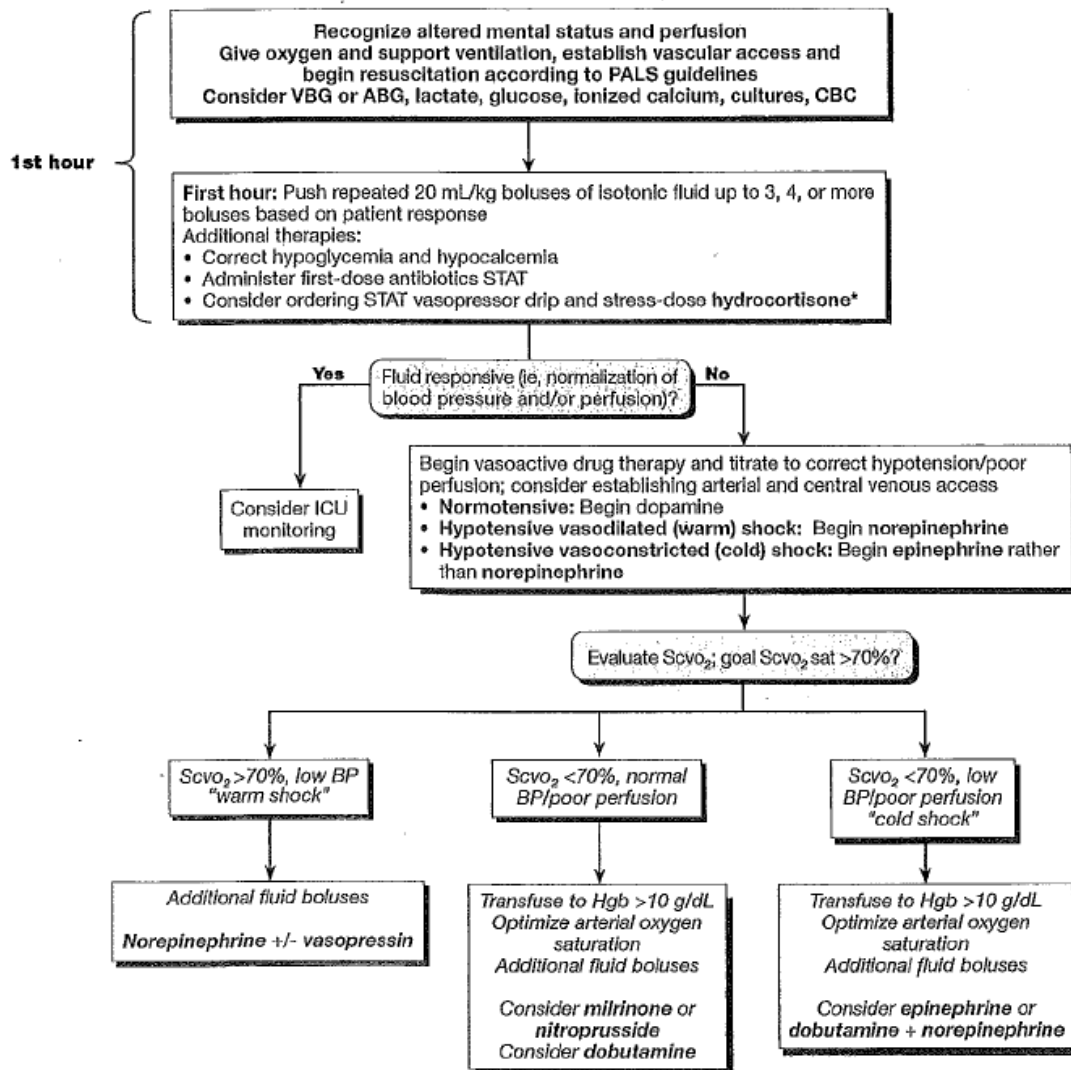
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*Note: Fluid refractory and dopamine- or norepinephrine-dependent shock defines patient at risk for adrenal insufficiency.

Draw baseline cortisol; consider ACTH stimulation test if unsure of need for steroids

If adrenal insufficiency is suspected give hydrocortisone ≈2 mg/kg bolus IV; maximum 100 mg

Modified from Parker MM, Hazelzet JA, Carcillo JA. Pediatric considerations. Crit Care Med. 2004;32:S591-S594.

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Postresuscitation Treatment of Shock and Maintenance Fluid Requirements

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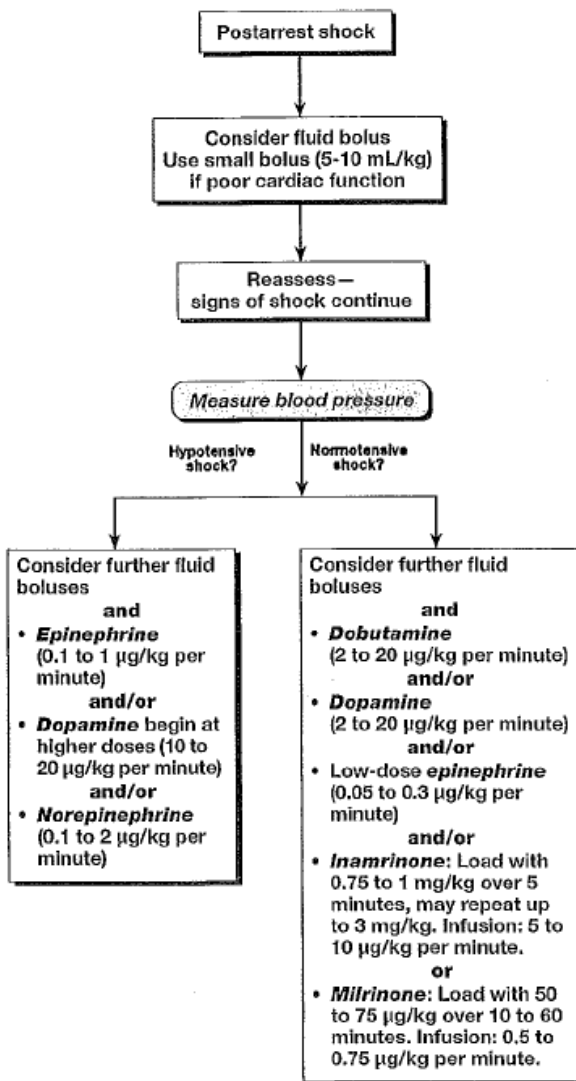
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Estimation of Maintenance Fluid Requirements

- **Infants <10 kg:** Infusion of D₅ normal saline after initial stabilization at a rate of 4 mL/kg per hour. For example, the maintenance rate for an 8-kg baby is as follows:

$$4 \text{ mL/kg per hour} \times 8 \text{ kg} = 32 \text{ mL/h}$$

- **Children 10 to 20 kg:** Infusion of 0.9% sodium chloride (normal saline) after initial stabilization at a rate of 40 mL/h plus 2 mL/kg per hour for each kilogram between 10 and 20 kg. For example, the maintenance rate for a 15-kg child is as follows:

$$40 \text{ mL/h} + (2 \text{ mL/kg per hour} \times 5 \text{ kg}) = 50 \text{ mL/h}$$

- **Children >20 kg:** Infusion of 0.9% sodium chloride (normal saline) after initial stabilization at a rate of 60 mL/hour plus 1 mL/kg per hour for each kilogram above 20 kg. For example, the maintenance rate for a 30-kg child is as follows:

$$60 \text{ mL/h} + (1 \text{ mL/kg per hour} \times 10 \text{ kg}) = 70 \text{ mL/h}$$

- Shortcut for patients weighing >20 kg:

$$\text{weight in kg} + 40 \text{ mL/h}$$

Adjust rate and composition of fluids to child's clinical condition (eg, pulse, blood pressure, systemic perfusion) and level of hydration.

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Equipment	PINK Newborn/ Small infant (3-5 kg)	RED Infant (6-9 kg)	PURPLE Toddler (10-11 kg)	YELLOW Small Child (12-14 kg)	WHITE Child (15-18 kg)	ORANGE Large Child (24-28 kg)	GREEN Adult (30-60 kg)
Resuscitation bag	Child	Child	Child	Child	Child	Child/adult	Adult
O ₂ mask	Newborn	Newborn	Pediatric	Pediatric	Pediatric	Adult	Adult
Oral airway	Infant/small child	Infant/small child	Small child	Child	Child	Child/small adult	Medium adult
Laryngoscope blade (size)	0-1 straight	1 straight	1 straight	2 straight	2 straight or curved	2-3 straight or curved	3 straight or curved
Tracheal tube (mm)	Premature infant 2.5 Term infant 3.0-3.5 uncuffed	3.5 uncuffed	4.0 uncuffed	4.5 uncuffed	5.0 uncuffed	6.0 cuffed	6.5 cuffed
Endotracheal tube length (cm at lip)	10-10.5	10-10.5	11-12	12.5-13.5	14-15	17-18	18.5-19.5
Stylet (F)	6	6	6	6	6	14	14
Suction catheter (F)	6-8	8	8-10	10	10	10	12
BP cuff	Newborn/ infant	Newborn/ infant	Infant/child	Child	Child	Child/adult	Adult
IV catheter (G)	22-24	22-24	20-24	18-22	18-22	18-20	18-20
Butterfly (G)	23-25	23-25	23-25	21-23	21-23	21-22	18-21
Nasogastric tube (F)	5-8	5-8	8-10	10	10-12	14-18	18
Urinary catheter (F)	5-8	5-8	8-10	10	10-12	12	12
Defibrillation/ cardioversion external paddles	Infant paddles	Infant paddles until 1 yr or 10 kg	Adult paddles when ≥1 yr or ≥10 kg	Adult paddles	Adult paddles	Adult paddles	Adult paddles
Chest tube (F)	10-12	10-12	16-20	20-24	20-24	28-32	32-40

*Adapted from the 2002 Broselow Pediatric Resuscitation Tape, with permission from Armstrong Medical Industries, Lincolnshire, Ill. Modified from Hazinski MF, ed. *Manual of Pediatric Critical Care*. St. Louis, Mo: Mosby-Year Book; 1999.

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Pediatric Assessment Flowchart

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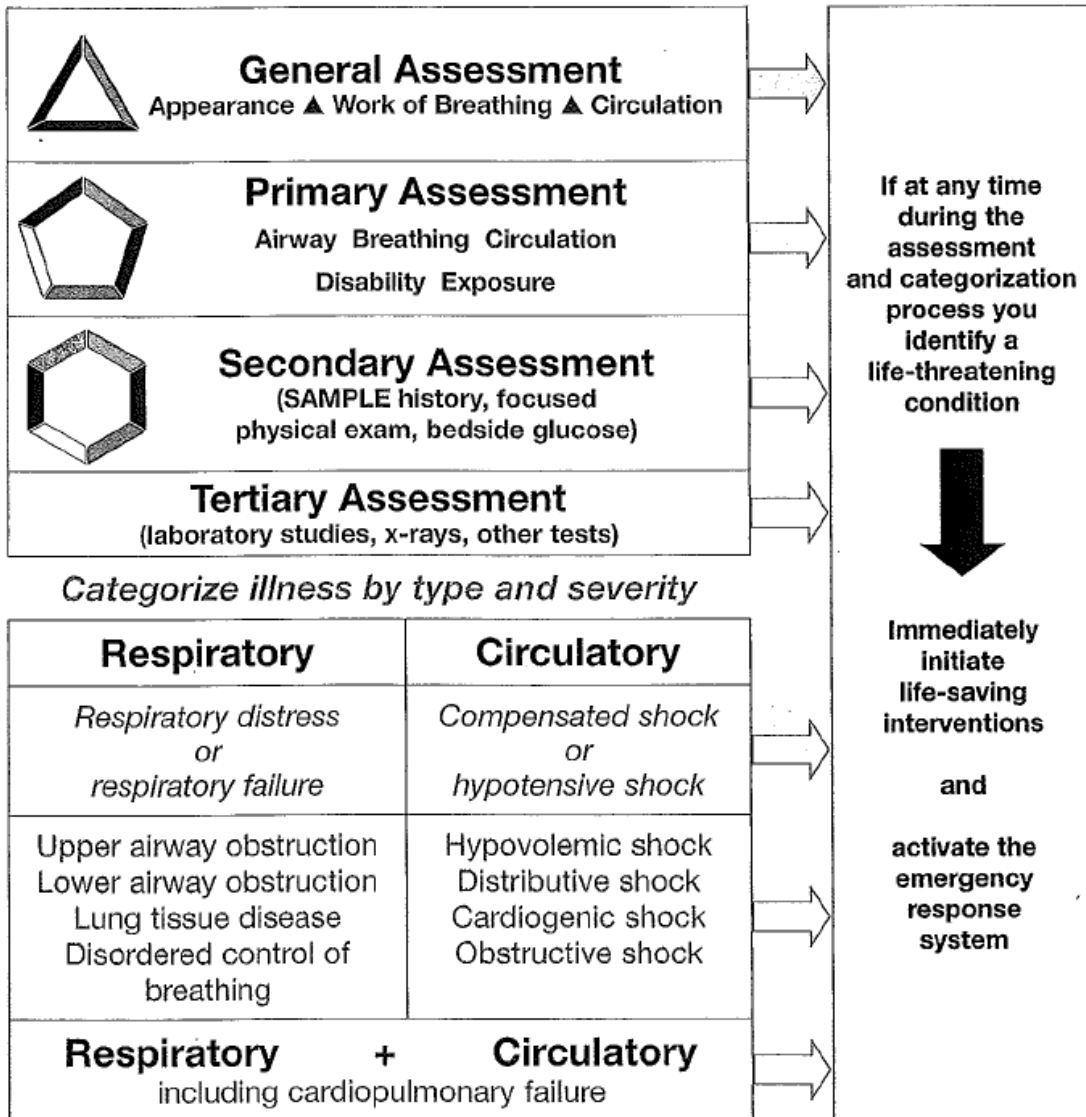
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Pediatric Recognition of Respiratory Problems

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Recognition of Respiratory Problems

Clinical Signs		Upper Airway Obstruction	Lower Airway Obstruction	Lung Tissue (Parenchymal) Disease	Disordered Control of Breathing
A	Patency	Airway open and maintainable/not maintainable			
B	Respiratory Rate/Effort	Increased			Variable
	Breath Sounds	Stridor (typically inspiratory) Seal-like cough Hoarseness	Wheezing (typically expiratory) Prolonged expiratory phase	Grunting Crackles Decreased breath sounds	Normal
	Air Movement	Decreased			Variable
C	Heart Rate	Tachycardia (early)		Bradycardia (late)	
	Skin	Pallor, cool skin (early)		Cyanosis (late)	
D	Level of Consciousness	Anxiety, agitation (early) Lethargy, unresponsiveness (late)			
E	Temperature	Variable			

Categorize Respiratory Problems by Severity

	Respiratory Distress	Respiratory Failure
A	Open and maintainable	Not maintainable
B	Tachypnea	Bradypnea to apnea
	Work of breathing (nasal flaring/retractions) Increased effort	Decreased effort Apnea
	Good air movement	Poor to absent air movement
C	Tachycardia	Bradycardia
	Pallor	Cyanosis
D	Anxiety, agitation	Lethargy to unresponsiveness
E	Variable temperature	

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Pediatric Management of Respiratory Emergencies Flowchart

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General Management for All Patients

- Airway positioning
- Oxygen
- Pulse oximetry
- ECG monitor (as indicated)
- BLS as Indicated

Upper Airway Obstruction

Specific Management for Selected Conditions

Group	Anaphylaxis	Aspiration of Foreign Body
<ul style="list-style-type: none"> • Nebulized epinephrine • Corticosteroids 	<ul style="list-style-type: none"> • IM epinephrine (or auto-injector) • Albuterol • Antihistamines • Corticosteroids 	<ul style="list-style-type: none"> • Allow position of comfort • Specialty consultation

Lower Airway Obstruction

Specific Management for Selected Conditions

Bronchiolitis	Asthma
<ul style="list-style-type: none"> • Nasal suctioning • Bronchodilator trial 	<ul style="list-style-type: none"> • Albuterol ± ipratropium • Corticosteroids • SQ epinephrine • Magnesium sulfate • Terbutaline

Lung Tissue (Parenchymal) Disease

Specific Management for Selected Conditions

<i>Pneumonia/Pneumonitis</i> <i>Infectious Chemical Aspiration</i>	<i>Pulmonary Edema</i> <i>Cardiogenic or Noncardiogenic (ARDS)</i>
<ul style="list-style-type: none"> • Albuterol • Antibiotics (as indicated) 	<ul style="list-style-type: none"> • Consider noninvasive or invasive ventilatory support with PEEP • Consider vasoactive support • Consider diuretic

Disordered Control of Breathing

Specific Management for Selected Conditions

Increased ICP	Poisoning/Overdose	Neuromuscular Disease
<ul style="list-style-type: none"> • Avoid hypoxemia • Avoid hypercarbia • Avoid hyperthermia 	<ul style="list-style-type: none"> • Antidote (if available) • Contact poison control 	<ul style="list-style-type: none"> • Consider noninvasive or invasive ventilatory support

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Pediatric Recognition of Shock Flowchart

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Clinical Signs		Hypovolemic Shock	Distributive Shock	Cardiogenic Shock	Obstructive Shock
A	Patency	Airway open and maintainable/not maintainable			
	Respiratory rate	Increased			
B	Respiratory effort	Normal to increased		Labored	
	Breath sounds	Normal	Normal (± crackles)	Crackles, grunting	
C	Systolic blood pressure	Compensated Shock → Hypotensive Shock			
	Pulse pressure	Narrow	Wide	Narrow	
	Heart rate	Increased			
	Peripheral pulse quality	Weak	Bounding or weak	Weak	
	Skin	Pale, cool	Warm or cool	Pale, cool	
	Capillary refill	Delayed	Variable	Delayed	
	Urine output	Decreased			
D	Level of consciousness	Irritable early Lethargic late			
E	Temperature	Variable			

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Pediatric Management of Shock Emergencies Flowchart

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Management of Shock Emergencies

- Oxygen
- Pulse oximetry
- ECG monitor
- IV/IO access
- BLS as Indicated
- Bedside glucose

Hypovolemic Shock

Specific Management for Selected Conditions

<i>Nonhemorrhagic</i>	<i>Hemorrhagic</i>
<ul style="list-style-type: none"> • 20 mL/kg NS/LR bolus, repeat as needed • Consider colloid after 3rd NS/LR bolus 	<ul style="list-style-type: none"> • Control external bleeding • 20 mL/kg NS/LR bolus, repeat 2 or 3x as needed • Transfuse PRBCs as indicated

Distributive Shock

Specific Management for Selected Conditions

<i>Septic</i>	<i>Anaphylactic</i>	<i>Neurogenic</i>
Management Algorithm: <ul style="list-style-type: none"> • Septic Shock 	<ul style="list-style-type: none"> • IM epinephrine (or auto-injector) • Antihistamines • Corticosteroids • Epinephrine infusion • Albuterol 	<ul style="list-style-type: none"> • 20 mL/kg NS/LR bolus, repeat PRN • Vasopressor

Cardiogenic Shock

Specific Management for Selected Conditions

<i>Bradyarrhythmia/Tachyarrhythmia</i>	<i>Other (eg, CHD, Myocarditis, Cardiomyopathy, Poisoning)</i>
Management Algorithms: <ul style="list-style-type: none"> • Bradycardia • Tachycardia with poor perfusion 	<ul style="list-style-type: none"> • 5 to 10 mL/kg NS/LR bolus, repeat PRN • Vasoactive infusion • Consider expert consultation

Obstructive Shock

Specific Management for Selected Conditions

<i>Ductal-Dependent (LV Outflow Obstruction)</i>	<i>Tension Pneumothorax</i>	<i>Cardiac Tamponade</i>	<i>Pulmonary Embolism</i>
<ul style="list-style-type: none"> • Prostaglandin E₁ • Expert consultation 	<ul style="list-style-type: none"> • Needle decompression • Tube thoracostomy 	<ul style="list-style-type: none"> • Pericardiocentesis • 20 mL/kg NS/LR bolus 	<ul style="list-style-type: none"> • 20 mL/kg NS/LR bolus, repeat PRN • Consider thrombolytics, anticoagulants • Expert consultation

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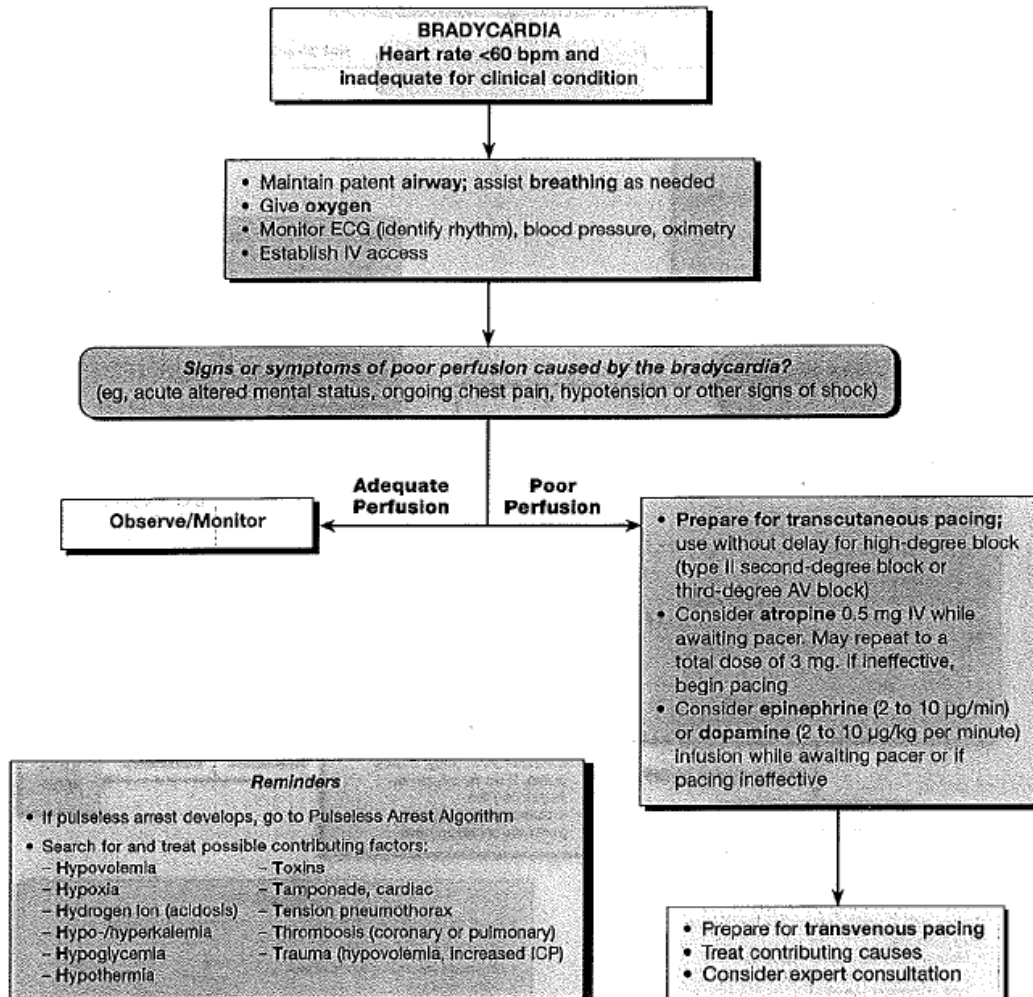
ACLS Guidelines

Adult Advanced Cardiovascular Life Support



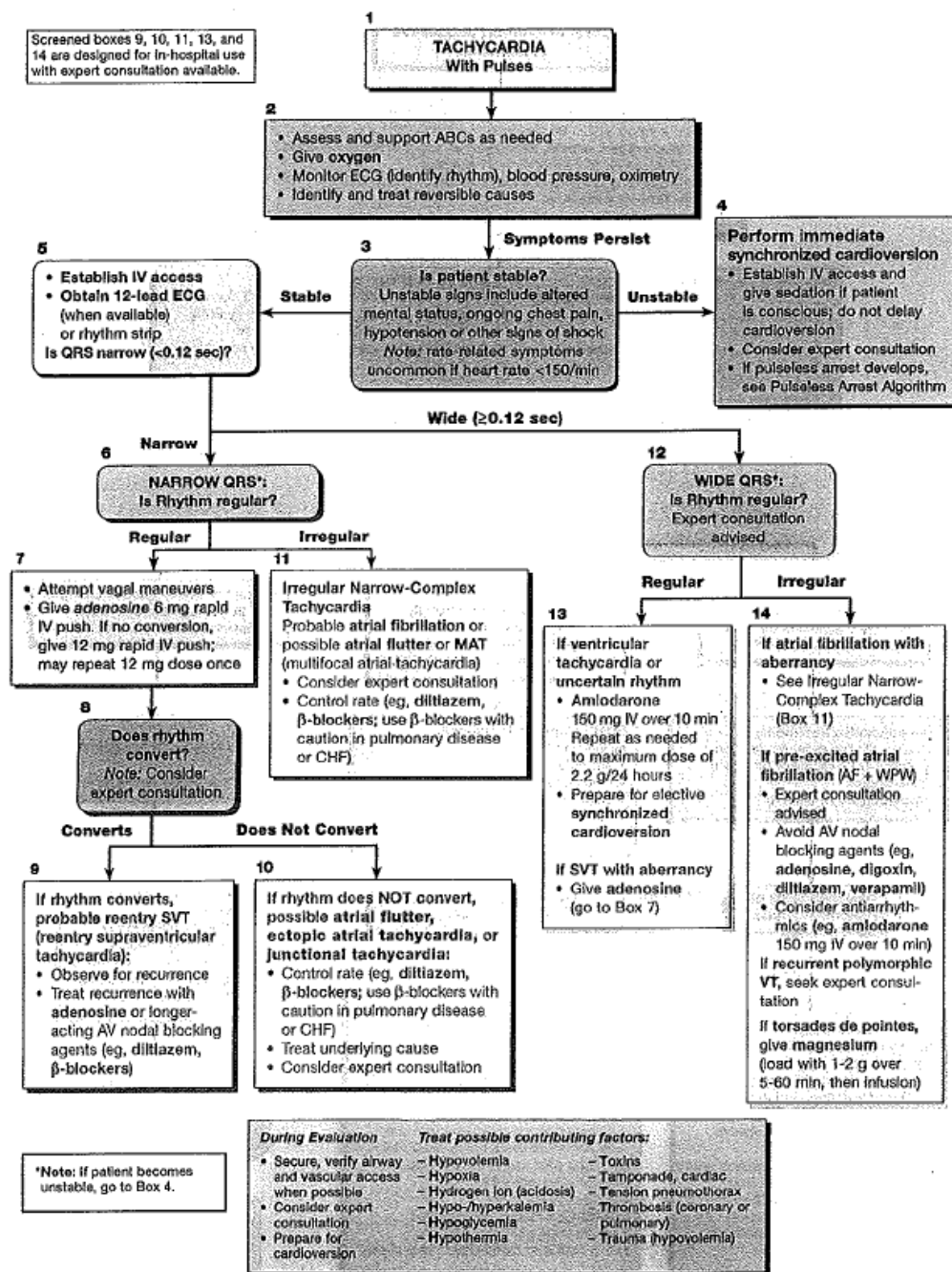
Bradycardia Algorithm

Adult Advanced Cardiovascular Life Support



Tachycardia Algorithm

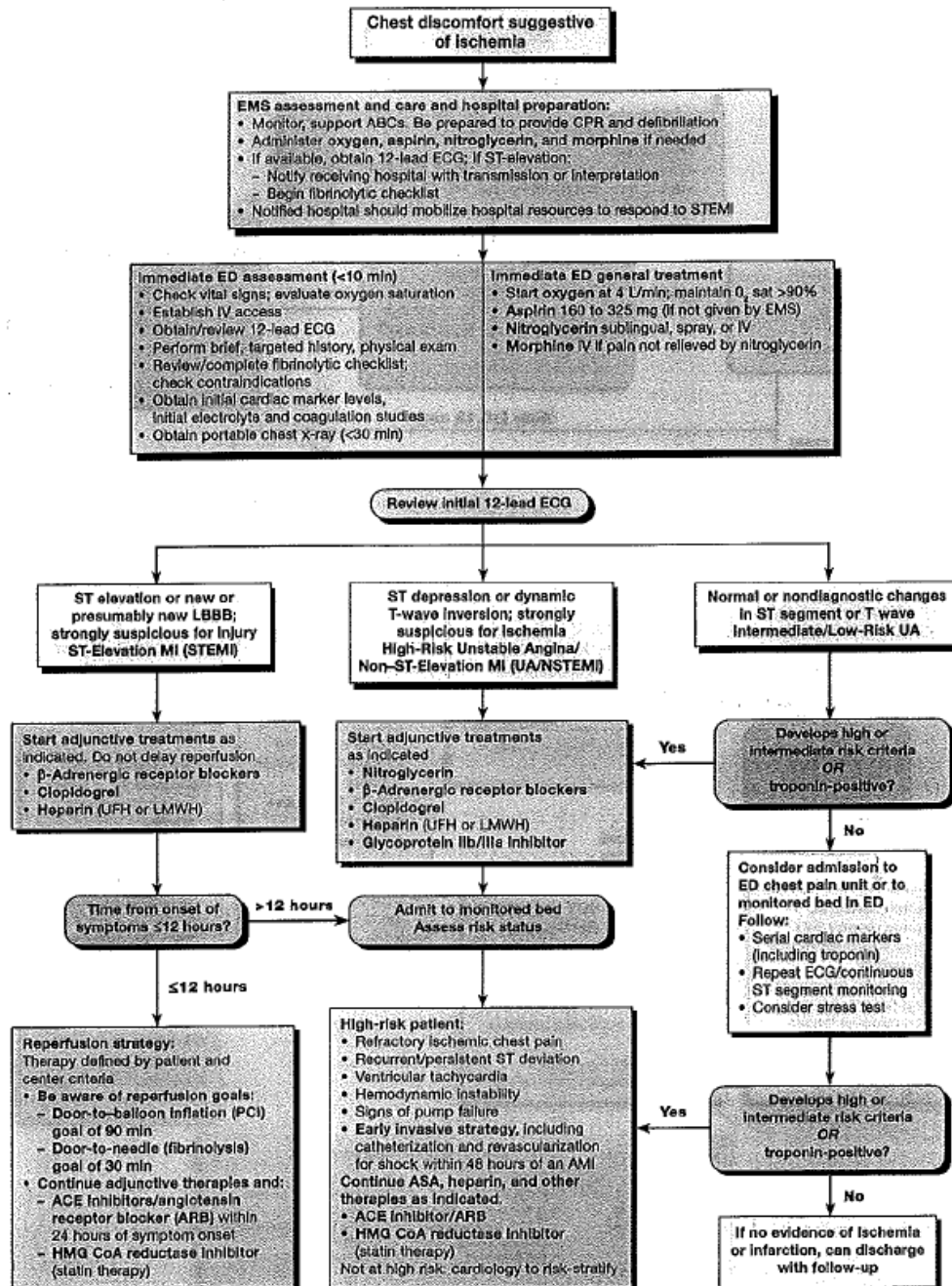
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Acute Coronary Syndromes Algorithm

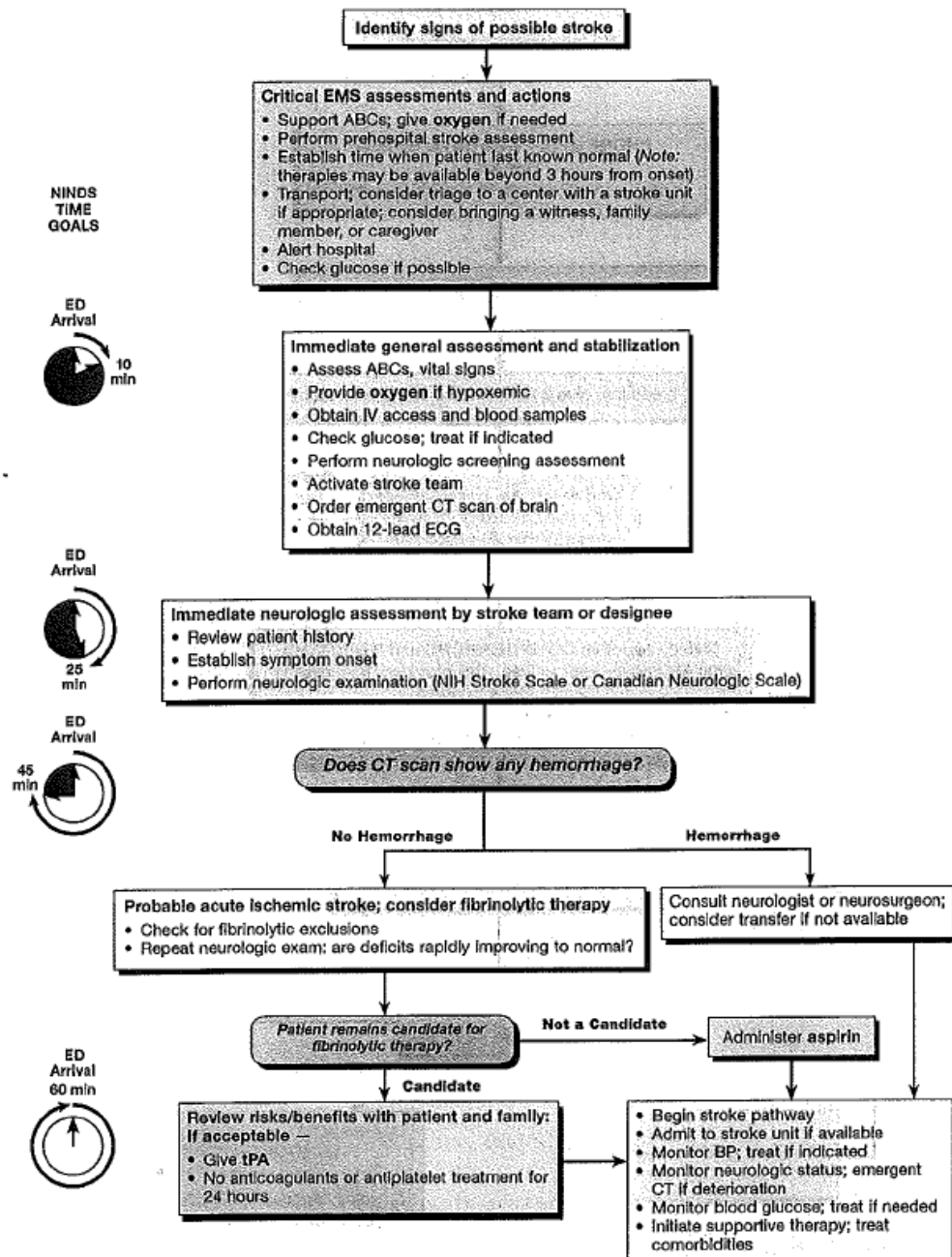
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Suspected Stroke Algorithm

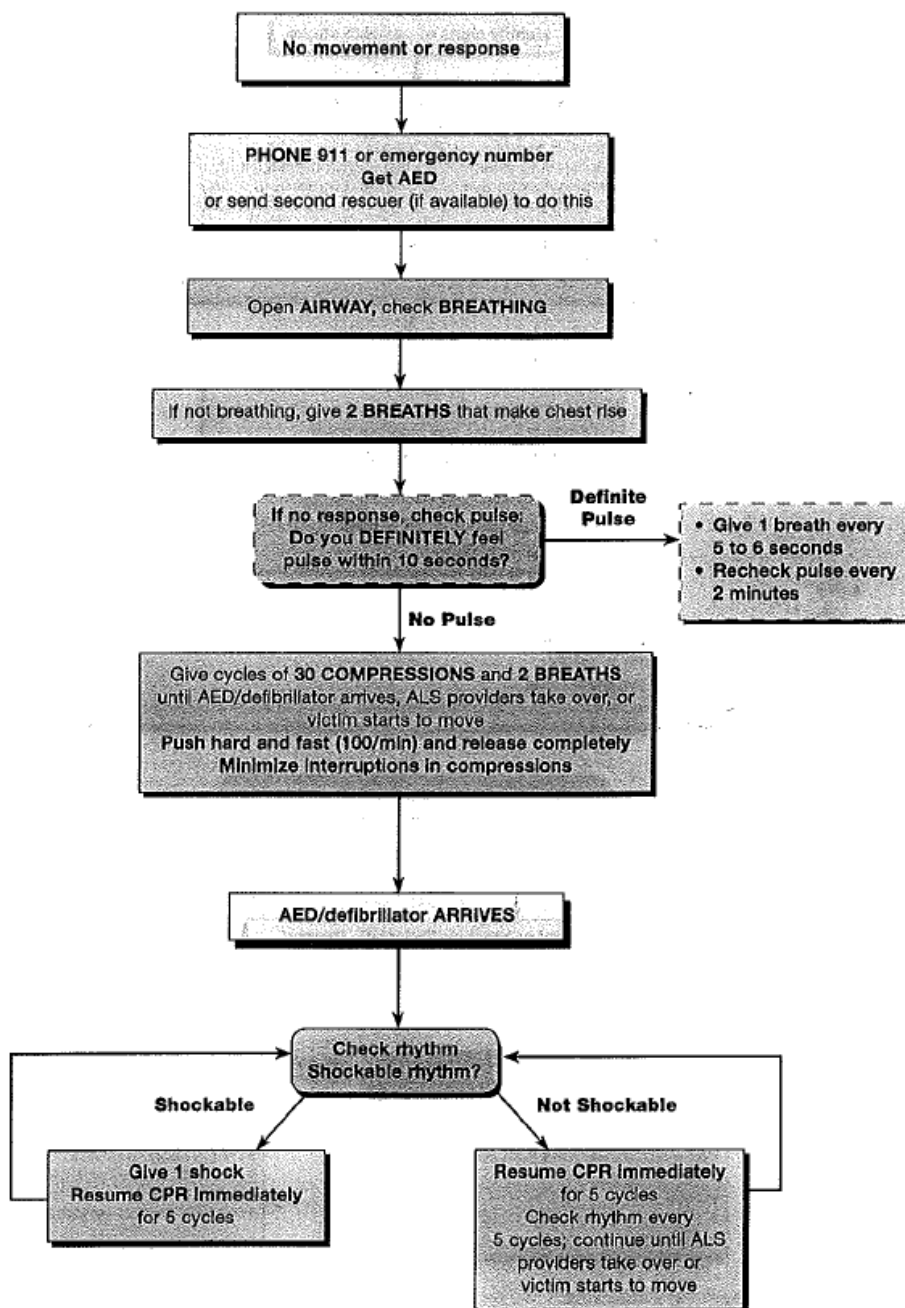
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BLS Healthcare Provider Algorithm

