

Dr. Edgerton: Hello, everyone. Welcome to the maternal web base here at HRSA. My name is Dr. Beth Edgerton and I'm delighted to let you know we're going to be presenting this webinar on EMSC for children, opportunities to enhance pediatric emergency care through trauma performance improvement. We're honored to have three guest speakers, Dr. Brice, Ms. Fritzeen, and Dr. O'Connell. All three will take us through approaches to trauma performance improvement from the assistance level with Dr. Brice, the provider level with Ms. Fritzeen and the patient perspective with Dr. O'Connell. The EMSC program is in the 5th year and has been able to fund every state and territory over that duration. Our funding programs focus on a few specific areas, improving, refining, and integrating pediatric care within the state EMS system, finding new approaches to provide the best possible emergency care for children across the nation, supporting a multi-institutional network for research in pediatric emergency medicine, and improving access to specialize pediatric medical treatment in areas where such care is limited due to geographical distances or jurisdictional borders. Today's webinar will focus on targeted grants. They're innovation grants. Funding opportunity that allows us to address specific needs or concerns of national significance to the delivery of pediatric emergency care and are considering cross cutting and able to be replicated in other studies. They usually focus on a new products, a resource, or illustrate best practices in emergency care. In a moment, I'll introduce our speakers, but I wanted to take a moment to let you know that we will have a question and answer session at the end of the webinar, but please submit your questions as they come up during the webinar. We'll keep track of that. We'll try to address all of those issues. This webinar is being archived, so if you have friends that were not able to attend today, you'll be sent a link in approximately two weeks where the archive webcast can be obtained at the NCHB website. And in addition, we're honored to be able to provide continuing education and those links will be provided at the end of the webinar for you to access the continuing education credit for today's session. So today we're honored by our three speakers. Dr. Jane Brice is the Principal Investigators and Target Director for EMS, and pediatric trauma, a North Carolina population-based performance improvement prevention and evaluation, using multiple linked healthcare data bases, which is based at the University of North Carolina at Chapel Hill. Dr. Brice is the professor of the University of North Carolina's Department of Emergency medicine, and serves as the Orange County EMS Medical Director and the Chair of the University of North Carolina Hospital Disaster Committee. Ms. Jennifer Fritzeen is the Program Manager for the Trauma and Burn Industry in Washington, D.C. She functions as the Project Coordinator for this targeted issues project entitled reducing errors in pediatric trauma resuscitation using a checklist. The P.I. for this is Dr. Randy Byrd who is unable to join us today. And finally Dr. Karen O'Connell is the Principal Investigator and Project Director of her targeted use project entitled Family Presence in Pediatric Trauma Resuscitation, measuring the effects of a multidisciplinary approach to family centers care. She's also attending physician in patient safety of the Emergency Medicine and Trauma Center in Children's Medical Center. She's been practicing and studying the emergency department for over 20 years. Again, we have no disclosures to share. And again, this is the information about the continuing education. You'll need to complete the evaluation by October 31. And, again, that link will be provided to you at the end of the webinar. So Dr. Brice, if I can hand the slides over to you and let you start your component. Thank you. >> Dr. Brice: First I want to thank the EMSC folks for sharing the money with us today. We thought of the longest title we could for this study. We could have put a few more words in there, I think, but maybe not. The purpose of our study was to do a three-year review of pediatric trauma outcomes before and after an implementation

project that involved a three-pronged EMS intervention. Our study was designed to improve destination decision making of EMS providers in North Carolina. So far, we have collected our before data and are in the process of linking it with a variety of other healthcare data bases to look at outcomes. And we will not collect our after data until sometime around the end of October. We looked at interventions that were targeted specifically for EMS providers, for the pre-hospital personnel who take care of children in the field. In the -- the interventions were designed to improve destination decision making. Do I go to a trauma center or do I not need to go to the trauma center for this particular child. Our interventions were not designed to impact clinical care. As I said, it was a three-pronged intervention strategy which involved educational courses, a preplanning tool for destination decision making, and a performance improvement tool. We chose these three intervention strategies -- these three-pronged intervention strategies because we really believe that they're interconnected and one drives another. And that you must provide education and guidelines for EMS providers. But beyond