TITLE PAGE

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I. EXECUTIVE SUMMARY

In 2019, the U.S. Department of Health and Human Services' Assistant Secretary for Preparedness and Response (ASPR) established the Eastern Great Lakes Pediatric Consortium for Disaster Response (EGL-PCDR) as one of ASPR's two Pediatric Centers of Disaster Excellence (PDCOEs). EGLPCDR is comprised of six children's hospital and other key strategic partners, all located within the region. The six hospitals are:

1. University Hospitals Rainbow Babies and Children's Hospital (Cleveland, Ohio)
2. Cincinnati Children's Hospital (Cincinnati, Ohio)
3. CS Mott Children's Hospital / University of Michigan (Ann Arbor, Michigan),
4. Nationwide Children's Hospital (Columbus, Ohio),
5. Children's Hospital of Michigan (Detroit, Michigan), and
6. Spectrum Health / Helen Devos Children's Hospital (Grand Rapids, Michigan).

Collectively, working as the APPR PDCOE, these partners harness and develop best-practices on disaster preparedness and response and share them with other children's and non-children's hospitals and affiliated entities in the region. The goal is to help advance a national model of pediatric disaster preparedness and response by providing a multipronged approach to address gaps within pediatric care across the disaster cycle spectrum of mitigation, preparedness, response, and recovery.

The PDCOE's deliverables centered on the following five activities, which are described in this report:

1) Develop coordinated pediatric disaster care capability,
2) Strengthen pediatric disaster care preparedness plans and healthcare system coordination for pediatric medical surge,
3) Enhance statewide and regional pediatric medical surge,
4) Increase and maintain healthcare professional competency through development and delivery of a standardized training program, and
5) Enhance situational awareness of pediatric disaster care capacity, capability, and assess regional readiness.

II. BACKGROUND

Children under 18 years old comprise approximately 25% of the United States population and are one of the country's most vulnerable groups.[i] The unique anatomic, physiologic, and developmental features of children cause them to be disproportionately affected by disasters.[ii] For example, children are at an increased risk for chemical and biological exposures due to their high skin permeability, large body surface to mass ratio, and propensity for spending time outdoors and touching dirty surfaces.[iii, iv] An inherently higher respiratory rate leads to children

inhaling greater quantities of toxins near ground level, where chemicals tend to collect.[v] Children are also more vulnerable to disasters characterized by blasts and forceful impacts, because they have large heads and fragile organs, less fluid and blood reserves, and less protective fat and subcutaneous tissue.[vi, vii] Developmentally, young children lack the mobility to escape from emergencies and often cannot comprehend and appropriately respond to threats.[viii, ix] Even when children are not physically harmed in disasters, they often must contend with the effects of short- and long-term psychological trauma.[x]

As a result of these vulnerabilities, studies of recent crises have shown that children compose a considerable proportion of all disaster victims, whether due to a lack of mobility preventing escape during tsunamis and earthquakes, increased inhalation and exposure during chemical attacks, or mass shootings deliberately targeting schools and day care centers.[xi, xii, xiii] The propensity of children to be affected by a wide variety of disaster may be why 14% of all US children surveyed reported being involved in at least one disaster throughout their lifetime.[xiv]

Apart from emergency managers and hospitals needing to consider which policies, equipment, and priorities best address children's unique vulnerabilities, they must also contend with how the large number ((320,000 – 560,000) of US children with medical complexity (CMC) affect disaster preparation.[xv] To survive, CMC are often dependent on constant access to functioning technologies such as tracheostomy tubes, ventilators, and feeding tubes, as well as medications and special services.[xvi, xvii] Regional emergency managers need to plan for how disasters affecting electricity, heat, running water, and the supply of home services will affect CMC, while hospitals must consider hospitalized CMC during disasters will necessitate additional resources and medical technology.[xviii]

As part of its response to these concerns, in 2019, the U.S. Department of Health and Human Services' Assistant Secretary for Preparedness and Response (ASPR) established two Pediatric Centers of Disaster Excellence (PDCOE), one of which is the Eastern Great Lakes Pediatric Consortium for Disaster Response (EGL-PCDR).

EGLPCDR is comprised of six children's hospital and other key strategic partners, all located within the region. Each partner children's hospital has a key role in the organization structure, activities, and Workplan strategies. These partner organizations established 16 workgroups with leads for each group to address the items outlined in the Workplan. Partners conducted weekly meetings to update all sites on progress within workgroups, address areas for collaboration among workgroups, and problem-solve using input from all partners. Conference calls have been conducted with the state Departments of Health to identify key areas for collaboration and development of plans to support the grant. Other key state agencies, including EMS and EMA have been contacted to support work within specific workgroups.

EGLPCDR established a close relationship with the other grantee, WRAP-EM to work in the defined areas for collaboration, education and behavioral health and regional metrics. In addition, key state agencies (including EMS and EMA) were contacted to help support specific Workgroup's activities. New collaborations were formed to explore the potential for creating a

"national view" for pediatric hospital bed capacity that can be integrated with other bed-tracking systems.

The EGLPCDR group held quarterly meetings during the grant year, to continue our synergistic process for ideas and evaluation of progress and virtual engagement with our state health department partners.