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Weight Guidelines

CHHC San Diego Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 1KG [REDACTED] 1 Kg

08/29/06

LOCATION:

16:41:56

Drug Medication	Dose	mls	Dose/Kg	Comments
Amiodarone 50 mg/ml	5 mg	0.10 ml	5 mg/kg	Dilute in D5W 1.5mg/ml, filter
Atropine 0.10 mg/ml	0.10 mg minimum	1 ml	0.02 mg/kg	
Bicarb 4.2% 0.50 mEq/ml	1 mEq	2 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	10 mg	0.10 ml	10 mg/kg	PPT with bicarb
Ca Gluconate 10% 100 mg/ml	100 mg	1 ml	100 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	2 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Epi 1:10,000 0.10 mg/ml	0.01 mg	0.10 ml	0.01 mg/kg	Doses may be much higher
Naloxone 0.40 mg/ml	0.10 mg	0.25 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Epinephrine Mix: 1.50 mg (1.50 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Standard Concentration Drips

Dopamine Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 0.08 ml/hr = 1 mcg/kg/min

Free Text Notes

CHHC San Diego Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 2KG

WEIGHT: 2 Kg

08/29/06

LOCATION:

16:42:05

ush Medication	Dose	mls	Dose/Kg	Comments
Amiodarone 50 mg/ml	10 mg	0.20 ml	5 mg/kg	Dilute in D5W 1.5mg/ml,filter
Atropine 0.10 mg/ml	0.10 mg minimum	1 ml	0.02 mg/kg	
Bicarb 4.2% 0.50 mEq/ml	2 mEq	4 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	20 mg	0.20 ml	10 mg/kg	PPT with bicarb
Ca Gluconate 10% 100 mg/ml	200 mg	2 ml	100 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	4 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Epi 1:10,000 0.10 mg/ml	0.02 mg	0.20 ml	0.01 mg/kg	Doses may be much higher
Naloxone 0.40 mg/ml	0.20 mg	0.50 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Epinephrine

Mix: 3 mg (3 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 0.15 ml/hr = 1 mcg/kg/min

Free Text Notes

CHHC San Diego Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 3KG

08/29/06

LOCATION:

BRIGHT 3 Kg

16:42:13

Usual Medication	Dose	mls	Dose/Kg	Comments
Amiodarone 50 mg/ml	15 mg	0.30 ml	5 mg/kg	Dilute in D5W 1.5mg/ml, filter
Atropine 0.10 mg/ml	0.10 mg minimum	1 ml	0.02 mg/kg	
Bicarb 4.2% 0.50 mEq/ml	3 mEq	6 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	30 mg	0.30 ml	10 mg/kg	PPT with bicarb
Ca Gluconate 10% 100 mg/ml	300 mg	3 ml	100 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	6 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Epi 1:10,000 0.10 mg/ml	0.03 mg	0.30 ml	0.01 mg/kg	Doses may be much higher
Naloxone 0.40 mg/ml	0.30 mg	0.75 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Epinephrine Mix: 4.50 mg (4.50 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Standard Concentration Drips

Dopamine Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 0.23 ml/hr = 1 mcg/kg/min

Free Text Notes

CHHC San Diego Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 4KG

08/29/06

LOCATION:

16:42:23

ush Medication	Dose	mls	Dose/Kg	Comments
Amiodarone 50 mg/ml	20 mg	0.40 ml	5 mg/kg	Dilute in D5W 1.5mg/ml, filter
Atropine 0.10 mg/ml	0.10 mg minimum	1 ml	0.02 mg/kg	
Bicarb 4.2% 0.50 mEq/ml	4 mEq	8 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	40 mg	0.40 ml	10 mg/kg	PPT with bicarb
Ca Gluconate 10% 100 mg/ml	400 mg	4 ml	100 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	8 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Epi 1:10,000 0.10 mg/ml	0.04 mg	0.40 ml	0.01 mg/kg	Doses may be much higher
Naloxone 0.40 mg/ml	0.40 mg	1 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Epinephrine

Mix: 6 mg (6 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 0.30 ml/hr = 1 mcg/kg/min

Free Text Notes

CHHC San Diego Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 5KG

08/29/06

LOCATION:

16:42:33

Drug Medication	Dose	mls	Dose/Kg	Comments
Amiodarone 50 mg/ml	25 mg	0.50 ml	5 mg/kg	Dilute in D5W 1.5mg/ml, filter
Atropine 0.10 mg/ml	0.10 mg	1 ml	0.02 mg/kg	
Bicarb 4.2% 0.50 mEq/ml	5 mEq	10 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	50 mg	0.50 ml	10 mg/kg	PPT with bicarb
Ca Gluconate 10% 100 mg/ml	500 mg	5 ml	100 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	10 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Epi 1:10,000 0.10 mg/ml	0.05 mg	0.50 ml	0.01 mg/kg	Doses may be much higher
Naloxone 0.40 mg/ml	0.50 mg	1.25 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Epinephrine

Mix: 7.50 mg (7.50 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 0.38 ml/hr = 1 mcg/kg/min

Free Text Notes

CHHC San Diego Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 10KG

08/29/06

LOCATION:

16:42:42

ush Medication	Dose	mls	Dose/Kg	Comments
Amiodarone 50 mg/ml	50 mg	1 ml	5 mg/kg	Dilute in D5W 1.5mg/ml, filter
Atropine 0.10 mg/ml	0.20 mg	2 ml	0.02 mg/kg	
Bicarb 4.2% 0.50 mEq/ml	10 mEq	20 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	100 mg	1 ml	10 mg/kg	PPT with bicarb
Ca Gluconate 10% 100 mg/ml	1000 mg	10 ml	100 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	20 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Epi 1:10,000 0.10 mg/ml	0.10 mg	1 ml	0.01 mg/kg	Doses may be much higher
Naloxone 0.40 mg/ml	1 mg	2.50 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Epinephrine

Mix: 15 mg (15 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 0.75 ml/hr = 1 mcg/kg/min

Free Text Notes

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 5KG

WEIGHT: 5 Kg

08/29/06

16:35:44

LOCATION:

Push Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.10 mg	0.25 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	5 mEq	5 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	50 mg	0.50 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	10 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	2.50 G	5 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.05 mg	0.50 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	0.50 mg	0.50 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	5 mg	0.25 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	0.50 mg	1.25 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine

Mix: 75 mg (0.94 ml of 80 mg/ml)

In : 250 ml

Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine

Mix: 7.50 mg (7.50 ml of 1 mg/ml)

In : 250 ml

Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine

Mix: 750 mg (37.50 ml of 20 mg/ml)

In : 250 ml

Run @ 1 ml/hr = 10 mcg/kg/min

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)

In : 250 ml

Run @ 0.38 ml/hr = 1 mcg/kg/min

Free Text Notes

ET Tube

Tube Size = (Age + 16) / 4 = inside diameter
 Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 10KG WEIGHT: 10 Kg

08/29/06

LOCATION:

16:35:53

ush Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.20 mg	0.50 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	10 mEq	10 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	100 mg	1 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	20 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	5 G	10 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.10 mg	1 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	10 mg	0.50 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	1 mg	2.50 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine

Mix: 150 mg (1.88 ml of 80 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine

Mix: 15 mg (15 ml of 1 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine

Mix: 1500 mg (75 ml of 20 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 10 mcg/kg/min

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
In : 250 ml
Run @ 0.75 ml/hr = 1 mcg/kg/min

Free Text Notes

ET Tube

Tube Size = (Age + 16) / 4 = inside diameter
Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 15KG WEIGHT: 15 Kg

08/29/06

16:36:03

LOCATION:

Drug Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.30 mg	0.75 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	15 mEq	15 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	150 mg	1.50 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	30 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	7.50 G	15 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.15 mg	1.50 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	15 mg	0.75 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	1.50 mg	3.75 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine

Mix: 225 mg (2.81 ml of 80 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine

Mix: 22.50 mg (22.50 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine

Mix: 2250 mg (112.50 ml of 20 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 10 mcg/kg/min

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 1.13 ml/hr = 1 mcg/kg/min

Free Text Notes

ET Tube

Tube Size = (Age + 16) / 4 = inside diameter
 Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 20KG WEIGHT: 20 Kg

08/29/06

16:36:15

LOCATION:

Push Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.40 mg	1 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	20 mEq	20 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	200 mg	2 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	40 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	10 G	20 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.20 mg	2 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	20 mg	1 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine	Mix: 300 mg (3.75 ml of 80 mg/ml) In : 250 ml Run @ 1 ml/hr = 1 mcg/kg/min
Epinephrine	Mix: 30 mg (30 ml of 1 mg/ml) In : 250 ml Run @ 1 ml/hr = 0.10 mcg/kg/min
Lidocaine	Mix: 3000 mg (150 ml of 20 mg/ml) In : 250 ml Run @ 1 ml/hr = 10 mcg/kg/min

Standard Concentration Drips

Dopamine	Mix: 200 mg (2.50 ml of 80 mg/ml) In : 250 ml Run @ 1.50 ml/hr = 1 mcg/kg/min
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Free Text Notes

ET Tube Tube Size = (Age + 16) / 4 = inside diameter
 Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 30KG WEIGHT: 30 Kg

08/29/06

16:36:33

LOCATION:

Push Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.60 mg	1.50 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	30 mEq	30 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	300 mg	3 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	60 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	15 G	30 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.30 mg	3 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	30 mg	1.50 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine
Mix: 450 mg (5.63 ml of 80 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine
Mix: 45 mg (45 ml of 1 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine
Mix: 4500 mg (225 ml of 20 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 10 mcg/kg/min

Standard Concentration Drips

Dopamine
Mix: 200 mg (2.50 ml of 80 mg/ml)
In : 250 ml
Run @ 2.25 ml/hr = 1 mcg/kg/min

Free Text Notes

ET Tube Tube Size = (Age + 16) / 4 = inside diameter
Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing
 PATIENT: CODE BLUE SHEET 25KG WEIGHT: 25 Kg
 LOCATION:

PedCode 2.01
 08/29/06
 16:36:24

Push Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.50 mg	1.25 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	25 mEq	25 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	250 mg	2.50 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	50 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	12.50 G	25 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.25 mg	2.50 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	25 mg	1.25 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine
 Mix: 375 mg (4.69 ml of 80 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine
 Mix: 37.50 mg (37.50 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine
 Mix: 3750 mg (187.50 ml of 20 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 10 mcg/kg/min

Standard Concentration Drips

Dopamine
 Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 1.88 ml/hr = 1 mcg/kg/min

Free Text Notes

ET Tube Tube Size = (Age + 16) / 4 = inside diameter
 Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 35KG WEIGHT: 35 Kg

08/29/06

LOCATION:

16:36:47

Drug Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.70 mg	1.75 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	35 mEq	35 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	350 mg	3.50 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	70 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	17.50 G	35 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.35 mg	3.50 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	35 mg	1.75 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine

Mix: 525 mg (6.56 ml of 80 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine

Mix: 52.50 mg (52.50 ml of 1 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine

** Custom drip volume overflow. Use Standard **

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
In : 250 ml
Run @ 2.63 ml/hr = 1 mcg/kg/min

Lidocaine

Mix: 2000 mg (100 ml of 20 mg/ml)
In : 500 ml
Run @ 5.25 ml/hr = 10 mcg/kg/min

Free Text Notes

ET Tube

Tube Size = (Age + 16) / 4 = inside diameter
Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 40KG WEIGHT: 40 Kg

08/29/06

LOCATION:

16:39:08

Push Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.80 mg	2 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	40 mEq	40 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	400 mg	4 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	80 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	20 G	40 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.40 mg	4 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	40 mg	2 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine

Mix: 600 mg (7.50 ml of 80 mg/ml)

In : 250 ml

Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine

Mix: 60 mg (60 ml of 1 mg/ml)

In : 250 ml

Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine

** Custom drip volume overflow. Use Standard **

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)

In : 250 ml

Run @ 3 ml/hr = 1 mcg/kg/min

Lidocaine

Mix: 2000 mg (100 ml of 20 mg/ml)

In : 500 ml

Run @ 6 ml/hr = 10 mcg/kg/min

Free Text Notes

ET Tube

Tube Size = (Age + 16) / 4 = inside diameter
 Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 45KG WEIGHT: 45 Kg

08/29/06

LOCATION:

16:39:22

Drug Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	0.90 mg	2.25 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	45 mEq	45 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	450 mg	4.50 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	90 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	22.50 G	45 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.45 mg	4.50 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	45 mg	2.25 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine

Mix: 675 mg (8.44 ml of 80 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine

Mix: 67.50 mg (67.50 ml of 1 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine

** Custom drip volume overflow. Use Standard **

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
In : 250 ml
Run @ 3.38 ml/hr = 1 mcg/kg/min

Lidocaine

Mix: 2000 mg (100 ml of 20 mg/ml)
In : 500 ml
Run @ 6.75 ml/hr = 10 mcg/kg/min

Free Text Notes

ET Tube

Tube Size = (Age + 16) / 4 = inside diameter
Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 50KG WEIGHT: 50 Kg

08/29/06

LOCATION:

16:39:34

Drug Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	1 mg	2.50 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	50 mEq	50 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	500 mg	5 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	100 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	25 G	50 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.50 mg	5 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	50 mg	2.50 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine

Mix: 750 mg (9.38 ml of 80 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine

Mix: 75 mg (75 ml of 1 mg/ml)
 In : 250 ml
 Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine

** Custom drip volume overflow. Use Standard **

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
 In : 250 ml
 Run @ 3.75 ml/hr = 1 mcg/kg/min

Lidocaine

Mix: 2000 mg (100 ml of 20 mg/ml)
 In : 500 ml
 Run @ 7.50 ml/hr = 10 mcg/kg/min

Free Text Notes

ET Tube

Tube Size = (Age + 16) / 4 = inside diameter
 Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 55KG WEIGHT: 55 Kg

08/29/06

LOCATION:

16:39:44

Drug Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	1 mg maximum	2.50 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	50 mEq maximum	50 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	550 mg	5.50 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	110 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	27.50 G	55 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.55 mg	5.50 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	55 mg	2.75 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine
Mix: 825 mg (10.31 ml of 80 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine
Mix: 82.50 mg (82.50 ml of 1 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine ** Custom drip volume overflow. Use Standard **

Standard Concentration Drips

Dopamine
Mix: 200 mg (2.50 ml of 80 mg/ml)
In : 250 ml
Run @ 4.13 ml/hr = 1 mcg/kg/min

Lidocaine
Mix: 2000 mg (100 ml of 20 mg/ml)
In : 500 ml
Run @ 8.25 ml/hr = 10 mcg/kg/min

Free Text Notes

ET Tube Tube Size = (Age + 16) / 4 = inside diameter
Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 60KG WEIGHT: 60 Kg

08/29/06

LOCATION:

16:39:53

Drug Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	1 mg maximum	2.50 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	50 mEq maximum	50 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	600 mg	6 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	120 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	30 G	60 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.60 mg	6 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	60 mg	3 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine Mix: 900 mg (11.25 ml of 80 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine Mix: 90 mg (90 ml of 1 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine ** Custom drip volume overflow. Use Standard **

Standard Concentration Drips

Dopamine Mix: 200 mg (2.50 ml of 80 mg/ml)
In : 250 ml
Run @ 4.50 ml/hr = 1 mcg/kg/min

Lidocaine Mix: 2000 mg (100 ml of 20 mg/ml)
In : 500 ml
Run @ 9 ml/hr = 10 mcg/kg/min

Free Text Notes

ET Tube Tube Size = (Age + 16) / 4 = inside diameter
Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 65KG WEIGHT: 65 Kg

08/29/06
16:40:50

LOCATION:

Drug Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	1 mg maximum	2.50 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	50 mEq maximum	50 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	650 mg	6.50 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	130 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	32.50 G	65 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.65 mg	6.50 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	65 mg	3.25 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine

Mix: 975 mg (12.19 ml of 80 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine

Mix: 97.50 mg (97.50 ml of 1 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine

** Custom drip volume overflow. Use Standard **

Standard Concentration Drips

Dopamine

Mix: 200 mg (2.50 ml of 80 mg/ml)
In : 250 ml
Run @ 4.88 ml/hr = 1 mcg/kg/min

Lidocaine

Mix: 2000 mg (100 ml of 20 mg/ml)
In : 500 ml
Run @ 9.75 ml/hr = 10 mcg/kg/min

Free Text Notes

ET Tube

Tube Size = (Age + 16) / 4 = inside diameter
Secure at AGE + 10 cm at the gums

CHHC SAN DIEGO Emergency Medication Dosing

PedCode 2.01

PATIENT: CODE BLUE SHEET 70KG WEIGHT: 70 Kg
LOCATION:08/29/06
16:40:05

Push Medication	Dose	mls	Dose/Kg	Comments
Atropine 0.40 mg/ml	1 mg maximum	2.50 ml	0.02 mg/kg	
Bicarb 8.4% 1 mEq/ml	50 mEq maximum	50 ml	1 mEq/kg	Infuse Slowly
Ca Chloride 10% 100 mg/ml	700 mg	7 ml	10 mg/kg	PPT with bicarb
Defibrillation 0 Joules/ml	140 Joules	0 ml	2 Joules/kg	Repeat with 4 Joules/kg
Dextrose 50% 0.50 G/ml	35 G	70 ml	0.50 G/kg	Dilute 1:1 with water for D25W
Epi 1:10,000 0.10 mg/ml	0.70 mg	7 ml	0.01 mg/kg	May repeat as needed.
Epi 1:1000 1 mg/ml	1 mg maximum	1 ml	0.10 mg/kg	Doses may be much higher.
Lidocaine 20 mg/ml	70 mg	3.50 ml	1 mg/kg	Repeat every 5 minutes
Naloxone 0.40 mg/ml	2 mg maximum	5 ml	0.10 mg/kg	Repeat dose q30-60 min prn

Custom Drips

Dopamine
Mix: 1050 mg (13.13 ml of 80 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 1 mcg/kg/min

Epinephrine
Mix: 105 mg (105 ml of 1 mg/ml)
In : 250 ml
Run @ 1 ml/hr = 0.10 mcg/kg/min

Lidocaine ** Custom drip volume overflow. Use Standard **

Standard Concentration Drips

Dopamine
Mix: 200 mg (2.50 ml of 80 mg/ml)
In : 250 ml
Run @ 5.25 ml/hr = 1 mcg/kg/min

Lidocaine
Mix: 2000 mg (100 ml of 20 mg/ml)
In : 500 ml
Run @ 10.50 ml/hr = 10 mcg/kg/min

Free Text Notes

ET Tube Tube Size = (Age + 16) / 4 = inside diameter
Secure at AGE + 10 cm at the gums

Crash Cart Contents List

Rady Children's Hospital - San Diego
Code Cart Contents - Charge Sheet - Appendix 3

Patient Information - Addressograph or Label

TOP OF CART				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
DEFIBRILLATOR WITH LEADS (Check function -- Appendix 4)	UNIT	1		
NEEDLE BOX (top or side of cart)	UNIT	1		
CLIPBOARD WITH 1 RESUSCITATION RECORD and 1 PEN ATTACHED	UNIT	1		
CODE CART RESOURCE MANUAL - includes: Resuscitation Records (5), Code Cart Contents Verification Checklist - Appendix 5 (1), Current Pharmacy Expiration Sheet Copies of Emergency Medication Tray, Intubation Medication Tray, IV Start/Flush Bag, Emergency Fluids Tray, Code Cart Contents - Charge Sheet, Defibrillator Check - Appendix 4, ACLS & PALS Reference Cards	UNIT	1		
GLOVE NITRILE MEDIUM LF	J01A13	1	30110	
MASK FLUIDSHIELD (Face masks with shield)	K02D03	1	31450	

SIDE OF CART				
OXYGEN TANK WITH REGULATOR (Check function and adequate volume (>1500PSI))	UNIT	1		
OXYGEN TANK WITH DUOVAC	UNIT	1		

BACK OF CART				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
BACKBOARD	UNIT	1		
RESPIRATORY EQUIPMENT BAG (Check integrity of lock)	see below			
SELF-INFLATING BAG PEDIATRIC	RESP	1		
SELF-INFLATING BAG ADULT	RESP	1		
CPAP BAG (1/2L)	RESP	1		
CPAP BAG (1 L)	RESP	1		
MANOMETER	RESP	1		
O2 FLOW METER WITH NIPPLE	RESP	1		
O2 TUBING GREEN BUBBLE TUBING	RESP	1		
NON-REBREATHER MASK ADULT	RESP	1		
NON-REBREATHER MASK CHILD	RESP	1		
MASK PREMIE	RESP	1		
MASK INFANT	RESP	1		
MASK TODDLER	RESP	1		
MASK CHILD	RESP	1		
MASK ADULT	RESP	1		
SIMMS ADAPTER	RESP	1		

DRAWER ONE				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
WASHCLOTH IN ZIPLOCK BAG	MM-LINEN	1		
PAPER RECORDING - EKG ROLL	M05D02	1	24510	
STETHESCOPE DUALHEAD LF	N06E02	1	24070	
TIP SUCTION TONSIL YANKAUER	N05E01	2	37670	

OXISENSOR O2 SAT PROBE - NEONATAL/ADULT	P01D01	1	80270	
DRAWER ONE - CONTINUED				
PAD DEFIB ADULT MULTIFUNCTION (Defib or pacer pads)	L04E01	1	0028538	
PAD DEFIB PED MULTIFUNCTION (Defib or pacer pads)	L04E03	1	37127	
PAD DEFIB PADDLE GEL (Package of defib gel pads)	L04E02	1	0002057	
ELECTRODE PEDIATRIC ADULT	M05B01	3	32260	
STYLETTE INFANT 6FR	I02D04	2	35690	
STYLETTE PEDIATRIC	I02D05	2	36482	
STYLETTE ADULT	I02D06	2	35700	
TUBE ET 2.5 UNCUFFED	I04E02	1	37210	
TUBE ET 3.0 UNCUFFED	I04E03	1	37220	
TUBE ET 3.5 UNCUFFED	I04E04	1	37230	
TUBE ET 4.0 UNCUFFED	I04E05	1	37240	
TUBE ET 4.5 UNCUFFED	I04E06	1	37250	
TUBE ET 5.0 UNCUFFED	I04E07	1	37260	
TUBE ET 5.5 UNCUFFED	I04E08	1	37270	
TUBE ET 6.0 UNCUFFED	I04E09	1	37280	
TUBE ET 6.5 UNCUFFED	I04E10	1	37290	
TUBE ET 7.0 UNCUFFED	I04E11	1	37300	
TUBE ET 3.0 CUFFED	I04D01	1	0020220	
TUBE ET 3.5 CUFFED	I04D02	1	0029884	
TUBE ET 4.0 CUFFED	I04D03	1	20230	
TUBE ET 4.5 CUFFED	I04D04	1	20240	
TUBE ET 5.0 CUFFED	I04D05	1	20250	
TUBE ET 5.5 CUFFED	I04D06	1	37340	
TUBE ET 6.0 CUFFED	I04D07	1	37360	
TUBE ET 6.5 CUFFED	I04A03	1	20280	
TUBE ET 7.0 CUFFED	I04D09	1	37320	
TUBE ET 7.5 CUFFED	I04D10	1	37330	
TUBE ET 8.0 CUFFED	Buyer	1	0002059	
DRAWER TWO				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
AIRWAY BOX (Check integrity of lock) INCLUDES:				
AIRWAY NASAL 12 FR	I04F01	1	42586	
AIRWAY NASAL 14FR	I04F02	1	42587	
AIRWAY NASAL 16FR	I04F03	1	42588	
AIRWAY NASAL 18 FR	I04F04	1	42589	
AIRWAY NASAL 20 FR	I04F05	1	42590	
AIRWAY NASAL 22 FR	I04F06	1	42591	
AIRWAY NASAL 24FR	I04F07	1	42592	
AIRWAY NASAL 26FR	I04F08	1	42593	
AIRWAY NASAL 28FR	I04F09	1	42594	
AIRWAY NASAL 30FR	I04F10	1	42595	
AIRWAY NASAL 32FR	I04F11	1	42596	
AIRWAY ORAL #000	F02F02	1	35060	
AIRWAY ORAL #00	F02F03	1	35050	
AIRWAY ORAL #0	F02F04	1	35040	
AIRWAY ORAL #1	F02F05	1	35000	
AIRWAY ORAL #2	F02F06	1	34950	
AIRWAY ORAL #3	F02G01	1	34940	
AIRWAY ORAL #4	F02G02	1	21770	
AIRWAY ORAL #5	F02G03	1	34840	

DRAWER TWO - CONTINUED				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
ASPIRATOR MECONIUM	N06E04	1	36773	
BATTERY AA ALKALINE	E01E03	2	60190	
BATTERY C ALKALINE	E01E02	2	60140	
CO2 DETECTOR PEDI CAP	102D02	1	36158	
DETECTOR CO2 EASY CAP	102D01	1	0027122	
SKIN TRAC MEDIUM (replace if >1/2 used)	K05E02	1	35900	
NEEDLE HOLDER 5 1/2"	N05C03	1	21900	
PENLIGHTS DISPOSABLE	F02D06	1	30630	
SCALPEL DISPOSABLE #11	L02E11	1	33970	
SCISSOR SHARP BLUNT 5"	N05C02	1	21910	
ADHESIVE LIQUID MASTISOL	N03B02	2	20150	
SUTURE 3-0 PROLENE	F02D02	2	20190	
LARYNGYSCOPE TRAY - (Check integrity of lock) includes Handles (small and large) , Miller Blades (0,1,2,3,4), Macintosh Blades (1,2,3,4) McGill Forceps (small and large)	BIOMED	1		
INTUBATION MEDICATION TRAY (CHECK INTEGRITY OF LOCK)	PHARM	1		

DRAWER THREE				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
ALCOHOL WIPES	MM-BULK	10	30080	
BUTTERFLY COLLECTIO SET 23G	R04B01	2	33550	
SYRINGE LUER LOCK 1CC TB	MM-BULK	5	39471	
SYRINGE LUER LOK 3CC	MM-BULK	10	24770	
SYRINGE LUER LOK 5CC	MM-BULK	5	24780	
SYRINGE LUER LOK 10CC	MM-BULK	10	24790	
NEEDLE FILTER 19G X 1"	R05E09	5	20720	
NEEDLE HYPO 18G X 1	MM-BULK	10	33370	
SPONGE STERILE 4 PLY 2 X 2	MM-BULK	5	35160	
SPONGE STERILE 4 PLY 4 X 4	MM-BULK	5	35200	
TAPE ADHESIVE 1" WR	N03D02	1	36820	
BLOOD GAS SYRINGES	MM-BULK	2	37950	
MEDICATION LABELS	MM-BULK	10	11100	
CALCULATOR	UNIT	1		
PERMANENT MARKER	MM-BULK	1		
EMERGENCY MEDICATION TRAY (Check integrity of lock) (NICU cart has Neonatal Med Tray - STANDARD Medication Tray is in Garage of NICU cart)	PHARM	1		

DRAWER FOUR				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
IV CATH SAFE 16G X 1 1/4 #3062	R05B02	3	35906	
IV CATH SAFE 18G X 1 1/4 #3065	R05B03	3	35907	
IV CATH SAFE 20 X 1 1/4 #3066	R05B04	3	35908	
IV CATH SAFE 22G X 1 #3053	R05F04	3	36572	
IV CATH SAFE 24 X 3/4	R05F05	3	36556	
CATH RADIAL 20G ARROW	R05C03	2	34190	
CATH RADIAL 22G ARROW	R05C04	2	26590	

DRAWER FOUR - CONTINUED				
NEEDLE PERC 18G COOK	R04E08	2	12328	
NEEDLE PERC 20G COOK	R04E06	2	35250	
NEEDLE INTROSSEOUS 13G	R04E05	1	0013189	
NEEDLE INTROSSEOUS 15G	R04E03	1	0028042	
NEEDLE INTROSSEOUS 18G	R04E02	1	0028043	
SET EXT 6" 4WAY STOPCOCK NAMIC	P05D01	3	38500	
DISPENSING PIN W/VALVE	P05D02	3	39500	
CONNECTOR T LUER SLIP	P05C01	3	39100	
STOPCOCK 4 WAY MX234-1L	P03E01	3	35020	
MICROCLAVE	P03C01	3	39850	
ARMBOARD SMALL 2X4	M06D01	1	21780	
ARMBOARD MEDIUM CLOTH 3X6	M06C01	1	21790	
ARMBOARD LARGE CLOTH 3X9	M06C02	1	22060	
TOURNIQUET 18" X 1"	M04C09	2	339999	
ALCOHOL WIPES	MM-BULK	10	30080	
VENI GARD	L02C01	2	20140	
VENI GARD JR	L02C02	2	24240	
IV START / FLUSH BAG: includes 10ml NS vials (6), 10ml NS syringes(10), Povidine-Iodine 3 swab packs (2) Chloraprep kits(2)	PHARM	1		

DRAWER FIVE				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
KIT CVP DL 4FR X 8CM ARROW	R06B01	1	27790	
KIT CVP DL 4FR X 13CM ARROW	R06B02	1	24250	
WIRE GUIDE 18X40 CDOC18X40-0	L04C01	1	39900	
TUBE FEEDING 8FR X 42"	M02E06	1	37380	
TUBE SALEM SUMP 10FR	M02C01	1	36470	
TUBE SALEM SUMP 12FR	M02C02	1	36490	
TUBE SALEM SUMP 14FR	M02C03	1	36500	
TUBE SALEM SUMP 16FR	M02C04	1	35720	
CATH SUCTION 5/6FR GLOVE KIT	B02A01	2	39750	
CATH SUCTION 8FR GLOVE KIT	B02A02	2	39760	
CATH SUCTION 10 FR GLOVE	B02A03	2	39770	
CATH SUCTION 12FR GLOVE	B02A04	2	44061	
CATH SUCTION 14FR GLOVE	B02A05	2	39780	
TUBE CONNECTING 6'	P02A03	1	37190	
SYRINGE LUER LOK 20CC	R03A05	5	27820	
SYRINGE LUER LOK 60CC	MM-BULK	5	24800	
SYRINGE CATHETER TIP 60CC	MM-BULK	2	36700	
TIP SUCTION TONSIL YANKAUER	N05E01	1	37670	
LUBRICANT JELLY 3G STERILE	N05D03	2	32940	
CUFF BP NEONATE	P01F05	1	31470	
CUFF BP INFANT LF	P01F06	1	31480	
CUFF BP CHILD LONG LF	P01E01	1	31530	
CUFF BP SMALL ADULT LF	P01E02	1	31540	
CUFF BP ADULT LF	P01E03	1	31560	
NON-DISP CUFF BP INFANT	MM	1		
NON-DISP CUFF BP CHILD LONG	MM	1		
NON-DISP CUFF BP SMALL ADULT	MM	1		
NON-DISP CUFF BP ADULT	MM	1		

GLOVE STERILE LATEX FREE 6	E03B03	2	0029553	
GLOVE STERILE LATEX FREE 6.5	E03C01	2	29554	
GLOVE STERILE LATEX FREE 7	E03C02	2	0029555	
GLOVE STERILE LATEX FREE 7.5	E03B01	2	29556	
GLOVE STERILE LATEX FREE 8	E03B02	2	0029557	
GLOVE STERILE LATEX FREE 8.5	E03A01	2	0029558	

DRAWER SIX (BOTTOM OR GARAGE)				
DESCRIPTION	LOCATION	PAR	STOCK #	Quantity Used
SET IV STRAIGHT STANDARD	P02B01	3	21320	
TRAY CVP DISPOSABLE	P02A05	1	26040	
TRAY THORACENTESIS	R07B03	1	35790	
TRAY VENESECTION DISPOSABLE	L06F03	1	38505	
TUBE ET 2.5 UNCUFFED	I04E02	1	37210	
TUBE ET 3.0 UNCUFFED	I04E03	1	37220	
TUBE ET 3.5 UNCUFFED	I04E04	1	37230	
TUBE ET 4.0 UNCUFFED	I04E05	1	37240	
TUBE ET 4.5 UNCUFFED	I04E06	1	37250	
TUBE ET 5.0 UNCUFFED	I04E07	1	37260	
TUBE ET 5.5 UNCUFFED	I04E08	1	37270	
TUBE ET 6.0 UNCUFFED	I04E09	1	37280	
TUBE ET 6.5 UNCUFFED	I04E10	1	37290	
TUBE ET 7.0 UNCUFFED	I04E11	1	37300	
TUBE ET 3.0 CUFFED	I04D01	1	0020220	
TUBE ET 3.5 CUFFED	I04D02	1	0029884	
TUBE ET 4.0 CUFFED	I04D03	1	20230	
TUBE ET 4.5 CUFFED	I04D04	1	20240	
TUBE ET 5.0 CUFFED	I04D05	1	20250	
TUBE ET 5.5 CUFFED	I04D06	1	37340	
TUBE ET 6.0 CUFFED	I04D07	1	37360	
TUBE ET 6.5 CUFFED	I04A03	1	20280	
TUBE ET 7.0 CUFFED	I04D09	1	37320	
TUBE ET 7.5 CUFFED	I04D10	1	37330	
TUBE ET 8.0 CUFFED	Buyer	1	0002059	
EMERGENCY MEDICATION TRAY - NICU only (Check integrity of lock) (NICU cart has Neonatal Med tray - STANDARD medication tray is in Garage of NI cart)	PHARM	1		
EMERGENCY FLUIDS TRAY (Check integrity of lock) Includes LR 1000ml, NS 500ml, NS 250 ml, Dopamine - 0.8mg/ml 250ml bag, Hespan 500ml bag	PHARM	1		

APPENDIX 4

BiPHASIC HEARTSTREAM XL DEFIBRILLATOR CHECK

PATIENT CONNECTIONS: EKG cable with leads attached (EKG electrodes (2pkgs) are in Drawer #1); paddles (adult & pediatric size), paddle cable & defib pad cables (defib pads [1 adult & 1 pediatric size] are in Garage) must be in good condition (call Biomed if any questions). Make sure there are no cracks, broken wires, or other visible signs of damage. Make sure the connectors engage securely.

RECORDER: Adequate paper in recorder (extra roll in Drawer #1)

POWER: Check AC power cord is plugged in. Ensure that the BATT CHARGE and AC POWER lights are on. (If the unit is plugged in and the BATT CHARGE or AC POWER light is not on, the power cord may be damaged. Request assessment of problem from Biomed immediately.) Check that the BATT CHARGE and AC POWER lights go off when the unit is unplugged.

OPERATIONAL TEST: Perform with the defibrillator unplugged.