that, you have to provide feedback and you have to measure performance in order to change your education and guidelines. And that is a -- that's a circuit that functions together as a whole. Our educational course was called injured children -- right decision, right destination. The broad objective was to provide tools to recognize a child with injuries that required advanced care. And to help EMS providers make the right destination decision. We actually developed two courses. One was designed specifically for EMS providers. And the other was designed for telecommunicators. It's our very strong belief that the telecommunicator is left out of EMS planning and communication and we want to target this population. The educational courses were web based. A flash presentation with slides and voiceover. The content was also available on-line for reading and review. We specifically designed in a start, stop, and resume feature because EMS providers almost always take educational courses at work. And they are often called away from their computers to respond to emergencies and there had to be a feature in order for them to walk away from the computer and be able to come back and resume where they left off. Our course was structured similarly for both courses for both the EMS and the course. There was a pretest to measure what they knew before they took our courses, and then there were four modules for EMS and two for . Each module had review questions at the end so that providers could review their knowledge gain and go back and remediate anything that they had not adequately mastered. The EMS course, there were two case studies, and for . One case study and a post-test for both courses provided us with some measure of knowledge gain. The course content for both courses was similar. It covered the epidemiology of pediatric injury, recognition of injured pediatric patients, discussion of destination types, and then destination decision making and how to perform them in the field. Our course was developed in two stages. An initial draft was reviewed by care providers from the hospital side. So that would be pediatric emergency physicians, pediatric trauma surgeons, EMS physicians, and emergency epidemiologists. A second draft was created reviewed by field providers, EMS field providers, the advisory committee, and telecommunicators and NC office of EMS. The contract with a company called AHEconnect. They provided us with graphic artists and our voiceover. Course delivery was conducted through hosting by on the EMSP website. EMSPIC stands for emergency medical services performance improvement center, a group here in North Carolina. Credit was obtained once a posttest was passed and CEU credit was provided to the North Carolina office of EMS for the field providers. This is what the initial sign up for the course looks like. This is a screen shot of the front page. And you can see, we collected a number of demographic

information pieces that help us understand who took the course. Everyone in North Carolina has a state I.D. if you're an EMS provider. So we were able to track who was taking the course through the state I.D. Persons not signing up for credit were asked to provide additional demographic information so we could understand who was taking the course. The course itself as you can see, was divided into several modules that you could track on the left-hand side of the screen you're looking at. And providers were able to track through the course of each of the modules' case studies and on to the post test. The case studies were a component of learning. And helped us provide integrated learning by taking all of the material they had previously learned and applying it to a case. There were two cases for EMS, and not one for . Then students took a pretest to assess knowledge beforehand as I mentioned. Followed at the end of the course by a post-test which was mandatory and once they had passed that, they were given CEU credits. We've taken a look at who took the course. In this table, you can see the number of registered North Carolina providers. So this is how many people in North Carolina are certified at each of those levels. For instance, at the EMT basic level, , providers. In the next column, you can see how many people took the course in each of those categories. You will note that some paramedics, for instance, took the dispatcher course. That's because in North Carolina people often serve dual roles in their system, so they may be a paramedic on one day and a dispatcher on the next. So they may have chosen to take both courses. From the EMS responder side, you can see how many people took the course and what percentage of the total in North Carolina took the course. We are pleased to see that percent of our providers took it and almost percent of our telecommunicators took the course. This next table helps us understand our participant demographics. As you can see, the majority of people took the course for credit. And the age, gender, and certification levels fall out generally in line with our distribution in North Carolina. This also helps us understand a little bit more about our participant demographics. The majority of our telecommunicators were nonvolunteer, our EMS responders were more of a mix between nonvolunteer and multiple, which means they occupied both volunteer and nonvolunteer categories. You can see that the majority of our folks were from governmental nonfire