Grant Year Highlights

Despite the steady state of the COVID-19 pandemic and our new adaptive working environments have allowed partners to proceed with work within the grant deliverables. Highlights of the grant year include:

1. The *Asset Map Workgroup* and the *Information Technology (IT) Workgroup* partnered with Juvare to create common pediatric terms on Juvare's national pediatric dashboard demonstration platform. This effort involved working closely partners from the State of Michigan partners and health care representatives from Utah.
2. The *Behavioral Health Workgroup* collaborated with mental health professionals to respond in a disaster, especially that involves children and families, through statewide organizations and coordinated trainings. The Workgroup recruited and educated mental health professionals as members of a new disaster mental health relief team serving Ohio and Michigan; members also participated in the PDCOE's telehealth virtual drill in May, 2021. The Workgroup partnered with Ohio EMSC to present three webinars for EMS partners about children's mental and behavioral concerns; content also covered how to approach and manage provision of resources to these health care professionals.[1] An additional three trainings were conducted in the region in order to expand the number of individuals who are able to address children's needs during pandemics and other disasters.
3. The *Children's Hospital Survey Workgroup* – created the Children's Hospital Survey and collected data that will help inform the Asset Map and Deployable Teams concepts. Michigan's collected data were shared with the State; Ohio conducted and completed a re-survey to address an originally low response rate. The Children's Hospital Survey results also fostered an understanding and verification of the types of pediatric assets, including bed type and staffing, available in both States.
4. The *Education Workgroup* focused on helping meet health care professionals' need for materials about the special needs population with respect to disasters. The Workgroup produced and distributed a Concept of Operations (CONOPS) for the integration of pediatric disaster preparedness into a whole-community approach to preparedness. The CONOPS is posted on the EIIC website and was a poster at the all-state EMSC grantee meeting in September, 2021. The Workgroup also created a video and infographics for families with children with special health care needs (CSHCN). These materials are designed to assist with disaster preparedness and are available in multiple languages. The Workgroup also assisted

[1] See: https://www.ems.ohio.gov/links/MHFlyerPart1.pdf

with training resources and education for a Pediatric Coordination Center demonstration project, launched during the grant period. The materials are available in 8-10 languages to reach as broad an audience as possible.[2] To date, materials have been uploaded to the EIIC site related to issues concerning COVID-19, behavioral health, exercise, HVA, and quality.[3] [4]

5. The *Emergency Medical Services (EMS) Workgroup* coordinated with state personnel to conduct a review of scopes of practice, EMS protocols, and legal and policy issues. This information was compared with national NASEMSO standard protocols and the resulting findings were included in the white paper (see attached). The Workgroup also identified assets for specialized transport.
6. The *Exercise Workgroup* designed, conducted, and completed three exercises. The first, a Quality Reunification Exercise, was held on April 27, 2021.[5] The second, a Telehealth Exercise, was held on May 20, 2021.[6] A Deployable Teams Exercise was originally scheduled to be held in June 2021 but was postponed due to the Delta surge of COVID-19.
7. The *Facility Recognition/Pediatric Medical Recognition Workgroup* created a Facility Recognition Tool in order to help coalitions recognize essential pediatric considerations—stratified by facility type—to include in their disaster planning activities. The tool is designed to help develop a thorough understanding of each hospital's pediatric surge capacity and determining where the most acute pediatric patients will be best managed. The Workgroup shared the Tool with the Department of Health in each state, and then, subsequently, with regional hospital coalitions in each state to aid in the coordination of plans within the regions.
8. *The Hazard and Threat Vulnerability Analysis (HVA) Workgroup* created a template tool, which is designed to facilitate hospital's and regional coalitions' preparations for a variety of pediatric hazards.[7] The template was pilot-tested with the two PDCOEs. Based on the pilot-test results, this tool was refined in advance of wider distribution. The tool is now available on-line for hospitals and regional coalitions to use; it provides information on common hazards and how to prepare with children.[8] This is currently being revised into self-paced modules.
9. *The Information Integration Workgroup* explored platforms and processes for a proof of concept operation for using IT to enhance communication and pediatric bed tracking, and included this information in the white paper (see attached). The Workgroup also explored

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[2] The Be Ready CYSHCN has been translated into videos in 10 languages (English, Spanish, Tagalog Chinese (simple and traditional), Arabic, French, Haitian Creole, Vietnamese, and American Sign Language); the Be Ready infographics have been translated into 8 languages (English, Spanish, Tagalog, Chinese, Arabic, French, Haitian Creole, and Vietnamese).

[3] https:// emscimprovement.center/domains/preparedness/covid-19-coronavirus/

[4] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/

[5] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/reunification/

[6] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/telehealth/.

[7] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/hva/.

[8] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/hva/

electronic formats to place CSHCN into an electronic health record (EHR). It also collaborated with the Missouri STARS program on this effort, and exploring the use of EMResource and Juvare's "pediatric-specific bed board" as a model for other states.[9] These efforts are designed to increase situational awareness at the hospital level.

10. The *Legal Workgroup* conducted a review of laws related to deployable teams, EMS work across jurisdictions, EMA and EOP coordination in a large event (that does not have a federal disaster declaration). are a component of the legal review and are in progress. The review also assessed the scarcity of resource and shortage of crisis standards related to pediatric disasters (including the COVID-19 pandemic). A comparison of the two states was part of the review, as well. The Workgroup created a state-based crisis scorecard as a component of the document.

11. The *Pediatric Deployable Teams Workgroup* engaged the expertise of the two PDCOEs to create a Proof of Concept for each State for deployment consideration. The Proof of Concept includes a telehealth platform and identified a coordinating body for each state. As part of the process, State Pediatric Coordinating Centers are being developed to assist with assets for pediatric events. Each state adapted its Pediatric Coordinating Center to serve as a model. In addition, the Workgroup is exploring state-specific Medical Reserve Corps as another way to identify and deploy health care professionals who have pediatric expertise and can support pediatric disaster readiness. A Deployable Teams Exercise was held with Michigan health care coalitions in June, 2021; key Ohio stakeholders observed the drill.