EXTERNAL PADDLE TEST:

1. Turn the Heartstream XL off.
2. Unplug the AC power cord.
3. While pressing [STRIP], turn the energy select knob to Manual On to start the test. Hold [STRIP] until the screen flashes briefly.
4. Follow the prompts on the screen to proceed with test.
 - € "Verify PADDLES are in Holders and Press the CHARGE"
 - € "Stand Clear! Press Shock." - press shock buttons on paddles.
5. Strip will print with the following information - if strip prints differently than below, please contact Biomed immediately to resolve. DO NOT keep strip. Document defib check on "Code Cart Contents Verification Check Sheet".
 - € General System Test: Pass
 - € ECG Test: Pass
 - € Backup Power Test: Pass
 - € Data Card Test: No Data Card Present (CHSD does not use)
 - € Defib Test: Pass/External Paddles
 - € Pacer Test: Not Tested

MULTIFUNCTION DEFIB PAD TEST

1. Turn the Heartstream XL off.
2. Unplug the AC power cord.
3. Connect a 50 ohm test load (attached to left side of code cart) to the pads patient cable (instead of pads).
4. While pressing [STRIP], turn the energy select knob to Manual On to start the test. Hold [STRIP] until the screen flashes briefly.
5. Follow the prompts on the screen to proceed with test.
 - € "Verify TEST LOAD is attached and Press the CHARGE"
 - € "Stand Clear! Press SHOCK"
6. Strip will print with the following information - if strip prints differently than below, please contact Biomed immediately to resolve. DO NOT keep strip. Document defib check on "Code Cart Contents Verification Check Sheet".
 - € General System Test: Pass
 - € ECG Test: Pass

Drug Traysheets

Rady Children's Hospital - San Diego
3020 Childrens Way
San Diego, CA 92123
858-968-7795

Patient Name:

Date Used:

Tech Prep:

RPH Ck:

LOCK #

EMERGENCY TRAY

Exp of Tray:

LOCK #

Tray #

Next Med to Expire:

	Quantity Supplied		EXP DATE	QTY USED
TRAY	1	DRUG TRAY RESTOCK		1
ADEN3IV	2	Adenosine 3 mg/ml 2ml vial		
ASA80T	4	Aspirin 81mg tablets		
Place tablets in plastic bag with FOR ORAL USE ONLY label				
ATRO.4IV1	4	Atropine 0.4mg/ml 1ml vial		
CACL10IVS	1	Calcium Chloride 10% 10ml syringe		
DEXA4IV5	3	Dexamethasone 4mg/ml 5ml vial		
D50WIVS50	1	Dextrose 50% 50ml syringe		
EPI.1IVS10	2	Epinephrine 1:10,000 10ml syringe		
EPI1IV30	1	Epinephrine 1:1000 30ml vial		
ESM10IV10	1	Esmolol 10mg/ml 10ml vial		
FURO10IV10	1	Furosemide 10mg/ml 10ml vial		
HEP1MUIV1	1	Heparin 1000 units/ml 1ml vial		
LABE5IV20	1	Labetalol 5mg/ml 20ml vial		
Light Sensitive: leave in box				
LID100IVS5	2	Lidocaine Cardiac 100mg/5ml syringe		
MANN25IV50	4	Mannitol 25% 50ml vial		
Check for CRYSTALS in each vial				
NALO.4IV10	2	Naloxone 0.4mg/ml 10ml vial		
Light Sensitive: leave in box				
NTG.4SLT	1	Nitroglycerin 0.4mg tablet (25 / bottle)		
Seal bottle with TAMPER EVIDENT tape				
PHEN10IV1	1	Phenylephrine 10mg/ml 1ml vial		
Place vial in plastic bag with CODE DRIP label				
PHEN50IV5	2	Phenytoin 50mg/ml 5ml vial		
PROC100IV	1	Procainamide 100mg/ml 10ml vial		
NAHC1IV50	3	Sodium Bicarbonate 1meq/ml 50ml vial		
NS10	4	Sodium Chloride 0.9% (PF) 10ml vial		

Narcotic Documentation

MIDA5IV2	1	Midazolam 5mg/ml 2ml vial		
Dose Given:	RN Signature		Date Given:	
Waste Amount:	RN Signature		Time Given:	
PB130IV1	4	Phenobarbital 130mg/ml 1ml vial		
Dose Given:	RN Signature		Date Given:	
Waste Amount:	RN Signature		Time Given:	

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 Children's Way
 Diego, CA 92123
 858-966-7795

Patient Name: _____	Date Used: _____	Tech Prep: _____
		RPH Ck: _____

EMERGENCY FLUIDS TRAY

Tray # _____	Exp of Tray: _____	Next Med to Expire: _____
--------------	--------------------	---------------------------

	Quantity Supplied		EXP DATE	QTY USED
TRAY	1	DRUG TRAY RESTOCK		1
LRL	1	Lactated Ringers IV Solution 1000 ml bag		
NSHL	1	Sodium Chloride 0.9% IV Solution 500 ml bag		
NSQL	1	Sodium Chloride 0.9% IV Solution 250 ml bag		
DOP200250	1	Dopamine 0.8 mg/ml 250 ml bag (with dosing chart)		
HETA6IV500	1	Hetastarch 6% / NS (Hespan) 500 ml bag		

Nursing Signature: _____

<div style="display: flex; justify-content: space-between;"> <div>Date: _____</div> <div>RPH / TECH: _____</div> </div>

Please discard all previous med tray sheets when replacing with a new med tray. An Occurrence report will be generated if previous sheets are found on code cart.

Rady Children's Hospital
San Diego
3020 Childrens Way
San Diego, CA 92123
858-968-7795

Patient Name: _____

Date Used: _____

Tech Prep: _____

RPH Ck: _____

INTUBATION TRAY

Exp of Tray: _____

LOCK # _____

Tray # _____

Next Med to Expire: _____

	Quantity Supplied		EXP DATE	QTY USED
TRAY	1	DRUG TRAY RESTOCK		1
ATRO.4IV1	1	Atropine 0.4mg/ml 1ml vial		
NS10	2	Sodium Chloride 0.9% (PF) 10ml vial		
Place in plastic bag labeled WARNING: Paralyzing Agent				
PANC1IV10	1	Pancuronium 1mg/ml 10ml vial Expires in 6 months at room temperature		
Place in plastic bag labeled WARNING: Paralyzing Agent				
SUCC20IV	1	Succinylcholine 20mg/ml 10ml vial Expires in 3 months at room temperature		
Place in plastic bag labeled WARNING: Paralyzing Agent				
VECU10IV10	2	Vecuronium 10mg vial		
Place in plastic bag labeled WARNING: For External Use Only				
AFRIN15SP	1	Oxymetazoline 0.05% Nasal Spray 15 ml bottle		
LID2GEL30	1	Lidocaine Jelly 2 % 30ml tube		
BENZOIN0.6	2	Tincture of Benzoin 0.6ml vial		

Narcotic Documentation

KETA100IV5	1	Ketamine 100mg / ml 5 ml vial		
Dose Given:		RN Signature	Date Given:	
Waste Amount:		RN Signature	Time Given:	
THIO500IVS	1	Thiopental 500mg / 20ml syringe		
Dose Given:		RN Signature	Date Given:	
Waste Amount:		RN Signature	Time Given:	
Nursing - Please account for all Controlled Medications before RETURNING this tray to pharmacy.				

JNIT: _____

RN SIGNATURE: _____

DATE: _____

RPH / TECH: _____

Pharmacy staff - DO NOT accept tray if missing controlled medications or documentation is not complete.

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 Childrens Way
 Diego, CA 92123
 858-966-7795

Patient Name: _____

Date Used: _____

Tech Prep: _____

RPH Ck: _____

IV START / FLUSH BAG

Exp of Tray: _____

BAG # _____

Next Med to Expire: _____

	Quantity Supplied		EXP DATE	QTY USED
TRAY	1	DRUG TRAY RESTOCK		1
NS10	6	Sodium Chloride 0.9% (PF) 10ml vials		
NS5	10	Sodium Chloride 0.9% (PF) 5ml syringe		
Place items in plastic bag labeled FOR EXTERNAL USE ONLY				
BETASWABST	2	Povidone - Iodine 10% swab sticks (3 swabs/pack)		
CHLORAPREP	2	ChloroPrep kits (1appl/kit)		

UNIT: _____

NURSING SIGNATURE: _____

DATE USED: _____

RPH or TECH: _____

Please discard all previous medication tray sheets when replacing a new medication tray. An Occurrence report will be generated if previous sheets are found on the code cart.

Pediatric Operating Room



The following list of OR (pre, intra, and post) specific considerations can be used to augment an existing surgical infrastructure. This list assumes that the user facility already has an existing operating room capable of treating Orthopedic, General Surgery, Vascular, and Neurosurgical injuries. The items listed are *pediatric specific*.

Types of Injuries to Be Expected

- Burns
- Penetrating
- Blunt

Patient ID Challenges

- No government issued photo ID
- NICU/Newborns: Unnamed or name variations
- Parent/Guardian ID band in order to release the child upon discharge

Family Considerations

- Keep child with family even if child does not need treatment
- Determine who the guardian is
- Respecting Developmental Levels, Privacy, and Dignity as you would for an adult

Talking to Children

- Communicate with child/family with the appropriate age and development level.
- Carefully chosen words: bed, sleepy, special air, opening into
- Use appropriate interpreters when possible
- Talk directly to child whenever possible & be at their eye level. Do not offer too many choices

Consent

- Emergency: No consent needed if life threatening

- Try to correctly identify caregiver (caregivers affidavit)
- Emancipated minors
- Court orders

NPO Guidelines

Infant Less than 6 Months:

- Formula or breast milk finished 4 hours prior
- Clear liquids finished 2 hours prior

Children 6 Months and Older:

- Formula or breast milk finished 6 hours prior.
- Clear liquids finished 2 hours prior.

Guidelines acceptable for General Anesthesia or Conscious Sedation

Non-Threatening Environment

- Keep family together whenever possible
- Allow child to stay in own clothes until under anesthesia
- Allow child to walk back to OR if possible
- Use toys, songs, games, etc. for distraction

Decreasing Anxiety

- Decrease your own anxiety. Anxiety is contagious.
- Be calm, prepared, reassuring & confident.
- Soft spoken voice.
- Warm smile.
- Do not rush.

Maintain Normothermia

- Normal temperature is defined as 36.4° C (97.6° F) temporal artery scanner.
- Keep babies warm, they have no shiver reaction before 3 months. Use blankets, head cover, warm room, Bair Buggers.

Hypothermia

- If the temperature is below 35.6°C (96.0°F) or the temperature is below the patient's baseline normal by more than 1.1 degrees C° or 2 degrees F°, we utilize one of the following measures post-op:
 - Apply warming device
 - Warming lights at a distance of 28".
 - Supplement patient with 2 or more warm blankets

Size-Appropriate Supplies

- Wide range of patients (1-350 lbs).
- Same size OR table for all patients, with an infant table attachment.
- Size specific, trauma related instrumentation you might need:
 - Small K-wires (.62 and smaller)
 - 12, 16, 20 and 24 french straight chest tubes
 - 4 fr, 5 fr, and 7 fr Central Lines
 - Pediatric Grounding Pads (dual electrode)
 - Small Suprapubic Catheter Kits (Stamey 10 and 14fr)
 - Braselow Tapes

Laryngospasm

- Maintain airway
- Use succinylcholine
- Extubate in controlled environment

Transportation to PACU

- Loss of IV: Tape it well, use IV board (may need to cut down to size)
- Appropriate size bed. Usually transported intubated with O₂
- Injury upon emergence: Use two safety belts, bath blankets pad as needed
- Communicate:
 - Child's response during induction

PACU

- RNs with ICU or ED experience
- PALS Training
- Pain: Demerol & Dilaudid
- Nausea: Zofran or Reglan
- Parent Involvement

Discharge PACU Criteria

- Modified Aldrete greater than or equal to 8.
- Blood pressure and heart rate back to baseline or +/- 20% of pre-op BP/HR.
- Temperature: Greater than 35.6°C (96°F) or back to pre-op baseline (+ or -1 degree).
- LOC: Awake or back to pre-sedation state.
- Pain Score: FLACC/Visual Analog Scale less than or equal to 4/10.

Pediatric Pharmaceuticals

Pharmaceutical Care and the Pediatric/Neonatal Patient

Medication administration to pediatric and neonatal patients can have substantial differences from medicating adults. Pediatric patients should not be considered miniature adults. For successful medication therapy in this population of patients, there are fundamental issues that must be considered.

I. Physiological Differences between Neonates and Adults

Neonates and adults have significant differences physiologically. One must consider all of the factors below to ensure successful drug therapy.

Gastric pH	Decreased
Gastric Motility	Decreased
Gastric Emptying Time	Increased
Intestinal flora, pancreatic enzymes, bile salt	Decreased
Percutaneous absorption	Increased
Total body water % & Extracellular water	Increased
Plasma proteins	Decreased
Hepatic enzyme capacity	Decreased
Renal Function	Decreased

II. Pharmacodynamics

Differences Between Adult and Pediatric Patients

- Growth and development ongoing
 - Complications from steroid use, paradoxical excitement with antihistamines, tetracycline on bone development, altered rates of toxicity

- PD measurements, surrogate markers or target may be different
 - PFT determinations, pain assessments, BP, CD4+ Cells
- Altered disease manifestation or progression and exclusive diseases
 - Etiologic, receptor, co-morbid conditions, toxicity differences

General rule: adult maximum doses are generally not exceeded in children (but there are exceptions!)

Goal: **Avoid toxicity** which can happen easily in pediatric patients

The bottom line is that if any drug is not calculated or dosed correctly, it can lead to toxicity or ineffectiveness

Children are moving targets... Weight is always changing due to growth

Children are particularly vulnerable to medication dosing errors, Not only are there differences in absorption and elimination, but weights seen in children can vary from <500 grams to 150 kg pts (x 300 fold differences in weight).

To facilitate proper dosing of pediatric patients consider Unit dosing, and dilute drugs to enhance dose accurate measurement.

Because of the lack of available dosage formulations it can be necessary to compound existing dosage forms to deliver accurate doses to kids.

Renal Drug Elimination in Pediatric Patients

The kidneys undergo rapid change in the first years of life. Drugs eliminated primarily by this route should be used with a focus on this concept.

- Kidneys at birth receive only 5-6% of cardiac output compared to 15-25% in adults
- Renal blood flow is ~12 ml/min at birth compared to 1100 ml/min in adults
- GFR is directly proportional to gestational age (GA) beyond 34 weeks GA
- Tubular secretion increases 2 fold over the first week of life and 10 fold over first year of life

Normal Serum Creatinine - Creatinine is a product of muscle metabolism. The normal range for serum varies in infants and as they mature, children and adolescents. Be cautious when evaluating renal function of children using serum creatinine.

Newborn	0.3 – 1 mg/dl
Infant	0.2 – 0.4
Child	0.3 – 0.7
Adolescent	0.5 - 1
Adult	0.5 – 1.2

III. Dosing

To ensure to appropriate amount of drug to be administered, pediatric and neonatal dosages are based on mg/kg/day, mg/kg/dose or mg/m²

Determining the Pediatric Dosing, the following elements should be considered:

- Age
- Weight bands (eg 10-15kg)
- Weight (mg/kg)
- Body Surface Area (mg/m²)
- Allometric Scaling
 - Adult Dose * (WT/70)^{0.7}
 - If no reference, use a mg/kg based on 70 kg patient → mg/kg/dose or mg/kg/day

Once the dose is established there are additional considerations when medicating the pediatric patient.

IV. How to minimize dosing errors in Pediatric Patients:

- Avoid Dosing errors by:
 - Obtaining accurate patient weight
 - Conversion pounds → kilograms (1 kg = 2.2 pounds)
 - Caution in preterms < 1 kg—
 - 10X error due to misplaced decimal point
 - Dose checking is imperative for all health care practitioners!
 - Only use oral syringes to dose liquids

- OTC medications→ Many strengths
- Advise parents of dosing with package in hand

V. Dosage Forms

- Age/Development:
 - > 2 yoa→ Prefers Chew Tablets
 - >10 yoa→ Pill Swallowers
 - Developmental Delayed→ Liquids preferred

Be cautious when crushing or manipulating tablets and capsules. Be wary of extended release products in particular.

- 6 month old given adult crushed OTC antihistamine for colic and “fussiness
- Baby found unresponsive in the morning

Mom was midwife, Dad was an EMT (Benadryl given frequently)

Drug Absorption by Non-Enteral Routes

- Inhaled
 - Issues with administration
- Topical
 - Consistently better than adults
 - Toxicity seen in infants with
 - Hexachlorophane (phisoderm) – spongiform myelinopathy
 - Lindane – neurotoxicity / seizures

POST-EXPOSURE PROPHYLAXIS AND TREATMENT OF POTENTIALLY HARMFUL AGENTS

ATTACHMENT 1

BIOLOGICAL WEAPON	PEDIATRIC DOSING	ADULT DOSING
ANTHRAX	Post-Exposure Prophylaxis: <ul style="list-style-type: none"> Ciprofloxacin 10-15mg/kg/dose PO BID x 60 days Doxycycline 2.2mg/kg/dose PO BID x 60 days Amoxicillin 80mg/kg/day divided into 3 doses x 60 days 	Post-Exposure Prophylaxis: <ul style="list-style-type: none"> Ciprofloxacin 500mg/dose PO BID x 60 days Doxycycline 100mg/dose PO BID x 60 days Amoxicillin 500mg/dose PO TID x 60 days¹
	Cutaneous Anthrax Treatment: <ul style="list-style-type: none"> Ciprofloxacin 10-15mg/kg/dose PO BID x 60 days (max 1gm/day) Doxycycline: <ul style="list-style-type: none"> ≤8 yoa: 2.2mg/kg/dose PO BID x 60 days >8 yoa & ≤45kg: 2.2mg/kg/dose PO BID x 60 days >8 yoa & >45kg: 100mg/dose PO BID x 60 days 	Cutaneous Anthrax Treatment: <ul style="list-style-type: none"> Ciprofloxacin 500mg/dose PO BID x 60 days Doxycycline 100mg/dose PO BID x 60 days

	<p>Inhalation, GI, and Oropharyngeal Anthrax Treatment:</p> <ul style="list-style-type: none"> • Ciprofloxacin 10-15mg/kg/dose IV BID x 60 days • Doxycycline: <ul style="list-style-type: none"> ○ ≤8 yoa: 2.2mg/kg/dose IV BID x 60 days ○ >8 yoa & ≤45kg: 2.2mg/kg/dose IV BID x 60 days ○ >8 yoa & >45kg: 100mg/dose IV BID x 60 days ○ Plus one or two additional antibiotics <p>(May switch to oral therapy and dosing when clinically appropriate)</p>	<p>Inhalation, GI, and Oropharyngeal Anthrax Treatment:</p> <ul style="list-style-type: none"> • Ciprofloxacin 400mg/dose IV BID x 60 days • Doxycycline 100mg/dose IV BID x 60 days <ul style="list-style-type: none"> ○ Plus one or two additional antibiotics² <p>(May switch to oral therapy and dosing when clinically appropriate)</p>
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POST-EXPOSURE PROPHYLAXIS AND TREATMENT OF POTENTIALLY HARMFUL AGENTS

BOTULISUM	Treatment: <ul style="list-style-type: none"> Botulinum Equine Trivalent Antitoxin 	Treatment: <ul style="list-style-type: none"> Botulinum Equine Trivalent Antitoxin³
BIOLOGICAL WEAPON	PEDIATRIC DOSING	ADULT DOSING
BRUCELLOSIS	Treatment if >8 yoa: <ul style="list-style-type: none"> Doxycycline PO 200mg/day x 6 weeks + Streptomycin IM 1g/day x 2 weeks or Gentamycin 3-5mg/kg/day IM or IV x 1 week Doxycycline PO 200mg/d or TMP-SMX 2DS/d x 6 weeks + Rifampin PO 15-20mg/kg/day x 6 weeks Treatment if <8 yoa: <ul style="list-style-type: none"> TMP-SMX PO 5 mg/kg/dose BID x 45 days + Gentamicin IV/IM 2 mg/kg/dose q8h x 2 wks 	Treatment: <ul style="list-style-type: none"> Doxycycline PO 200mg/day x 6 weeks + Streptomycin IM 1g/day x 2 weeks or Gentamycin 3-5mg/kg/day IM or IV x 1 week Doxycycline PO 200mg/day x 6 weeks + Rifampin PO 15-20mg/kg/day x 6 weeks⁴
LASSA FEVER	Treatment: <ul style="list-style-type: none"> Ribavirin 30mg/kg IV x 1 dose (max dose: 2g), then 16mg/kg/dose Q 6 hours x 4 days (max dose: 1g), then 8mg/kg/dose Q 8 hours x 6 days (max dose: 500mg)⁵ 	Treatment: <p>Ribavirin 33mg/kg IV x 1 dose (max dose: 2g), then 16mg/kg/dose Q 6 hours x 4 days (max dose: 1g), then 8mg/kg/dose Q 8 hours x 6 days (max dose: 500mg)⁶</p>

POST-EXPOSURE PROPHYLAXIS AND TREATMENT OF POTENTIALLY HARMFUL AGENTS

BIOLOGICAL WEAPON	PEDIATRIC DOSING	ADULT DOSING
PLAGUE	Post-Exposure Prophylaxis: <ul style="list-style-type: none"> • Doxycycline: <ul style="list-style-type: none"> ◦ <45kg: 2.2mg/kg/dose PO BID x 10 days ◦ ≥45kg: 100mg/dose PO BID x 10 days • Ciprofloxacin 20mg/kg/dose PO BID x 10 days • Chloramphenicol 25mg/kg/dose PO QID x 10 days (avoid if <2yoa) 	Post-Exposure Prophylaxis: <ul style="list-style-type: none"> • Doxycycline 100mg/dose PO BID x 10 days • Ciprofloxacin 500mg/dose PO BID x 10 days • Chloramphenicol 25mg/kg/dose PO QID x 10 days
	Treatment: <ul style="list-style-type: none"> • Streptomycin 15mg/kg/dose IM BID (max daily dose: 2g) x 10 days • Gentamicin 2.5mg/kg/dose IM or IV TID x 10 days • Doxycycline: <ul style="list-style-type: none"> ◦ <45kg: 2.2mg/kg/dose IV BID (max: 200mg/day) x 10 days ◦ ≥45kg: 100mg/dose IV BID x 10 days • Ciprofloxacin 15mg/kg/dose IV BID x 10 days • Chloramphenicol 25mg/kg/dose IV QID x 10 days (avoid if <2yoa) 	Treatment: <ul style="list-style-type: none"> • Streptomycin 1g/dose IM BID x 10 days • Gentamicin 5mg/kg/dose IM or IV once daily or 2mg/kg LD x followed by 1.17mg/kg/dose IM or IV TID x 10 days • Doxycycline 100mg/dose IV BID x 10 days • Ciprofloxacin 400mg/dose IV BID x 10 days • Chloramphenicol 25mg/kg/dose IV QID x 10 days⁷

BIOLOGICAL WEAPON	PEDIATRIC DOSING	ADULT DOSING
Q FEVER	Prophylaxis (<12 yoa): <ul style="list-style-type: none"> Erythromycin 50mg/kg/dose PO BID x 7 days (Start 8-12 days after exposure) 	Prophylaxis: <ul style="list-style-type: none"> Tetracycline 500mg/dose PO QID x 5-7 days Doxycycline 100mg/dose PO BID x 5-7 days (Start 8-12 days after exposure)
	Treatment (<12 yoa): <ul style="list-style-type: none"> Co-trimoxazole: trimethoprim 4mg/kg/dose PO BID x 2 weeks 	Treatment: <ul style="list-style-type: none"> Tetracycline 500mg/dose PO QID x 15-21 days Doxycycline 100mg/dose PO BID x 15-21 days^{2,8}

POST-EXPOSURE PROPHYLAXIS AND TREATMENT OF POTENTIALLY HARMFUL AGENTS TO SOCIETY

BIOLOGICAL WEAPON	PEDIATRIC DOSING	ADULT DOSING
SHIGELLOSIS	Treatment: <ul style="list-style-type: none"> Ceftriaxone 50mg/kg/dose IV once daily (max: 2g/day) x 5 days Cefixime 8mg/kg/day PO once daily or BID x 5 days Azithromycin 10mg/kg/day PO once daily x 3 days Ciprofloxacin 25mg/kg/day PO divided Q12 hours x 3-5 days (not approved for use in children) 	Treatment: <ul style="list-style-type: none"> Levofloxacin 500mg PO once daily x 3 days Ciprofloxacin 500mg/dose PO BID x 3 days Azithromycin 500mg PO once daily x 3 days⁹
SMALLPOX	Post-Exposure Prophylaxis: <ul style="list-style-type: none"> Smallpox Vaccine (not recommended in infants)⁶ 	Post-Exposure Prophylaxis: <ul style="list-style-type: none"> Smallpox Vaccine¹⁰

POST-EXPOSURE PROPHYLAXIS AND TREATMENT OF POTENTIALLY HARMFUL AGENTS TO SOCIETY

BIOLOGICAL WEAPON	PEDIATRIC DOSING	ADULT DOSING
TULAREMIA	Post-Exposure Prophylaxis: <ul style="list-style-type: none"> • Doxycycline: <ul style="list-style-type: none"> ○ <45kg: 2.2mg/kg/dose PO BID x 14 days ○ ≥45kg: 100mg/dose PO BID x 14 days • Ciprofloxacin 15mg/kg/dose PO BID x 14 days (max: 1g/day) 	Post-Exposure Prophylaxis: <ul style="list-style-type: none"> • Doxycycline 100mg/dose PO BID x 14 days • Ciprofloxacin 500mg/dose PO BID x 14 days
	Treatment: <ul style="list-style-type: none"> • Streptomycin 15mg/kg/dose IM BID x 10 days (max: 2g/day) • Gentamicin 2.5mg/kg/dose IM or IV TID x 10 days • Doxycycline: <ul style="list-style-type: none"> ○ <45kg: 2.2mg/kg/dose IV BID x 14-21 days ○ ≥45kg: 100mg/dose IV BID x 14-21 days • Chloramphenicol 15mg/kg/dose IV QID x 14-21 days • Ciprofloxacin 15mg/kg/dose IV BID x 10 days (max: 1g/day) (can switch to oral therapy when clinically indicated)	Treatment: <ul style="list-style-type: none"> • Streptomycin 1g/dose IM BID x 10 days • Gentamicin 5mg/kg/dose IM or IV once daily x 10 days • Doxycycline 100mg/dose IV BID x 14-21 days • Chloramphenicol 15mg/kg/dose IV QID x 14-21 days • Ciprofloxacin 400mg/dose IV BID x 10 days ¹¹ (can switch to oral therapy when clinically indicated)

BIOLOGICAL WEAPON	PEDIATRIC DOSING	ADULT DOSING
TYPHOID FEVER	Treatment (Complicated Typhoid Fever): <ul style="list-style-type: none"> Ceftriaxone 60mg/kg/day IV or IM x 10-14 days 	Treatment (Uncomplicated Typhoid Fever): <ul style="list-style-type: none"> Ciprofloxacin 7.5mg/kg/dose PO BID x 5-7 days Ofloxacin 7.5mg/kg/dose PO BID x 5-7 days Chloramphenicol 12.5mg/kg/dose PO QID x 14-21 days Amoxicillin 25mg/kg/dose TID x 10-14 days Trimethoprim-Sulfamethoxazole 4/20mg/kg/dose PO BID x 10-14 days Cefixime 5mg/kg/dose PO BID x 7-14 days Azithromycin 10mg/kg/dose PO once daily x 7 days Ceftriaxone 1 to 2 g/day IV or IM x 10-14 days (complicated)⁹

References:

1. Abramowicz, Mark. Post-Exposure Anthrax Prophylaxis. The Medical Letter, Inc. 2001; 44: W1116-1117A.
2. Department of Health and Human Services Centers for Disease Control and Prevention. 2006. U.S. Government. 06 Feb. 2006 <http://www.cdc.gov>.
3. Arnon SS, Schechter R, Inglesby TV, et al. Botulinum Toxin as a Biological Weapon Medical and Public Management. JAMA. 2001; 285: 1059-1070.
4. Long: Principles and Practice of Pediatric Infectious Diseases. 2003. Churchill Livingstone, An Imprint of Elsevier. 06 Feb. 2006 <http://home.mdconsult.com>.
5. Markenson, David. The Treatment of Children Exposed to Pathogens Linked to Bioterrorism. Infect Dis Clin N Am 2005; 19: 731-745.
6. Clinical Pharmacology Online. 2006. Gold Standard Media. 06 Feb. 2006 <http://www.cp.gsm.com>.
7. Inglesby TV, Dennis DT, Henderson DA et al. Plague as a Biological Weapon Medical and Public Health Management. JAMA 2000; 283: 2281-2290.
8. Interim Guidelines for Action in the Event of a Deliberate Release: Q FEVER. HPA Centre for Infections. Vers 1.1. 2006.
9. Mandell, Bennet, & Dollin: Principles and Practice of Infectious Diseases, 6th ed. 2005. Churchill Livingstone, An Imprint of Elsevier. 6 Feb. 2006 <http://home.mdconsult.com>.
10. Henderson DA, Inglesby TV, Bartlett JG, et al. Smallpox as a Biological weapon Medical and Public Health Management. JAMA. 1999; 281: 2127-2137.
11. Dennis DT, Inglesby TV, Henderson DA, et al. Tularemia as a Biological Weapon Medical and Public Health Management. JAMA. 2001; 285: 2763-2773.
12. Taketome CK, Hodding JK, and Kraus DM. LEXI-COMP'S Pediatric Dosage Handbook 12th ed. 2005. Lexi-Comp Inc.

13. World Health Organization. 2006. 6 Feb. 2006 <http://www.who.int/en/>.
14. Diner, Barry. Toxicity, Mercury. 2005. eMedicine.com, Inc. 06 Feb. 2006
<http://www.emedicine.com>.
15. Management of Rodenticide Poisoning. 2000. Indegene Lifesystems Pvt. Ltd. 6 Feb. 2006
<http://www.indegene.com>.
16. Leikin JB and Paloucek FB. Leikin & Paloucek's Poisoning & Toxicology Handbook 3rd ed. 2002.

GUIDELINES

Increase dextrose 2.5 - 5% per 24 hours. Increase protein and fats 0.5 - 1 g / kg / day, over 3 - 4 days. GOAL: Maximum of 60% total calories from fat.

Monitor TG as the dose increases and keep below 100 - 250 mg / dL. (Check TG after lipids are off for 4 hours). Lipids may be contraindicated when low platelet count or hypertriglyceridemia are present.

* The standard protein source is Travasol. The NICU uses TrophAmine. TrophAmine will be used for all infants under one (1) year of age. When TrophAmine is used cysteine will be added in the amount of 40 mg/g TrophAmine.

Requirements: Positive nitrogen balance requires at least 150 - 250 non-protein calories per gram of nitrogen.

PER 24 HOURS	NEONATES		INFANTS & CHILDREN			ADOLESCENTS
	Preterm less than 3 kg	Full Term	10 kg	10 - 20 kg	greater than 20 kg	
Fluids (mL / kg)	100 - 200	100 - 150	100 - 125	1000 mL - Add 50 mL / kg for each extra kg greater than 10 kg		1500 mL - Add 20 - 25 mL / kg for each extra kg greater than 20 kg
Calories (Kcal / kg)	70 - 120	greater than 100	75 - 90	75 - 90	greater than 40	30 - 60
Protein (g / kg) Max Perip: 2 g / kg / day Max Central: 3.5 g / kg / day	2.5 - 3.5	2 - 2.5	2 - 2.5	1.5 - 2.5	1.5 - 2.5	1 - 2
Dextrose (%) Max Periph: 12.5% Max Central: 30%	5 - 25	5 - 25	5 - 30	5 - 30	5 - 30	5 - 30
Fat (g / kg / day)	0.5 - 3	1 - 3	1 - 3	1 - 3	1 - 3	1 - 3
Vitamins (mL / day)	NEONATES		INFANTS / CHILDREN		Children / Adult	
	less than 1 kg	1 - 2.5 kg	greater than 2.5 kg & less than 11 Years		greater than or equal to 11 Years	
MVI - Peds (Contains Vitamin K = 0.2 mg / 5 mL)	1.5 mL / day	3.25 mL / day	5 mL / day			
MVI - 13 (Vitamin K = 0.15 mg / 10 mL)					10 mL / day	
* Heparin	0.5-1 unit / mL		0 - 0.5 unit / mL		0 - 0.5 unit / mL	
# Levocarnitine	10 - 20 mg / kg / day		greater than 30 days = 5 mg / kg / day		greater than 30 days = 1 - 5 mg / kg / day	

* Recommended for slow infusion rates

Prematurity or TPN dependence

	PEDIATRICS	STANDARD ADULT SOLUTION (3L)
* Sodium	2 - 5 mEq / kg / day	100 mEq / day
Potassium	2 - 5 mEq / kg / day	100 mEq / day
Chloride	2 - 5 mEq / kg / day	100 mEq / day
Phosphate (as K+)	1 - 4 mEq / kg / day	45 mEq / day
Calcium Gluconate (Maximum peripheral conc = 2 mg / mL)	100 - 500 mg / kg / day	3000 mg / day
Magnesium	0.25 - 0.5 mEq / kg / day	24 mEq / day

* By Definition NS = 154 mEq / L; 1/4 NS = 38.5 mEq / L

TRACE ELEMENTS +	NEONATES		INFANTS GREATER THAN 3 MONTHS AND CHILDREN
	Preterm	0 - 3 Months	Average
Peds Multi-Trace	0.2 mL / kg		0.2 mL / kg (max 10 mL / day)
Additional Zinc (mcg / kg)	*300	150	

* (Premature infants weighing less than or equal to 3 kg require an additional 300 mcg / kg / day of zinc for total of 400 mcg / kg / day)

PEDIATRIC MULTI-TRACE ELEMENTS 0.2 mL / kg / day Provides:

ELEMENT:	DOSE:	NORMAL RANGE:
Zinc	100 mcg / kg / day	100 - 300 mcg / kg / day
Copper	20 mcg / kg / day	15 - 30 mcg / kg / day
Chromium	0.17 mcg / kg / day	0.14 - 0.2 mcg / kg / day
Manganese	5 mcg / kg / day	2 - 10 mcg / kg / day

SPECIAL CONSIDERATIONS:

A. Zinc	Catabolic States: Stool / Ileostomy:	Add 30 mcg / kg / day Add 10 mcg / kg / day
B. Copper	Biliary Obstruction:	Decrease or Omit
C. Chromium	Renal Insufficiency:	Decrease
D. Manganese	Biliary Obstruction:	Decrease or Omit
E. Selenium	For greater than 30 days on TPN:	Add 3 mcg / kg

SUGGESTED MONITORING GUIDELINES

VARIABLES	NEW TPN/ CLINICALLY UNSTABLE	CLINICALLY STABLE
Plasma Electrolytes	daily	twice weekly
BUN, Cr	3 times a week	weekly
Magnesium, Phosphate, Calcium	daily	weekly
Blood Glucose	daily	twice weekly
Urine Glucose	daily	twice weekly
Serum Albumin	twice weekly	weekly
LFT's	twice weekly	weekly
Hg, Hct	twice weekly	weekly
CBC / DIFF	as indicated	as indicated
TG	daily	weekly
Fe, TIBC, Retic Count, Transferrin	pm	pm
Trace Elements	Mandatory to monitor after 30 days	

GUIDELINES

Physical Compatibility of Potassium Phosphate & Calcium Gluconate

grams. Calcium Gluconate per 250 mL

	0.5	1	1.5
0	5	2	1
2.5	5	4	3
5	12	7	4
7.5	14	8	6

The numbers in the squares represent the maximum mEq Potassium Phosphate (as K+) that can be added to 250 mL.

NICU GUIDELINES

Increase dextrose 1-2 mg/kg/min per 24 hours. Increase fats by 0.5 - 1 g / kg / day, over 3 - 4 days. GOAL: Maximum of 60% total calories from fat.

Monitor TG as the dose increases and keep below 100 - 250 mg / dL. Lipids may be contraindicated when low platelet count or hypertriglyceridemia are present.

The NICU uses TrophAmine. TrophAmine will be used for all infants under one (1) year of age. When TrophAmine is used cysteine will be added in the amount of 40 mg/g TrophAmine.

Requirements: Positive nitrogen balance requires at least 150 - 250 non-protein calories per gram of nitrogen.