organizations or from mixed organizations, which is typical for North Carolina being a rural state with many people holding both paid and volunteer jobs within our state. Our educational and primary work levels as well as primary work environment fell out, again, along North Carolina distributions and is fairly typical for what you would expect to see in our state. We found that most people were able to successfully complete the course. We're now trying to dive into the course a little bit and see where it is that people who did not complete the course fell out so that we can make modifications in the course to make it easier for people to complete. And that there was a significant knowledge gain. Our second intervention was preplanning tool for destination decision making. We wanted to make sure that the right patient got to the right care at the right destination within the right amount of time. In North Carolina, in January of , the North Carolina office of EMS mandated the use of what they called triage destination plans, utilizing the expert panels field triage guidelines, they merged the guidelines to specific destination decision making. What this meant was, as you can see in the next slide, that using this template with the field triage guidelines on the left, each EMS system was asked to fill in the right side of this page with the exact location of the trauma center to which they wanted their personnel to take injured patients who met the guidelines on a regular basis. It's very hard for EMS field providers who are standing on the side of the road in the middle of the night in the rain to figure out which trauma center is closest and whether their patient should go the extra

minutes to a trauma center or go to the closest hospital. And this preplanning tool took that decision making out of their hands and made it part of their protocols that they would indeed drive the extra minutes for critically injured patients to take them directly to the trauma center rather than directly to the closest facility. We wanted to take these guidelines and modify them, specifically for pediatric trauma, which the North Carolina of EMS had not opportunity. So utilizing the pediatric specific components of the field triage guidelines, we created a destination plan and provided this to the North Carolina office of EMS for distribution to EMS systems across the state. And this is what it looks like. It, again, takes the field triage guidelines on the left, specifically for pediatrics and asked EMS systems to put into protocol where they want injured children taken in their state. We've looked at this a little bit to try to figure out who's creating these plans and how they distribute them to their EMS providers and how they maintain these plans. These were not designed to be static plans, rather dynamic plans that would change as hospital systems change and as guidelines changed. So who creates the trauma destination plans? We found that for the most part, there are three entities that are at the table when these are made. That's the county medical director, EMS medical director, and the county training officer. Less often, unfortunately, are county hospital representatives at the table to verify their hospital's capabilities and be involved in the conversation. We found that they are almost always distributed through face-to-face meetings, less commonly through other distribution methods such as on-line education or part of protocol. In one instance, they did not have a method for distributing their plans, which concerned us a bit. The maintenance of the plans would typically change with hospital changes less often on a regular basis and some systems had no plan to revise to maintain or revise their plans. Our third intervention was a performance improvement tool kit. This was a message to provide feedback to EMS systems about how well they're adhering to their protocols and how often they're taking children to the right destination. North Carolina has a state-wide EMS data base that allows us to create these types of performance improvement tools. These are large comprehensive performance reports about specific types of clinical events. And in North Carolina, there were six types. We actually have created the seventh. So trauma, stroke, acute myocardial infarctions, general pediatrics, the response times and cardiac arrest were the in the tool kit when we began. Utilizing the tool kits took system parameters like patient care, service delivery, personnel performance, and through the tool kits were allowed systems to benchmark their performance against regional or state performance providing recommendations for improvement. The adult tool kit was developed by a national panel of experts. There were people at the table when the adult trauma tool kit was created. They agreed on the definition of a trauma patient and the content of the tool kit. We took their work and modified it specifically for pediatrics such that the pediatric tool kit mirrors the adult tool kit, limiting the age to less than years. And this is what pieces of the tool kit look like. This allows the EMS systems to is have a , foot view of exactly how many patients met the trauma criteria, how many were treated, how many were treated and released. How many were not transported or refused care. It also allows them to take a look at how well they're documenting in their system and completing the data elements required for the statewide EMS data base. It allows them to understand their county fatality rates for trauma and how they compare both to North Carolina as a state and to the United States as a whole so that they can see where they fall out in that category. I'd be pleased to answer any questions if you want me to, but I'm not sure if you want me to answer questions now or later. >> Dr. Edgerton: We're going to wait until the end. If people have questions coming up, please write them in the question box so we