12. The *Quality Workgroup* concluded the eight-module Pediatric Disaster Preparedness Quality (PDPQ) Collaborative, which included 39 hospitals representing a broad geographic area. The Collaborative's mission was to engage local pediatric champions in efforts to improve the ability of their hospital to receive and treat children in response to a pandemic or other disaster. In collaboration with the EMSC / EIIC, the Workgroup created a reunification drill that was hosted on a virtual platform, which culminated the collaborative's activities. The drill was hosted on April 27, 2021 and engaged 31hospitals from across the United States and Canada.[10]

13. *Regional Healthcare Coalition Survey Workgroup* – The Regional Healthcare Coalition Survey Workgroup concluded its activities during year 1 of the grant, and provided additional information during year 2 of the grant.

14. The *Regional Metrics Workgroup* created a concept for a scorecard for use in defining regional, pediatric-specific metrics to help prepare for disasters.[11] Representatives from the EMSC / EIIC and the other Center of Excellence helped the Workgroup define a few simple, easy accessible measures that are designed to improve health care coalition's awareness about pediatric- and family-specific needs during disasters. The pediatric-specific items can be measured using data from existing databases, and can be used to assess progress in

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[9] https://vimeo.com/534082594; password: spectrum.

[10] https://emscimprovement.center/collaboratives/pediatric-disaster-preparedness-quality-collaborative/pdpqc-participants-only/modules/).

[11] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/hva/

mitigating challenges on an annual basis. The scorecard was piloted by the regional coalitions in the two-state region. The scorecard was developed in collaboration with WRAP-EM, the EIIC, the AAP, and the CDC; it will be further integrated with a more pediatric-specific HVA in the future.

15. *The Supply Chain Workgroup* created a follow-up survey for managers to assess adoption and/or implementation of the strategies and recommendations contained in the *Supply Chain Assessment* report. The *Assessment* focused on summarizing key characteristics of the regional pediatric supply chain to assess both capabilities and vulnerabilities. Recommendations include the need for future research to explore other supplies and cross-sector dependencies (i.e., food, bed linens) to expand understanding of hospital level supply chain management.
16. The *Telemedicine / Telehealth Workgroup* purchased equipment, developed a protocol and training for the equipment, and created a distribution plan. The Workgroup held a virtual Metrics drill in May 2021, featuring nine pre-recorded modules that demonstrated the deployment of pediatric assets in various disaster-related scenarios.[12] The Workgroup also formed new collaborations to create a "national view" of pediatric hospital bed capacity that can be integrated with other bed-tracking systems.

Additional highlights from the grant year include:

- Presentations at and posters at two meetings: the Association of Healthcare Emergency Preparedness 2021 (5 posters) and the Preparedness Summit 2021 (3 on-demand presentations and 3 posters).
- Two presentations were accepted for the National Healthcare Coalition conference, originally scheduled to be held in December 2021 but cancelled due to COVID-19. A similar presentation, scheduled for the September 2021 NDMS meeting, was also cancelled due to COVID-19.
- The grant partners have been very engaged with state partners and other stakeholders to promote the National Pediatric Readiness Assessment survey within the region; improved participation by hospitals within the two-state region is anticipated.

See Attachment E for more information on presentations and publications.

III. NARRATIVE PROGRESS REPORT BY ACTIVITY

As noted, the PDCOE's deliverables centered on the following five activities, each of which are described in detail, below:

A. Develop coordinated pediatric disaster care capability,

[12] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/telehealth/

B. Strengthen pediatric disaster care preparedness plans and healthcare system coordination for pediatric medical surge,
C. Enhance statewide and regional pediatric medical surge,
D. Increase and maintain healthcare professional competency through development and delivery of a standardized training program, and
E. Enhance situational awareness of pediatric disaster care capacity, capability, and assess regional readiness.

Activity A: Develop a coordinated pediatric disaster care capability for pediatric patient care in disasters

Strategy 1: Define the core elements of a pediatric disaster care capability and identify the respective contributions of regional partners and other available assets.

Pediatric Disaster care capability is aligned with the emergency spectrum of care and the ability to surge to different levels—from conventional to crisis operations. Capability is very dependent upon health care providers' education to care for pediatric patients. Hence, understanding current capacity is a vital step in creating a plan to expand capacity by adding capability. A baseline understanding of prehospital workforce and protocols within each state was obtained; opportunities for alignment were identified to facilitate cross-State mutual aid in the case of a regional event. An assessment of the capacity of hospitals with pediatric assets outside of designated children's hospitals was obtained through the Children's Hospital Survey. The results helped foster an understanding and verification of the types of pediatric assets—including bed type and staffing—which are available in both states. Further capacity expansion could also occur by supporting concepts of deployment of pediatric health care expertise over a telehealth platform in the event of a regional disaster.

Specific Workgroup activities include:

Behavioral Health: Coordinated with WRAP-EM and conducted trainings in Psychological First Aid. The Workgroup presented at the 2021 Preparedness Summit. It created training tools and a compendium of resources and literature review to be posted on the EIIC website. Efforts to understand the types of mental health providers and their training were conducted, and a demonstration of JIT training was performed. The Workgroup recruited and trained mental health professionals to improve responses to disasters affecting with children and their families. In Ohio, the Workgroup is working with the Psychological Association Disaster Response Team. In Michigan, it is working with the Michigan Psychological Association. The Workgroup collaborated on the virtual drill held in May, 2021. It created webinars on child mental health for prehospital providers, for promotion through the EMSC.

- Children's Hospital Survey: The survey was completed and data reviewed. Information

was shared with Michigan. Ohio conducted a resurvey in order to update the information providing originally; the survey was completed in April 2021. The results were evaluated and used to assess additions to the Asset Mapping and Pediatric Deployable Teams concepts.

- EMS: A review was conducted on coordination between State personnel, scopes of practice, and legal / policy issues. This included a comparison to the national NASEMSO standard protocols. The Workgroup completed a white paper that summarizes the review's findings.