PER 24 HOURS	NEONATES	
	Preterm less than 3 kg	Full Term
Fluids (mL / kg)	100 - 200	100 - 150
Calories (Kcal / kg)	70 - 120	greater than 100
Protein (g / kg) Max Periph: 2 g / kg / day Max Central: 3.5 g / kg / day	2.5 - 3.5	2 - 2.5
Dextrose (%) Max Periph: 12.5% Max Central: 25%	5 - 25	5 - 25
Fat (g / kg / day)	0.5 - 3	1 - 3
Vitamins (mL / day)	NEONATES	
	up to 2.5 kg	greater than 2.5 kg & less than 11 Years
MVI - Peds (Contains Vitamin K = 0.2 mg / 5 mL)	2 mL / kg / day	5 mL / day
Heparin	0.5-1 unit / mL	0 - 0.5 unit / mL
Levocarnitine	10 - 20 mg / kg / day	greater than 30 days = 5 mg / kg / day

Other Considerations

Amphotericin	May require TPN to be infused over 22 hours. Flush with dextrose before and after infusion
Gentamicin*	6 mg/Liter
Prophylactic Heparin for cardiac shunts	10 units/kg/hr. Order under "other" category
Octreotide	100 mcg/kg/day
Ranitidine	2 mg/kg/day
Vancomycin*	15 mg/L

*Systemic treatment required, in addition

	PEDIATRICS
*Sodium	2 - 5 mEq / kg / day
Potassium	2 - 5 mEq / kg / day
Chloride	2 - 5 mEq / kg / day
Phosphate (as K+)	1 - 4 mEq / kg / day
Calcium Gluconate (Maximum peripheral conc = 2 mg / mL)	100 - 500 mg / kg / day
Magnesium	0.25 - 0.5 mEq / kg / day

* By Definition NS = 154 mEq / L; 1/4 NS = 38.5 mEq / L

TRACE ELEMENTS +	NEONATES		INFANTS GREATER THAN 3 MONTHS AND CHILDREN
	Preterm	0 - 3 Months	Average
Peds Multi-Trace	0.2 mL / kg		0.2 mL / kg (max 10 mL / day)
Additional Zinc (mcg / kg)	*300	150	

*(Premature infants weighing less than or equal to 3 kg require an additional 300 mcg / kg / day of zinc for total of 400 mcg / kg / day)

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ELEMENT:	DOSE:	NORMAL RANGE:
Zinc	100 mcg / kg / day	100 - 300 mcg / kg / day
Copper	20 mcg / kg / day	15 - 30 mcg / kg / day
Chromium	0.17 mcg / kg / day	0.14 - 0.2 mcg / kg / day
Manganese	5 mcg / kg / day	2 - 10 mcg / kg / day

SPECIAL CONSIDERATIONS:

A. Zinc	Catabolic States:	Add 30 mcg / kg / day
	Stool / Ileostomy:	Add 10 mcg / kg / day
B. Copper (Cu)	*Biliary Obstruction:	Omit
C. Chromium (Cr)	Renal Insufficiency:	Decrease
D. Manganese	*Biliary Obstruction:	Omit
E. Selenium	For greater than 30 days on TPN:	Add 3 mcg / kg

SUGGESTED MONITORING GUIDELINES

VARIABLES	CLINICALLY UNSTABLE	CLINICALLY STABLE
Plasma Electrolytes	daily	twice weekly
BUN, Cr	3 times a week	weekly
Magnesium, Phosphate, Calcium	daily	weekly
Blood Glucose	daily	twice weekly
Urine Glucose	daily	twice weekly
Serum Albumin	twice weekly	weekly
LFT's	twice weekly	weekly
Hg, Hct	twice weekly	weekly
CBC / DIFF	as indicated	as indicated
TG	daily	weekly
Fe, TIBC, Retic Count, Transferrin	pm	pm
Trace Elements	Mandatory to monitor after 30 days	

GUIDELINES

Physical Compatibility of Potassium Phosphate & Calcium Gluconate

grams. Calcium Gluconate per 250 mL

	0.5	1	1.5
0	5	2	1
2.5	5	4	3
5	12	7	4
7.5	14	8	6

grams.
TrophAmine
per 250 mL

The numbers in the squares represent the maximum mEq Potassium Phosphate (as K+) that can be added to 250 mL.

Emergency and Acute Care Medications

Drug	Concentration	Dose	Route	Remarks
Adenosine	3 mg/ml	0.1 mg/kg	IV	Second dose 0.2 mg/kg to Max dose of 12 mg. Fast
Amiodarone	50 mg/ml	2-5 mg/kg, Max 15 mg/kg/day	IV	Dilute to 1.5-3 mg/ml in D5W Pulseless VT/VFib
Atropine	0.4 mg/ml, 0.1 mg/ml	0.02 mg/kg	IM/IV	Max 1 mg x 2 Min 0.1mg
Calcium Chloride	100 mg/ml	10-20 mg/kg	IV	Slow Push. Central pref
Cefazolin		20 mg/kg/dose	IM/IV	
Ceftriaxone		50-100 mg/kg/24h	IM/IV	
Dexamethasone	4 mg/ml	Variable	IM/IV	Meningitis 0.15 mg/kg q6h x
Dextrose		50% 1-2 ml/kg, 25% 2-4 ml/kg	IV	=5-10 ml/kg of D10%
Diazepam	5 mg/ml	0.1-0.3 mg/kg	IV	Central pref / PR 0.5 mg/kg
Digoxin	100 mcg/ml	10-15 mcg/kg	IV	
Diphenhydramine	50 mg/ml	1 mg/kg	IM/IV	
Dobutamine		1-20 mcg/kg/min	IV	Central pref
Dopamine		1-20 mcg/kg/min	IV	Central pref
Edrophonium	10 mg/ml	5-10 mg	IV	Adult dose for PAT
Epinephrine	0.1 mg/ml, 1 mg/ml	0.01-0.1 mg/kg 0.01-1 mcg/kg/min 0.1 mg/kg ETT	IV	Repeat every 3-5 minutes
Esmolol	10 mg/ml 250 mg/ml	100-500 mcg/kg 25-1000 mcg/kg/min	IV	Dilute to 10-20 mg/ml Central pref
Etomidate	2 mg/ml	0.3-0.6 mg/kg	IV	
Fentanyl	50 mcg/ml	1-5 mcg/kg	IM/IV	
Flumazenil	0.1 mg/ml	0.01 mg/kg	IV	Max 0.2 mg/dose, total 1-3 mg
Furosemide	10 mg/ml	Max 1 mg/kg	IM/IV	
Glucagon	1 mg	0.5-1 mg	IM/IV	
Heparin		50 units/kg bolus 25 units/kg/hr drip	IV	
Insulin (Novolin) R	100 units/ml	0.05-0.1 unit/kg	SQ/IV	
Isoproterenol		0.01-1 mcg/kg/min		Concentration 20 mcg/ml up to 64mcg/ml
Labetalol	5 mg/ml	0.2-1 mg/kg	IV	Max 3 mg/kg/hr. Max 20 mg/dose
Lidocaine	20 mg/ml	1 mg/kg, 5-50 mcg/kg/min	IV	MR bolus x1 in 15 minutes
Lorazepam	2 mg/ml	0.05-0.1 mg/kg	IV	Remarks
Lipids		20% 1ml/kg over 1 min q5min., then 0.25 ml/kg/min	IV	For tx of local anesthetic toxicity. Max total=8 ml/kg
Magnesium Sulfate	500 mg/ml	25-50 mg/kg	IM/IV	125 mg =1 mEq, dilute to 20 mg/ml. Push over 5-20 min
Mannitol	25%	0.25-1 g/kg (=1.25-5 ml/kg)	IV	Filter, watch for crystals
Midazolam	5 mg/ml	0.05- 0.2 mg/kg	IM/IV	
Milrinone		0.5-1.5 mcg/kg/min	IV	
Naloxone	0.4mg/ml	10 mcg/kg (AE reverse), 100 mcg/kg (full reverse)	IM/IV	Adults 0.4-2 mg, repeat q2- 3 min prn

3/15/2011

Emergency and Acute Care Medications

Drug	Concentration	Dose	Route	Remarks
Neostigmine	1 mg/ml	0.025-0.1 mg/kg, Max 5mg for adult	IM/IV	Give after atropine or glycopyrrolate
Nitroglycerin		0.25-5 mcg/kg/min	IV	
Nitroprusside		0.05-2 mcg/kg/min	IV	Dextrose only, protect from light/ Central pref
Norepinephrine		0.01-0.1 mcg/kg/min	IV	Central pref
Pentobarbital	50 mg/mL	1-5 mg/kg q 1-3 min	IV/IM	Max 100 mg/dose to 500 mg total dose
Phenobarbital	130 mg/ml	10-20 mg/kg	IM/IV	NTE 1mg/kg/min
Phenylephrine	10 mg/ml	0.1 mg/kg adult 5-20 mcg/kg child 0.01-1 mcg/kg/min	IV	Max 5 mg Central pref
Phenytoin	50 mg/ml	10-20 mg/kg	IV	Dilute with NS, NTE 1 mg/kg/min/ Central pref
Potassium Chloride	2 meq/ml	0.25-1 mEq/kg/hr	IV	0.4 mEq/mL central, DILUTE
Procainamide	100 mg/ml	3-6 mg/kg bolus 20-80 mcg/kg/min Max total 15 ma/ka	IV	Dilute bolus to <=30 mg/ml, Infusion <=4 mg/ml.
Propranolol	1 mg/ml	0.01-0.1 mg/kg	IV	Max 1 mg, adults max 5 mg (total)
Protamine	10 mg/ml	1 mg/kg	IV	1 mg/ 100 units heparin
Rocuronium	10 mg/ml	0.5-1.2 mg/kg	IV	
Sodium Bicarbonate	0.5-1 mEq/ml	1 mEq/kg	IV	Central pref / 0.5 mEq/ml for preterm neonates
Succinylcholine	20 mg/ml	1-2 mg/kg	IV	Give with atropine
Thiopental	25 mg/ml	1-5 mg/kg	IV	(Pentothol) Central pref
Vasopressin	20 units/ml (1unit = 1000 milliunits)	0.4-1 unit/kg/dose DI: 0.5-10 Milliunits/kg/hr Shock: 0.1-3 Milliunits/kg/min GI: 1-15 Milliunits/kg/min	IV	VF or pulseless VT Max 40 units (adult)
Vecuronium	1 mg/ml	0.1-0.3 mg/kg	IV	
Verapamil	2.5 mg/ml	0.1 mg/kg	IV	Not for < 1 year old

3/15/2011

Supply Chain Management

- RCHSD has (look in comments for cache vs. OPS)
- GAC MUST HAVE (RCHSD has)
- GAC NICE to have (RCHSD has)

Pediatric Specific Medical Supplies	Case/Box Size	Amount Ordered	Inventory	Expiration Date	Location	Comments
Ambu bag -Infant						Cache
Ambu bag – Child						Cache
Arm board – Infant						OPS
Arm board - Child						OPS
needles – 23g						OPS
needles – 25g						OPS
Chest tube – 12f						Cache
Chest tube – 16f						Cache
Chest tube – 20f						Cache
Chest tube – 24f						Cache
Chest tube – 28f						Cache

Pediatric Specific Medical Supplies	Case/Box Size	Amount Ordered	Inventory	Expiration Date	Location	Comments
Central venous catheters	Need Sizes input!!					OPS
C-spine collar - Infant						Cache
C-spine collar - Sm child						Cache
C-spine collar – Child						Cache
Cricothyrotomy kit						OPS
Defibrillator – Peds						OPS (or peds paddles if defib is capable)
ETCO2 detector - Peds						OPS
ET tubes – 2.5 cuffed						Cache
ET tubes – 2.5 uncuffed						Cache
ET tubes – 3.0 cuffed						Cache
ET tubes – 3.0 uncuffed						Cache
ET tubes – 4.0 cuffed						Cache
ET tubes – 4.0 uncuffed						Cache
ET tubes – 4.5 cuffed						Cache
ET tubes – 5.0 cuffed						Cache
ET tubes – 5.0 uncuffed						Cache

Pediatric Specific Medical Supplies	Case/Box Size	Amount Ordered	Inventory	Expiration Date	Location	Comments
ET tubes – 5.5 cuffed						Cache
ET tubes – 6.0 cuffed						Cache
Feeding tube -5f						OPS
Feeding tube – 8f						OPS
Foley catheter – 8f						OPS
Foley catheter – 10f						OPS
Foley catheter – 12f						OPS
Gastro tube -12f						OPS
Gastro tube -14f						OPS
Gastro tube -16f						OPS
Glucometer						OPS
Infant scale						OPS
IV set – Ped						Cache
Intubation stylet – Sm						OPS
Intubation stylet – Lg						OPS
Laryngoscope blade – Macintosh 0						OPS

Pediatric Specific Medical Supplies	Case/Box Size	Amount Ordered	Inventory	Expiration Date	Location	Comments
Laryngoscope blade – Macintosh 1						OPS
Laryngoscope blade – Macintosh 2						OPS
Laryngoscope blade – Miller 0						OPS
Laryngoscope blade – Miller 1						Cache
Laryngoscope blade – Miller 1.5						Cache
Laryngoscope blade – Miller 2						Cache
Laryngoscope handle						Cache
Magill Forceps						OPS
Monitor electrodes- Ped						OPS
Nasal Cannula –Neonate						OPS
Nasal Cannula –Infant						OPS
Nasal Cannula –Child						OPS
Nebulizer						Cache
NG tube – 6f						OPS
NG tube – 8f						OPS
NG tube – 10f						OPS

Pediatric Specific Medical Supplies	Case/Box Size	Amount Ordered	Inventory	Expiration Date	Location	Comments
NG tube – 12f						OPS
NG tube – 14f						OPS
NG tube – 16f						OPS
O2 mask/tubing - Infant						Cache
O2 mask/tubing - Child						Cache
Non-rebreather - Infant						Cache
Non-rebreather - Child						Cache
Nasopharyngeal airways						Cache
Oral airway - 00						Cache
Oral airway - 01						Cache
Over the needle IV Cath 20g						Cache
Over the needle IV Cath 22g						Cache
Over the needle IV Cath 24g						Cache
Papoose/restraint						OPS

Pediatric Specific Medical Supplies	Case/Box Size	Amount Ordered	Inventory	Expiration Date	Location	Comments
SAM-Splints – 24 inch Or larger						Cache
Suction catheter -5f						OPS
Suction catheter -8f						OPS
Suction catheter -10f						OPS
Syringes (60cc)						OPS
Thermometer – rectal						OPS
Thermometer - temporal						OPS
Tracheostomy tubes - 0						OPS
Tracheostomy tubes - 1						OPS
Tracheostomy tubes - 2						OPS
Tracheostomy tubes - 3						OPS
Tracheostomy tubes - 4						OPS
Tracheostomy tubes - 5						OPS
Umbilical vein caths						OPS
Warming device						Cache

Pediatric Specific Care Supplies	Case/Box Size	Amount Ordered	Inventory	Expiration Date	Location	Comments
Baby food						
Baby cereal						
Bathing basin/tub						
Bottles & nipples						
Diaper wipes – fragrance free						
Diapers – Size 1						
Diapers – Size 2						
Diapers – Size 3						
Diapers – Size 4						
Diapers – Size 5						
Diapers - pull ups 4T-5T						
Diaper rash cream						
Disposable changing pads						
Formula - milk						
Formula - hypoallergenic						
Formula - soy						

Pediatric Specific Medical Supplies	Case/Box Size	Amount Ordered	Inventory	Expiration Date	Location	Comments
Infant hat/booties						
Infant spoons						
Infant wash – hypoallergenic						
Oral electrolytes						
Nutritional supplements						
Towels						
Washcloths						

Equipment

Medical Equipment for Pediatric Surge

Equipment	Inventory	On Hand	Comments
Ventilators for infant And Child			Need at least a couple ventilators that can care for Infants and children. LTVs work well
Physiologic Monitors			Any monitor will work, need electrodes that will fit small infants and children
Infant scale			For infant weight a scale is needed. Ideally you can measure length with the scale. A sling scale can be used for toddlers if a standing scale is not working
Otoscope			Frequently used in Pediatrics.
IV Pumps			Any pump can work. Should be smart pump with pediatric profile. Due to drug dosing it is helpful to have syringe modules
Laryngoscopes, airways, bags and masks			Need all sizes.
Blood Pressure Cuffs			Need all sizes. Can be manual or with device
Cribs			You can use Bubble top cribs for all ages

Terrorism Tools

TERRORISM / MASS VIOLENCE

(ACTIVE SHOOTER)

Key points:

In addition to typical considerations of patient safety, the following are critical considerations for pediatric populations:

- **Be cautious of WEAPONS on patients – victim/patient COULD be shooter**
- As with any other possible/confirmed terrorism event, scene safety is paramount

If Active Shooter is on site (was patient, carry-on incident, etc)

HOW TO RESPOND WHEN LAW ENFORCEMENT ARRIVES

Law enforcement's purpose is to stop the active shooter as soon as possible. Officers will proceed directly to the area in which the last shots were heard.

- Officers usually arrive in teams of four (4)
- Officers may wear regular patrol uniforms or external bulletproof vests, Kevlar helmets, and other tactical equipment
- Officers may be armed with rifles, shotguns, handguns
- Officers may use pepper spray or tear gas to control the situation
- Officers may shout commands, and may push individuals to the ground for their safety

How to react when law enforcement arrives:

- Remain calm, and follow officers' instructions
- Put down any items in your hands (i.e., bags, jackets)
- Immediately raise hands and spread fingers

- Keep hands visible at all times
- Avoid making quick movements toward officers such as attempting to hold on to them for safety
- Avoid pointing, screaming and/or yelling
- Do not stop to ask officers for help or direction when evacuating, just proceed in the direction from which officers are entering the premises

Information to provide to law enforcement or 911 operators:

- Location of the active shooter
- Number of shooters, if more than one
- Physical description of shooter(s)
- Number and type of weapons held by the shooter(s)
- Number of potential victims at the location

HOW TO RESPOND

WHEN AN ACTIVE SHOOTER IS IN YOUR VICINITY

QUICKLY DETERMINE THE MOST REASONABLE WAY TO PROTECT YOUR OWN LIFE. CUSTOMERS AND CLIENTS ARE LIKELY TO FOLLOW THE LEAD OF EMPLOYEES AND MANAGERS DURING AN ACTIVE SHOOTER SITUATION.

1. EVACUATE

- Have an escape route and plan in mind
- Leave your belongings behind
- Keep your hands visible

2. HIDE OUT

- Hide in an area out of the active shooter's view.
- Block entry to your hiding place and lock the doors

3. TAKE ACTION

- As a last resort and only when your life is in imminent danger.
- Attempt to incapacitate the active shooter
- Act with physical aggression and throw items at the active shooter

**CALL 911 WHEN IT IS
SAFE TO DO SO**

HOW TO RESPOND WHEN LAW ENFORCEMENT ARRIVES ON THE SCENE

1. HOW YOU SHOULD REACT WHEN LAW ENFORCEMENT ARRIVES:

- Remain calm, and follow officers' instructions
- Immediately raise hands and spread fingers
- Keep hands visible at all times
- Avoid making quick movements toward officers such as attempting to hold on to them for safety
- Avoid pointing, screaming and/or yelling
- Do not stop to ask officers for help or direction when evacuating, just proceed in the direction from which officers are entering the premises

2. INFORMATION YOU SHOULD PROVIDE TO LAW ENFORCEMENT OR 911 OPERATOR:

- Location of the active shooter
- Number of shooters, if more than one
- Physical description of shooter/s
- Number and type of weapons held by the shooter/s
- Number of potential victims at the location

RECOGNIZING SIGNS OF POTENTIAL WORKPLACE VIOLENCE

AN ACTIVE SHOOTER MAY BE A CURRENT OR FORMER EMPLOYEE. ALERT YOUR HUMAN RESOURCES DEPARTMENT IF YOU BELIEVE AN EMPLOYEE EXHIBITS POTENTIALLY VIOLENT BEHAVIOR. INDICATORS OF POTENTIALLY VIOLENT BEHAVIOR MAY INCLUDE ONE OR MORE OF THE FOLLOWING:

- Increased use of alcohol and/or illegal drugs
- Unexplained increase in absenteeism, and/or vague physical complaints
- Depression/Withdrawal
- Increased severe mood swings, and noticeably unstable or emotional responses
- Increasingly talks of problems at home
- Increase in unsolicited comments about violence, firearms, and other dangerous weapons and violent crimes












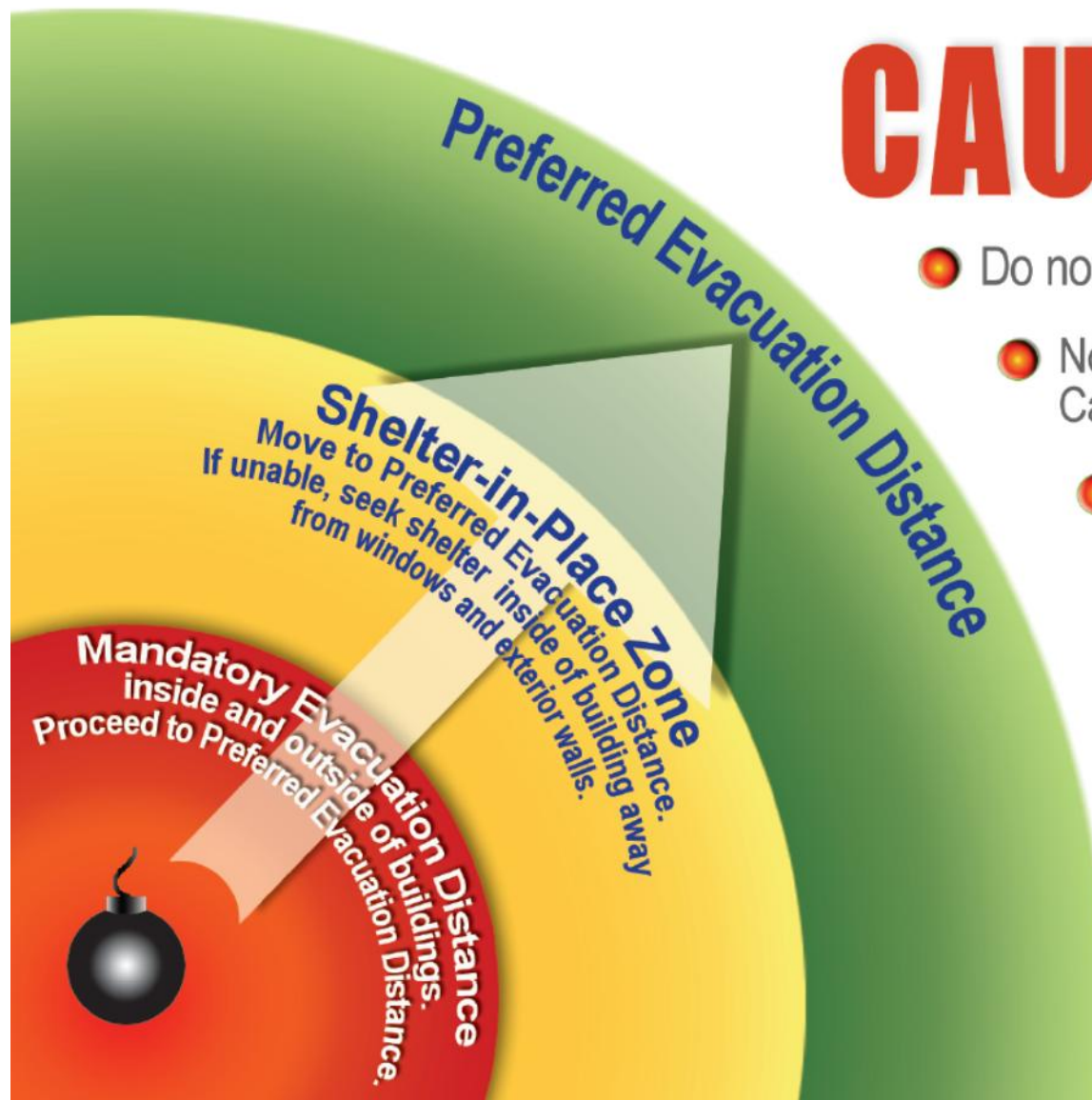
Contact your building management or human resources department for more information and training on active shooter response in your workplace.



BOMB THREAT STAND-OFF CARD



Threat Description 	Explosives Capacity	Mandatory Evacuation Distance	Shelter-in-Place Zone	Preferred Evacuation Distance
 Pipe Bomb	5 lbs	70 ft	71-1199 ft	+1200 ft
 Suicide Bomber	20 lbs	110 ft	111-1699 ft	+1700 ft
 Briefcase/Suitcase	50 lbs	150 ft	151-1849 ft	+1850 ft
 Car	500 lbs	320 ft	321-1899 ft	+1900 ft
 SUV/Van	1,000 lbs	400 ft	401-2399 ft	+2400 ft
 Small Delivery Truck	4,000 lbs	640 ft	641-3799 ft	+3800 ft
 Container/Water Truck	10,000 lbs	860 ft	861-5099 ft	+5100 ft
 Semi-Trailer	60,000 lbs	1570 ft	1571-9299 ft	+9300 ft



CAUTION!

- Do not touch suspicious item
- Notify proper Authorities - Call 911
- Ensure all witnesses are available to brief 1st responders
- Recommended stand-off data should be used in conjunction with your emergency evacuation plan

Sources: Department of Homeland Security, Office for Bombing Prevention, Arlington, VA
FBI, Bomb Data Center, Quantico, VA
Technical Support Working Group, Arlington, VA

BIOTERROR

The release of a biological weapon would disproportionately affect children through several mechanisms. With aerosolized agents (e.g. anthrax), increased respiratory minute ventilation in children (500 ml/Kg/min) compared with adults (140 ml/Kg/min) results in the child's exposure to a relatively greater inoculum. The high vapor density of bioaerosols, such as those potentially used to disseminate airborne pathogens, places their highest concentration close to the ground in the lower breathing zone of children. The more permeable skin of newborns and children in conjunction with a larger surface-to-mass ratio results in greater than exposure to transdermally absorbed toxicants. Children, because of their relatively larger body surface area, lose heat quickly when showered. Consequently, skin decontamination with water may result in hypothermia unless heating lamps and other warming equipment are used. Having less fluid reserve increases the child's risk of rapid dehydration or frank shock after vomiting and diarrhea. Finally, children have significant developmental vulnerabilities. Infants, toddlers, and young children do not have the motor skills to escape from the site of a biological incident. Even if they are able to walk, they may not have the cognitive insight to decide in which direction to flee. All children are at risk of psychological injury, such as posttraumatic stress disorder, from experiencing or witnessing an act of terrorism. In a mass casualty incident, children witness injuries and deaths, possible of their parents, who would produce both short- and long-term psychological trauma requires intervention.

Children are difficult to care for by health care personnel wearing protective equipment, which is essential in the management of chemical, biological, and radiological events. Protective clothing is bulky and cumbersome; it impedes the ability of healthcare providers to perform procedures such as venipuncture or endotracheal intubation on small children

Rady Children's Hospital San Diego - Appendix A

BIOTERRORISM: Infection Control Practices for Patient Management

Activation: HICS will be activated by the Incident Command who will notify the hospital operator to overhead page the disaster activation and status. Additionally the operator will notify the Disaster Team via pager.
 External Contacts: State Health Department: 916/657-1493
 FBI San Diego Field Office: 858/565-1255
 CDC Bioterrorism Emergency Response: 770/488-7100
 CDC Hospital Infections Program: 404/639-6413
 Department Health Services, Epidemiology: 858/565-5255 or 619/575-6620

	BACTERIAL AGENTS										VIRUSES					BIOLOGICAL TOXINS				
	Anthrax	Brucellosis	Cholera	Glanders (rarely seen)	Bubonic Plague	Pneumonic Plague	Tularemia	Q Fever			Smallpox	Encephalitis	Viral Encephalitis	Viral Hemorrhagic Fever		Botulism	Ricin	T-2 Mycotoxins	Staph Enterotoxin B	
Isolation Precaution																				
Standard Precautions for all aspects of patient care	X	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	
Contact Precautions	X										X			X						
Airborne Precautions				X							X									
Use of N95 mask by all individuals entering the room											X									
Droplet Precautions						X						X								
Wash hands with antimicrobial soap	X	X									X			X						
Patient Placement																				
No restrictions	X						X									X	X	X	X	
Cohort patients when private room unavailable			X		X	X		X					X							
Private Room		X	X	X	X	X					X	X		X						
Negative Pressure											X									
Door closed at all times				X							X									
Patient Transport																				
No restrictions	X						X									X	X	X	X	
Limit movement to essential medical purposes only		X	X	X	X	X					X	X		X						
Place mask on patient to minimize dispersal of droplets				X		X					X	X								
Cleaning, Disinfection of Equipment																				
Routine terminal cleaning of room with hospital approved disinfectant upon discharge			X	X			X	X			X	X	X			X	X	X	X	
Disinfect surfaces with bleach/water sol. 1:9 (10% sol.)	X	X			X	X								X						
Dedicated equipment that is disinfected prior to leaving room	X										X			X						
Linen management as with all other patients	X	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	
Regulate Medical Waste handled per hospital policy	X	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	
Discharges Management																				
No special discharge instruction necessary	X		X	X			X	X			X	X				X	X	X	X	
Home care providers need to be taught principles of Standard Precautions	X	X			X	X								X						
Not discharged from hospital until determined no longer infectious						X					X			X						
Patient usually not discharged until 72 hours of antibiotics completed						X														
Post-mortem Care																				
Follow principles of Standard Precautions	X	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	
Droplet Precautions						X														
Airborne Precautions											X									
Use of N95 mask by all individuals entering the room											X									
Negative Pressure											X									
Contact Precautions											X			X						
Routine terminal cleaning of room with hospital approved disinfectant upon autopsy		X	X	X			X	X			X	X	X			X	X	X	X	
Disinfect surfaces with bleach/water sol. 1:9 (10% sol.)	X				X	X								X						

Source: Walter Reed Army Medical Center, Washington, DC

Table 1: DISEASE ASSOCIATE WITH BIOTERRORISM

	Anthrax	Botulism	Plague	Smallpox
Etiology	<p><u>Bacillus anthracis</u></p> <p>Gram-positive bacillus (spore forming)</p>	<p><u>Clostridium botulinum</u></p> <p>Anaerobic gram-positive bacillus produces a potent neurotoxin, botulinum toxin</p>	<p><u>Yersinia pestis</u></p> <p>Gram-negative bacillus</p>	<p><u>Variola virus</u></p>
Clinical Features	<p><u>Pulmonary:</u></p> <ul style="list-style-type: none"> • Flu-like symptoms • 2-4 days, abrupt onset respiratory failure • hemodynamic collapse • widened mediastinum • gram-positive bacilli on blood culture (2-3 days) • treatable in early prodromal stage <p><u>Cutaneous:</u></p> <ul style="list-style-type: none"> • Local skin involvement • Head, forearms, hands • Localized itching • Papular to vesicular lesion • Usually non-fatal if treated <p><u>Gastrointestinal:</u></p> <ul style="list-style-type: none"> • Abdominal pain, nausea, vomiting, fever • Bloody diarrhea, hematemesis • Gram-positive bacilli on blood culture • Usually fatal after progression to toxemia and sepsis 	<ul style="list-style-type: none"> • Responsive patient with absence of fever • Symmetric cranial neuropathies (drooping eyelids, weakened jaw clench, difficulty swallowing or speaking) • Blurred vision • Symmetric descending weakness in a proximal to distal pattern • Respiratory dysfunction from respiratory muscle paralysis or upper airway obstruction due to weakened glottis • No sensory deficits. 	<p>Pneumonic Plague:</p> <ul style="list-style-type: none"> • Fever, cough, chest pain • Hemoptysis • Muco-purulent or watery sputum • Radiographic evidence of bronchopneumonia 	<ul style="list-style-type: none"> • 2-4 days, non-specific prodromal fever, myalgias • rash most prominent on face and extremities (including palms and soles) in contrast to varicella with truncal distribution • rash scabs over in 1-2 weeks • rash has a synchronous onset in contrast to varicella rash, wheal arises in crops
Modes of Transmission	<p>Spore form-delivered as an aerosol:</p> <ul style="list-style-type: none"> • Inhalation of spores • Cutaneous contact with spores • Ingestion of contaminated food 	<p>Generally by ingestion of toxin-contaminated food. Aerosolization of toxin may be mechanism for bioterrorism exposure.</p>	<ul style="list-style-type: none"> • Normally transmission from an infected rodent to man by infected fleas • Bioterrorism-related outbreaks likely through dispersion of an aerosol • Person-to-person transmission of pneumonic plague is possible via large aerosol droplets 	<p>Transmission via both large and small respiratory droplets. Patient-to-patient transmission is likely from airborne and droplet exposure by contact with skin lesions or secretions. Patients are considered more infectious if coughing or if they have a hemorrhagic form of smallpox.</p>

	Anthrax	Botulism	Plague	Smallpox
Incubation Period	Pulmonary: 2-60 days Cutaneous: 1-7 days Ingestion: 1-7 days	Foodborne: 12-36 hours Inhalation: 24-72 hours	Fleaborne: 2-8 days Pulmonary: 1-3 days	10-14 days
Period of Communicability	Transmission of anthrax from person-to-person unlikely. Airborne transmission does not occur. Direct contact with skin lesions may result in cutaneous infection.	Botulism is not transmitted from person-to-person.	Until 48 hours of effective therapy and until clinical improvement	Most infectious during first week of rash and until all scabs have separated (usually 3-4 weeks)
Special Planning Information	<ul style="list-style-type: none"> How additional ventilators can be obtained How limited numbers of ventilators will be distributed 	Any individuals suspected to have been exposed to botulinum toxin should be carefully monitored for evidence of respiratory compromise. Ventilatory support is required, on average 2-3 months	<ul style="list-style-type: none"> Sources of bulk prophylactic antibiotics and planning for acquisition on short notice. Locations, personnel needs and protocols for administering prophylactic Post-Exposure care to large numbers of potentially exposed individuals. 	<ul style="list-style-type: none"> Triage and management of large-scale exposure/potential exposures. Sites within or outside the facility that can provide necessary parameters for cohorting large numbers of patients with Airborne Precautions. Source of Smallpox vaccine. Availability of large supply of N95 particulate respirators and purified air powered respirators (PAPRs). Personnel needs for large numbers of patients on Airborne Precautions.
Decontamination of Exposed Patients	Only necessary immediately after exposure. Post-Exposure decontamination to be done in the ER as follows: <ul style="list-style-type: none"> Instruct patient to remove clothing and store in biohazard bag. Handle clothing minimally to avoid agitation Instruct patient to shower thoroughly with soap and water (provide assistance if necessary). 		Only necessary immediately after exposures. Post-Exposure decontamination to be done at the ER dock as follows: <ul style="list-style-type: none"> Instruct patients to remove clothing and store in biohazard bag. Handle clothing minimally to avoid agitation Instruct patient to shower thoroughly with soap and water (provide assistance if necessary).	Not indicated

Table 2: PREVENTIVE MEASURES

	Anthrax	Botulism	Plague	Smallpox
Decontamination of Environment	In possibly contaminated areas, decontaminate environmental surfaces with a phenolic disinfectant; allow 10-minute contact time.	No special precautions	See general instructions	Terminal cleaning of patient room and disinfection with a phenolic (10 minute contact time).
Cleaning, Disinfection, Sterilization of Equipment	After decontamination, standard cleaning procedures.	Standard cleaning procedures	Standard cleaning procedures	<ul style="list-style-type: none"> • Use dedicated patient care equipment (e.g. stethoscope, B/P cuff, thermometer, etc.) • All reusable equipment must be cleaned and disinfected with a phenolic (10 minute contact time) prior to use by other patients.
Isolation Precautions for Exposed Patients	Standard Precautions	Standard Precautions	Droplet Precautions for 2-7 days after exposure; observe for flu-like symptoms or pneumonia.	Airborne & Contact Precautions on days 7-17 after exposure; monitor for disease onset (see below).
Isolation Precautions for Patients with Disease	Standard Precautions	Standard Precautions	Droplet Precautions until patient has completed 72 hours of antimicrobial therapy.	Airborne & Contact Precautions for at least 3 weeks and only discontinue with approval from Infectious Diseases/Infection Control. <ul style="list-style-type: none"> • Use N95 mask or particulate respirator. • Place in negative pressure room. • For large numbers of patients cohort in a separate facility.
Patient Transport	Standard Precautions	Standard Precautions	Limit movement – only for essential medical purposes. Patient wears surgical mask.	Limit movement – only for essential medical purposes. DO NOT transport patient until Infection Control staff is notified. Patient wears surgical mask.
Patient Placement	Private room not necessary	Private room not necessary	Private room or cohort patients	Private room (negative air pressure); door must remain closed. Patients with same disease may be cohorted, but must be in a negative air pressure room.