have a queue when we get to that point. >> Jennifer Fritzeen: I'm Jennifer Fritzeen and I'm going to take over on impact of a checklist on ATLS task performance during pediatric resuscitation. We did this via funding provide bid the HRSA grant and all work has been approved by the children's national IRB. Advanced trauma life support is the accepted standard for the first hour of trauma care. It's been shown to improve outcomes and really has taken trauma care to that next level. However, despite training in the ATLS certification, we do find that the ATLS applications persists, even with those who are not the most experienced and useful. To look at the background, just with the checklist in general. We know that checklists are used in protocol-driven domains such as aviation. They have been introduced to medical domains by the WHO surgical safety checklist and other areas such as infection control procedures. I can imagine that if your institution is like ours, you're seeing more and more checklists pop up every day. The -- we're using them to increase the protocol adherence. We use them to improve team communication and really checklists have shown to improve outcomes such as decreasing mortality and we've shown decreased infection rates. So, we decided to use a checklist to look at our ATLS performance. To develop the checklist, we collaborated with a group of human factor specialists who work primarily in the domain of aviation and brought them here to work with our medical team. We had a focus group which was multidisciplinary and had about three meetings when those focus groups looked at what elements needed to be included in a trauma -- trauma ATLS checklist. Once the checklist was developed, we have simulation sessions to check the checklist. In each session, we ran four scenarios -- two scenarios we ran with the checklist, and two scenarios we ran not using a checklist, letting our team run the trauma, resuscitation, however they were comfortable. With the two checklist -- with the two scenarios in which they used the checklist, one scenario we asked them to use the checklist using a to-do method. The to-do method allows the resuscitation to take place. And then pause after the primary -- the primary survey allowed them to do the whole primary survey evaluation, pause, and go through and see if there's areas they missed using the checklist. We had the second scenario using a verification or a challenge response method in which the administrator at the checklist would state what needs to occur next. And the person doing the evaluation would then do that task. For instance, the administrator would say, breath sounds. That's when the evaluator would check the breath sounds and report back the evaluation. During the simulation testing, we measured ATLS task completion using an ATLS performance score. We measured compliance with the checklist use. And we also measured workloads -- we did a workload survey using the TLX. Because we wanted to make sure that if some of these checklists didn't put more work on the trauma team and decrease their ability to be able to focus on the actual trauma itself. Results of our simulation testing showed that it improved ATLS performance score when we used the checklist, that there is improved ATLS performance score with the improved checklist compliance. And we found that it didn't matter how they used the checklist, whether they used the to-do method or the challenge response, just the fact that they used the checklist showed improved ATLS performance score. Overall, there was no change in workload as a team member, so putting this checklist into their hands did not make them feel like their workload had increased. Our conclusion after the simulation was that the checklist improves performance and it was safe in evaluating and in actual resuscitation. Which allowed us to move to an implementation period. We did a three-month introductory period before we started collecting data. The goal of the three months was really to let the administrator or the checklist and the trauma team touch the checklist, play with it, give us feedback, allows us to do some minor modifications based on