- P-DART: The Workgroup created a proof concept that will become an asset for each state's implementation, and identified the coordinating body for Michigan (the State's Department of Health). The coordinating body for Ohio has not yet been identified. As a result of the structure of the State's hospitals and Department of Health, and the and lack of sustainable funding model, the pediatric coordinating center lead has yet to be identified for Ohio. An exploration is ongoing for a mental/behavioral health deployable team proof of concept in the State. Medical Reserve Corps (MRC) were explored as a potential way to identify and deploy health care professionals who have pediatric expertise. Details of deployment, notification of request, training and integration with MRCs have yet to be determined. A drill was held for Michigan Healthcare Coalitions in June 2021, and key stakeholders from Ohio attended and observed the activities.

- Supply Chain: Supplies are another important component of capability expansion. The Workgroup created a follow-up survey about the recommendations made in the report in Year 1, to assess the adoption or implementation of any strategies contained in the report. Opportunities for improvement were identified and a critical pediatric supplies list was created.

- Telemedicine/Telehealth: The Workgroup purchased equipment and began training and protocol development for hub-and-spoke sites. A virtual exercise that integrated deployable teams was conducted in May 2021. The exercise demonstrated nine different scenarios that could occur in a disaster in order to support children and health care professionals and facilities.

Strategy 2: Develop a partnership with pediatric health care entities, disaster response entities, other relevant entities (e.g., supply chain vendors/ distributors), and subject matter experts (e.g., pediatric professional medical organizations) across the region that are necessary to facilitate statewide and regional pediatric disaster health care response. Specific focus of this partnership should be on building the response capabilities required for the coordinated regional care of pediatric patients in disasters, including as related to the management of pediatric trauma, infectious disease (including PI and other EID), burn, and CBRN incidents.

Coordination of pediatric care for many types of incidents is paramount upon the partnerships and collaborations across multiple entities, including public health, prehospital and hospitals providers, schools, daycare facilities, supply chain, and many others. The Children's Hospital Survey focused on the identification of regional pediatric expertise (including on the part of providers at non-children's hospitals that have pediatric assets). The results allowed regional health care coalitions to gain an understanding in their States' pediatric experts. Information about identification supply chain vendors for these children's hospitals also provided clarity about how this asset could be affected during a disaster—this was especially true since the demonstration occurred during the COVID-19 pandemic. A demonstration exercise on telehealth platforms was conducted that explored different ways to support personnel at a variety of institutions during a disaster. Multiple concepts of pediatric deployable teams were explored, including the concept of a Pediatric Coordinating Center; an outline for a state-level Center was created for each State. The Centers would coordinate their assets and potentially assist in a regional event by supporting one another.

Specific Workgroup activities included:

- Children's Hospital Survey: As noted above, the survey was completed and data reviewed. Information was shared with Michigan. The Ohio resurvey was completed in April 2020, and data analyzed. The results will facilitate regional health care coalitions understanding of who the pediatric experts are in their States, and where they are located.

- Education: The Workgroup assessment identified that information on children with special health care needs (CSHCN) is lacking for many health care professionals. As a result, efforts focused on developing materials on this topic in order to support on-line asynchronous training and JIT on telemedicine platforms to support families of CSHCN. The Workgroup developed a video and infographic materials to create awareness about issues that are unique to CYSHCN among health care professionals and emergency managers.

- Telemedicine/ Telehealth: The Workgroup purchased equipment and began training and developing protocols for partner institutions and demonstration hospitals. A virtual exercise that can integrate deployable teams was held in May 2021 that integrated deployable teams and included mini-scenarios on simulated pediatric disaster. Partner institutions and demonstration sites included EMS, air medical transport, and hospital and mental health professionals.

Activity B: Strengthen pediatric disaster preparedness plans and health care system coordination related to pediatric medical surge in disasters and explores legal and policy coordination and alignment.

Strategy 1: Review and update existing disaster preparedness plans and annexes to ensure that they incorporate pediatric considerations

The COVID-19 pandemic created a unique opportunity to review relevant State preparedness plans, annexes, laws, and policies in real time during the course of a disaster. This enriched the comparison of the States with respect to disaster and hazard mitigation, health care professional training and licensure requirements, and crisis standards of care. All of these items pertain to pediatrics in the disaster cycle spectrum, and the list of identified opportunities is intended to improve regional coordination.

Specific Workgroup activities included:

- Education: As noted above, education regarding CSHCN is a significant knowledge gap for health care professionals. The Workgroup reviewed the literature and identified gaps in order to map out a toolkit for use by both health care professionals and families. A Concept of Operations report was completed, along with a video and infographics for families.

- Hazard and Vulnerability Assessment (HVA): The Workgroup created HVA examples (Drexel, Kaiser, etc.). Data elements were identified by the Regional Metrics Workgroup that helped inform the pediatric-oriented HVA. The Workgroup pilot-tested the pediatric-focused HVA with regional coalitions and hospital emergency managers in both PDCOEs. The HVA was updated and completed and is available at: *https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/hva/.*

- Other: The Workgroup completed the comparison between the State's pediatric annexes. This comparison identified opportunities for coordination to address gaps. Recommendations were integrated into the Regional Metrics Scorecard, which was created by accessing national databases, and is designed for use by regional health care coalitions.

Strategy 2: Explore legal and policy coordination and alignment

The Legal Workgroup's review included the laws related to deployable teams, health care professionals working across jurisdictions, and EMA and EOP coordination in a large event (without a federal declaration). The review compared both states and outlined opportunities to create synergy between them.

Specific Workgroup activities included:

- Legal: The Workgroup incorporated the scarce allocation of resources and crisis standards related to pediatric COVID and other disasters into the ethics and legal review. The Workgroup developed a white paper comparing the two States. It created a state-based crisis scorecard as a component of the legal document.

Activity C: Enhance statewide and regional medical surge capacity for pediatric patients

Strategy 1: Develop regional capability to provide highly specialized clinical care for pediatric patients including children with special health care needs.