	Anthrax	Botulism	Plague	Smallpox
Specimen Collection and Transport	<p><u>Pulmonary</u>: For early disease with productive cough; sputum sent on ice. 2-8 days post-exposure; blood culture in standard blood culture bottle.</p> <p><u>Cutaneous</u>: Early disease; unroof vesicle and soak 2 sterile swabs in vesicular fluid; later disease; 2 sterile swabs rotated beneath the edge of the eschar.</p> <p><u>GI</u>: early stage-stool culture; later stage-blood culture.</p> <p>Must notify laboratory personnel of suspicions of bioterrorism-related agent before transporting to lab.</p>	<p>In event of aerosolization specimens of choice include; serum for toxigenicity studies, feces or return from a sterile water or saline enema. In event of foodborne illness; serum, gastric contents, vomitus, stool or the return from a sterile water or saline enema are specimens of choice. Must notify laboratory personnel of suspicions of bioterrorism-related agent before transporting to lab.</p>	<p>Specimen of choice: pneumonic plague-tracheal or lung aspirates. Bubonic plague – material from infected bubo or series of blood cultures within 24 hours. Other sources: CSF, feces and urine. On autopsy, lymphoid tissue, lung tissue or bone marrow. Care should be taken to avoid the generation of aerosols from infectious materials. Must notify laboratory personnel of suspicions of bioterrorism-related agent before transporting to lab.</p>	<p>Notify Infection Control prior to collection of any specimens and await further instructions.</p>
Laboratory Confirmation	<p>Testing can only be performed in a BSL-2 laboratory. Contact Health Department for rapid testing capabilities.</p>	<p>Routine laboratory tests are of limited value in the diagnosis of botulism. Contact Health Department for special instructions.</p>	<p>Contact Microbiology Director for special instructions for Serum for capsular antigen testing Blood cultures Sputum or tracheal aspirate for Gram's, Wayson's, and fluorescent antibody staining Sputum or tracheal aspirates for culture.</p>	<p>Testing can only be performed in a BSL-4 laboratory. Contact CDC for special instructions and to obtain an appropriate specimen kit.</p>
Lab Specimen Handling and Transport	<p>Handling of clinical specimens will be coordinated with the local Health Department/FBI for transportation to Department of Defense laboratory. The chain of custody form, provided with the transportation kit, must be used to document all information. All specimens sent through the US mails must meet IOTA guidelines for transport.</p>	<p>All specimens sent through the US mails must meet IOTA guidelines for transport.</p>	<p>All specimens sent through the US mails must meet IOTA guidelines for transport.</p>	<p>Handling of clinical specimens will be coordinate with the local Health Department/FBI for transportation to Department of Defense laboratory. The chain of custody form, provided with the transportation kit, must be used to document all information. All specimens sent through the US mails must meet IOTA guidelines for transport.</p>
Post Mortem Care	Standard Precautions	Standard Precautions	Standard & Droplet Precautions	Airborne & Contact Precautions
Post Exposure Management		<p>Single cases of botulinum should immediately raise concerns of an outbreak potentially associated with shared contaminated food.</p>	<p>Risk for re-aerosolization of <i>Y. pestis</i> from contaminated clothing of exposed persons is low.</p>	<p>Contact Infection Control on pager (858) 493-0390. Depending on availability:</p> <ul style="list-style-type: none"> • Give Smallpox vaccine (vaccinia virus) within 3 days of exposure. • If greater than 3 days, give vaccination and vaccinia immune globulin (VIG) 0.6 ml/kg IM.

	Anthrax	Botulism	Plague	Smallpox
Prophylaxis and Post-Exposure Immunization	Prophylaxis should be initiated upon confirmation of an anthrax exposure. See Table 6 for specific information.	Trivalent botulinum antitoxin is available by contracting state health departments or CDC. Skin testing should be performed prior to administration due to < 9% rate of hypersensitivity reactions.	Post-Exposure prophylaxis should be initiated following confirmed or suspected bioterrorism Y. pestis exposure, and for Post-Exposure management of healthcare workers and others who had unprotected face-to-face contact with symptomatic patients.	Post-Exposure immunization with smallpox vaccine (vaccinia virus) available and effective. Vaccine alone is recommended if given within 3 days of exposure. Passive immunization is also available in forms of vaccinia-immune-globulin (VIG). If given greater than 3 days has elapsed since exposure, both vaccination and VIG are recommended. See information for pregnant women and persons with immunosuppression and eczema.
Vaccine Availability	Inactivated, cell-free anthrax vaccine - limited availability	Pentavalent toxoid vaccine available as an investigational new drug.	Formalin-killed vaccine exists for bubonic plague, but has not proven effective for pneumonic plague. Not currently available in the United States.	A live-virus intradermal vaccine is available from the CDC.
Immunization Recommendations	Routinely administered to military personnel. Routine vaccination of civilian population not recommended.	Routine immunization of the public including healthcare workers is not recommended.	Not recommended for the general population; Post-Exposure immunization has no utility.	Routine public vaccination is not recommended, since the last naturally acquired case in the world occurred more than 20 years ago. Vaccination against smallpox does not reliably confer lifelong immunity. Even previously vaccinated persons should be considered susceptible to smallpox.
Discharge Management	No special discharge instructions are indicated; teach home care providers Standard Precautions.	No special discharge instructions are indicated.	Generally, patients with pneumonic plague would not be discharged from a healthcare facility until no longer infectious and would require no special discharge instructions. In the event of a large bioterrorism exposure with patient receiving care in homes, home care providers should be taught to use Standard Precautions and Droplet Precautions for all patient care.	In general, patients with smallpox should not be discharged from a healthcare facility until determined if they are no longer infectious. Therefore, no special discharge instructions are required.
Patient, Visitor, and Public Information	Fact sheets – available from the Infection Control office.	Fact sheets – available from the Infection Control Office.	Fact sheets – available from the Infection Control office.	Fact sheets – available from the Infection Control office.

Table 5#: RECOMMENDED POST-EXPOSURE PROPHYLAXIS FOR YERSINIA PESTIS (PLAGUE)*

Antimicrobial agent	Adults	Children Ç
1st choice		
Doxycycline	100 mg twice daily	5 mg per kg of body mass per day, divided into two doses
2nd choice		
Ciprofloxacin	500 mg twice daily	20-30 mg per kg of body mass daily, divided into two doses

Ç Pediatric use of tetracyclines is associated with adverse effects. Fluoroquinolones are currently not approved for those <18 yrs. Due to concern of toxicity in animals. Use of these medications must be weighed against the risk of developing a lethal disease.

* Prophylaxis should continue for 7 days after last known or suspected *Y. pestis* exposure, or until exposure has been excluded.

Table 6#: RECOMMENDED POST-EXPOSURE PROPHYLAXIS FOR BACILLUS ANTHRACIS (ANTHRAX)

Antimicrobial agent	Adults	Children Ç
Oral Fluoroquinolones		
One of the following:		
Ciprofloxacin	500 mg twice daily	20-30 mg per kg of body mass daily, divided into two doses
Levofloxacin	500 mg once daily	Not recommended
Ofloxacin	400 mg twice daily	Not recommended
If fluoroquinolones are not available or are contraindicated		
Doxycycline	100 mg twice daily	5 mg per kg of body mass per day, divided into two doses

Ç Pediatric use of tetracyclines is associated with adverse effects. Fluoroquinolones are currently not approved for those <18 yrs. Due to concern of toxicity in animals. Use of these medications must be weighed against the risk of developing a lethal disease. If *B. anthracis* exposure is confirmed, the organism must be tested for penicillin susceptibility. If susceptible, exposed children may be treated with oral amoxicillin 40mg per kg of body mass per day divided every 8 hours (not to exceed 500mg, three times daily).

Prophylaxis should continue until *B. anthracis* exposure has been excluded. If exposure is confirmed, prophylaxis should continue for 8 weeks. In addition to prophylaxis, Post-Exposure immunization with an inactivated, cell-free anthrax vaccine is also indicated following anthrax exposure. If available, Post-Exposure vaccination consists of three doses of vaccine at 0, 2 and 4 weeks after exposure. With vaccination, Post-Exposure antimicrobial prophylaxis can be reduced to 4 weeks.

Reference: Bioterrorism Readiness Plan: A template for Healthcare Facilities, CDC website, accessed September 2010. <http://emergency.cdc.gov/bioterrorism/prep.asp>

CHEMICAL EXPOSURE/TERRORISM

Key points:

In addition to typical considerations of patient safety, the following are critical considerations for pediatric populations:

Specific Pediatric Vulnerabilities to Chemical Agents (AHRQ)

Children have inherent physiologic, developmental, and psychological differences from adults that may enhance susceptibility and worsen prognosis after a chemical agent exposure. Briefly, such physiologic differences include:

- Higher minute ventilation
- Increased skin permeability
- Greater body surface area to weight ratio (plays a key role in degree of contamination and in the ability to maintain thermal homeostasis after decontamination)
- Less intravascular volume reserve in defense of hypovolemic shock
- Shorter stature (which places children nearer the greatest gas vapor density at ground level)

Chemical Terrorism

- Chemical agents act quickly. Rapid response is essential.
- Learn to recognize and diagnose the health effects of chemical agents.
- Chemical agents may contaminate you and your facility
- Do not become a casualty! Implement procedures to decontaminate and treat incoming patients.

AWARENESS

RECOGNIZING CHEMICAL TERRORISM-RELATED ILLNESSES

Adequate planning and regular training are key to preparedness for terrorism-related events. This wall chart is only a summary of important information. For more detail to assist you in preparedness planning, review the resources at the bottom of this wall chart.

Healthcare providers should be alert to illness patterns and reports of chemical exposure that might signal an act of terrorism. The following clinical, epidemiological and circumstantial clues may suggest a possible chemical terrorist event:

- Any unusual increase in the number of people seeking care, especially with respiratory, neurological, dermatological or gastrointestinal symptoms
- Any clustering of symptoms or unusual age distribution (e.g., chemical exposure in children)
- Any unusual clustering of patients in time or location (e.g., persons who attended the same public event)
- Location of release not consistent with a chemical's use
- Simultaneous impact to human, animal and plant populations

Any unusual symptoms, illnesses or clusters of these should be reported immediately. Notify the County Health Department and regional Poison Control Center.

PHONE NUMBERS

Poison Control Centers 1-800-222-1222

County Health Department

San Diego Department of Health

Nerve Agents in Children: Guidelines

Symptoms	Triage Level: Disposition	Atropine Correct hypoxia before IV use (risk of torsades, Vfib)	Pralidoxime	Diazepam May use other benzodiazepines (e.g. midazolam)
Asymptomatic	Delayed: Observe	None	None	None
Miosis, mild rhinorrhea	Delayed: Admit or Observe prn	None	None	None
Miosis and any other symptom	Immediate -Moderate: Admit	0.05 mg/kg IV or IM <ul style="list-style-type: none"> repeat as needed q5-10 minutes until respiratory status improves 	25-50 mg/kg IV or IM, may repeat q 1 hour. <ul style="list-style-type: none"> Watch for: ⇒ muscle rigidity ⇒ laryngospasm, ⇒ tachycardia 	For any neurologic effect: <ul style="list-style-type: none"> 30 days to 5 years – 0.05 to 0.3 mg/kg IV to a max of 5mg/dose. 5 years and older– 0.05 to 0.3 mg/kg IV to a max of 10 mg/dose. May repeat q15-30 minutes
Apnea, Convulsions, Cardiopulmonary Arrest	Immediate - Severe: Admit intensive care status	0.05-0.1 mg/kg IV, IM, per ETT <ul style="list-style-type: none"> no maximum repeat q5-10 minutes as above 	25-50 mg/kg IV or IM as above	See above

Consider other supportive agents as indicated: Oxygen, Bronchodilators, Analgesics, Mydriatics, Environmental protection



General Principles

- Nerve agent casualties will present in large numbers soon after the event and may continue to present for days.
- **Have a high index of suspicion for**
 - mixed agents (e.g. sarin and mustard)
 - secondary injuries (blast, trampling)
- Most casualties will arrive **without** adequate decontamination.
- **Most casualties and their parents will be:**
 1. Mildly poisoned and ambulatory and /or
 2. Psychologically traumatized
- Prepare for patient behavioral outbursts, child-care issues, security issues, the media.
- Guard against injury to health care workers from secondary exposure
- **Contact appropriate non-medical authorities** (e.g. Law Enforcement, Military Public Health) of suspicion of nerve agent exposure.
 - Determine: time of first symptoms, liquid vs. vapor exposure, location of casualties

Differential Diagnosis

- **Sudden mass casualties without sign of trauma → suspect airborne toxin**
 - Hypoxemic, miosis, profuse secretions → **organophosphate (nerve agent/pesticide)**
 - Unconscious, metabolic acidosis, non-hypoxemic → **Cyanide**
 - venous blood gases arterialized
- **Progressive respiratory symptoms:**
 - Consider: phosgene, anthrax, plague, Botulinum toxin

Clinical Signs

- **Children may ONLY show CNS Effects**
 - **Neuromuscular Effects:** twitching, weakness, paralysis, respiratory failure
 - **Autonomic Nervous System Effects:** reduced vision, small pupil size, drooling, sweating, diarrhea, nausea, abdominal pain, vomiting
 - **Central Nervous System Effects:** headache, convulsions, coma, respiratory arrest, confusion, slurred speech, respiratory depression
- **Miosis** - most consistently indicates a significant exposure
- **RBC-Cholinesterase level is NOT** useful to screen for exposure in mass casualty situation

Treatment

- **Base treatment on clinical suspicion**
- **ABC's: Airway protection and pulmonary support are key for survival**
- **Terminate exposure**
 - **Triage: Attend infants and children in immediate and moderate categories first** (higher susceptibilities and more tenuous airways)
 - **Decontamination:**
 - **1) Full exposure** (bag and seal any clothes or personal items).
 - **2) Wash with copious water/soap and rinse.**
 - Consider 0.05% bleach, flour, talcum, dirt, powder and wash off with water/baby wipes.
- **In a possible liquid exposure to skin or mucous membranes**, regardless of findings, observe for 18 hours, at a minimum.
- **Antidotes: see reverse**
- **Atropine: Dose liberally to muscarinic effect**
 - In the Iran/Iraq War NA severely affected victims received 20-200 mg of atropine.
 - Atropine cannot reverse neuromuscular symptoms
 - Sinus Tachycardia - not an end-point for atropinization
- **Diazepam** - other benzodiazepines may be equally effective (consider midazolam or lorazepam).
- **Intubation:** consider a nondepolarizing agent
- **Supportive care:**
- **Airway protection/bronchospasm/pulmonary toilet**
 - Oxygen, **bronchodilators**, nasogastric tubes.
- **Cardiac:** Monitor for arrhythmias
- **Fluids, electrolytes, nutrition**
 - Nursing mothers -discard breast milk
- **Prevent hypothermia and hyperthermia**
- **Eye care**
 - Treat eye pain
 - Consider treating miosis
 - Atropine will not reverse miosis
- **Treat complicating injuries/infections**
 - Attend any iatrogenic skin lesions
- **Follow-up: chronic neuropsychiatric sequelae**



CHEMICAL TERRORISM AGENTS AND SYNDROMES: Watch for these signs and symptoms

Agents	Signs	Symptoms	Onset	Clinical Diagnostic Tests	Exposure Route and Treatment	Differential diagnosis
Nerve Agents: Sarin (GB); Tabun (GA); Soman (GD); Cyclohexyl Sarin (GF); VX; Novichok agents, other organophosphorus compounds including carbamates and pesticides	Pinpoint pupils (miosis) Bronchoconstriction Respiratory arrest Hypersalivation Increased secretions Diarrhea Decreased memory, concentration Loss of consciousness Seizures	Moderate exposure: Diffuse muscle cramping, runny nose, difficulty breathing, eye pain, dimming of vision, sweating, muscle tremors. High exposure: The above plus sudden loss of consciousness, seizures, flaccid paralysis (late sign)	Aerosols: Seconds to minutes Liquids: minutes to hours	Red blood cell or serum cholinesterase (whole blood) Treat based on signs and symptoms; lab tests only for later confirmation	Inhalation and dermal absorption Atropine (2mg) IV; repeat q 5 minutes, titrate until effective, average dose 6 to >15 mg – use IM in the field before IV access (establish airway for oxygenation) Pralidoxime chloride (2-PAMCl) 600-1800 mg IM or 1.0 g IV over 20-30 minutes (maximum 2 g IM or IV per hour) Additional doses of atropine and 2-PAMCl depending on severity Diazepam or lorazepam to prevent seizures if >4 mg atropine given Ventilatory support	Poisoning from organophosphate and carbamate pesticides may occur as a result of occupational exposure Cyanide poisoning Myasthenia gravis
Cyanides: hydrogen cyanide (HCN), cyanogen chloride	Moderate exposure: Metabolic acidosis, venous blood-O ₂ level above normal, hypotension, "pink" skin color High exposure: Above signs plus coma, convulsions, cessation of respiration and heartbeat	Moderate exposure: Giddiness, palpitations Dizziness, nausea, vomiting, headache, eye irritation, increase in rate and depth of breathing (hyperventilation), drowsiness High exposure: Immediate loss of consciousness, convulsions and death within 1 to 15 minutes	Seconds to minutes	Bitter almond odor associated with patient suggests cyanide poisoning Metabolic acidosis Cyanide (blood) or thiocyanate (blood or urine) levels Treat based on signs and symptoms; lab tests only for later confirmation	Inhalation, ingestion and dermal absorption 100% oxygen by face mask; intubation with 100% FiO ₂ if indicated Amyl nitrite via inhalation, 1 ampule (0.2 mL) q 5 minutes Sodium nitrite (300 mg IV over 5-10 minutes) and sodium thiosulfate (12.5 g IV) Additional sodium nitrite should be based on hemoglobin level and weight of patient	Similar CNS illness can result from: Industrial/occupational exposure to HCN and derivatives; carbon monoxide (CO) exposure from incomplete combustion of natural gas or petroleum fuels (exhaust fumes in enclosed areas); hydrogen sulfide (H ₂ S) exposure from sewers, animal waste, industrial sources) Poisoning from nerve agents
Vesicants/Blister Agents: sulfur mustard, lewisite, nitrogen mustard, mustard lewisite, phosgene-oxime	Skin erythema and blistering; watery, swollen eyes; upper airways sloughing with pulmonary edema; metabolic failure; neutropenia and sepsis (esp. sulfur mustard, late in course)	Burning, itching, or red skin Mucosal irritation (prominent tearing, and burning and redness of eyes) Shortness of breath Nausea and vomiting	Lewisite, minutes; Sulfur mustard, hours to days	Often smell of garlic, horseradish, and/or mustard on body Oily droplets on skin from ambient sources Urine thiodiglycol Tissue biopsy (USAMRICD)	Inhalation and dermal absorption Mustards no antidote For lewisite and lewisite/mustard mixtures: British Anti-Lewisite (BAL or Dimercaprol) IM (rarely available) Thermal burn therapy; supportive care (respiratory support and eye care)	Diffuse skin exposure with irritants, such as caustics, sodium hydroxides, ammonia, etc., may cause similar syndromes. Sodium hydroxide (NaOH) from trucking accidents
Pulmonary/Choking Agents: phosgene, chlorine, diphosgene, chloropicrin, oxides of nitrogen, sulfur dioxide	Pulmonary edema with some mucosal irritation (greater water solubility of agent = greater mucosal irritation) leading to ARDS or non-cardiogenic pulmonary edema Pulmonary infiltrate	Shortness of breath Chest tightness Wheezing Laryngeal spasm Mucosal and dermal irritation and redness	1-24 hours (rarely up to 72 hours); May be asymptomatic period of hours	No tests available but history may help identify source and exposure characteristics (majority of incidents generating exposures to humans involve trucking with labels on vehicle)	Inhalation No antidote Management of secretions; O ₂ therapy; consider high dose steroids to prevent pulmonary edema (demonstrated benefit only for oxides of nitrogen) Treat pulmonary edema with PEEP to maintain PO ₂ above 60 mm Hg	Mucosal irritation, airway reactions, and deep lung effects depend on the specific agent, especially water solubility
Ricin (castor bean oil extract)	Clusters of acute lung or GI injury; circulatory collapse and shock, tracheobronchitis, pulmonary edema, necrotizing pneumonia	Ingestion: Nausea, diarrhea, vomiting, fever, abdominal pain Inhalation: chest tightness, coughing, weakness, nausea, fever	18-24 hours 8-36 hours	ELISA (from commercial laboratories) using respiratory secretions, serum, and direct tissue	Inhalation and Ingestion No antidote Supportive care For ingestion: charcoal lavage	Tularemia, plague, and Q fever may cause similar syndromes, as may biological weapons and chemical weapon agents such as Staphylococcal enterotoxin B and phosgene
T-2 mycotoxins: Fusarium, Myrothecium, Trichoderma, Verticillium, Stachybotrys	Mucosal erythema and hemorrhage (intestinal necrosis) Red skin, blistering Increased salivation Pulmonary edema Seizures and coma Liver/renal dysfunction	Dermal and mucosal irritation; blistering, necrosis Blurred vision, eye irritation, tearing Nausea, vomiting, and diarrhea Ataxia coughing and dyspnea	2-4 hours	ELISA from commercial laboratories Gas chromatography/Mass spectroscopy in specialized laboratories	Inhalation and dermal contact No antidote Supportive care For ingestion: charcoal lavage Consider high dose steroids	Pulmonary toxins (O ₃ , NO _x , phosgene, NH ₃) may cause similar syndromes though with less mucosal irritation.

Modified from Chemical Terrorism General Guidance Pocket Guide, Employee Education System for the Office of Public Health and Environmental Hazards, Department of Veterans Affairs. October 2001.

- Centers for Disease Control and Prevention. Demilitarization of Chemical Weapons. <http://www.cdc.gov/nceh/demil/articles/initialtreat.htm>.
- Centers for Disease Control and Prevention. Chemical Agents Listing and Information. <http://www.bt.cdc.gov/Agent/AgentlistChem.asp>.
- Committee on R&D Needs for Improving Civilian Medical Response to Chemical and Biological Terrorism Incidents, Institute of Medicine. Chemical and Biological Terrorism. Washington, DC: National Academy Press. 1999 <http://www.nap.edu/catalog/6364.html>
- The Henry L. Stimson Center. Chemical and Biological Weapons Nonproliferation Project. Table E: Medical Characteristics of Chemical Warfare Agents <http://www.stimson.org>.
- Macintyre AG, Christopher GW, Eitzen E, Gum R, Weir S, DeAtley C, et al. Weapons of mass destruction events with contaminated casualties: Effective planning for health care facilities. JAMA 2000;283:242-249.
- NIOSH/OSHA/USCG/EPA. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Washington, D.C.: Department of Health and Human Services. 1985.
- US Army Medical Research Institute of Chemical Defense (USAMRICD) Medical Management of Chemical Casualties Handbook. 3rd ed. USAMRICD: Aberdeen Proving Ground, MD. July 2000. <http://ccc.apgea.army.mil/products/handbooks/mmccthirdeditionjul2000.pdf>
- Wannemacher RW, Wiener ST. Trichothecene mycotoxins. In: Sidell FR, Takafuji ET, Franz DR, eds. Medical Aspects of Chemical and Biological Warfare. Washington DC: Borden Institute, Walter Reed Army Medical Center. 1997. pages 655-676.

UNIVERSAL PERSONAL PROTECTIVE EQUIPMENT (PPE)*	NOTIFICATION PROCEDURES	FOR MORE INFORMATION	UNIVERSAL DECONTAMINATION PROTOCOL	DETECTION OF OUTBREAKS
<p>Level A: Maximum protection against vapor and liquids. Environment known to be immediately dangerous to life and health (harm occurs within 30 minutes). Fully encapsulating, chemical-resistant suit, chemically resistant gloves and boots, and a pressure-demand supplied air respirator (air hose) and escape self-contained breathing apparatus (SCBA)</p> <p>Level B: Minimum protection exposure to unknown hazards. Full respiratory protection is required but danger to skin/risk of dermal absorption from vapor is less. Agent not identified, or concentration not known to be safe (i.e., field decontamination or ambulatory setting). Nonencapsulating, splash-protective chemical resistant suit (splash suit), chemical resistant gloves and boots/shoes, and a pressure-demand supplied air respirator (air hose) and escape SCBA</p> <p>Level C: Until patient/victim decontamination completed. Organic vapor/P11 cartridge respirator or hood, nonencapsulating chemically-resistant (i.e., coated Tyvek) suit and gloves</p> <p>* Training required to properly and safely use PPE</p>	<ol style="list-style-type: none"> 1. First call the local Health Director; after hours contact local Health Director via 911. 2. If criminal activity is suspected, call your local law enforcement and the FBI. 3. Alert local HAZMAT team via fire department at 911. 	<ul style="list-style-type: none"> Contact your local poison control center or National Poison Control 800-222-1222 Contact your public health regional surveillance team Contact your institution industrial hygienist or safety officer Department of Justice Domestic Preparedness National Response Hotline 800-424-8802 If you need further help in clinical diagnosis, call CDC Emergency Response 770-488-7100 Review US Army Chemical Casualty Care handbook (http://ccc.apgea.army.mil) 	<ol style="list-style-type: none"> 1. Remove clothing quickly and seal in plastic impervious bags (save for authorities). Strongly recommended even if exposure only to vapor or aerosol agent. 2. Wash skin and shampoo with hypoallergenic liquid soap and copious tepid water in sequential steps of rinse, soap, rinse, wait one minute, then final additional rinse (20 minutes). 3. Latent response from cyanide or pulmonary agents do not require decontamination. 4. Decontamination waste water may require special collection or treatment. (Discuss with local water authorities; notify local water authorities at the time of an event.) 5. Pure metals and strong corrosives require dry decontamination (i.e., gentle brushing or vacuuming of larger particles) before water is applied. 6. Clean and decontaminate the healthcare facility according to the specific agent involved. http://www.bt.cdc.gov/Agent/AgentlistChem.asp 	<p>Epidemiologic Strategies</p> <ul style="list-style-type: none"> A rapidly increasing disease incidence An unusual increase in the number of people seeking care, especially with neurologic, respiratory, dermal and/or gastrointestinal symptoms Higher attack rate among persons who had attendance at similar activities or events (work site, convention, sports events) with either indoor or outdoor exposure. Clusters of patients arriving from a single locale Large numbers of rapidly fatal cases Any patient presenting with symptoms and/or signs that suggest inhalation, ingestion, or dermal exposure to a toxic chemical agent

Support provided by:	Chart developed by:
<p>The North Carolina Institute for Public Health and The North Carolina Center for Public Health Preparedness, in the School of Public Health at The University of North Carolina at Chapel Hill</p> <p>In view of the possibility of human error or changes in medical sciences, neither the authors, nor the publisher, nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete. Readers are encouraged to confirm the information contained herein with other sources and check drug package inserts for warnings and contraindications.</p>	<p>North Carolina Statewide Program for Infection Control and Epidemiology (SPICE) email: spice@unc.edu KK Hoffmann,* DJ Weber,* W Stopford,† CG Smith,‡ J Newmark,§ BI Maliner,§ EP Clontz,* WA Rutala*</p>

* North Carolina Statewide Program for Infection Control and Epidemiology, University of North Carolina at Chapel Hill School of Medicine

† Duke University Medical Center

‡ North Carolina Department of Health and Human Services and University of North Carolina at Chapel Hill

§ US Army Medical Research Institute of Chemical Defense

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PERSONAL PROTECTIVE EQUIPMENT (PPE)

DO NOT BECOME A CASUALTY!

Exposure can occur from inhalation of vapors, dermal contact or eye contact. The following general information can help responders/healthcare providers determine appropriate PPE.

Inhalation Exposure

Protection from both vapors and particulates may be required when the chemical agent is being released. After release, protection from vapors is most important. Half-face and full-face respirators, with the appropriate canister, can provide protection from vapors. These operate by negative pressure and must be fit tested for optimal protection. Powered, air-purifying respirators (PAPR) and self-contained breathing apparatus (SCBA) provide even greater protection and operate under positive pressure so that fit characteristics are less important. Surgical and N-95 masks will not protect against inhalation of vapors.

Dermal Exposure

Latex examination gloves provide very little protection from most chemical agents and can cause allergies. Gloves made of Viton, nitrile, butyl or neoprene provide better protection and, in some styles, allow adequate dexterity. However, the resistance of these materials to different chemicals varies and it is best to have a variety of gloves available. Double gloving may provide additional protection. Chemical-resistant aprons, suits and boots can also minimize dermal exposure.

Eye Exposure

Full-face respirators, PAPR and SCBA will provide protection from both splashes and vapors. Protective eyewear, such as goggles or a face shield, will **not** provide protection from chemical vapors. Protective eyewear is necessary during decontamination to prevent splashing into eyes.

For more information, refer to *OSHA Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances*. Available at:

http://www.osha.gov/dts/bestpractices/firstreceivers_hospital.pdf

AGENTS

Table 1. RECOGNIZING, DIAGNOSING, AND TREATING HEALTH EFFECTS OF CHEMICAL AGENTS

Agent Type	Agent Names	Mode of Action	Any Unique Characteristics	Signs and Symptoms	Treatment	Other Patient Considerations
Nerve (See Table 2 below)	<ul style="list-style-type: none"> - Cyclohexyl sarin (GF) - Sarin (GB) - Soman (GD) - Tabun (GA) - VX - Some insecticides (cholinesterase inhibitors) - Novichok agents/ Soviet V 	<ul style="list-style-type: none"> - Inactivate acetylcholinesterase enzymes, causing both muscarinic and nicotinic effects 	<ul style="list-style-type: none"> - Miosis (pinpoint pupils) - Copious secretions/ sweating - Muscle twitching/ fasciculations 	<ul style="list-style-type: none"> - Miosis (pinpoint pupils) - Blurred/dim vision - Headache - Nausea, vomiting, diarrhea - Copious secretions/ sweating - Muscle twitching/ fasciculations - Dyspnea - Seizures - Loss of consciousness 	<ul style="list-style-type: none"> - Confirm patient decontamination - See nerve agent antidote Table 2 below - Atropine before other measures - Pralidoxime (2-PAM) chloride 	<ul style="list-style-type: none"> - Onset of symptoms from dermal contact with liquid forms may be delayed - Repeated antidote administration may be necessary
Asphyxiant/ Blood (See Table 3 below)	<ul style="list-style-type: none"> - Arsenic - Cyanogen chloride - Hydrogen cyanide 	<ul style="list-style-type: none"> - Arsenic: Causes massive intravascular hemolysis which may lead to anemia, jaundice and renal failure. - Cyanogen chloride/ hydrogen cyanide: Cyanide binds with iron in cytochrome a_3 preventing intracellular oxygen utilization. The cell then uses anaerobic metabolism, creating excess lactic acid and metabolic acidosis. 	<ul style="list-style-type: none"> - Possible skin color changes: cherry-red (cyanide or cyanogen chloride); yellow or bronze (arsenic) - Possible cyanosis - Possible frostbite* 	<ul style="list-style-type: none"> - Confusion - Nausea - Gasping for air, similar to asphyxiation but more abrupt onset - Seizures - Metabolic acidosis (cyanide or cyanogen chloride) 	<ul style="list-style-type: none"> - Confirm patient decontamination - Rapid treatment with oxygen - For cyanide, use sodium nitrite or amyl nitrite, if available, and then sodium thiosulfate - See cyanide antidote Table 3 below - Vigorous supportive care may aid recovery of some patients even without specific antidote - Arsenic has no specific antidote 	<ul style="list-style-type: none"> - Arsenic and cyanogen chloride may cause delayed pulmonary edema
Choking/ Pulmonary-damaging	<ul style="list-style-type: none"> - Chlorine - Hydrogen chloride - Nitrogen oxides - Phosgene 	<ul style="list-style-type: none"> - Acids or acid-forming agents which react with cytoplasmic proteins and destroy cell structure 	<ul style="list-style-type: none"> - Chlorine is a greenish-yellow gas with pungent odor - Phosgene gas may smell like newly-mown hay or grass - Possible frostbite* 	<ul style="list-style-type: none"> - Eye and skin irritation - Airway irritation - Dyspnea, cough - Sore throat - Chest tightness - Wheezing - Bronchospasm 	<ul style="list-style-type: none"> - Confirm patient decontamination - Fresh air, forced rest - Semi-upright position - If signs of respiratory distress are present, oxygen with or without positive airway pressure may be needed - Maintain adequate oxygenation - No specific antidote 	<ul style="list-style-type: none"> - May cause delayed pulmonary edema, even following a symptom-free period that varies in duration with the amount inhaled - May lead to ARDS (Acute Respiratory Distress Syndrome)

Agent Type	Agent Names	Mode of Action	Any Unique Characteristics	Signs and Symptoms	Treatment	Other Patient Considerations
Blistering/ Vesicant (See Table 4 below)	<ul style="list-style-type: none"> - Mustard/Sulfur mustard (HD, H) - Nitrogen mustard (HN-1, HN-2, HN-3) - Lewisite (L) - Phosgene oxime (CX) 	<ul style="list-style-type: none"> - Exact mechanisms of biologic activity are unknown - Mustard: Forms metabolites that bind to enzymes, proteins and other cellular components - Lewisite: Binds to thiol groups in many enzymes - Phosgene oxime: Mechanism unknown, but corrosive like strong acids 	<ul style="list-style-type: none"> - Mustard (HD) may have an odor like horseradish, garlic, or mustard - Lewisite (L) may have an odor like geranium - Phosgene oxime (CX) may have a pepper-like or pungent odor 	<ul style="list-style-type: none"> - Skin, eye and mucosal irritation - Skin erythema and blistering - Tearing, conjunctivitis, corneal damage - Mild respiratory distress to marked airway damage 	<ul style="list-style-type: none"> - Confirm patient decontamination - If dyspneic, give oxygen - Specific antidote British Anti-Lewisite (BAL) may decrease systemic effects of Lewisite - See Lewisite antidote Table 4 below - Mustard and phosgene oxime have no specific antidotes 	<ul style="list-style-type: none"> - Possible pulmonary edema - Mustard has an asymptomatic latent period - Lewisite has immediate burning pain, blisters later - Phosgene oxime causes immediate pain - Monitor electrolyte balance; fluid loss is likely to be less than in comparable thermal burns - Neutropenia and sepsis
Incapacitating / Behavior-altering (See Table 5 below)	<ul style="list-style-type: none"> - Agent 15/BZ 	<ul style="list-style-type: none"> - Competitively inhibits acetylcholine which disrupts muscarinic transmission in central and peripheral nervous systems (atropine-like action) 	<ul style="list-style-type: none"> - May appear as mass drug intoxication with erratic behaviors, shared realistic and distinct hallucinations, disrobing and confusion - Hyperthermia - Mydriasis (dilated pupils) 	<ul style="list-style-type: none"> - Dry mouth and skin - Initial tachycardia - Altered consciousness, delusions, denial of illness, belligerence - Hyperthermia - Ataxia (lack of coordination) - Hallucinations - Mydriasis (dilated pupils) 	<ul style="list-style-type: none"> - Confirm patient decontamination - Evaluate mental status - Use restraints as needed - Monitor core temperature carefully - Specific antidote physostigmine may be available - See Agent 15/BZ antidote Table 5 below 	<ul style="list-style-type: none"> - Hyperthermia and self-injury are greatest risks - Hard to detect because it is an odorless and non-irritating substance - Possible serious arrhythmias
Cytotoxic Protein	<ul style="list-style-type: none"> - Ricin - Abrin 	<ul style="list-style-type: none"> - Inhibit protein synthesis 	<ul style="list-style-type: none"> - Exposure by inhalation or injection causes more pronounced signs and symptoms than exposure by ingestion 	<ul style="list-style-type: none"> - Latent period of 4-8 hours, followed by flu-like signs and symptoms - Progress within 18-24 hours to: <ul style="list-style-type: none"> - Nausea, cough, dyspnea, pulmonary edema (inhalation exposure) - GI hemorrhage with emesis and diarrhea; hypovolemic shock; hepatic, splenic and renal failure (ingestion exposure) 	<ul style="list-style-type: none"> - Confirm patient decontamination - Maintain fluid/electrolyte balance - Maintain adequate oxygenation - Provide pain management - No specific antidote 	<ul style="list-style-type: none"> - Rapid progression of signs and symptoms - Death possible within 36 hours - If patient survives beyond 5 days without complications, recovery is likely

* Frostbite may occur from skin contact with liquid arsine, cyanogen chloride or phosgene.

ANTIDOTES

Table 2. NERVE AGENT ANTIDOTE RECOMMENDATIONS

Nerve agent antidotes may be obtained as auto-injector syringes. These devices rapidly deliver antidotes intramuscularly, typically to the thigh or buttocks. Atropine, in auto-injector form, is available as the AtroPen in amounts of 0.5, 1, or 2 mg. 2-PAM chloride, in auto-injector form, is available as the 600 mg ComboPen. A Mark I kit contains two auto-injector syringes; the smaller one with 2 mg atropine and the larger one with 600 mg 2-PAM chloride.

The spring-loaded design of the auto-injectors provides a forceful delivery that may cause tissue damage, especially to children and smaller patients. Children weighing less than 15 lb (about 7 kg), generally those younger than 6 months old, should not ordinarily be treated with the nerve agent antidote auto-injectors. In this age group, atropine should be individualized at doses of 0.05 mg/kg.