the real life scenario. And it also allowed us to get some of the logistics in place as far as how are we going to store it, where is it going to go in the charts. How we would collect them afterward. Once we were ready to go live, we presented the checklist in our trauma meeting. We put together a training video with the help of our human factor specialist partners to teach the trauma leaders how to use this checklist. And this is something that we can continue to use as our residents change over, our fellows change over. And we did some orientation, with our trauma leaders at the beginning of the rotation, not only with the video but one-on-one orientation of how to use the checklist. What you see now is really a final version of where we're at right now with the checklist. We use a paper version. It's divided to four different sections. The pre-arrival section, to be completed before the patient arrives. A primary survey section, a secondary survey section, and a departure plan. When you use the to-do method, what we suggest is that if each of these four boxes, you allow your evaluator to complete the task and then pause at the end of each section to do the to-do list check. All right, to go back, the gray areas that you see are areas that are -- that we reserve for our higher acuity patients. The white area is for OP patients. So, we did a pre-post study once we went live. We did a pre -- we had two -week periods. Pre-implementation period of time may through August of in which we watched videos of all of our resuscitations. And we're able to get data. And then we had a post-implementation stage that was May through August of , again, watching all of our trauma activations in order to collect data. Trauma activations are filmed from two different angles. One is over the bed so you can see the team at the bed providing care. The other angle in the back of the room allows you to see the whole team. We would look at our evaluation from both angles in order to be able to get all of the data needed. When we reviewed the video at the time of the resuscitation, we looked at ATLS primary survey tasks and reviewed ATLS secondary survey tasks. The differences between our cohorts calculated with the characteristics, the age of the demographics, the frequency of and mean of time for task completion. And we used the Pearson's Chi-squared and T tests. These are characteristics. You can see PRE and post the test implementations that it did not deliver. The next slide shows the primary survey tasks, pre in the grey and post-implementation in the black. You can see areas where I had red star above, O-places, pulses, and exposure. They had significant pre checklist versus post checklist. You can see things like airway, breathing, Did not really change much. We had a high score, pre-checklist implementation. And it's hard to really improve upon that high score in the post section. The next slide shows our frequencies were not significant. All of the frequencies were high in things like temperature, heart rate, respiratory rate. But what we really want to show in this slide is that the completion is significant. That we could do using a checklist, we could complete these tasks faster with the checklist than we could complete them in the pre-checklist phase. This slide shows our secondary survey results. I apologized. A couple of my red asterisks got a little off with the slide placement, it looks like. We looked at a total of tasks. You can see here with the stars, we had eight exams that were significant for improvement using the checklist, and those include evaluation of the head, eyes, face, nose, mouth, neck, chest, and pelvis. Again, we -- you can see there's some areas that pre and post checklist, the evaluation was relatively the same. Not a lot of room for improvement when you were doing well. Overall, you can see, this is exactly the mean ATLS test completion pre and post checklist implementation. We looked at tasks, the primary and secondary survey. Pre-checklist implementation, the team did an average of . total survey tasks. Post implementation, we looked at . showing that post checklist implementation, teams average doing two more of the ATLS tasks than they

did in the pre-phase. Usage by our team leader was percent of resuscitations had checklist utilization. It showed improved ATLS completion in the primary survey, . tasks, significantly improved. In the secondary, I showed that eight tasks were significantly improved. And overall, we had over two tasks completed more in each resuscitation than in the pre-checklist. The good news is that no tasks were actually completed less frequently. So we only showed improvement. And in summary, with the results, we were able -- there's no delay in evaluation. We were actually able to do vital sign measurement faster. There was only one task that became significantly slower in time to completion. That was our blacked out scale. The reason that became slower, pre-checklist, we just asked for a total GCS score. During the checklist implementation, we started asking our teams to provide us with each level for GCS. We asked for verbal and motor to go -- to the data. So it took a little bit longer in order for them to be able to report the values versus one. There was no change in total resuscitation time. The pre-checklist and post-checklist averaged about . minutes. So our checklist doesn't make a trauma resuscitation take longer. Since completing the study, we have been diligently working on getting a pediatric trauma resuscitation checklist tool kit available. We are just inches away from being able to release to the public. So it is coming very, very soon. Things that are included in our checklist are really lessons that we've learned. At the beginning, determining the elements of your checklist, each trauma center team has different elements in which they need to include or not include. We had a lot of education to our focus groups as far as what elements should be included in a checklist. And not everything that you do needs to be included. We really looked at what every single patient needed. And we looked at what elements are easy to forget during the chaos of a trauma resuscitation. And those have to be