The Regional Metrics scorecard for community-level situational awareness, which includes CYSHCN, is complete. The audience for the scorecard is regional health care coalitions. Behavioral health educational tools related to the COVID-19 pandemic and other topics for children and families in a disaster are available, as are tools for health care professionals. Education regarding the needs of CYSHCN during disasters has been presented in a toolkit for health professionals and families; video and infographics were created in multiple languages and will be available on the EIIC website. Exercises were conducted on the virtual platform, which allowed multiple avenues to increase coordination within the region and explore how to support health care professionals that do not usually care for pediatric patients.

Specific Workgroup activities included:

- Behavioral Health: The Workgroup disseminated training and the literature review in Year 1. The Workgroup conducted resource and education support for telemedicine and its members made several national presentations, including at the 2021 Preparedness Summit. The Workgroup made three presentations to Ohio EMSC's statewide prehospital community on pediatric behavioral health. (Also see below, Regional Metrics Workgroup.)

- Children's Hospital Survey: The Workgroup reviewed metrics available for children (including CSHCN) for community-level information to assist with Regional Metrics and situational awareness. The intent is to create a score card in conjunction with WRAP-EM and national SMEs.. As noted above, the survey was completed and data reviewed. Information was shared with Michigan. The Ohio resurvey was completed in April 2020, and data analyzed. The results will facilitate regional health care coalitions understanding of who the pediatric experts are in their States, and where they are located.

- Education: The Workgroup made a presentation at the 2021 Preparedness Summit. As noted, it reviewed literature and gaps on CSHNC for use in developing a toolkit, video, and infographics.

- Regional Metrics & Behavioral Health Workgroups: The Workgroup reviewed metrics available for children (including CSHNC) for community-level information to assist with regional metrics and situational awareness. The effort was coordinated with WRAP-EM and members of the EIIC's Disaster Domain, with the intent to create a scorecard in conjunction with WRAP-EM and national SMEs. The work on the scorecard will be integrated with EIIC's Disaster Domain's Regional Metrics Subcommittee to ensure broad SME input. The scorecard is intended for use by regional- or state-level

Emergency Managers. Data points were identified for the scorecard and assessed with respect to their availability and accessibility in national databases. preliminary scorecard was reviewed by Regional Healthcare Coordinators, the American Academy of Pediatrics' (AAP) State Disaster Champions, and an EIIC Disaster Domain Scholar. A presentation was made at the 2021 Preparedness Summit.

- Quality**:** The National Readiness PQRC Disaster bundle was modified for this grant and 31 hospitals enrolled in the Collaborative.[13] The deadline for participants was extended, due to COVID-19, until March, 2021. The Collaborative concluded with a virtual reunification drill conducted on April 27, 2021. Participants aggregated the best practices and shared them among the group.

Strategy 2: Develop a regional deployable pediatric response capability

There are many means by which to support a region's increased medial surge capacity—the Telehealth Exercise provided a demonstration of some of the proposed situations that could achieve this goal. A Proof of Concept for a Pediatric Coordinating Center was created for each State; this concept will need to be further funded and evaluated in order to be implemented. The Legal Workgroup's review included the laws related to deployable teams, health care professionals working across jurisdictions, and EMA and EOP coordination in a large event (without a federal declaration). The review compared both states and outlined opportunities to create synergy between them.

Specific Workgroup activities included:

- Legal: The Workgroup conducted a review of laws related to deployable teams, EMS working across jurisdictions, EMA, and Emergency Operations Plan (EOP) coordination during a large event that lacks a Federal emergency declaration. A white paper of findings was drafted and finalized.

- P-DART: The Workgroup discussed the concept of deployable pediatric teams with partners and developed the concept in a white paper. The Workgroup developed State pediatric coordinating centers to assist with assets for a pediatric event and with the proof of concept. Michigan and Ohio adapted the pediatric coordinating center to a model that fits for each state.

Strategy 3: Coordinate with entities within and outside of the region to develop a model for pediatric telemedicine and telementoring capability

[13] https://emscimprovement.center/collaboratives/pediatric- disaster-preparedness-quality-collaborative/

The Workgroups demonstrated how to coordinate, increase capacity, and enhance capability using various platforms during the virtual exercise. Please see the After Action Report for full details.

Specific Workgroup activities included:

- Education: The Workgroup completed a Delphi of disaster competencies with experts and an education literature review and gap analysis. It created materials on CSHCN to be delivered via JIT on telemedicine platforms for health care professionals. The Workgroup also created a toolkit for families of CSHCN. It completed a concept of operations report that emphasized a whole-community approach to integrating pediatric disaster preparedness.

- Telemedicine/Telehealth: The Workgroup purchased and disseminated equipment and conducted training on the equipment's use. Protocol was developed. The Workgroup conducted a drill on May 20, 2021, to test coordination and capability using various platforms.

Strategy 4: Assess and enhance pediatric tracking, transport, and reunification capabilities within the state and multi-state region

Details of the transport assets within the two-state region were quantified in order to gain a better understanding of capability within the region. A comparison of State bed-tracking system mapping assets was also explored; a pediatric-specific tool is currently in use in Michigan to demonstrate the usefulness of this tool. In addition, a Proof of Concept on the use of Essential Elements of Information (EEI) and transmission to bed-tracking systems from different Electronic Health Records (EHRs) was explored and described in the Proof of Concept. Concepts about regional reunification were explored in the virtual exercise held on April 27, 2021. Further details of differences in state wide approach to reunification were identified in the Legal Workgroup's comparison between the two states (see above).

Specific Workgroup activities included:

- EMS: The Workgroup identified and reviewed assets for specialized transport and State EMS protocols. It also conducted a comparison of the State protocols with national protocols. Results were summarized in a white paper.