Patient	Mild/Moderate Effects ¹	Severe Effects ²	Other Treatment
Child	Atropine: 0.05 mg/kg IM or IV (minimum 0.1 mg, maximum 5 mg); and 2-PAM chloride: 25 mg/kg IM or IV (maximum 2 g IM or 1 g IV)	Atropine: 0.1 mg/kg IM or IV (minimum 0.1 mg, maximum 5 mg); and 2-PAM chloride: 50 mg/kg IM or IV (maximum 2 g IM or 1 g IV)	Assisted ventilation after antidotes for severe exposure. Repeat atropine at 2-5 minute intervals until secretions have diminished and breathing is comfortable or airway resistance has returned to near normal. Repeat 2-PAM chloride once at 30-60 minutes, then at one-hour intervals for 1-2 doses, as necessary.
Adult	Atropine: 2 to 4 mg IM or IV; and 2-PAM chloride ³ : 600 mg IM, or 25 mg/kg IV slowly	Atropine: 6 mg IM; and 2-PAM chloride ³ : 1,800 mg IM, or 50 mg/kg IV slowly	Diazepam for seizures: Child - 0.05 to 0.3 mg/kg IV (maximum 10 mg); Adult - 5 mg IV Other benzodiazepines (e.g. lorazepam, midazolam) may provide relief. Phentolamine for 2-PAM chloride-induced hypertension: 1 mg IV for children; 5 mg IV for adults.

- Mild/Moderate effects of nerve agents** include localized sweating, muscle fasciculations, nausea, vomiting, weakness, dyspnea.
- Severe effects of nerve agents** include unconsciousness, seizures, apnea, flaccid paralysis.
- Dose selection of 2-PAM chloride for elderly patients should be cautious (usually starting at 600 mg IM, or 25 mg/kg IV slowly) to account for the generally decreased organ functions in this population.

NOTE: 2-PAM chloride is pralidoxime chloride or Protopam Chloride.

CHEMPACK: CHEMPACK is a federal program to provide nerve agent antidotes (Atropine, 2-PAM, Diazepam) to medical personnel during an emergency. Contact your county EMS coordinator, health department or emergency management office for more information.

Table 3. CYANIDE ANTIDOTE RECOMMENDATIONS

Victims whose clothing or skin are contaminated with hydrogen cyanide liquid or solution can secondarily contaminate response personnel by direct contact or through off-gassing vapors. Avoid dermal contact with cyanide-contaminated victims or with gastric contents of victims who may have ingested cyanide-containing materials. Victims exposed **only** to hydrogen cyanide gas do not pose contamination risks to rescuers. **If the patient is a victim of recent smoke inhalation (may have high carboxyhemoglobin levels), administer only sodium thiosulfate.**

Patient	Mild (conscious)	Severe (unconscious)	Other Treatment
Child	If patient is conscious and has no other signs or symptoms, antidotes may not be necessary.	Sodium nitrite ¹ : 0.12 - 0.33 ml/kg, not to exceed 10 ml of 3% solution ² (300 mg) slow IV over <u>absolutely</u> no less than 5 minutes, or slower if hypotension develops and Sodium thiosulfate: 1.65 ml/kg of 25% solution IV over 10 - 20 minutes ³	For sodium nitrite-induced orthostatic hypotension, normal saline infusion and supine position are recommended. If still apneic after antidote administration, consider sodium bicarbonate for severe acidosis.
Adult	If patient is conscious and has no other signs or symptoms, antidotes may not be necessary.	Sodium nitrite ¹ : 10 - 20 ml of 3% solution ² slow IV over <u>absolutely</u> no less than 5 minutes, or slower if hypotension develops and Sodium thiosulfate: 50 ml of 25% solution (12.5 g) IV over 10 - 20 minutes ³	

1. If sodium nitrite is unavailable, administer amyl nitrite by inhalation from crushable ampules. If neither is available, use sodium thiosulfate alone.
2. Available from Taylor Pharmaceuticals in cyanide antidote kit, formerly known as the Pasadena or Lilly Cyanide Antidote Kit.
3. If there is an inadequate clinical response after 30 minutes, administer a second dose of sodium thiosulfate which is half the initial dose.

Table 4. LEWISITE ANTIDOTE RECOMMENDATIONS

British Anti-Lewisite (BAL, dimercaprol) was developed as an antidote for Lewisite and is used medicinally as a chelating agent for heavy metals. BAL can be toxic; healthcare providers should read the package insert carefully prior to use. [Consult your regional Poison Control Center.](#)

British Anti-Lewisite dosing			
Indications	Dosing for systemic effects	Contraindications	Other Treatment
<p>Due to toxic side effects, BAL should be administered only to patients who have signs of shock or significant pulmonary injury.</p> <p>There is evidence that BAL in oil, given intramuscularly, may reduce the systemic effects of Lewisite.</p> <p>BAL, administered IM, has no effect on local lesions of the skin, eyes or airways (See Other Treatment).</p>	<p>IM: 3-5 mg/kg every 4 hours for 4 doses</p> <p>IV: Never administer BAL in oil via IV route.</p>	<p>Do not administer BAL if the patient presents with any of the following:</p> <ul style="list-style-type: none"> pre-existing renal disease pregnancy (except in life-threatening circumstances) concurrent use of medicinal iron 	<p>BAL skin and ophthalmic ointment decreases the severity of skin and eye lesions when applied immediately after decontamination; however, neither is currently manufactured. They can be used if available.</p>

Table 5. AGENT 15/BZ ANTIDOTE RECOMMENDATIONS

[Consult your regional Poison Control Center.](#)

Physostigmine dosing			
Test dose	Dosing information ¹	All routes	Contraindications
<p>If the diagnosis is in doubt, a dose of 1 mg might be given. If slight improvement occurs, routine dosing should begin.</p>	<p>IM: 45 mcg/kg in adults (20 mcg/kg in children)</p> <p>or</p> <p>IV: 30 mcg/kg slowly (1 mg/min)</p> <p>or</p> <p>PO: 60 mcg/kg if patient is cooperative (dilute in juice due to bitter taste)</p>	<p>Titrate every 60 minutes to mental status.</p>	<p>Do not administer physostigmine if the patient is experiencing any of the following:</p> <ul style="list-style-type: none"> cardiopulmonary compromise hypoxia bronchospasm acid-base imbalance with history of seizure disorder acid-base imbalance with history of arrhythmias

1. Physostigmine may be minimally effective if given in the first 4-6 hours following exposure.

RADIOLOGIC EXPOSURE/TERRORISM


Key points:

In addition to typical considerations of patient safety, the following are critical considerations for pediatric populations:

Medical Treatment Unique to Pediatrics (AHRQ)

The clinical manifestations of radiation injury in children are generally similar to those in adults. However, a number of characteristics render the pediatric patient uniquely sensitive to the effects of radiation exposure. For example:

- Children have a greater body surface area to weight ratio than adults and the skin is more permeable and less keratinized, making them more vulnerable to both thermal and radiation burns.
- Young children may be unable to shield their eyes, making them more susceptible to ocular injury from blast, radiation, and thermal effects.
- Children have a higher baseline respiratory rate than adults and also exist in a lower breathing zone, making them more vulnerable to both generalized inhalation exposure and particulate exposure from radioactive fallout
- Children have a lower intravascular volume reserve than adults, making them more susceptible to dehydration from the gastrointestinal losses encountered in acute radiation syndrome.
- Infants and young children are more likely to come in close contact with radioactively contaminated materials in their environment
- Radioiodine, a common byproduct of nuclear reactor activity, is effectively transmitted through both human breast milk and cow's milk, which are staples of the childhood diet

 <input checked="" type="checkbox"/> P O L I C Y/PROCEDURE <input type="checkbox"/> STANDARDIZED PROCEDURE <input type="checkbox"/> PLAN <input type="checkbox"/> GUIDELINE	CURRENT EFFECTIVE DATE	REVISED DATE	MANUAL:
			TRACKING #
	TITLE: <p style="text-align: center;">DECONTAMINATION</p>		
PERFORMED BY:			

<u>Specialty Review</u> <input checked="" type="checkbox"/> Multidisciplinary <input type="checkbox"/> Nursing Council <input type="checkbox"/> RT Council <input type="checkbox"/> SW Council <input type="checkbox"/> Child Life <input type="checkbox"/> Human Resources <input type="checkbox"/> EOC/Safety	<input type="checkbox"/> Information Services <input type="checkbox"/> Infection Control <input type="checkbox"/> Interdisciplinary Practice <input type="checkbox"/> Pharmacy & Therapeutics <input type="checkbox"/> Forms <input checked="" type="checkbox"/> Med Staff <input checked="" type="checkbox"/> Specialty Review	<u>Council Review</u> <input type="checkbox"/> Clinical Ops <input checked="" type="checkbox"/> Med Staff Executive <input type="checkbox"/> Center Ops <input type="checkbox"/> Board	
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1.0 PURPOSE:

- 1.1 To prepare for identification and decontamination of pediatric and adult patients who have been exposed to Chemical, Biological, or Radiological contamination.
- 1.2 To prevent the contamination of healthcare workers, facility, or other patients.

2.0 NOTIFICATION:

- 2.1 Upon notification or presentation of more than two patients who have had chemical, biological, or radiological exposure, the Emergency Department charge nurse will assume the role of the incident commander and activate RCHSD's Hospital Incident Command System (HICS).
- 2.2 Incident commander will notify Plant Operations to immediately set up decontamination tent, water heaters, and forced air warmers in decontamination area.
- 2.3 Incident commander will notify security to prepare for on-scene security and traffic flow.
 - Security / Traffic management pallet will be brought to front of hospital from decon supply container.

- Security will establish security perimeter beginning at entrance of the ambulance circle and extending West to the main loading dock.
- Vehicles will not be allowed in this area except for those transporting patients to be decontaminated. Once a vehicle enters this area, that vehicle will require decontaminated before leaving.
- Normal ambulance traffic will be re-routed to the main hospital driveway and patients will enter hospital through East-side emergency room doors.
- Pedestrian traffic will be re-routed around hot-zone using signage and deliniators.
- Security will maintain security perimeter until hot zone is deemed safe by public authorities.

2.4 Incident commander will assign clinical staff to hot zone for intake and triage, warm zone for actual decontamination, and to cold zone for receipt after shower and transition into ED. Incident commander will ensure that all staff assigned to hot and warm zones don all PPE before entering the area.

2.5 If exposure is Radiological, Incident Commander or Command Center if open will immediately notify Radiology and ensure that Radiological detection equipment is brought to Hot zone immediately and that all hospital staff don radiological exposure badges.

3.0 LOCATION:

3.1 Primary - Adjacent to the ambulance circle directly outside of the Emergency Department.

3.2 Secondary – MAL Patio

4.0 PERSONAL PROTECTIVE EQUIPMENT:

4.1 All hospital staff involved in the hot or warm zones of decontamination will wear a minimum of level C PPE.

4.2 Level C PPE will include:

1. Full-face or half-mask (PAPR's), air purifying respirators (NIOSH approved).
2. Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).
3. Coveralls.
4. Gloves, outer, chemical-resistant.
5. Gloves, inner, chemical-resistant.

4.3 Hospital staff working in cold zone may not enter hot or warm zones under any circumstances and must be decontaminated themselves if they do. Zones must be clearly delineated and monitored for cross contamination.

5.0 ZONES:

- 5.1 During all decontamination events, three zones will be established by the assigned incident commander,
- Hot zone will be the intake or receiving area for patients. Patients in this area will be triaged and disrobed. Patients suspected of Biological or Radiological exposure should be disrobed in the shower to prevent aerosolizing particles.
 - Warm zone will be the actual decontamination area where patients will be washed.
 - Cold zone will be the area where patients are received after wash down dressed, warmed, and transitioned into Emergency Department.
 - Flow of patients and staff will occur in one direction only (hot to cold).

6.0 SHOWERS:

- 6.1 All patients will receive a five minute wash down with warm water. If the exposure is viscous or oily, a chemical soap will also be used. At no time will bleach be used in the decontamination of pediatric patients or patients with wounds that are deeper than superficial. Ambulatory patients will be instructed to stand with “arms out, legs apart” and be washed from head (top) to feet (bottom).

7.0 DRESSINGS/TOURNIQUETS/SPLINTS:

- 7.1 During initial decontamination in the decontamination areas bandages will be removed and wounds flushed. Bandages will be replaced only if bleeding recurs. Tourniquets are replaced with clean tourniquets and the sites of the original tourniquets decontaminated. Splints are thoroughly decontaminated, but removed only by a physician.
- 7.2 Dressings removed after decontamination in the operating room, emergency room, or inpatient care unit will be submerged in a 5% solution of hypochlorite or placed in a plastic bag and sealed.

8.0 THROUGHPUT:

- 8.1 RCHSD can decontaminate up to 24 patients per hour based on two stations at a rate of 5minutes per patient.

9.0 DECONTAMINATION OF ADULTS:

- 9.1 In a mass decontamination situation, family members are likely to show up with their children and should be considered “exposed”. They should be disrobed in the hot zone and follow their child through the decontamination process before being allowed into the facility.

10.0 EVIDENCE/CHAIN OF CUSTODY

- 10.1 If the event causing the exposure is related to known or suspected terrorism or crime, all clothes and personal effects should be treated as evidence. Regardless, all clothes and personal effects should be documented, placed in a Biohazard Bag with the patient's identification, sealed, and placed in a rigid Biohazard container.

11.0 PRIVACY:

- 11.1 All efforts will be made to provide privacy for disrobed patients.
- 11.2 All efforts will be made to separate male from female disrobed patients
- 11.3 All efforts will be made to keep news camera's (including helicopters) from filming mass decontamination events.

12.0 THERMAL REGULATION:

- 12.1 Pediatric patients are much more likely to become hypothermic during decontamination. Water heaters, forced air warmers, will be used during all decontamination events.
- 12.2 Covering with appropriate gown, cloth, and/or emergency blankets will immediately take place in cold zone.

13.0 PATIENT IDENTIFICATION:

- 13.1 Identification cards will be affixed to patients in the cold zone. Documents handled in hot or warm zone will be considered contaminated and cannot be affixed to a disrobed patient.

14.0 DECONTAMINATION OF CARE GIVERS:

- 14.1 All care givers in the hot and warm zones must be decontaminated at the end of the event or as they are relieved.

List of Decontamination Supplies Needed for Pediatric Patients

Assumptions

1. Facility is already set up with primary decontamination equipment (i.e. showers, level C or higher PPE, lights, tape, stretchers, waste water collection equipment, etc).
2. Facility will perform primary decontamination independently (will not rely on SDFD for support).

The following list of equipment is pediatric specific and is meant to augment an already functioning and reviewed decontamination infrastructure.

Thermal Regulation Equipment

1. Hot water heater
2. Forced Air warmer
3. Appropriately sized patient gowns and emergency blankets

Transport

1. Appropriately sized gurneys and cribs

Monitoring

1. Pediatric/infant SAO2 probes
2. Pediatric/infant monitor leads/modules
3. Braselow tapes

Airway

1. Pediatric/Infant airway supplies

Cleaning Agents

1. Soap and water only, no bleach compounds.

Throughput

1. Pediatric patients will take longer to decontaminate. Allow for a minimum of five minutes per ambulatory patient (12 patients per hour for each decon shower)..

Pediatric Specific Decontamination Considerations

1. Pediatric patients have higher respiratory rates (higher exposure to inhaled agents)
2. Pediatric patients have higher skin permeability (higher exposure to skin agents)
3. Pediatric patients have weaker immune systems
4. Pediatric patients have less fluid reserves
5. Pediatric patients may not have verbal skills required to understand instructions or

communicate concerns

6. Pediatric patients will have increased anxiety (especially if separated from parents)
7. Pediatric patients are far more prone to hypo/hyperthermia.
8. Consider parents or caregivers transporting pediatric patients to facility contaminated as well and allow them to accompany child through decon process if possible.
9. Pediatric patients have increased psychosocial needs that need to be addressed
10. Pediatric patients are VERY difficult to hold when wet and must be handled securely/with great caution

Developing Your Own Surge Plan for Pediatrics General Acute Care (GAC) Hospitals

Preparation by General Health Care Facilities for a Surge of Critically Ill Children

All health care facilities, not simply pediatric hospitals, must be prepared for a surge of critically ill children. Although EMS field efforts will attempt to match the victims' needs with the nearest appropriate hospital, the most recent disaster literature suggest that up to 50 percent of the victims arriving at a hospital under surge (mass casualty) scenario will arrive by other means. To accommodate a possible surge of pediatric patients, hospitals that care for adult patients should ensure that adequate, up-to-date stocks of pediatric supplies - Broselow tapes, endotracheal tubes, intravenous catheters, interosseous needles, ambu bags, and other equipment - are on site (cache lists in appendix) Lastly, adult-only hospitals should diligently practice pediatric disaster drills. These activities should also include all staff that may be called on to deliver care to children, including respiratory technicians, radiologists, and others. RCHSD serves as a resource for community adult facilities. The goal is all acutely ill or injured children 14 years of age and under are sent to RCHSD. In the event of a surge event that impacts a significant number of pediatric patients that age limit may be lowered in collaboration with discussion from RCHSD Incident Commander and the San Diego County Emergency Operations Center.

A surge of ill children may present considerable staff challenges to general and adult-only hospitals. Although physicians who have undergone residency training in emergency medicine are prepared to manage acutely ill children, many general hospitals have limited numbers of pediatricians and pediatric support staff (e.g. child life specialists) on staff. Consequently, adult-only hospitals should develop lists with accompanying contact information (e.g. pager numbers, office phone numbers, home phone numbers, and cell phone numbers) of locally available pediatricians and nurses who will report to the hospital in the event of a surge. In metropolitan areas, adult-only hospitals should draft memoranda of understanding with local pediatric hospitals. These memoranda should 1) delineate protocols for patient transfers and other direct patient-care activities between the two facilities; 2) provide for pediatric hospital clinicians to staff inpatient locations such as intensive care units and operating suites; and 3) extend emergency staff privileges to pediatricians who are acutely needed to provide medical care in adult-only facilities. The last two points are vitally important; victims from a bioterror attack may not be appropriate for transfer and therefore must remain in the receiving facility. Since inpatient care is closely linked to that provided in the ED, sufficient numbers of pediatricians are required to staff inpatient beds, otherwise an ED will never decant its existing patient load and prepare for the arrival of more.

We cannot predict the nature of a future emergency that might occur, nor can we predict the date of its arrival, therefore we must prepare in advance for the possibility that they *will* occur; in this case, we must plan for pediatric surges.

Seriously/critically ill or injured children require an entirely different approach in terms of medical management and the physical infrastructure to provide for their care. They require specialized training, knowledge, procedures, medications, and handling. While Rady Children's Hospital of San Diego (RCHSD) remains the region's premier pediatric medical facility (and Level 1 trauma center) it is likely that in a large medical crisis, all of our hospital and clinical partners will have a part to play and will likely need manage pediatric patients at their own

facilities. “Children under the age of 18 comprise nearly 25 percent of the U.S. population and have important and often complex planning and response needs (FEMA). It is the intention of RCHSD to help prepare our community and regional healthcare partners for this task; and this manual serves as the cornerstone in the framework of our partnership.

This guide will provide familiarization, training, planning and preparation considerations, resources (tools, links, etc) and contact information for your Pediatric Surge Liaison partners at RCHSD. (Tools TBD/TBA)

Planning for Pediatric Surge in a General Acute Care Facility

Purpose: Providing strategic direction for hospital surge for pediatric facility.

Objectives:

1. Perform an Educational Needs Assessment
2. Perform an Organizational Needs Assessment
3. Develop Relationships with Pediatric Experts/Facilities
4. Practice Disaster Surge Response
5. Evaluate Education Plan

1. Perform an Educational Needs Assessment:

The potential needs of physicians, nurses and other staff in a crisis situation are determined by a number of methods. Direct methods include conducting interviews and employing written questionnaires, which include online surveys and focus groups. The Joint Commission Hazard and Vulnerability Analysis (HVA) is another valuable and important tool to assist with the assessment of the following 6 critical areas:

- Communication
- Resources and assets
 - Staffing
 - Supplies
 - Equipment
 - Pharmaceuticals
 - Space
- Safety and security
- Staff responsibilities
- Utilities management
- Patient clinical care and support

Indirect methods include disaster drill observations and review of standards published by others, including The Joint Commission.

2. Prepare an Organizational Needs Assessment:

In preparation of an overall organizational needs assessment, it is vital to address the following key elements:

Identify Appropriate Child Care Space

Pre-identify areas in the hospital for utilization during a surge. Use these areas for triage, treatment, holding and possibly admissions.

Ensure access control and monitor to prevent child predators. Avoid separation of children from their caregivers. Address childproofing strategies to avoid unnecessary injury.

Convert patient care areas appropriately for the care of children in the event of a disaster. Identify essential supplies required for proper care of children during a crisis event. Assess current pediatric supplies on hand. Include non-medical supplies such as diapers, pajamas, cribs, bottles, and pacifiers. Adjust and supplement current supplies for the number of children estimated to arrive during a disaster. Pre-arrange delivery of additional items with your hospitals' supplier and pre-identify important stock numbers.

Identify Child-Appropriate Food and Formula Supplies

The list includes milk and soy-based formulas. Adult foods modified into child-appropriate foods through the process of pureeing or dicing are worthy substitutes. Note: Additional food handling duties require additional staff. Always consider food allergies.

Determine Available Pharmaceutical Types

Maintain a cache of medication preparations suitable for children. Make available a standard means of dose calculation consistent with hospital practice, such as Broselow tapes and/or a pediatric pharmacy reference book to perform weight-based dose calculations.

Identify Staff Members for Child Care and Supervision

Assess current staff for specialty skills or experience in treating pediatric patients. Additionally, assess employees working in non-clinical areas regarding their experience in supervisory care of children. Develop a plan to notify identified staff rapidly in the event of a pediatric patient surge. Encourage key staff to maintain current credentials in pediatric training programs such as Neonatal Advance Life Support (NALS), Pediatric Advance Life Support (PALS), Advanced Cardiac Life Support (ACLS), Advanced Trauma Life Support (ATLS), Emergency Nursing Pediatric Course (EPNC), as well as current Just-in-Time training modules. Assign pediatric staff members to supervise those staff members lacking pediatric experience.

Develop Pediatric Disaster Response Team (PDRT)

Develop a Pediatric Disaster Response Team to address pediatric-specific issues which may arise during a disaster, whether your institution specializes in pediatric care or not. Identify team members, their level of training, and staff resources (sufficient to cover 24 hours, 7 days a week). Obtain commitments early in the process from team members as well as their supervisors.

3. Develop Relationships with Pediatric Experts/Facilities

Locate pediatric experts and pediatric facilities outside of your institution. Approach them pre-event. Discuss pediatric disaster issues with local departments of public health, hospitals and healthcare systems. Use Memos of Understanding (MOU's) where necessary

to define roles and expectations between institutions. Use technology systems to help coordinate education disseminated by outside experts.

4. Practice Disaster Response

Pre-event drills are an important part of surge preparedness. Perform small drills and tabletop exercises with staff to practice and test policies and protocols. Schedule larger scale drills and perform them regularly. Incorporate scenarios involving pediatric victims into all hospital drills. The value of practice is immeasurable. Always include experienced observers in these exercises.

5. Evaluate Education Plan

Evaluation plays an important role in the education process. Use drill assessments and After-Action Reports to identify skill gaps. Use questionnaires to capture participant observations and suggestions. Develop a summary evaluation report including both formal assessments and informal participant comments. Update or modify education plans based on assessment results.

We need to convey to people that the theoretical risk of a disaster
is an eventual reality. A catastrophic disaster will occur;
We just don't know when."
Alan L. Nager, M.D.

Diversion Activities/ Toys

Suggested Diversion for Children

INFANTS / TODDLER

Baby music CD's/players
Board books
Fisher-Price baby cars and trucks
Infant Duplo (large Legos)
Musical crib toys
Musical pop-up boxes
Pacifiers
Plastic colored linking toys
Plastic/soft blocks
Play phones
Pound and play action toys
Rattles
Shape sorters
Sipper cups
Stacking nesting cups
Stacking rings
Teething toys
Wind up musical toys

PRESCHOOL

Baby doll sets
Beginner games – Candyland, Chutes and Ladders, Don't Break the Ice, Memory
Books/magazines
Building blocks
Duplo sets
Fisher-Price cars, trucks, bus, ambulance, helicopter
Hot wheel and match box cars
Magna Doodle
Midsize die-cast cars and trucks
Musical books
Midsize die-cast cars and trucks
Musical books
Plastic farm/barnyard/dinosaurs animals
Pop-up books
Puzzles (20-60 pieces)
See-N-Says
Small travel size Fisher-Price doll sets (people, furniture, animals)
Stuffed animals
View masters and reels

SCHOOL AGE / ADOLESCENTS

Action figures

Art and craft kits for boys and girls

Barbie dolls/clothes

Board games: Monopoly, Sorry, Checkers, Guess Who, Connect 4, Perfection, Uno, Checkers, Chess

Books/Magazines

Electronic hand held video games – Monopoly, Battleship, sports-themed games

Hot Wheels

Lego theme sets for boys and girls

Paint by number sets

Playing cards

Puzzles (100-200 pieces)

Travel-size games (Connect 4, etc.)

MISCELLANEOUS

Bubbles (made in USA)

Colored pencil sets

Coloring books for all ages

Construction paper

Crayons

Floor mats/blankets for children to play on

Foam Art pieces

Glue sticks

Marker sets

Pre-assembled art kits for easy distribution

Scissors (child size)

Stickers

Resources & References

Links for SURGE plan training:

**NATIONAL CENTER FOR DISASTER PREPAREDNESS Pediatric Preparedness for Disasters and Terrorism
A National Consensus Conference**

<http://www.bt.cdc.gov/children/pdf/working/execsumm03.pdf>

BURN RESOURCE MANUAL

COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES

EMERGENCY MEDICAL SERVICES AGENCY

DIASER SERVICES

<http://ems.dhs.lacounty.gov/Disaster/BurnManual.pdf>

Pediatric Disaster Toolkit: Hospital Guidelines for Pediatrics during Disasters (2nd Edition 2006)

<http://www.nyc.gov/html/doh/html/bhpp/bhpp-focus-ped-toolkit.shtml>

**NATIONAL CENTER FOR DISASTER PREPAREDNESS Pediatric Preparedness for Disasters and Terrorism
A National Consensus Conference**

www.bt.cdc.gov/children/pdf/working/execsumm03.pdf

Radiation Event Medical Management: Guidance on Diagnosis & Treatment for Health Care Providers

U.S. Department of Health & Human Services.

<http://www.remm.nlm.gov/>

Pediatric Terrorism and Disaster Preparedness: A Resource for Pediatricians

Agency for Healthcare Research and Quality (AHRQ) by the American Academy of Pediatrics (AAP).

<http://www.ahrq.gov/research/pedprep/resource.htm>

IS-200.HCa Applying ICS to Healthcare Organizations

EMI/FEMA

<http://training.fema.gov/EMIWeb/IS/is200HCa.asp>

In a Moment's Notice: Surge Capacity in Terrorist Bombings

Centers for Disease Control and Prevention

<http://www.bt.cdc.gov/masscasualties/surgecapacity.asp>

Active Shooter: how to respond

U.S. Department of Homeland Security

http://www.alerts.si.edu/docs/DHS_ActiveShooterBook.pdf

Reporting Suspicious Activities for Hospitals

<http://www.calhospitalprepare.org/category/content-area/planning-topics/terrorism>

Recommended Training:

Various Topics

<http://www.calhospitalprepare.org/>

Psychological First Aid (Online)

Learning Center for Child and Adolescent Trauma

<http://learn.nctsn.org/course/category.php?id=11>

Radiation Event Medical Management: Guidance on Diagnosis & Treatment for Health Care Providers - U.S. Department of Health & Human Services.

<http://www.remm.nlm.gov/>

PEDIATRIC SURGE POCKET GUIDE

Clinical checklists, guides, and just-in-time references to manage a surge of pediatric patients.

Sections

Normal Values
Triage and Assessment
Treatment and Medications
Equipment
Decontamination
Mental Health
Pediatric Safe Areas



PEDIATRIC SURGE POCKET GUIDE

This Pocket Guide was a collaborative effort by:
Los Angeles County Department of Public Health
Los Angeles County Emergency Medical Services Agency
Childrens Hospital Los Angeles
Pediatric Liaison Nurses of Los Angeles County
Pediatric Disaster Resource Center
Long Beach Department of Health and Human Services
Pasadena Public Health Department

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Lorazepam, Diazepam Rectal, Fosphenytoin, Phenobarbital, Mannitol 20%	67
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Paralyzing Agents

Rocuronium, Succinylcholine, Vecuronium	69
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Resuscitation Medications

Atropine, Amiodarone, Calcium Chloride 10%, Epinephrine 1:10,000, Epinephrine 1:1000	70
Glucose (D25W), Glucose (D10W), Lidocaine, Sodium bicarb 4.2%, Sodium bicarb 8.4 %	72

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OVERVIEW: PEDIATRIC RISKS DURING DISASTERS

Characteristic	Risk
Respiratory	Higher breaths/minute increases exposure to inhaled agents Nuclear fallout and heavier gases settle lower to the ground and may affect children more severely.
Gastrointestinal	May be more at risk for dehydration from vomiting and diarrhea after exposure to contamination.
Skin	Higher body surface area increases risk of skin exposure. Skin is thinner and more susceptible to injury from burns, chemicals and absorbable toxins.
Endocrine	Increased risk of thyroid cancer from radiation exposure.
Thermoregulation	Less able to cope with temperature problems with higher risk of hypothermia.
Developmental	Less capability to escape environmental dangers or anticipate hazards.
Psychological	Prolonged stress from critical incidents. Susceptible to separation anxiety.



SECTION 1: NORMAL VALUES

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USING KILOGRAMS

Weigh all children in kilograms.

1kg = 2.2 lbs

Example: 20 lb child
20 lb divided by 2.2 = 9 kg

Method to estimate weight:

- Newborn (term): usually 3 kg
- 1-10 yrs: age multiplied by 2 + 10 (kg)
- >10 yrs: age multiplied by 2 + 20 (kg)

If available, a Broselow Tape may be used for weight estimation.

NORMAL PEDIATRIC VITAL SIGNS

	HR beats/min	RR breaths/min	BP (sys) mm/Hg	BP (dias) mm/Hg
Newborn 0-1 month	100-180	30-60	73-92	52-65
Infant 1-12 months	80-150	30-60	90-109	53-67
Toddler 1-3 years	75-130	25-35	95-105	56-68
Pre-School Age 3-5 years	75-120	22-32	99-110	55-70
School Age 5-11 years	70-110	20-30	97-118	60-76
Adolescent 13-18 years	65-105	16-22	110-133	63-83
Adult 18+ years	50-90	12-20	113-136	65-84

NORMAL DEVELOPMENT

Age	Gross Motor Skills	Fine Motor Skills
2 months	Flexed position when prone	Inhibited grasp reflex
4 months	Rolls from front to back, back to side	Carries object to mouth
6 months	Rolls from back to abdomen	Holds bottle
9 months	Sits steady, creeps or crawls	Holds objects in both hands and bangs together
12 months	Cruises well	Bangs 2 blocks together
15-18 mos	Pushes and pulls toys	Uses cup well, some spoon agility
2 years	Runs well with wide stance	Turns doorknob and unscrews lids
3 years	Climbs stairs alternating feet	Copies circles and cross
4 years	Hops, jumps, and skips on one foot	Draws person with greater than 3 body parts
5 years	Skips alternating feet	Prints some letters

DAILY MAINTENANCE FLUID AND ELECTROLYTE REQUIREMENTS

	Calculation
Fluids Per Hour	4mL/kg/hr for first 10kg of weight 2mL/kg/hr for next 10 kg of weight 1mL/kg/hr for each kg over 20kg
Fluids Per 24 Hour Period	100mL/kg for the first 10kg body weight 1000mL+ 50mL/kg for the next 10kg body weight 1500mL+ 20mL for each kg of body weight over 20kg
Maintenance Electrolyte Calculations for IV Fluid	Sodium: 3-4 mEq/kg/day or 30-50 mEq/m ² /day Potassium: 2-3 mEq/kg/day or 20-40 mEq/m ² /day

NORMAL BLOOD VOLUME

Total blood volume varies by weight.

Approximate volume is 80mL/kg.

Examples:

Newborn = $\sim 3 \text{ kg} \times 80\text{mL} = 240 \text{ mL}$

5 year old = $\sim 25 \text{ kg} \times 80\text{mL} = 2000 \text{ mL (2L)}$

13 year old = $\sim 50 \text{ kg} \times 80\text{mL} = 4000 \text{ mL (4L)}$

PRBC/Platelet/Albumin 5%/FFP = 10mL/kg

IV ADMINISTRATION TIPS

For IV infusions in children, an over-the-needle 22 to 24 gauge catheter may be used

- It may be possible to place a larger gauge catheter in older children

Catheter should be secured with a transparent dressing and tape

Use of a padded armboard may be helpful to secure IV in young children

It is important to secure IV tubing to prevent infants and children from becoming entangled or from accidentally pulling catheter or needle out

If possible, amount of fluid hung that can be infused to patient should be limited to 2 hours of fluid with the use of buretrol or IV pump

APPROPRIATE INFANT NUTRITIONAL COMPONENTS

Age	
Birth - 1 month	2-3 ounces (6-90 mL) per feeding breast or bottle every 2-3 hours
2-4 months	3-4 ounces (90-120 mL) per feeding every 3-4 hours
4-6 months	4-5 ounces (120-150 mL) per feeding, four or more time daily Begins baby food, usually rice cereal
6-8 months	6-8 ounces (180-240 mL) per feeding, four times daily Eats baby food such as rice cereal, fruits and vegetables
8-10 months	6 ounces (180 mL) per feeding, four times a day Soft finger foods
10-12 months	6-8 ounces (180-240mL) per feeding, four times a day Soft table foods, uses spoon and cup with lid
Formulas	Milk Based: Enfamil, Enfacare & Similac Soy Based: Prosobee & Isomil



SECTION 2: TRIAGE AND ASSESSMENT TOOLS

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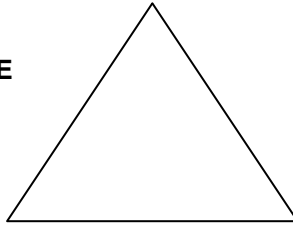
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PEDIATRIC ASSESSMENT TRIANGLE

APPEARANCE

Mental status
Muscle tone
Body position



CIRCULATION

Color

Component	Signs
Appearance	Focus on the child's mental status and muscle tone
Breathing	Direct attention to respiratory rate and respiratory effort
Circulation	Use skin signs, color and capillary refill as indicators of the patient's circulatory status



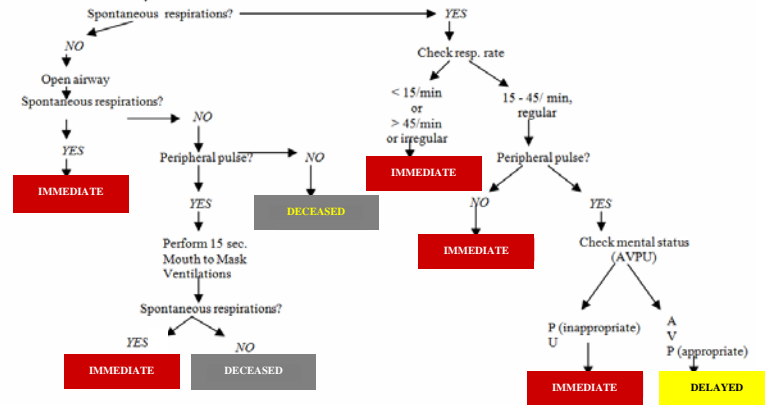
JUMPSTART FIELD PEDIATRIC MULTICASUALTY TRIAGE SYSTEM

(Patients aged 1- 8 years)

Identify and direct all ambulatory patients to designated Green area for secondary triage and treatment. Begin assessment of nonambulatory patients as you come to them. Proceed as below:

MINOR

Black = Deceased/expectant
Red = Immediate
Yellow = Delayed
Green = Minor/Ambulatory



TREATMENT PRIORITIZATION

Triage Category	Description
RED Immediate	Patients who do not obey commands, <u>or</u> do not have a peripheral pulse, <u>or</u> are in respiratory distress, <u>or</u> have uncontrolled major hemorrhage
YELLOW Delayed	Remaining patients who do not fit the Red/Immediate or Green/Minimal categories
GREEN Minimal	Patients with mild injuries that are self-limited and can tolerate a delay in care without increasing mortality risk
BLACK Expectant or Dead	Expectant: Patients who have injuries incompatible with life given the currently available resources Dead: Patients who are not breathing after life-saving interventions



CLINICAL FEATURES OF DEHYDRATION

Feature	Mild (<5%)	Moderate (5% to 10%)	Severe (>10%)
Heart rate	Normal	Slightly increased	Rapid, weak
Systolic BP	Normal	Normal to orthostatic, >10 mmHg change	Hypotension
Urine output	Decreased	Moderately decreased	Marked decrease, anuria
Mucous membranes	Slightly dry	Very dry	Parched
Anterior fontanel	Normal	Normal to sunken	Sunken
Tears	Present	Decreased, eyes sunken	Absent, eyes sunken
Skin	Normal turgor	Decreased turgor	Tenting
Skin perfusion	Normal capillary refill (<2 seconds)	Capillary refill slowed (2-4 seconds); skin cool to touch	Capillary refill markedly delayed (>4 seconds); skin cool, mottled, gray

WONG-BAKER FACES PAIN RATING SCALE



Instructions:

1. Point to each face using the words to describe the pain intensity.
2. Ask the child to choose face that best describes own pain and record the appropriate number.