included. The other element of the multidisciplinary team did finding the components of the checklist is that we used representatives from every service that provides care in the trauma resuscitation day. And you find that depending on your area of specialty, obviously that's where your focus goes. If we would have left this checklist to anesthesiologists or therapists, it would have been heavy the A and B sections versus the entire trauma evaluation. And so the moderator of that focus group really does have to work within that interdisciplinary team to equalize the -- the needs of components throughout the trauma evaluation. Other tips to implementing are the arguments that you're going to hear from those in your trauma team. I don't need this. I've been doing trauma resuscitations for years. I don't need a checklist. We can show you with the data that even those who have been doing this , plus years still do miss ACLS components. None of us are exempt from this. It does not take any longer, you have that argument. We have the data we can show. And it will never work. Based on our data, we can show that it does significantly improve your primary and secondary pass. Other tips to implementation, these are logistical. Who will be your trauma team member that will administrate the checklist. At our institution, it's the surgical coordinator who is in charge of the event. We looked at other disciplines do this also. We consider it having the ED physician doing it. We considered having the ED nurse do it. We played with it a little bit to see who the best person would be. In the end, we used the surgical coordinator. Do you want your checklist to be paper checklist or electronic? We're considering an iPad APP to be able to do this. Right now, we're on paper. One thing on paper, it's whose responsibility is it to stock it, it's in the chart. And whose responsibility will it be to monitor and look at compliance. The last tip for implementing we focused heavily on in the tool kit is the leadership component. The leadership, whoever you decide to run your checklist, the ability to communicate with the team. The ability to articulate the checklist, and pull back

information when not getting it. And really the ability to control the room. The more chaotic, the more it tells us how to bring that room back to the task at hand. One thing we have noticed and our leaders really appreciate is when they are reading off components of the check list, if there's something on the checklist that the team doesn't agree about or doesn't think they should be doing, the team leader uses the excuse that this is the checklist. It's on the checklist, it's not me asking you to do it, it's the checklist asking you to do it. So it's really improved compliance in some of the areas of the process improvement that we have worked on for quite a while. In conclusion, the checklist significantly improves task completion and task completion frequency and decreases time to first vital sign measurement and does not increase resuscitation duration. This slide shows the components of our full research team. And we will take questions at the end. Thank you. >> Dr. O'Connell: Thank you, Jenny. I'm Dr. Karen O'Connell. I'm going to talk about trauma care. I want to thank HRSA for giving us the ability to study the pediatric trauma and sharing our thoughts and findings today with you. I would like to start with background information about family center care to give historical perspective surrounding the discussion. So since we're talking about trauma today and our study focuses on trauma, I want to remind you that trauma is the leading cause of child morbidity and mortality. Tragedy affects the whole family, especially when children are involved. Family plays a crucial role on patients especially when discharged home. Parents have traditionally been separated from their children during the initial phases of trauma care, which most institutions is called a trauma STAT or a trauma team. So families are the care givers of pediatric patients. When you treat the child, you're treating the entire family. The patient center of care is a care delivery model that focuses on mutually including family in the care giving and decision making. You're establishing a partnership and collaboration amongst the families, the patients, and the healthcare providers. This gives families a sense of -- that they are part of the team and then again that they are sharers in the decisions that are being made about the child. The model is grounded in the four principles of dignity, respect, information sharing, participation, and collaboration. So one asset of patient family center care is we're familiar with in the emergency department is family presence. The Emergency Nurses' Association are big advocates and has defined family presence as the attendance of family in the location that allows physical or visual contact with their child during resuscitations or invasive procedures. The degrees can range from holding their hand at the bedside to standing back at the back of the room and watching what is going on. So for the past decade, the healthcare environment has shifted to include families more in the care of the loved ones. So the families are asking to stay by their children's sides and they're expecting to be given the choice. In alone, there were three national reports supporting patient family center care. The institute of medicine reports