- Information Technology: The personnel at PDCOE partner hospitals and state agencies reviewed platforms for consideration in a Proof of Concept operation for Health Information Exchange (HIE) to improve communication. The group also explored using electronic formats to place the Emergency Information Form (EIF) for CSHCN into an electronic health record. This Proof of Concept will require additional funding and support to complete. The Workgroup sought assistance for Missouri STARS program as part of the information-gathering effort. It worked with Juvare and EMResource to

create a pediatric-specific bed board that may be suitable as a model for other States to use; Michigan is using this product for bed identification.[14] Reunification was explored in an exercise conducted with the Quality Collaborative participants (held on April 27, 2021) as well as in the Legal Workgroup's review. Reunification is also part of an education bundle for hospitals; coordination will occur through the National Center for Missing and Exploited Children in case of a large event affecting unaccompanied minors.

Activity D: Increase and maintain health care professional competency through the development and delivery of a standardized training program

Strategy 1: Educate and train the health care and medical workforce on identified preparedness and response gaps related to the clinical management of pediatric patients.

Multiple educational tools are now available on the EIIC website, including assessment tools in the form of HVA and Regional Metrics Scorecard. These tools will enhance the knowledge that is currently available to help stakeholders understand the gaps for preparedness and response. There is more work to be done on both assessment and filling gaps for health care professionals who do not usually care for children.

Specific Workgroup activities included:

- Behavioral Health: The Workgroup provided materials to adapt to telehealth platforms that can support State mental health response teams. It provided a demonstration on delivering JIT Telehealth Exercise on May 20, 2021 (see the After Action Report).

- Education: The Workgroup collaborated with WRAP-EM to conduct a gap analysis and review competencies. It considered which materials about CSHCN are best-suited for JIT and use in telehealth platforms. Information on CSHCN was created and promoted on EIIC and ASPR TRACIE websites.[15]

- P-DART: Specific education needed for deployable teams was collated by the Michigan demonstration project and will be recommended as part of the contribution to the Pediatric Care Coordinating Centers.

Strategy 2: Provide expert training and technical assistance; Develops internal and external evaluation tools to allow for tracking the number of participants trained, demographic information of participants, whether there is a demonstrated increase in knowledge, and participant confidence to apply the skills learned when appropriate

[14] https://vimeo.com/534082594 (required password: spectrum)
[15] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/cyshcn/

The EIIC website has been adapted to provide technical assistance and training and dissemination. Analytics are available for the website. A landing site within the website has been created to disseminate materials coordinated by this group.

Specific Workgroup activities included:

- Education: The EIIC website was adapted to provide and disseminate technical assistance and training information created and coordinated by the Workgroup. Materials were placed on the website with content on COVID-19, behavioral health, exercise, HVA, and quality. Telehealth platform will also be used to support education efforts.

Strategy 3: Develops a mechanism to allow facilities to submit requests for subject matter expert based technical assistance and Develop an open- access online resource repository

Specific Workgroup activities included:

- Education: The EIIC website was adapted for dissemination of materials to national organizations National organizations that support health care professionals (such as the ENA, ACEP, etc.). In addition, a portal was created to track the dissemination of materials.[16] [17]

Activity E: Enhance situational awareness of pediatric disaster care capabilities and capacity and assess regional pediatric readiness

Strategy 1: Define the essential elements of information related to pediatric trauma, infectious disease (including PI and other EID), burn, and CBRN incidents

The components of essential health information and information about how to communicate during a disaster have been placed into a Proof of Concept for further exploration. (Note that the type of disaster is not as pertinent as the general information, which will be the same for various events.) The Proof of Concept includes integration on different electronic health care platforms and how the information can be shared on statewide bed-tracking systems . (Also see Activity C, Strategy 4.)

Specific Workgroup activities included:

- Information Technology: The Workgroup is exploring information-sharing as a Proof of Concept and integration with different Electronic Health Record platforms. This information may also be used on Statewide bed-tracking information systems.

[16] https:// emscimprovement.center/domains/preparedness/covid-19-coronavirus/
[17] (https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/

- Regional Metrics: Metrics are being identified that are important to children, can be easily accessed from public databases, and updated for use at the coalition and/or regional levels to inform situational awareness for day-to-day operations.

Strategy 2: Develop regional pediatric readiness metrics

A Regional Metrics Scorecard to support pediatric-specific situational awareness has been created for use by the regions. This tool further supports an ongoing review of components of the pediatric annexes. Bed-tracking with specific pediatric definitions was created with the state of Michigan; Juvare is currently in the trial phase to test usability in the state of Michigan.

Specific Workgroup activities included:

- Information Technology: The Workgroup explored information-sharing as a proof of concept and integration of statewide bed-tracking information as a means to assess situational awareness at the hospital level.

- Regional Metrics: The Workgroup considered parameters for situational awareness related to pediatrics. The Workgroup created a Regional Metrics Scorecard for use in the regions, which will support the pediatric annex review.

Strategy 3: Create a regional readiness self- assessment tool

A pediatric-specific HVA tool was developed for a hospital self-assessment. A Regional Metrics Scorecard was created that supports pediatric-specific situational awareness for regions was also created; it supports the ongoing review of components of the pediatric annexes. A pediatric disaster toolkit was drafted, to assist with pediatric disaster preparedness at the hospital-level.

Specific Workgroup activities included:

- HVA & Regional Metrics: The Workgroups collaborated to identify metrics for use in a self-assessment tool. The Workgroup developed a pediatric specific tool for a hospital self-assessment.[18] (This tool supports and supplements the toolkit developed by the Quality Workgroup to assist with pediatric disaster preparedness at the hospital level.) This is currently being revised into self-paced modules.

Strategy 4: Conduct regional exercise(s) to test capabilities
Three virtual exercises were completed. After Action Reports for all exercises are available on the EIIC website.