Rating scale is recommended for persons age 3 years and older.

FLACC POST-OPERATIVE PAIN SCALE

Category	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaws, quivering chin
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans, whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort

Five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; and (C) Consolability; is scored from 0-2, which results in a total score between zero and ten.

GLASGOW COMA SCALE

Category	For Patients <2 Years Old	For Patients >2 Years Old
Eye Opening (E)	(4) Spontaneous (3) To speech (2) To pain (1) None	(4) Spontaneous (3) To speech (2) To pain (1) None
Verbal Response (V)	(5) Coos, babbles (4) Irritable, cries (3) Cries to pain (2) Moans to pain (1) None	(5) Oriented (4) Confused (3) Inappropriate words (2) Incomprehensible (1) None
Motor Response (M)	(6) Normal spontaneous movements (5) Withdraws from touch (4) Withdraws from pain (3) Abnormal flexion (2) Abnormal extension (1) None	(6) Obeys commands (5) Localizes to pain (4) Withdrawal to pain (3) Flexion to pain (2) Extension to pain (1) None

The lowest possible score is 3 (deep coma or death).
The highest is 15 (fully awake and aware)

BURN ASSESSMENT: PEDIATRIC RULE OF NINES

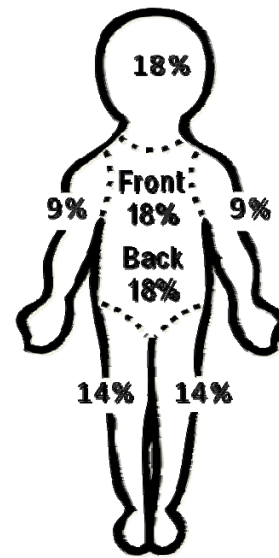
The “**Rule of Nines**” is a convenient, quick method to determine burn size.

Only second and third degree burn injury are used to calculate the extent of burn that is applied to burn formula calculations.

Alternate Method: The size of the patient's hand, including the fingers, represents approximately 1% of their body surface. This is useful to for mapping irregular areas of burns.

Pediatric Considerations

- Increased fluid requirements relative to adults
- Increased surface area : mass ratio
- Hypoglycemia may occur in infants (<30 kg) due to limited glycogen reserves



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FLUID RESUSCITATION

1. Administer 20 mL/kg of isotonic or crystalloid solution (NS or LR)
2. Monitor
 - Peripheral perfusion
 - Urine output
 - Vital signs
 - LOC
3. Repeat bolus if no improvement
4. Reassess status

Consider blood products in traumatic injuries
requiring >40-60 mL/kg of fluid

PRBC/Platelet/Albumin 5%/FFP @ 10mL/kg

See next page on Hypovolemic Shock.

HYPOVOLEMIC SHOCK

Hypovolemic shock is the most common type of shock in children.

Blood is the ideal fluid replacement for volume losses caused by trauma in children who do not respond to 40-60 mL/kg of NS/LR.

Children increase their cardiac output by tachycardia, therefore:
Bradycardia is an ominous sign!

Things to look for:

- Slow or irregular breathing
- Grunting
- Bradycardia
- Cyanosis
- Hypotension
- Decreased LOC

ANALGESICS, PART 1: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Acetamin- ophen	10-15 mg/kg/ every 4-6 hours	Oral	30-45 mg	50-75 mg	100-150 mg	150-225 mg	200-300 mg
Ibuprofen	5-10 mg/kg every 6-8 hours Max 40 mg/ kg/day	Oral	x	25-50 mg	50-100 mg	75-150 mg	100-200 mg
Morphine	0.1-0.2 mg/kg every 2-4 hours, as needed Max 15mg/ dose	IV/IM/ SubQ	0.15 -0.3 mg q 4-8 hrs	0.5-1 mg	1-2 mg	1.5-3 mg	2-4 mg

ANALGESICS, PART 1: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Acetaminophen	10-15 mg/kg/ q 4-6 hours Max 4 g/day	Oral	250-375 mg	300-450 mg	400-600 mg	500-750 mg
Ibuprofen	5-10 mg/kg q 6-8 hours Max 40 mg/ kg/day or 1.2 g/day	Oral	125-250 mg	150-300 mg	200-400 mg	250-500 mg
Morphine	0.1-0.2 mg/kg every 2-4 hours, as needed Max 15 mg/ dose	IV/IM/ SubQ	2.5-5 mg	3-6 mg	4-8 mg	5-10 mg

ANALGESICS, PART 2: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Fentanyl	<p><i>Neonates:</i> Slow IV push: 1-4 µg/kg/dose; May repeat every 2-4 hours.</p> <p><i>Children, 1-12 years:</i> Sedation for minor procedures/ analgesia</p> <p><i>Children, 1-3 years:</i> 1-3 µg/kg/dose 3 min. before procedure, may repeat after 30-60 minutes.</p> <p><i>Children: 3-12 years:</i> 1-2 µg/kg/dose 3 min. before procedure; may repeat after 3-60 minutes.</p>	<p>Neonates: Slow IV push</p> <p>Children: IM/ slow IV push</p>	3-12 µg	5-20 µg	10-30 µg	15-45 µg	20-40 µg

ANALGESICS, PART 2: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Fentanyl	<p><i>Children, 1-12 years:</i> Sedation for minor procedures/analgesia</p> <p><i>Children, 3-12 years:</i> 1-2 µg /kg/dose 3 min. before procedure; may repeat after 3-60 minutes.</p>	IM/ slow IV push	25-50 µg	30-60 µg	40-80 µg	50-100 µg

ANALGESICS, PART 3: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Dilaudid	<i>Young children <11 years:</i> 0.03-0.1 mg/kg/ dose every 4-6 hours as needed Max dose 5mg/dose.	Oral	0.09 mg	0.15- 0.5 mg	0.3-1 mg	0.45- 1.5 mg	0.6-2 mg
Dilaudid	<i>Young children <11 years:</i> 0.015 mg/kg/dose every 3-6 hours as needed.	Children <11 years: IV	0.045 mg	0.075 mg	0.15 mg	0.225 mg	0.3 mg

ANALGESICS, PART 3: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Dilaudid	<p><i>Young children <11 years:</i> 0.03-0.1 mg/kg/dose every 4-6 hours as needed; Max dose 5mg/dose.</p> <p><i>Older children >12 years:</i> 1-2 mg/dose every 3-4 hours as needed</p>	Oral	0.75-2.5 mg	0.9-3 mg	1-2 mg	1-2 mg
Dilaudid	<p><i>Young children <11 years:</i> 0.015 mg/kg/dose every 3-6 hours as needed.</p> <p><i>Older children >12 years:</i> 0.2-0.6 mg/dose every 3-4 hours as needed</p>	<p><i>Children <11 yrs:</i> IV</p> <p><i>Children >12 yrs:</i> IM/IV/ SubQ</p>	0.375 mg	0.45 mg	0.2-0.6 mg	0.2-0.6 mg

ANALGESICS, PART 4: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Lortab For moderate to severe pain	<i>Children and adults <50 kg:</i> Usual initial dose: 0.2 mg/kg every 3- 4 hours as the hydrocodone component.	Oral	X	X	2 mg	3 mg	4 mg

ANALGESICS, PART 4: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Lortab For moderate to severe pain	<i>Children and adults <50 kg:</i> Usual initial dose: 0.2 mg/kg every 3-4 hours	Oral				
	<i>Children and adults ≥50 kg:</i> Usual initial dose: 10 mg every 3-4 hours as the hydrocodone component.		5 mg	6 mg	8 mg	10 mg

ANTIBIOTICS, PART 1: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Doxycycline	None for ages Newborn to 6 years	n/a	None				
Doxycycline for Anthrax	None for ages Newborn to 6 years	n/a	None				

ANTIBIOTICS, PART 1: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Doxycycline	<i>Children ≥ 8 yrs:</i> 1-2 mg/kg every 12 hours Not to exceed 200 mg/day. <i>Adolescents and adults:</i> 100-200 mg/day in 1-2 divided doses	Oral/IV	25-50 mg	30-60 mg	50-100 mg	
Doxycycline for Anthrax	<i>Children ≥ 8 yrs:</i> 2.5 mg/kg every 12 hours for 60 days <i>Adolescents and adults:</i> 100 mg every 12 hours for 60 days.	Oral/IV	62.5 mg	75 mg	100 mg	

ANTIBIOTICS, PART 2: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Clindamycin	<p><i>Neonates</i> >2000 g: 20-30 mg/kg/day divided every 6-8 hours</p> <p><i>Infants and children:</i> 25-40 mg/kg/day divided every 6-8 hours Max dose: 4.8 g/day</p>	<p><i>Neonates:</i> IM/IV</p> <p><i>Infants, children:</i> Oral/IM/IV</p>	60-90 mg per day divided every 6-8 hours	125-200 mg per day divided every 6-8 hours	250-400 mg per day divided every 6-8 hours	375-600 mg per day divided every 6-8 hours	500-800 mg per day divided every 6-8 hours

ANTIBIOTICS, PART 2: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Clindamycin	<p><i>Infants and children:</i> 25-40 mg/kg/day divided every 6-8 hours Max dose: 4.8 g/day.</p> <p><i>Adolescents and adults:</i> 1.2-1.8g/day in divided doses Max dose: 4.8 g/day</p>	Oral/IM/IV	625-1000 mg per day divided every 6-8 hours	750-1200 mg per day divided every 6-8 hours	1.2-1.8 g per day divided every 6-8 hours	

ANTIBIOTICS, PART 3

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Vancomycin	<i>Neonates > 2000g:</i> 45 mg/kg/day divided every 8 hrs <i>Infants >1 month and children:</i> 40 mg/kg/day in divided doses every 6 hrs	IV	45 mg every 8 hours	50 mg every 6 hours	100 mg every 8 hours	150 mg every 8 hours	200 mg every 8 hours

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Vancomycin	40 mg/kg/day in divided doses every 6 hrs	IV	250 mg every 8 hours	300 mg every 8 hours	400 mg every 8 hours	500 mg every 8 hours

ANTIBIOTICS, PART 4

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Metronidazole	<i>Neonates >2000 g:</i> 30 mg/kg/day divided every 12 hrs <i>Infants and children:</i> 30mg/kg/day divided every 6-8 hours Max dose: 4 g/ day	Oral/IV	45 mg every 12 hours	150 mg per day divided every 6-8 hours	300 mg per day divided every 6-8 hours	450 mg per day divided every 6-8 hours	600 mg per day divided every 6-8 hours

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Metronidazole	30mg/kg/day divided every 6-8 hrs Max dose: 4 g/day	Oral/IV	750 mg per day divided q 6-8 hours	900 mg per day divided q 6-8 hours	1200 mg per day divided q 6-8 hours	1500 mg per day divided q 6-8 hours

ANTIBIOTICS, PART 5: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Amoxicillin	<p><i>Neonates and infants <3 mos:</i> 20-30 mg/kg/day in divided doses every 12 hours</p> <p><i>Infants >3 months and children:</i> 25-50 mg/kg/day in divided doses every 12 hours</p>	Oral	60-90 mg per day divided every 12 hours	125-250 mg per day divided every 12 hours	250-500 mg per day divided every 12 hours	375-750 mg per day divided every 12 hours	500-1000 mg per day divided every 12 hours

ANTIBIOTICS, PART 5: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Amoxicillin	<p><i>Children:</i> 25-50 mg/kg/day in divided doses every 12 hours</p> <p><i>Adults:</i> 250-500 mg every 8 hours Max dose 2-3 g/day</p>	Oral	625-1250 mg per day divided every 12 hours	750-1500 mg per day divided every 12 hours	1000- 2000 mg per day divided every 12 hours	Adults 750-1500 mg per day divided every 8 hours

ANTIBIOTICS, PART 6: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Cefazolin	<p><i>Neonates</i> <i>>2000g:</i> 60 mg/kg/day divided every 8 hours.</p> <p><i>Infants and</i> <i>children:</i> 50-100 mg/kg/day in divided doses every 8 hours Max dose 6g/day</p>	Oral	180 mg per day divided every 8 hours	250- 500 mg per day divided every 8 hours	500- 1000 mg per day divided every 8 hours	750- 1500 mg per day divided every 8 hours	1000- 2000 mg per day divided every 8 hours

ANTIBIOTICS, PART 6: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Cefazolin	<p><i>Children:</i> 50-100 mg/kg/day in divided doses every 8 hours Max dose 6g/day</p> <p><i>Adults:</i> 0.5-2 g every 6-8 hours.</p>	Oral	1250- 2500 mg per day divided every 8 hours	1500- 3000 mg per day divided every 8 hours	2000- 4000 mg per day divided every 8 hours	0.5-2 g every 6-8 hours

ANTIBIOTICS, PART 7: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Ceftriaxone	<p><i>Neonates >2000g: 50-75 mg/kg/day given every 24 hours</i></p> <p><i>Infants and children: 50-75 mg/kg/day divided every 12-24 hours</i></p>	<p><i>Neonates Oral</i></p> <p><i>Infants and children: Oral/IM</i></p>	150-225 mg every 24 hours	250- 375 mg per day divided every 12-24 hours	500- 750 mg per day divided every 12-24 hours	750- 1125 mg per day divided every 12-24 hours	1000- 1500 mg per day divided every 12-24 hours

ANTIBIOTICS, PART 7: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Ceftriaxone	<p><i>Children:</i> 50-75 mg/kg/day divided every 12-24 hours</p> <p><i>Adults:</i> 1-2 g every 12- 24 hours Max dose: 4 g/day</p>	<p><i>Children:</i> Oral/IM</p> <p><i>Adults:</i> Oral</p>	1250- 1875 mg per day divided every 12- 24 hours	1500- 2250 mg per day divided every 12- 24 hours	2000- 3000 mg per day divided every 12- 24 hours	1-2 g per dose

ANTIBIOTICS, PART 8: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Ciprofloxacin	<i>Neonates:</i> 7-40 mg/kg/day divided q 12 hrs <i>Children:</i> IV 20- 30 mg/kg/day divided q 12 hrs Max dose: 800 mg/day	<i>Neonates:</i> IV <i>Children:</i> Oral/IV	21-120 mg per day divided every 12 hours	35-200 mg per day divided every 12 hours	70-400 mg per day divided every 12 hours	105-600 mg per day divided every 12 hours	400-600 mg per day divided every 12 hours
Ciprofloxacin for Anthrax	Children: 20-30 mg/kg/day divided every 12 hrs for 60 days Max dose: 800 mg/day	<i>Oral:</i> 30 mg/kg/day divided q 12 hours <i>IV:</i> 20 mg/kg/day divided q 12 hours	21-120 mg per day divided every 12 hours	35-200 mg per day divided every 12 hours	70-400 mg per day divided every 12 hours	105-600 mg per day divided every 12 hours	400-600 mg per day divided every 12 hours

ANTIBIOTICS, PART 8: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Ciprofloxacin	<i>Children:</i> IV 20-30 mg/kg/day divided q 12 hours Max dose: 800 mg/day <i>Adults:</i> 200-400 mg every 12 hours	<i>Children:</i> Oral/IV <i>Adults:</i> Oral/IV	500-750 mg per day divided every 12 hours	600-900 mg per day divided every 12 hours	800-1200 mg per day divided every 12 hours	200-400 mg per day divided every 12 hours
Ciprofloxacin for Anthrax	<i>Children:</i> 20-30 mg/kg/day divided q 12 hrs for 60 days Max dose: 800 mg/day <i>Adults: Oral:</i> 500 mg q 12 hours for 60 days <i>IV:</i> 400 mg q 12 hrs for 60 days	<i>Oral:</i> 30 mg/kg/day divided q 12 hours <i>IV:</i> 20 mg/kg/day divided q 12 hours	500-750 mg per day divided every 12 hours	600-900 mg per day divided every 12 hours	800-1200 mg per day divided every 12 hours	200-400 mg per day divided every 12 hours

ANTIBIOTICS, PART 9: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Cefotaxime	<p><i>Neonates</i> >2000g: 150-200 mg/kg/day divided every 6-8 hours</p> <p><i>Infants and children, 1-12 years: <50 kg:</i> 100-200 mg/kg/day divided every 6-8 hours Max: 2g/dose</p>	IV	450-600 mg per day divided every 6-8 hours	500-1000 mg per day divided every 6-8 hours	1000-2000 mg per day divided every 6-8 hours	1500-2000 mg per day divided every 6-8 hours Max 2 g/dose	2000-4000 mg per day divided every 6-8 hours Max 2 g/dose

ANTIBIOTICS, PART 9: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Cefotaxime	<p><i>Children, 1-12 years: <50 kg:</i> 100-200 mg/kg/day divided every 6-8 hours Max: 2 g/dose</p> <p><i>≥ 50 kg:</i> 1-2 g every 6-8 hrs Max: 12 g/day</p>	IV	<p>2500 mg per day divided every 6-8 hours</p> <p>Max 2 g/ dose</p>	<p>6 g per day divided every 6-8 hours</p> <p>Max 2 g/ dose</p>	<p>1-2 g per dose every 6-8 hours</p> <p>Max 2 g/ dose</p>	<p>1-2 g per dose every 6-8 hours</p> <p>Max 12 g/ day</p>

ANTIPYRETICS

Drug	Dose	Route	0-3 mos (3 kg)	4-11 mos (6 kg)	1-2 years (9 kg)	2-3 yrs (12 kg)
Acetaminophen	10-15 mg/kg every 4-6 hours	Oral	40 mg	80 mg	120 mg	160 mg
Ibuprofen	5-10 mg/kg	Oral	X	5-10 mg/kg every 6-8 hours Max 40 mg/kg/day		

Drug	Dose	Route	4-5 yrs (18 kg)	6-8 yrs (24 kg)	9-10 yrs (30 kg)	11 yrs (36 kg)
Acetaminophen	10-15 mg/kg every 4-6 hours	Oral	240 mg	320 mg	400 mg	480 mg
Ibuprofen	5-10 mg/kg	Oral	5-10 mg/kg every 6-8 hours Max 40 mg/kg/day			

ANTIVIRALS: SEASONAL FLU

Recommendations for the treatment and chemoprophylaxis of influenza change frequently, in particular because of changes in circulating strains and their antiviral resistance. It is important to check the CDC website for the latest recommendations.

CDC antiviral recommendations can be found here:

<http://www.cdc.gov/flu/professionals/antivirals>

ANTIVIRALS: H1N1 INFLUENZA: LESS THAN 1 YEAR

Recommendations for the treatment and chemoprophylaxis of H1N1 influenza change frequently, in particular because of ongoing antiviral resistance. Check the CDC website for the latest recommendations: <http://www.cdc.gov/h1n1flu/recommendations.htm>

Age	Oseltamivir: Recommended treatment dose for 5 days
<3 months	12 mg twice daily
3-5 months	20 mg twice daily
6-11 months	25 mg twice daily
Age	Oseltamivir: Recommended prophylaxis dose for 10 days
<3 months	Not recommended unless situation judged critical due to limited data on use in this age group
3-5 months	20 mg once daily
6-11 months	25 mg once daily

Pregnant women are known to be at higher risk for complications from infection with seasonal influenza viruses, and severe disease among pregnant women was reported during past pandemics. For further information about influenza antiviral medications, including contraindications and adverse effects, refer to the CDC website.

ANTIVIRALS: H1N1 INFLUENZA: 1 YEAR AND OLDER

Recommendations for the treatment and chemoprophylaxis of H1N1 influenza change frequently, in particular because of ongoing antiviral resistance. It is important to check the CDC website for the latest recommendations. Information contained in the tables below can be found here: <http://www.cdc.gov/h1n1flu/recommendations.htm>

Agent, group		Treatment	Chemoprophylaxis
Oseltamivir			
Children ≥ 12 months	15 kg or less	60 mg per day divided into 2 doses	30 mg once per day
	15-23 kg	90 mg per day divided into 2 doses	45 mg once per day
	24-40 kg	120 mg per day divided into 2 doses	60 mg once per day
	>40 kg	150 mg per day divided into 2 doses	75 mg once per day
Zanamivir			
Children		Two 5-mg inhalations (10 mg total) twice per day (age, 7 years or older)	Two 5-mg inhalations (10 mg total) once per day (age, 5 years or older)

ASTHMA MEDICATIONS, PART 1: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Albuterol	<12 years: 1-2 inhalation 4 times/day using a tube spacer >12 years and greater 1-2 inhalations every 4-6 hours	Inhalation MDI: 90 µg/ spray	<12 years: 1-2 inhalation 4 times/day using a tube spacer				
Albuterol	0.01-0.05 mL/kg of 0.5% solution every 4-6 hours <ul style="list-style-type: none"> • Range: every 2-6 hrs • Max dose: 5 mg = 1 mL • Min dose: 1.25 mg • Dilute dosage in 1-2 mL NS 	Inhalation solution (for nebulization)	0.03-0.15 mL	0.05- 0.25 mL	0.1- 0.5 mL	0.15- 0.75 mL	0.2- 1.0 mL

ASTHMA MEDICATIONS, PART 1: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Albuterol	<12 years: 1-2 inhalation 4 times/day using a tube spacer > 12 years: 1-2 inhalations every 4-6 hours	Inhalation MDI: 90 µg/ spray	<12 years: 1-2 inhalation 4 times/day using a tube spacer		12 years and greater 1-2 inhalations every 4-6 hours.	
Albuterol	0.01-0.05 mL/kg of 0.5% solution every 4-6 hours <ul style="list-style-type: none"> • Range: every 2-6 hrs • Max dose: 5 mg = 1 mL • Min dose 1.25 mg • Dilute dosage in 1-2 mL NS 	Inhalation solution (for nebulization)	0.25-1.0 mL	0.3-1.0 mL	0.4-1.0 mL	0.5-1.0 mL

ASTHMA MEDICATIONS, PART 2: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Methyl- prednisolone	1 mg/kg/dose every 6 hours	IV	X	X	10 mg	15 mg	20 mg
Prednisone	1-2 mg/kg/day in divided doses 1-2 times/day for 3-5 days	Oral	X	5-10 mg	10-20 mg	15-30 mg	20-40 mg

ASTHMA MEDICATIONS, PART 2: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Methyl- prednisolone	1 mg/kg/dose every 6 hours	IV	25 mg	30 mg	40 mg	50 mg
Prednisone	1-2 mg/kg/day in divided doses 1-2 times/day for 3-5 days	Oral	25-50 mg per day divided doses, 1-2 times/day	30-60 mg per day divided doses, 1-2 times/day	40-60 mg per day divided doses, 1-2 times/day Max: 60 mg/day	50-60 mg per day divided doses, 1-2 times/day Max: 60 mg/day

ASTHMA MEDICATIONS, PART 3: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Racemic Epinephrine	160–250 µg (1 inhalation of a commercially available aerosol preparation) Repeated once, if necessary, after at least 1 minute Subsequent doses should not be administered for at least 3 hours.	Inhalation: MDI	X	X	X	X	1 inhalation
Racemic Epinephrine, 2.25% solution	1–3 deep inhalations Do not repeat more often than every 3 hours Discontinue if symptoms not relieved within 20 minutes or if symptoms become worse	Inhalation: Hand bulb nebulizer	X	X	X	X	1-3 deep inhalations

ASTHMA MEDICATIONS, PART 3: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Racemic Epinephrine	160–250 µg (1 inhalation of a commercially available aerosol preparation) Repeated once, if necessary, after at least 1 minute Subsequent doses should not be administered for at least 3 hours.	Inhalation: MDI	1 inhalation			
Racemic Epinephrine, 2.25% solution	1–3 deep inhalations Do not repeat more often than every 3 hours Discontinue if symptoms not relieved within 20 minutes or if symptoms become worse	Inhalation: Hand bulb nebulizer	1–3 deep inhalations			

ASTHMA MEDICATIONS, PART 4: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Atrovent (Oral, MDI)	<i>Children:</i> 1-2 inhalations every 6-8 hours; up to 6 inhalations in 24 hours	Oral inhalation (MDI)	X	1-2 inhalations every 6-8 hours; up to 6 inhalations in 24 hours			
Atrovent (Inhalation, Nebulizer)	<i>Neonates:</i> 25 µg/kg/dose 3 times/day <i>Children:</i> 250-500 µg every 6-8 hours	Inhalation solution (for nebulization)	75 µg	250-500 µg every 6-8 hours			

ASTHMA MEDICATIONS, PART 4: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Atrovent (Oral, MDI)	<i>Children:</i> 1-2 inhalations every 6-8 hours; up to 6 inhalations in 24 hours <i>Adolescents and adults:</i> 2-3 inhalations 4 times/day; up to 12 inhalations in 24 hours	Oral inhalation (MDI)	1-2 inhalations every 6-8 hours; up to 6 inhalations in 24 hours	2-3 inhalations 4 times/day; up to 12 inhalations in 24 hours		
Atrovent (Inhalation, Nebulizer)	Children: 250-500 µg every 6-8 hours	Inhalation solution (for nebulization)	250-500 µg every 6-8 hours			

ASTHMA MEDICATIONS, PART 5: NEWBORN - 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Xopenex (levalbuterol) Acute asthma exacerbation (NAEPP, 2007)	Children: 0.075 mg/kg (minimum dose: 1.25 mg) every 20 minutes for 3 doses then 0.075-0.15 mg/kg (not to exceed 5 mg) every 1-4 hours as needed	Nebulizer	X	X	0.75 mg	1.125 mg	1.5 mg
Xopenex (levalbuterol) Acute asthma exacerbation (NAEPP, 2007)	Children: 4-8 puffs every 20 minutes for 3 doses then every 1-4 hours	Inhalation, MDI: 45 µg/spray	X		4-8 puffs every 20 minutes for 3 doses then every 1-4 hours		

ASTHMA MEDICATIONS, PART 5: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Xopenex (levalbuterol) Acute asthma exacerbation (NAEPP, 2007)	<i>Children:</i> 0.075 mg/kg (minimum dose: 1.25 mg) every 20 minutes for 3 doses then 0.075-0.15 mg/kg (not to exceed 5 mg) every 1-4 hours as needed	Nebulizer	1.875 mg	2.25 mg	3 mg	3.75 mg
Xopenex (levalbuterol) Acute asthma exacerbation (NAEPP, 2007)	<i>Children:</i> 4-8 puffs every 20 minutes for 3 doses then every 1-4 hours <i>Adults:</i> 4-8 puffs every 20 minutes for up to 4 hours then every 1-4 hours as needed	Inhalation, MDI: 45 µg/spray	4-8 puffs every 20 minutes for 3 doses then every 1-4 hours			

CARDIAC MEDICATIONS: NEWBORN TO 6 YEARS OLD

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Adenosine	0.1-0.3 mg/kg	IV rapid	0.3-0.9 mg	0.5-1.5 mg	1-3 mg	1.5-3 mg	2-6 mg
Furosemide	1 mg/kg	IV	3 mg	5 mg	10 mg	15 mg	20 mg
Labetalol	0.2-1.0 mg/kg	IV	X	1-5 mg	2-10 mg	3-15 mg	4-20 mg
Nifedipine	0.25-0.5 mg/kg	PO	X	1.25-2.5 mg	2.5-5 mg	3.75-7.5 mg	5-10 mg

CARDIAC MEDICATIONS: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Adenosine	0.1-0.3 mg/kg	IV rapid	2.5-7.5 mg	3-9 mg	4-12 mg	max 6-12 mg
Furosemide	1 mg/kg	IV	25 mg	30 mg	40 mg	50 mg
Labetalol	0.2-1.0 mg/kg	IV	5-20 mg	6-20 mg	8-20 mg	max 10-20 mg
Nifedipine	0.25-0.5 mg/kg	PO	6.25-10 mg	7.5-10 mg	8-10 mg	max 10 mg

INFUSION FORMULAS

Drug	Dose in $\mu\text{g/kg/min}$	Preparation
Dopamine/ Dobutamine	Dopamine: 2-20 Dobutamine: 2.5-20	$[6 \times (\text{wt in kg})] = \text{mg to add to 100mL D5W/IV}$ rate of 1mL/hr = 1 $\mu\text{g/kg/min}$
Epinephrine/ Norepinephrine	Epi: 0.1-1 Norepi: 0.1-2	$[0.6 \times (\text{wt in kg})] = \text{mg to add to 100mL D5W/IV}$ rate of 1mL/hr = 0.1 $\mu\text{g/kg/min}$
Amiodarone	5-10 (load 5 mg/kg)	$[6 \times (\text{wt in kg})] = \text{mg to add to 100mL D5W/IV}$ rate of 1mL/hr = 1 $\mu\text{g/kg/min}$
Lidocaine	20-50	$[120 \times (\text{wt in kg})] = \text{mg to add to 100mL D5W/IV}$ rate of 1mL/hr = 20 $\mu\text{g/kg/min}$
Milrinone	0.25-0.75 (load 50-75 $\mu\text{g/kg}$)	$[0.6 \times (\text{wt in kg})] = \text{mg to add to 100mL D5W/IV}$ rate of 1mL/hr = 0.1 $\mu\text{g/kg/min}$
Nitroprusside/ Nicardipine	Nitro: 0.5-4 Nicard: 0.5-3	$[6 \times (\text{wt in kg})] = \text{mg to add to 100mL D5W/IV}$ rate of 1mL/hr = 1 $\mu\text{g/kg/min}$
Terbutaline	0.4	$[0.6 \times (\text{wt in kg})] = \text{mg to add to 100mL D5W/IV}$ rate of 1mL/hr = 0.1 $\mu\text{g/kg/min}$

NEUROLOGY MEDICATIONS: NEWBORN TO 6 YEARS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Lorazepam	0.05-0.1 mg/kg	IV slow	0.15-0.3 mg	0.25- 0.5 mg	0.5-1 mg	0.75-1.5 mg	1-2 mg
Diazepam Rectal	0.2-0.5 mg/kg	Rectal	X	X	5 mg	5-10 mg	10 mg
Fosphenytoin	Load PE = 10-20 mg/kg	IV 30 min	X	50-100 mg	100-200 mg	150-300 mg	200-400 mg
Phenobarbital	Load 15- 20 mg/kg	IV infusn	45-60 mg	75-100 mg	150-200 mg	225-300 mg	300-400 mg
Mannitol 20%	0.5-1 g/kg	IV slow	1.5-3 g	2.5-5 g	5-10 g	7.5-16 g	10-20 g

NEUROLOGY MEDICATIONS: 7 YRS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Lorazepam	0.05-0.1 mg/kg	IV slow	1.25-2.5 mg	1.5-3.0 mg	2-4 mg	max 4 mg
Diazepam Rectal	0.2-0.5 mg/kg	Rectal	12.5 mg	15 mg	15 mg	20 mg
Fosphenytoin	Load PE = 10-20 mg/kg	IV 30 min	250-500 mg	300-600 mg	400-800 mg	500 mg - 1 g
Phenobarbital	Load 15-20 mg/kg	IV infusn	375-500 mg	450-600 mg	600-800 mg	750 mg - 1 g
Mannitol 20%	0.5-1 g/kg	IV slow	12.5-25 g	15-30 g	20-40 g	max 50 g

PARALYZING AGENTS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Rocuronium	0.6-1.0 mg/kg	IV	1.8-3.0 mg	2-3 mg	6-10 mg	9-15 mg	12-20 mg
Succinylcholine	1-2 mg/kg	IV	3-6 mg	5-10 mg	20 mg	15-30 mg	20-40 mg
Vecuronium	0.1 mg/kg	IV	0.3 mg	0.5 mg	1 mg	1.5 mg	2 mg

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Rocuronium	0.6-1.0 mg/kg	IV	15-25 mg	18-30 mg	24-40 mg	30-50 mg
Succinylcholine	1-2 mg/kg	IV	25-50 mg	30-60 mg	40-80 mg	50-100 mg (max 150)
Vecuronium	0.1 mg/kg	IV	2.5 mg	3 mg	4 mg	5 mg (max 10)

RESUSCITATION MEDS, PART 1: NEWBORN - 6 YRS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Atropine	0.02 mg/kg	IV/ETT	0.1 mg	0.1 mg	0.2 mg	0.3 mg	0.4 mg
Amiodarone	5 mg/kg x 3 max	IV	15 mg	25 mg	50 mg	75 mg	100 mg
Calcium Chloride 10%	20 mg/kg = 0.2 mL/kg	IV slow	60 mg	100 mg	200 mg	300 mg	400 mg
Epinephrine 1:10,000	0.01 mg/kg = 0.1 mL/kg	IV/IO	0.3 mL	0.5 mL	1 mL	1.5 mL	2 mL
Epinephrine 1:1000	0.1 mg/kg = 0.1 mL/kg	IV/ETT/IO	X	0.5 mL	1 mL	1.5 mL	2 mL

RESUSCITATION MEDS, PART 1: 7 YRS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Atropine	0.02 mg/kg	IV/ETT	0.5 mg	0.6 mg	0.8 mg	max 1 mg
Amiodarone	5 mg/kg x 3 max	IV	125 mg	150 mg	200 mg	250-300 mg
Calcium Chloride 10%	20 mg/kg = 0.2 mL/kg	IV slow	500 mg	500 mg	500 mg	max 500 mg
Epinephrine 1:10,000	0.01 mg/kg = 0.1 mL/kg	IV/IO	2.5 mL	3 mL	4 mL	max 10 mL
Epinephrine 1:1000	0.1 mg/kg = 0.1 mL/kg	IV/ETT/IO	2.5 mL	3 mL	4 mL	max 10 mL

RESUSCITATION MEDS, PART 2: NEWBORN - 6 YRS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Glucose (D25W)	0.5 g/kg = 2mL/kg	IV	X	10 mL	20 mL	30 mL	40 mL
Glucose (D10W)	0.5 g/kg = 5mL/kg	IV	15 mL	25 mL	X	X	X
Lidocaine	1 mg/kg	IV/IO	3 mg	5 mg	10 mg	15 mg	20 mg
Sodium bicarb 4.2%	1 mEq/kg = 2 mL/kg	IV	6 mL	10 mL	X	X	X
Sodium bicarb 8.4 %	1 mEq/kg = 1 mL/kg	IV	X	X	10 mL	15 mL	20 mL

RESUSCITATION MEDS, PART 2: 7 YRS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Glucose (D25W)	0.5 g/kg = 2mL/kg	IV	50 mL	60 mL	80 mL	100 mL
Glucose (D10W)	0.5 g/kg = 5mL/kg	IV	X	X	X	X
Lidocaine	1 mg/kg	IV/ETT	25 mg	30 mg	40 mg	max 100 mg
Sodium bicarb 4.2%	1 mEq/kg = 2 mL/kg	IV	X	X	X	X
Sodium bicarb 8.4 %	1 mEq/kg = 1 mL/kg	IV	25 mL	30 mL	40 mL	50 mL

REVERSAL AGENTS

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)
Flumazenil	0.01 mg/kg	IV	0.03 mg	0.05 mg	0.1 mg	0.15 mg
Naloxone	0.1 mg/kg	IV/ETT	0.3-6 mg	0.5 mg	1.0 mg	1.5 mg

Drug	Dose	Route	4-6 yrs (20 kg)	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Flumazenil	0.01 mg/kg	IV	0.2 mg	0.25 mg	0.3 mg	0.4 mg	0.5 mg (1 mg max)
Naloxone	0.1 mg/kg	IV	2.0 mg	2.0 mg	2.0 mg	2.0 mg	2.0 mg

SEDATION MEDICATIONS: NEWBORN TO 6 YEARS OLD

Drug	Dose	Route	Newborn (3 kg)	3-6 mos (5 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Etomidate	0.3 mg/kg	IV	0.9 mg	1.5 mg	3 mg	4.5 mg	6 mg
Fentanyl analgesic	<36 mos: 1-3µg/kg >36 mos: 1-2µg/kg	IV slow	2-12 µg	5-20 µg	10-40 µg	15-50 µg	20-80 µg
Ketamine	1-2 mg/kg	IV	3-6 mg	5-10 mg	10-20 mg	15-30 mg	20-40 mg
Midazolam	0.05-0.1 mg/kg	IV	0.15-0.3 mg	0.25-0.5 mg	0.5-1 mg	0.75-1.5 mg	1-2 mg
Thiopental	4-6mg/kg	ETT	12-18 mg	20-30 mg	40-60 mg	60-90 mg	80-120 mg