on the emergency care in the United States. The American Academy of Pediatrics Joint Policy Statement with the American College of Emergency Physicians and a report on the National Consensus Conference on Family Presence During Pediatric CPR and Procedures. This conference was attended by representatives from national emergency critical care, surgery, and trauma associations, which include the -- the American Academy of Pediatrics, the Emergency Nursing Association, the American College of Surgeons and numerous others as well as regulatory agencies. So the joint recommendations from these three reports highlighted patient centeredness as one of the gains for healthcare quality improvement. From there, they made recommendations on how to improve upon the care that we deliver when families are present. The recommendations encouraged providers to offer the presence for all emergency care, including pre-hospital. They also asked

institutions to develop patient family center care policies that would clearly outline how to assess families to be present, give procedures and guidelines as to how to safely have them attend a resuscitation. And then have a document, obtain legal consensus and educate your providers before implementing a policy. Lastly, any time you implement a change, it's important to study your changes. They have recommended they support research surrounding patient presence and patient family center care. Excuse me. So now the question is, do families want to be present? Over the last two decades of studies, on families, the overwhelming consensus is, yes, they want to be present. So there are three studies to date that have children who have died in the resuscitation, and the overwhelming majority of families wanted to be present and wanted to have the option to be present. Even when parents were interviewed three months later as in the Mangurten study, parents thought they had the right to be there and if it were to happen again, they would choose to be there. So the next question is does family presence actually benefit the families and the patient? Numerous studies again are listed here in the fine print under the bullet point. These studies support the patient and family Ben if I wants. For the patients, having the family members there at the bedside provides them with comfort and increases their ability to cope with pain and what is actually happening to them in the trauma bay. For the family, being there removes that doubt that you're not sure what's going on, but seeing it happening, you have comfort in what's being done. It reduces the anxiety of fear, the fear of the unknowing when you can't see, and it gave them a sense they were supporting and helping their loved one. Looking at the effects on families, the reports showed no traumatic effects on the family members themselves. Family members did not report trauma from being there. They just reported positive from their experience. Being there helped them have a sense of connectivity between them, the providers, and the patient. And in cases where a child or one of their loved ones dies, it facilitated the grieving process. So what happen about healthcare providers? So healthcare providers expressed concern of having families at the bedside and witnessing resuscitation and invasive procedures. Some of the studies reported that the experience of watching something so intense may be too traumatic. They feel or have a fear families may get too emotional and will interfere with the care given to them. Or just watching what's going on will increase staff stress and decrease their performance. What we know to date is that]healthcare providers vary in their support for the practice of family presence. Nurses are more supportive than physicians, experienced physicians are more supportive than trainees, female providers are more supportive than their male counterparts. Pediatric providers are more supportive of their counterparts. And trauma surgeons are least supportive of this. What about the patient care we're giving to sick and injured children. So looking at family members and do they get in the way or disrupt care, there are three studies to date. The first one is the pilot study from Philadelphia that looked at pediatric trauma cases. And in this case, there were no interference but two families were asked to leave for emotional responses. Four cases were reported out of a study in Utah. They looked at pediatric trauma patients and again, several -- a few families report in the way. Some had verbal interruptions, but no family members were asked to leave the room. In an adult study at a trauma center looking at video review of family members, they did not report any cases where families lost control or interfered with care. So instruction and care is one thing. But healthcare providers are already concerned about their performance. Does the family member present affect how they perform under critical situations? So looking at our pilot study from Philadelphia again, the top study of our pediatric trauma patients, we compared those with family presence versus those without family