[18] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/hva/

Specific Workgroup activities included:

- Exercise: The Workgroup conducted one exercise in Year 1[19] It planned and conducted a Quality Reunification exercise (April 2021);[20] Telehealth exercise (May 2021).[21] After action reports were created for each exercise.

IV. CHALLENGES

The work of the ASPR PDCOE revealed two over-riding challenges:

- Pandemic occurring during the grant cycle, offered divergent challenges to achieve goals of the grant with in specified time frame, in addition focus of partners and state entities to be able to work on objectives for the grant.
- Two states with different styles of governing and organization of state entities made cohesive approaches to many projects across state lines a challenge.

V. NEXT STEPS

Most of the Workgroups identified activities that would be beneficial in advancing and deepening the progress and successes of the grant's first year. These are summarized below, and detailed in the associated white papers.

- Asset Map:
    - Continue working with Michigan to explore the use of the Biospatial program and test its abilities via tabletop exercises. Continue working with Ohio to implement the Biospatial program and operationalizing it across the state. The Workgroup will use the Biospatial program to further develop a robust asset map including children's hospitals within FEMA's Region 5.
- Behavioral Health:
    - Identify a regional and national network of psychologists to discuss ongoing pediatric disaster preparedness and response for their practices, discuss new developments in the disaster mental health literature, and provide ongoing support during catastrophic events to children and their families.
    - Continue working on integrating mental health providers into all aspects of disaster response and preparedness.
    - Hold breakout session within future tabletop exercises that specifically focus on how medical professionals can identify and triage mental health concerns.

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[19] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/exercises/eglpcdr-virtual-pediatric-exercise/

[20] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/reunification/

[21] https://emscimprovement.center/domains/preparedness/asprcoe/eglpcdr/telehealth/

- Pilot the anticipate.plan.cope program with other groups and tailor it for parents/caregivers of CSHCN.
- Share the process for developing the *Pediatric Exit Care Instructions for Confirmed or Suspected COVID-19* via statewide and regional trainings for mental health care professionals, and engage psychologists who lack specific expertise in pediatric disaster preparedness/response and/or trauma-informed disaster response.
- Offer to assist children's hospitals to develop updated school playbooks, as needed during the pandemic, using *Healthy School Playbook Restart* recommendations as a model.
- Develop and implement plans to distribute Workgroup materials to statewide, regional, and national entities, including the findings of the Ohio Childcare Study and the disaster mental health literature review, such as via the Special Issue of *Children's Health Care*.
- Develop a "remote implementation guide" for the *the ACT Raising Safe Kids Program,* for use by national and international ACT facilitators.
- Provide trainings and webinars on PFA, SPR, TF-CBT, as well as other issues, with the goal of building a coalition of trained individuals who can assist during disasters.

- <u>Children's Hospital Survey</u>
  - Distribute the data and analysis for use both within Ohio and Michigan and across state borders; this will be of benefit if/when children's hospitals are at capacity and/or cannot be operational due to disasters.
  - Further refine the survey and use the updated survey to collect data across FEMA's Region 5 and other US regions.
  - Explore the development of a Federal Pediatric Bed Board to facilitate hospitals' identification of institutions with specialty providers and/or services needed during surges and disasters.

- <u>Education</u>
  - Use peer-to-peer technology to mobilize the broader pediatric community and strengthen response and capability to enhance virtual solutions to educational needs.
  - Create models that frontline workforce and communities can use to address children's need during the disaster cycle (mitigation, planning, preparedness, response, and recovery), such as the CONOPS.
  - Promote the establishment of regional pediatric disaster response systems to reduce operational barriers across jurisdictions.
  - Promote the CONOPS as a way to integrate children into multi-disciplinary disaster education and promote whole community resilience.

- <u>EMS</u>
  - Based on the findings from the legal and ethical analysis, work to improve alignment of prehospital pediatric disaster care by developing and promoting a common operating picture.

- Work to create processes and activities that improve coordination among prehospital procedures, protocols, and assets among states neighboring Ohio and Michigan.

- Exercise
  - Develop and implement additional exercises, particularly those that can be delivered in-person (as possible) and that include additional rounds of fully operational drills and exercises.
  - Expand the playbook to four additional states; analyze and resolve remaining obstacles to coordinated response.

- Facility Recognition
  - Help develop recognized pediatric facility and medical recognition programs for Ohio and Michigan.
  - Work on fostering standardization of pediatric facility and medical recognition programs (e.g., requirements, levels), including the inclusion of pediatric considerations into disaster planning activities and expand to FEMA region 5.

- HVA
  - Create a standardized model for a pediatric annex within the Michigan and Ohio regions, and formalize an annual review process of pediatric annexes to be conducted by pediatric disaster experts.
  - Broaden current HVA templates to include pediatric-specific implications and HVAs that highlights implication of all hazards on children. Consider standardizing the impact and severity measures for various geographic regions around the United States.
  - Create a publicly available database that provides pediatric-specific implications for all hazards (including, but not limited to data on hospitalization, injury patterns, morbidity, and mortality), and highlight these data within HVA templates for hospitals and regional planners.
  - Expand the infographic on HVA for Regional Disaster Coordinator to include state-based data across the US, and help hospital and regional emergency management leaders incorporate these documents into their planning.
  - Recruit hospital and/or regional emergency managers to determine the usefulness and applicability of the pediatric-specific disaster framework for use in HVA templates, and refine the template based on feedback and actual use.

- IT
  - Advocate for information on resources, bed availability, and capacity be shared after the end of the COVID-19 pandemic.
  - Automate situational resource awareness and patient tracking to eliminate manual entry errors, unnecessary personnel distractions, and duplicated efforts.
  - Expand bed availability and resource awareness between Michigan and Ohio, and eventually within the entire FEMA 5 region.