SEDATION MEDICATIONS: 7 YEARS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Etomidate	0.3 mg/kg	IV	7.5 mg	9 mg	12 mg	15-20 mg
Fentanyl	1-4 µg/kg	IV slow	25-100 µg	30-120 µg	40-150 µg	50-200 µg (max 400)
Ketamine	1-2 mg/kg	IV	25-20 mg	30-60 mg	40-80 mg	100-150 mg
Midazolam	0.1-0.3 mg/kg	IV	2.5-5 mg	3-5 mg	4-5 mg max	max 5 mg
Thiopental	4-6mg/kg	ETT	100-150 mg	120-180 mg	160-240 mg	200-300 mg

OTHER MEDICATIONS

Drug	Dose	Route
DT (Diphtheria Tetanus)	0.5 mL	IM DO NOT give SubQ

COLOR CODE DRUG DOSES BY WEIGHT: 3 KG

COLOR CODE: GREY

G R E Y	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 100-160 Respirations: 30-60 B/P Systolic: >60 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 0.3 mg Calcium Chloride: 60 mg Epinephrine 1:10,000: 0.03 mg Amiodarone: 15 mg Sodium Bicarbonate: 3 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 2.5 mg Dextrose 25% slow IV: 6 mL Midazolam IV/IM/IN: 0.3 mg Diphenhydramine*: 3 mg Epinephrine 1:1,000 IM: 0.03 mg Glucagon IM: 1 mg Morphine Sulfate*: 0.3 mg Naloxone IV/IM/IN: 0.3 mg Normal Saline IV Bolus: 60 mL 	G R E Y
	DEFIBRILLATION Cardioversion 3 Joules 6 Joules 6 Joules Defibrillation 6 Joules 12 Joules 12 Joules	DOPAMINE (400 mg / 5mL) <ul style="list-style-type: none"> Add 18 mg (0.2 mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 4 KG

COLOR CODE: GREY

G R E Y	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 100-160 Respirations: 30-60 B/P Systolic: >60 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 0.4 mg Calcium Chloride: 80 mg Epinephrine 1:10,000: 0.04 mg Amiodarone: 20 mg Sodium Bicarbonate: 4 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 2.5 mg Dextrose 25% slow IV: 8 mL Midazolam IV/IM/IN: 0.4 mg Diphenhydramine*: 4 mg Epinephrine 1:1,000 IM: 0.04 mg Glucagon IM: 1 mg Morphine Sulfate*: 0.4 mg Naloxone IV/IM/IN: 0.4 mg Normal Saline IV Bolus: 80 mL 	G R E Y
	DEFIBRILLATION <p>Cardioversion 4 Joules 8 Joules 8 Joules</p> <p>Defibrillation 8 Joules 16 Joules 16 Joules</p>	DOPAMINE (400 mg / 5 mL) <ul style="list-style-type: none"> Add 24 mg (0.3 mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 5 KG

COLOR CODE: GREY

G R E Y	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 100-160 Respirations: 30-60 B/P Systolic: >60 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 0.5 mg Calcium Chloride: 100 mg Epinephrine 1:10,000: 0.05 mg Amiodarone: 25 mg Sodium Bicarbonate: 5 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 2.5 mg Dextrose 25% slow IV: 10 mL Midazolam IV/IM/IN: 0.5 mg Diphenhydramine*: 5 mg Epinephrine 1:1,000 IM: 0.05 mg Glucagon IM: 1 mg Morphine Sulfate*: 0.5 mg Naloxone IV/IM/IN: 0.5 mg Normal Saline IV Bolus: 100 mL 	G R E Y
	DEFIBRILLATION Cardioversion 5 Joules 10 Joules 10 Joules Defibrillation 10 Joules 20 Joules 20 Joules	DOPAMINE (400 mg / 5 mL) <ul style="list-style-type: none"> Add 30 mg (0.4 mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 6-7 KG

COLOR CODE: PINK: 3-6 MONTHS; LENGTH: 59.5-66.5 CM

P I N K	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 100-160 Respirations: 30-60 B/P Systolic: >70 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 0.65 mg Calcium Chloride: 130 mg Epinephrine 1:10,000: 0.065 mg Amiodarone: 32 mg Sodium Bicarbonate: 6 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 2.5 mg Atropine IV: 0.13 mg Dextrose 25% slow IV: 13 mL Midazolam IV/IM/IN: 0.6 mg Diphenhydramine*: 6 mg Epinephrine 1:1,000 IM: 0.065 mg Glucagon IM: 1 mg Morphine Sulfate*: 0.6 mg Naloxone IV/IM/IN: 0.6 mg Normal Saline IV Bolus: 130 mL 	P I N K
	DEFIBRILLATION Cardioversion 7 Joules 14 Joules 14 Joules Defibrillation 13 Joules 26 Joules 26 Joules	DOPAMINE (400 mg / 5 mL) <ul style="list-style-type: none"> Add 40 mg (0.5 mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 8-9 KG

COLOR CODE: RED: 7-10 MONTHS; LENGTH: 66.5-74 CM

R E D	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 100-160 Respirations: 30-60 B/P Systolic: >70 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 0.85 mg Calcium Chloride: 170 mg Epinephrine 1:10,000: 0.085 mg Amiodarone: 42 mg Sodium Bicarbonate: 8 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 2.5 mg Atropine IV: 0.17 mg Dextrose 25% slow IV: 17 mL Midazolam IV/IM/IN: 0.8 mg Diphenhydramine*: 8 mg Epinephrine 1:1,000 IM: 0.085 mg Glucagon IM: 1 mg Morphine Sulfate*: 0.8 mg Naloxone IV/IM/IN: 0.8 mg Normal Saline IV Bolus: 170 mL 	R E D
	DEFIBRILLATION Cardioversion 9 Joules 17 Joules 17 Joules Defibrillation 17 Joules 34 Joules 34 Joules	DOPAMINE (400 mg / 5 mL) <ul style="list-style-type: none"> Add 50 mg (0.6 mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 10-11 KG

COLOR CODE: PURPLE: 11-18 MONTHS; LENGTH: 74-84.5 CM

P U R P L E	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 90-150 Respirations: 24-40 B/P Systolic: >70 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 1 mg Calcium Chloride: 210 mg Epinephrine 1:10,000: 0.1 mg Amiodarone: 52 mg Sodium Bicarbonate: 10.5 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 5 mg Atropine IV: 0.21 mg Dextrose 25% slow IV: 20 mL Midazolam IV/IM/IN: 1 mg Diphenhydramine*: 10 mg Epinephrine 1:1,000 IM: 0.1 mg Glucagon IM: 1 mg Morphine Sulfate*: 1 mg Naloxone IV/IM/IN: 1 mg Normal Saline IV Bolus: 200 mL 	P U R P L E
	DEFIBRILLATION Cardioversion 10 Joules 20 Joules 20 Joules Defibrillation 20 Joules 40 Joules 40 Joules	DOPAMINE (400 mg / 5 mL) <ul style="list-style-type: none"> Add 60 mg (0.8 mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 12-14 KG

COLOR CODE: YELLOW: 19-35 MONTHS; LENGTH: 84.5-97.5 CM

Y E L L O W	<p>NORMAL VITAL SIGNS</p> <ul style="list-style-type: none"> • Heart Rate: 90-150 • Respirations: 24-40 • B/P Systolic: >70 <p>DEFIBRILLATION</p> <p>Cardioversion</p> <p>13 Joules</p> <p>26 Joules</p> <p>26 Joules</p> <p>Defibrillation</p> <p>26 Joules</p> <p>52 Joules</p> <p>52 Joules</p>	<p>ACLS DRUGS-- INITIAL DOSE</p> <ul style="list-style-type: none"> • Adenosine: 1.3 mg • Calcium Chloride: 260 mg • Epinephrine 1:10,000: 0.13 mg • Amiodarone: 65 mg • Sodium Bicarbonate: 13 mEq <p>DOPAMINE (400 mg / 5mL)</p> <ul style="list-style-type: none"> • Add 80 mg (1 mL) to a 100 mL bag of NS • Start at 10 mcgtt/minute • Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	<p>MEDICATIONS</p> <ul style="list-style-type: none"> • Albuterol HHN: 5 mg • Atropine IV: 0.26 mg • Dextrose 25% slow IV**: 25 mL • Dextrose 50% slow IV**: 13 mL • Midazolam IV/IM/IN: 1.3 mg • Diphenhydramine*: 13 mg • Epinephrine 1:1,000 IM: 0.13 mg • Glucagon IM: 1 mg • Morphine Sulfate*: 1.3 mg • Naloxone IV/IM/IN: 1.3 mg • Normal Saline IV Bolus: 250 mL <p>* IV or IM</p> <p>** D₂₅ 0-2 years, D₅₀ > 2 years</p>	Y E L L O W
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COLOR CODE DRUG DOSES BY WEIGHT: 15-18 KG

COLOR CODE: WHITE: 3-4 YEARS; LENGTH: 97.5-110 CM

W H I T E	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 80-140 Respirations: 22-34 B/P Systolic: >75 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 1.7 mg Calcium Chloride: 330 mg Epinephrine 1:10,000: 0.17 mg Amiodarone: 80 mg Sodium Bicarbonate: 16.5 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 5 mg Atropine IV: 0.33 mg Dextrose 50% slow IV: 16 mL Midazolam IV/IM/IN: 1.6 mg Diphenhydramine*: 16 mg Epinephrine 1:1,000 IM: 0.17 mg Glucagon IM: 1 mg Morphine Sulfate*: 1.6 mg Naloxone IV/IM/IN: 1.6 mg Normal Saline IV Bolus: 300 mL 	W H I T E
	DEFIBRILLATION Cardioversion 17 Joules 33 Joules 33 Joules Defibrillation 33 Joules 66 Joules 66 Joules	DOPAMINE (400 mg / 5 mL) <ul style="list-style-type: none"> Add 100 mg (1.2mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 19-22 KG

COLOR CODE: BLUE: 5-6 YEARS; LENGTH: 110-122 CM

B L U E	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 70-120 Respirations: 18-30 B/P Systolic: >80 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 2 mg Calcium Chloride: 420 mg Epinephrine 1:10,000: 0.2 mg Amiodarone: 105 mg Sodium Bicarbonate: 20 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 5 mg Atropine IV: 0.42 mg Dextrose 50% slow IV: 20 mL Midazolam IV/IM/IN: 2 mg Diphenhydramine*: 20 mg Epinephrine 1:1,000 IM: 0.2 mg Glucagon IM: 1 mg Morphine Sulfate*: 2 mg Naloxone IV/IM/IN: 2 mg Normal Saline IV Bolus: 400 mL 	B L U E
	DEFIBRILLATION Cardioversion 20 Joules 40 Joules 40 Joules Defibrillation 40 Joules 80 Joules 80 Joules	DOPAMINE (400 mg / 5 mL) <ul style="list-style-type: none"> Add 125 mg (1.6 mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 24-28 KG

COLOR CODE: ORANGE: 7-9 YEARS; LENGTH: 122-137 CM

O R A N G E	NORMAL VITAL SIGNS <ul style="list-style-type: none"> Heart Rate: 70-120 Respirations: 18-30 B/P Systolic: >80 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> Adenosine: 2.6 mg Calcium Chloride: 530 mg Epinephrine 1:10,000: 0.26 mg Amiodarone: 130 mg Sodium Bicarbonate: 26 mEq 	MEDICATIONS <ul style="list-style-type: none"> Albuterol HHN: 5 mg Atropine IV: 0.5 mg Dextrose 50% slow IV: 25 mL Midazolam IV/IM/IN: 2.5 mg Diphenhydramine*: 25 mg Epinephrine 1:1,000 IM: 0.26 mg Glucagon IM: 1 mg Morphine Sulfate*: 2.5 mg Naloxone IV/IM/IN: 2 mg Normal Saline IV Bolus: 500 mL 	O R A N G E
	DEFIBRILLATION Cardioversion 27 Joules 53 Joules 53 Joules Defibrillation 52 Joules 104 Joules 104 Joules	DOPAMINE (400 mg/ 5 mL) <ul style="list-style-type: none"> Add 160 mg (2 mL) to 100 mL bag of NS Start at 10 mcgtt/minute Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

COLOR CODE DRUG DOSES BY WEIGHT: 30-36 KG

COLOR CODE: GREEN: 10-12 YEARS; LENGTH: 137-150 CM

GREEN	NORMAL VITAL SIGNS <ul style="list-style-type: none"> • Heart Rate: 60-100 • Respirations: 12-16 • B/P Systolic: >90 	ACLS DRUGS-- INITIAL DOSE <ul style="list-style-type: none"> • Adenosine: 3.3 mg • Calcium Chloride: 660 mg • Epinephrine 1:10,000: 0.33 mg • Amiodarone: 165 mg • Sodium Bicarbonate: 33 mEq 	MEDICATIONS <ul style="list-style-type: none"> • Albuterol HHN: 5 mg • Atropine IV: 0.5 mg • Dextrose 50% slow IV: 30 mL • Midazolam IV/IM/IN: 3 mg • Diphenhydramine*: 25 mg • Epinephrine 1:1,000 IM: 0.3 mg • Glucagon IM: 1 mg • Morphine Sulfate*: 3 mg • Naloxone IV/IM/IN: 2 mg • Normal Saline IV Bolus: 500 mL 	GREEN
	DEFIBRILLATION Cardioversion 33 Joules 66 Joules 66 Joules Defibrillation 66 Joules 132 Joules 132 Joules	DOPAMINE (400 mg / 5 mL) <ul style="list-style-type: none"> • Add 200 mg (2.5 mL) to a 100 mL bag of NS • Start at 10 mcgtt/minute • Titrate to signs of adequate perfusion or maximum of 20 mcgtt/minute 	* IV or IM	

NERVE AGENT & CYANIDE TREATMENT

Pediatric (Color Code) Dosages for Chemical Weapons

OVERVIEW

Atropine and 2PAM Chloride can be IV or IM, but if 2PAM Chloride is given IV, it should be given over 20 minutes.
--

Na ⁺ Nitrite and Na ⁺ Thiosulfate are to be given IV
--

- | |
|---|
| <ul style="list-style-type: none">• Give Na⁺ Nitrite over 10 minutes• Give Na⁺ Thiosulfate over 20 minutes |
|---|

NERVE AGENT & CYANIDE TREATMENT: 0-2 MONTHS

COLOR CODE: GREY - AVERAGE WEIGHT: 4 KG

Avg. 4 kg	MILD TO MODERATE EXPOSURE	GREY	SEVERE EXPOSURE
	<p style="text-align: center;">Nerve Agent Exposure</p> <p>Atropine 0.2 mg 2PAM Chloride 100 mg</p> <p style="text-align: center;">Cyanide Antidote Kit</p> <p><u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec</p> <p><u>Intravenous</u> 1st Na+ Nitrite (3%) 1.2 ml 2nd Na+ Thiosulfate (25%) 6 ml</p>		<p style="text-align: center;">Nerve Agent Exposure</p> <p>Atropine 0.4 mg 2PAM Chloride 200 mg Diazepam 0.8 mg</p> <p style="text-align: center;">Cyanide Antidote Kit</p> <p><u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec</p> <p><u>Intravenous</u> 1st Na+ Nitrite (3%) 1.2 ml 2nd Na+ Thiosulfate (25%) 6 ml</p>

NERVE AGENT & CYANIDE TREATMENT: 3-6 MONTHS

COLOR CODE: PINK - AVERAGE WEIGHT: 6.5 KG

Avg. 6.5 kg	MILD TO MODERATE EXPOSURE	P I N K	SEVERE EXPOSURE
	Nerve Agent Exposure Atropine 0.3 mg 2PAM Chloride 150 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 2 ml 2 nd Na+ Thiosulfate (25%) 10 ml		Nerve Agent Exposure Atropine 0.7 mg 2PAM Chloride 325 mg Diazepam 1.3 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 2 ml 2 nd Na+ Thiosulfate (25%) 10 ml

NERVE AGENT & CYANIDE TREATMENT: 7-10 MOS

COLOR CODE: RED - AVERAGE WEIGHT: 8.5 KG

Avg. 8.5kg	MILD TO MODERATE EXPOSURE	RED	SEVERE EXPOSURE
	Nerve Agent Exposure Atropine 0.4 mg 2PAM Chloride 200 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 2.6 ml 2 nd Na+ Thiosulfate (25%) 14 ml		Nerve Agent Exposure Atropine 0.9 mg 2PAM Chloride 425 mg Diazepam 1.7 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 2.6 ml 2 nd Na+ Thiosulfate (25%) 14 ml

NERVE AGENT & CYANIDE TREATMENT: 11-18 MOS

COLOR CODE: PURPLE - AVERAGE WEIGHT: 10.5 KG

Avg. 10.5kg	MILD TO MODERATE EXPOSURE	PURPLE	SEVERE EXPOSURE
	Nerve Agent Exposure Atropine 0.5 mg 2PAM Chloride 250 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 3.2 ml 2 nd Na+ Thiosulfate (25%) 16 ml		Nerve Agent Exposure Atropine 1 mg 2PAM Chloride 525 mg Diazepam 2.0 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 3.2 ml 2 nd Na+ Thiosulfate (25%) 16 ml

NERVE AGENT & CYANIDE TREATMENT: 1.5 - 3 YRS

COLOR CODE: YELLOW - AVERAGE WEIGHT: 13 KG

Avg. 13kg	MILD TO MODERATE EXPOSURE	Y E L L O W	SEVERE EXPOSURE
	<p style="text-align: center;">Nerve Agent Exposure</p> <p>Atropine 0.65 mg 2PAM Chloride 300 mg</p> <p style="text-align: center;">Cyanide Antidote Kit</p> <p><u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec</p> <p><u>Intravenous</u> 1st Na+ Nitrite (3%) 4.2 ml 2nd Na+ Thiosulfate (25%) 20 ml</p>		<p style="text-align: center;">Nerve Agent Exposure</p> <p>Atropine 1.3 mg 2PAM Chloride 650 mg Diazepam 2.5 mg</p> <p style="text-align: center;">Cyanide Antidote Kit</p> <p><u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec</p> <p><u>Intravenous</u> 1st Na+ Nitrite (3%) 4.2 ml 2nd Na+ Thiosulfate (25%) 20 ml</p>

NERVE AGENT & CYANIDE TREATMENT: 3 - 4 YEARS

COLOR CODE: WHITE - AVERAGE WEIGHT: 16.5 KG

Avg. 16.5kg	MILD TO MODERATE EXPOSURE	W H I T E	SEVERE EXPOSURE
	Nerve Agent Exposure Atropine 0.8 mg 2PAM Chloride 400 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 5 ml 2 nd Na+ Thiosulfate (25%) 25 ml		Nerve Agent Exposure Atropine 1.7 mg 2PAM Chloride 800 mg Diazepam 3 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 5 ml 2 nd Na+ Thiosulfate (25%) 25 ml

NERVE AGENT & CYANIDE TREATMENT: 5 - 6 YEARS

COLOR CODE: BLUE - AVERAGE WEIGHT: 20.5 KG

Avg. 20.5kg	MILD TO MODERATE EXPOSURE	BLUE	SEVERE EXPOSURE
	Nerve Agent Exposure Atropine 1 mg 2PAM Chloride 500 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 6.2 ml 2 nd Na+ Thiosulfate (25%) 32 ml		Nerve Agent Exposure Atropine 2 mg 2PAM Chloride 1000 mg Diazepam 4 mg Cyanide Antidote Kit <u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec <u>Intravenous</u> 1 st Na+ Nitrite (3%) 6.2 ml 2 nd Na+ Thiosulfate (25%) 32 ml

NERVE AGENT & CYANIDE TREATMENT: 7 - 9 YEARS

COLOR CODE: ORANGE - AVERAGE WEIGHT: 26 KG

Avg. 26kg	MILD TO MODERATE EXPOSURE	O R A N G E	SEVERE EXPOSURE
	Nerve Agent Exposure		Nerve Agent Exposure
	Atropine 1.3 mg		Atropine 2.5 mg
	2PAM Chloride 600 mg		2PAM Chloride 1300 mg
			Diazepam 5 mg
	Cyanide Antidote Kit		Cyanide Antidote Kit
	<u>Inhale</u>		<u>Inhale</u>
	Amyl Nitrite: on 15 sec; off 15 sec		Amyl Nitrite: on 15 sec; off 15 sec
	<u>Intravenous</u>		<u>Intravenous</u>
	1 st Na+ Nitrite (3%) 8.5 ml		1 st Na+ Nitrite (3%) 8.5 ml
	2 nd Na+ Thiosulfate (25%) 40 ml		2 nd Na+ Thiosulfate (25%) 40 ml

NERVE AGENT & CYANIDE TREATMENT: 10 - 12 YRS

COLOR CODE: GREEN - AVERAGE WEIGHT: 33 KG

Avg. 33kg	MILD TO MODERATE EXPOSURE	G R E E N	SEVERE EXPOSURE
	<p style="text-align: center;">Nerve Agent Exposure</p> <p>Atropine 1.6 mg 2PAM Chloride 600 mg</p> <p style="text-align: center;">Cyanide Antidote Kit</p> <p><u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec</p> <p><u>Intravenous</u> 1st Na+ Nitrite (3%) 10 ml 2nd Na+ Thiosulfate (25%) 50 ml</p>		<p style="text-align: center;">Nerve Agent Exposure</p> <p>Atropine 3.5 mg 2PAM Chloride 1600 mg Diazepam 6.5 mg</p> <p style="text-align: center;">Cyanide Antidote Kit</p> <p><u>Inhale</u> Amyl Nitrite: on 15 sec; off 15 sec</p> <p><u>Intravenous</u> 1st Na+ Nitrite (3%) 10 ml 2nd Na+ Thiosulfate (25%) 50 ml</p>

BURN TREATMENT: FLUID RESUSCITATION

Fluid Resuscitation Formula: 3 - 4 mL / kg / %TBSA burn
For Infants (0 - 2 years; less than 30 kg): Use maintenance fluid containing 5% dextrose in D5 Lactated Ringer's
Maintenance fluid requirements <ul style="list-style-type: none">• 1st 10kg of body wt: 4 mL/kg/hr• 2nd 10kg of body wt: 2 mL/kg/hr• For each kg over 20kg: 1 mL/kg/hr
Pediatric Considerations <ul style="list-style-type: none">• Increased fluid requirements relative to adults• Increased surface area : mass ratio• Hypoglycemia may occur in infants (<30 kg) due to limited glycogen reserves

SECTION 4: EQUIPMENT

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EQUIPMENT ESTIMATIONS

Method to estimate Endotracheal Tube (ETT) size:

$$\text{Internal tube diameter (mm)} = [16 + \text{age(y)}] / 4$$

ETT Depth in cm at lip = 3x ETT size

EQUIPMENT SIZES: NEWBORN - 6 YEARS OLD

Equipment	Newborn	3-6 mos	1 year	2-3 yrs	4-6 yrs
Weight	3 kg	5 kg	10 kg	15 kg	20 kg
ETT	3-3.5	3.5-4.0	4-4.5	4.5-5/0	5.0-5.5
L Blade	Miller 0-1	Miller 0-1	Miller 0-1	Miller 1-2	Miller 2
Suction	6-8 Fr	8-10 Fr	10 Fr	10 Fr	10 Fr
NG Tube	5-8 Fr	5-8 Fr	8-10 Fr	10-12 Fr	12-14 Fr
Foley	6-8 Fr	6-8 Fr	8-10 Fr	10-12 Fr	10-12 Fr
Chest Tube	10-12 Fr	12-16 Fr	16-20 Fr	20-24 Fr	24-32 Fr
LMA (cuff)	1 (4 mL)	1.5 (7 mL)	2 (10 mL)	2 (10 mL)	2-2.5 (14 mL)

EQUIPMENT SIZES: 7 YEARS AND OLDER

Equipment	7-9 yrs	10-12 yrs	13-15 yrs	>15 yrs
Weight	25 kg	30 kg	40 kg	> 50 kg
ETT	5.5-6.0 cuff	6.0-6t.5 cuff	7.0-7.5 cuff	7.5-8.0 cuff
L Blade	Mil/Mac 2	Mil/Mac 2-3	Mil/Mac 3	Mil/Mac 3
Suction	10 Fr	10 Fr	12 Fr	12-14 Fr
NG Tube	12-14 Fr	14-26 Fr	14-16 Fr	16-18 Fr
Foley	12 Fr	12 Fr	12-14 Fr	12-14 Fr
Chest Tube	28-32 Fr	28-32 Fr	32-40 Fr	32-40 Fr
LMA (cuff)	2.5 (17 mL)	3 (20 mL)	3 (20 mL)	4-6 (30-50 mL)

C-COLLAR SIZE INFORMATION

Size depends on the brand and type of collar.			
Collar packaging usually shows pediatric size per Broselow Tape.			
Necloc Extrication Collar Sizing			
Pediatric Sizes: By Age		Adult: By Neck Shape	
Age	Size	Stout	NL 200 EL (navy)
0-3 months	PAR 100 PAPOOSE	X-Small	NL 250 E (green)
0-2 years	NL-P1	Small	NL 300E (yellow)
2-6 years	NL-P2	Medium	NL 400 E (orange)
6-12 years	NL-P3	Large	NL 500 E (light blue)

SECTION 5: DECONTAMINATION

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DECONTAMINATION CONSIDERATIONS

The smaller the child, the bigger the problem regarding any of these considerations.
Attention to airway management is a priority throughout decontamination.
Preventing hypothermia is critical: <ul style="list-style-type: none">• Maintain water temperature above 98°F.• It is vital to rapidly dry children once decontaminated.• Provide warm blankets and a heated area before and after decontamination.
For young children, use high-volume, low-pressure, heated water systems .
Soap and water should be used for decontamination; bleach and other chemicals may be toxic to the sensitive skin of children.
Decontaminating children takes longer, due to the additional time required to assist them. Expect up to as much as fifteen minutes per child.
Parents/caregivers may not be able to decontaminate selves & children at same time.
Older children may resist decontamination out of fear, peer pressure, and modesty issues (even in front of their parents or caregivers).
Separation of families during decontamination should be avoided , but medical and safety concerns take priority.

AMBULATORY DECON: INFANTS AND TODDLERS LESS THAN 2 YEARS OLD

Steps:
1. Disrobe by child's caregiver and/or "hot zone" personnel
2. Direct supervision of decon (and of caregiver, too)
3. Escort through the decon shower by "warm zone" personnel and caregiver
Considerations:
<ul style="list-style-type: none">• Soap and water should be used.
<ul style="list-style-type: none">• Attention to airway management is a priority throughout decontamination.
<ul style="list-style-type: none">• If the water temperature is below 98°F, the risk of hypothermia increases in the smaller, younger child.
<ul style="list-style-type: none">• The smaller the child, the bigger the problem regarding any of these considerations.



**AMBULATORY DECON: PRE-SCHOOL
2 - 7 YEARS OLD**

Steps:
1. Assist disrobing (child's caregiver or "hot zone" personnel)
2. Direct supervision of decon (and of caregiver, too)
3. Escort through the decon shower by "warm zone" personnel and caregiver
Considerations:
<ul style="list-style-type: none">• Soap and water should be used.
<ul style="list-style-type: none">• Attention to airway management is a priority throughout decontamination.
<ul style="list-style-type: none">• If the water temperature is below 98°F, the risk of hypothermia increases in the smaller, younger child.
<ul style="list-style-type: none">• The smaller the child, the bigger the problem regarding any of these considerations.

**AMBULATORY DECON: SCHOOL AGE
8 - 18 YEARS OLD**

Steps:
1. Disrobe without assistance - respect privacy
2. Child decons him/herself, but goes through decon shower in succession with caregiver or parent, if present
3. Respect modesty - have screens to provide for gender separation
Considerations:
<ul style="list-style-type: none">• Soap and water should be used.
<ul style="list-style-type: none">• Attention to airway management is a priority throughout decontamination.



NON-AMBULATORY DECON: ALL AGES

Steps:
1. Disrobe by child's caregiver and "hot zone" personnel
2. Place on a stretcher or restraining device or escort if ambulatory but disabled
3. Escort through the decon shower by "warm zone" personnel and caregiver
4. Direct supervision of decon (and of caregiver, too)
Considerations:
<ul style="list-style-type: none">• Soap and water should be used.
<ul style="list-style-type: none">• Attention to airway management is a priority throughout decontamination.
<ul style="list-style-type: none">• If the water temperature is below 98°F, the risk of hypothermia increases in the smaller, younger child.
<ul style="list-style-type: none">• The smaller the child, the bigger the problem regarding any of these considerations.

SECTION 6: MENTAL HEALTH

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PSYCHOLOGICAL FIRST AID: OBJECTIVES

Primary objective:

To create and sustain an environment of:

- safety
- calm
- connectedness to others
- self-efficacy or empowerment
- hope

PSYCHOLOGICAL FIRST AID: STEPS 1-5

Step 1: Contact and engagement – “My name is _____ and I am here to try to help you and your family. I am a _____ worker here, and I am checking with people to see how they are feeling. May I ask your name?”

Step 2: Safety and comfort – “Do you need anything to drink or eat? Is your family here with you? Do you have a place to stay? We are working hard to make you and your family safe. Do you have any questions about what we’re doing to keep you safe?”

Step 3: Stabilization (if needed) – “After bad things happen, your body may have strong feelings that come and go like waves in the ocean. Even grown-ups need help at times like this. Is there anyone who can help you feel better when you talk to them? Can I help you get in touch with them?”

Step 4: Information gathering – “May I ask some questions about what you have been through? Can you tell me where you were during the disaster? Did you get hurt? Is your family safe? How scared were you? Is there anything else that you are worried about?”

Step 5: Practical Assistance – “It seems like what you are most worried about right now is _____. Can I help you figure out how to deal with this?”

PSYCHOLOGICAL FIRST AID: STEPS 6-9

Step 6: Connection with Social Support – *“You are doing a great job letting grown-ups know what you need. It is important to keep letting people know how they can help you. That way, you can make things better.”*

Step 7: Information on Coping – *“It’s normal for kids to feel scared after bad things happen. You will probably start to feel better soon. If you like, I can tell you some ways to help you feel better. You can also call 800-854-7771 (hotline staffed by mental health professionals trained in disaster response) any time to talk to people who can help you.”*

Step 8: Other support - Provide direct referrals to a) county mental health services or those through private insurance, b) Red Cross and FEMA, as appropriate.

Step 9: Continuity in Helping Relationships – Facilitate referrals: *“May I help make some calls to people who can help you?”* and if feasible, *“I’d like to check in with you again to see how you are doing. How may I contact your parents later?”*

Getting Mental Health Care

For crisis counseling and long-term mental health care resources in Los Angeles County, call the County of Los Angeles Department of Mental Health 24-hour access hotline: (800) 854-7771

MENTAL HEALTH CONSIDERATIONS

- | |
|---|
| <ul style="list-style-type: none">• Sit or crouch at a child's eye level. |
| <ul style="list-style-type: none">• Help children verbalize their feelings, concerns and questions; provide simple labels for common emotional reactions (e.g., mad, sad, scared, worried). Match the children's language to help you connect with them, and to help them to feel understood and to understand themselves. Do not increase their distress by using extreme words like "terrified" or "horrified." |
| <ul style="list-style-type: none">• Match your language to the child's developmental level. Children 12 years and under typically have much less understanding of abstract concepts and metaphors compared to adults. Use direct and simple language as much as possible. |
| <ul style="list-style-type: none">• Adolescents often appreciate having their feelings, concerns and questions addressed as adult-like, rather than child-like responses. |
| <ul style="list-style-type: none">• Reinforce these techniques with the child's parents to help them provide appropriate emotional support to their children. |

SECTION 7: PEDIATRIC SAFE AREAS

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SECURITY CONSIDERATIONS

Access to any area that children are being cared for or held should have strict security access control.
Once parent/child pair has been verified a method to quickly identify the pair should be implemented such as matching armbands.
If parent is capable, and when possible, child and parent should be kept together including during triage, treatment or decontamination.
It may be necessary to assign a staff member to supervise and escort an unattended child for duration of care.
Maintain procedures to ensure child's safety from predators.
Identify a Pediatric Safe Area for displaced, unaccompanied, and released children awaiting their caregivers has been identified.

PEDIATRIC SAFE AREA CONSIDERATIONS: LOCATION

Secure area away from crowd access
Secure medications and chemicals to prevent accidental poisoning
Cover electric outlets and keep electrical cords out of reach
Cribs should be provide for small children to prevent falls, if this is not available, mats on floor in supervised area may be used
Use of gates or gated areas may be used when supervised to assist in providing means to contain small children in holding areas
Care should be taken to prevent children from cause a trip hazard for elderly patients
Bathrooms should be readily available to the children
Windows should be locked
Remove injury-prone objects in the area (sharp objects, etc.)
The area should be away from stairwells and other fall-risks

**PEDIATRIC SAFE AREA CONSIDERATIONS:
EQUIPMENT AND SUPPLIES**

There should be enough staff and security to ensure the safety of the children
There should be a sign-in and sign-out sheet to help with tracking, which includes times, the name of the adult picking up the child, and his/her contact information
Maintain a supply of age appropriate games, DVDs, toys, art supplies, etc to occupy children
Maintain a supply of pediatric snacks
High chairs for infants
Fans and heaters are identified and made safe

PEDIATRIC IDENTIFICATION CONSIDERATIONS FOR ACCOMPANIED CHILDREN

The identification document or band to be placed on the “accompanied” child should include the following, if available:

- Name of pediatric patient/visitor and date of birth
- Name of adult, relationship to child, and date of birth
- Admission date of adult (if the adult is a victim)
- Admission date of injured pediatric patient
- Date of visit of uninjured pediatric patient

RESOURCE CONTACTS

Los Angeles County Department of Public Health

- Acute Communicable Disease Control: (213) 240-7941
- Communicable Disease Reporting System (CDRS)
Hotline: (888) 397-3993
Faxline: (888) 397-3778

Los Angeles County Emergency Medical Services Agency

- Business Hours: (562) 347-1500
- 24/7 Medical Alert Center (MAC): (866) 940-4401

Los Angeles County Department of Mental Health: 24/7 Hotline: (800) 854-7771

Long Beach Department of Health and Human Services: 24/7 Hotline: (562) 570-4499

Pasadena Public Health Department: (626) 744-6005

Poison Control Center: 24/7 Hotline: (800) 222-1222

REFERENCES

- Agency for Healthcare Research and Quality. *Pediatric Terrorism and Disaster Preparedness - a Resource for Pediatricians*. Rockville, MD: Agency for Healthcare Research and Quality; October 2006, Revised: December 2006. AHRQ Publication No. 06(07)-0056.
- Ball JW, Bindler RC. *Pediatric Nursing, Caring for Children, Fourth Edition*. Upper Saddle River, NJ: Pearson Prentice Hall; 2008.
- Brymer M, Jacobs A, Layne C, Pynoos R, Ruzek J, Steinberg A, Vernberg E, Watson P, (National Child Traumatic Stress Network and National Center for PTSD). *Psychological First Aid Field Operations Guide, 2nd Edition*. Rockville, MD: National Child Traumatic Stress Network and National Center for PTSD, July 2006.
- California Emergency Medical Services Authority. *EMSC Pediatric Disaster Preparedness Guidelines: Hospitals, Draft for Public Comment Period #1, April 20, 2009-June 18, 2009*. Sacramento, CA: California Emergency Medical Services Authority; May 2008.
- Hockenberry MJ, Wilson D. *Wong's essentials of pediatric nursing, ed. 8*. St. Louis, MO: Mosby; 2008.
- Los Angeles County Emergency Medical Services Agency. *Color Code Drug Doses: LA County Kids*. Santa Fe Springs, CA: Los Angeles County Emergency Medical Services Agency; August 19, 2008.
- Merkel S et al. The FLACC: A behavioral scale for scoring postoperative pain in young children. *Pediatr Nurse*. 1997;23(3):293-297.

REFERENCES (CONTINUED)

- Slota MC. (editor). *Core Curriculum for Pediatric Critical Care Nursing, Second Edition*. St. Louis, MO: Saunders; 2006.
- Taketomo C. *Childrens Hospital Los Angeles Pediatric Dosing Handbook and Formulary, 19th Edition*. Hudson, OH: Lexi-Comp; 2008.
- Teasdale G, Jennett B. Assessment of coma and impaired consciousness. A practical scale. *Lancet*. 1974;2:81-84.
- Wong DL, Perry SE, Hockenberry MJ, Lowdermilk DL, Wilson D. *Maternal Child Nursing Care, Third Edition*. St. Louis, MO: Mosby Elsevier; 2006.

NOTES

NOTES

PEDIATRIC SURGE POCKET GUIDE

This document is available for download at
<http://publichealth.lacounty.gov/eprp/plans.htm>

For Pocket Guide comments and questions, or to report an error, contact
sreynaldo@ph.lacounty.gov or (213) 637-3600.

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Constant and Associates, Inc.
info@constantassociates.com