- Obtain permission and technical aspects to connect WebEOC systems and patient tracking systems between Michigan and Ohio, and eventually within FEMA's Region 5.
- Ensure funding to link with HIE systems to promote safe and secure information-sharing for maximum clinical treatment plan regardless of patient location.
- Explore universal template formatting to send and receive information to avoid mass data dumps that make information-gathering cumbersome.
- Support efforts to standardize interoperability of systems nationally.
- Create the Eastern Great Lakes Pediatric Consortium for Disaster Response Situational Awareness Dashboard as a one stop location for bed availability, resource awareness, patient tracking, and health information.

- LEGAL
  - Distribute and promote the legal resource (e.g., playbook).
  - Address regulations about telemedicine's use, provision, and billing to ensure full and optimal regionalization of response and resource-sharing.
  - Expand the expand the playbook's analysis to four additional states, and analyze and resolve remaining obstacles to coordinated response.

- P-DART
  - Continue to develop and refine alternate models that fulfill the P-DART role and support pediatric populations affected by disasters.
  - Research expanding P-DARTs' role into the mitigation and preparedness phases.

- Regional Metrics
  - Implement the measurement tool, which was developed during the grant year, as a quality study.
  - Feedback from tool will be used to revise tool and distribute widely.

- Supply Chain
  - Increase engagement with Regional Coalitions and Coordination groups that are dedicated to strengthening the supply chain.
  - Enhance disaster-specific resources and data capabilities.
  - Track and participate in Federal efforts to strengthen supply chain resilience.

- Telehealth
  - Engage in activities to expand telehealth for pediatric disaster and response from the provision of care to also include Emergency Management.
  - Identify, test, and implement policies, best practices, and networks that leverage telehealth for emergency management functions.

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VI. APPENDICES

- **Appendix A. Abbreviations**
- **Appendix B. ASPR Workgroup Members** – provided as separate document
- **Appendix C. Year 1 Final Report ASPR COE Grant** – provided as separate document
- **Appendix D. Year 1 Workplan** – provided as separate document
- **Appendix E. Publications and Presentations** – provided as separate document

Attachment A. Abbreviations

AAP	American Academy of Pediatrics
ADA	American Disability Act
AFN	Access and Functional Needs
AHA	American Heart Association
AED	Automated External Defibrillator
APLS	Advanced Pediatric Life Support
ASL	American Sign Language
ASPR	Assistant Secretary for Preparedness and Response
CBRNE	Chemical Biologic Radiologic Nuclear and Explosives
CC	Closed Caption
CDC	Center for Disease Control
CERT	Community Emergency Response Team
CFAN	Children with Functional and Access Needs
CME	Continuing Medical Education
CMS	Centers for Medicare & Medicaid Services
COCA	Clinical Outreach and Communication
CONOPS	Concept of Operations
COVID-19	Coronavirus Disease 2019
CPR	Cardiopulmonary Resuscitation
CYDMN	Children and Youth with Disabilities and Medical Needs
CYSHCN	Children and Youth with Special Health Care Needs
DMAT	Disaster Medical Assistance Team
ED	Emergency Department
EIIC	EMS for Children Innovation and Improvement Center
EGLPCDR	Eastern Great Lakes Pediatric Consortium for Disaster Response
EGL/EIIC	Eastern Great Lakes
EMS	Emergency Medical Services
EMSC	Emergency Medical Services for Children
EMSC-II	Emergency Medical Services Innovation and Improvement
ESAR-VHP	Emergency System for Advance Registration of Volunteer Health Professionals
ESTI	Emergency Services Training Institute
FAQ	Frequently Asked Questions
FEMA	Federal Emergency Management Agency
GAO	US Government Accountability Office
HHS	Health and Human Services
HCC	Health Care Coalition
HRSA	Health Resources and Services Administration
HSEEP	Homeland Security Exercise and Evaluation Program
ICS	Incident Command System

ICU	Intensive Care Unit
IDEA	Individuals with Disability Education Act
IHI	Institute for Healthcare Improvement
IHME	Institute for Health Metrics and Evaluation
JIT	Just in Time
KSA	Knowledge, Skills and Abilities
MIS-C	Multisystem Inflammatory Syndrome in Children
MMWR	Morbidity and Mortality Weekly Report
NCCD	National Commission for Children and Disaster
NCDMPH	National Center for Disaster Medical and Public Health
NDMS	National Disaster Medical System
NEDARC	National EMSC Data Analysis Resource Center
NASEMSO	National Association of State EMS Officials
NEJM	New England Journal of Medicine
NETEC	National Emerging Special Pathogens Training and Education Center
NOAA	National Oceanic and Atmospheric Administration
NREMT	National Registry Emergency Medical Technician
NRP	Neonatal Resuscitation Program
OCR	Office for Civil Rights
OES	Office of Emergency Services
PALS	Pediatric Advanced Life Support
PDCOE	Pediatric Disaster Center of Excellence
PBLS	Pediatric Basic Life Support
PDSA	Plan Do Study Act
PECC	Pediatric Emergency Care Coordinator
PICU	Pediatric Intensive Care Unit
POPCORN	Pediatric Overflow Planning Contingency Response Network
PPE	Personal Protective Equipment
Project ECHO	Project Extension for Community Healthcare Outcomes
PRQC	Pediatric Readiness Quality Collaborative
PsySTART	Psychological Simple Treatment and Rapid Triage
REMM	Radiation Emergency Management
SBAR	Situation Background Assessment Recommendation
SAMSHA	Substance Abuse and Mental Health Services Administration
SARS-CoV2	Severe Acute Respiratory Syndrome Coronavirus 2
SME	Subject Matter Expert
TEEX	Texas A&M Engineering Extension Services
TRACIE	Technical Resources, Assistance Center and Information Exchange
WHO	World Health Organization
WRAP-EM	Western Response Alliance for Pediatric Emergency Management

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