presence for significant times and end points in the trauma resuscitation. And what we noted was there was no difference in the times of the primary and secondary surveys, I.V. placement as well. But we could not analyze the impact of the performance of invasive procedures because the numbers were too small for analysis. So the Dudley study as well had similar trends that showed no significant differences between the two cohorts for the CT scan and for resuscitation time. They also did not have a number large enough in the invasive procedures to be able to analyze that appropriately. So this is summarize the conversation about family presence. There are numerous benefits to having family members there for both the family and the patient. It affords transparency of the care that's being delivered, it allows the families to advocate for their child in realtime. Families feel they're part of the medical care team. And the research shows little evidence of interruptions in care. So some of the challenges that have been posed are that having family members there at the bedside does alter dynamics and how staff training. People have to learn how to communicate in a different manner. There is still that perceived -- perceived stress. I'm going to get back to the slide where we were. Not sure exactly what happened. So there's perceived stress. But there's limited data on the impact of trauma performance and the care delivery as well. To date, there's little information or comparative data for the severely injured child. Okay, give me one second, I apologize. So moving on. So our current study which was funded by HRSA and EMSC, will measure the effects of the approach to patient family center care for pediatric patients that present to one of three level one pediatric trauma centers. So our first aim was to actually evaluate the effects of family presence on the timeliness and effectiveness of the care that's delivered by the pediatric trauma team for trauma activation patients. We look at frequency of family member interference and explore the attitudes and experiences of family members as well as the trauma team providers. So this study was conducted at three level one pediatric trauma centers that range geographically across the country, Children's National Medical Center in Washington, D.C., Children's Hospital of Washington and Pennsylvania and Children's Medical Center of Dallas, Texas. We included children who were less than or equal to years of age, often they were younger based on state activation criteria and trauma center transport. And all of our children were specifically called as a trauma team activation, which required they have their evaluation and treatment in our trauma baby our trauma team. Patients who presented with multiple patients in the trauma area were excluded for purposes of confidentiality. And all three of our sites have had family presence policies in place, which, you know, will affect general eligibility for our results but it was a place for us to start. So, the data presented today just as a -- preliminary data. So the data analysis is currently in progress. But what we have to date is for the first aim, we have enrolled , patients trauma and we're evaluating the times of completion of invasive procedures such as I.V., central line placement, intubation, chest tube, needle thoracotomy, the times to the first radiograph or CT scan and the time of completion of the trauma survey. We're looking at how effective they were in completing the tasks successfully when family members were present or not. We're going look at the frequency of family member interference which we defined as physical or verbal disruption, in-patient care, resulting in the termination of family presence for that event. So for this study, we have , family members who were evaluated for family presence. Of that group, of them were screened not appropriate for family presence, which is about percent. For reasons of not appropriate to be able to handle what's happening. They were characterized as too distraught, combative, or altered mental status. Five of them -- those who were not available for family presence were limited because of space availability.

One because there's no facilitator, two, undefined reasons. family members, percent of ours who were screened who were appropriate for family presence. Of those, once they entered the trauma bay and were present, or a little less than percent were asked to leave for various purposes. Either they themselves needed medical care, the behavior was distracting, it was too loud and space was a problem once the trauma resuscitation was going on, or they, themselves were disruptive. At the end of the day, the provider preference is very important. An and two of them were asked to leave. Going back to those who were candidates, percent of them once they went to the trauma bay chose to leave for their own reasons. They felt overwhelmed or they needed to take a break or felt ill themselves. So overall, we had successful family presence events, which is about percent of our original cohort. The next in . looks at evaluating the experiences and attitudes of family members of enrolled children. And so for the methodology, we conducted telephone interviews, two to three -- excuse me, three to six months after the event, using a validated interview tool. And we also conducted a self-assessment of post-traumatic stress disorder symptoms that is related to the trauma event of their child. We have an in depth discussion. We have focus groups apt each site. The focus groups is important because it capitalizes participation between the participants and studies attitudes and experiences of those involved. It gives people who are less inclined to want to have a private interview, it gives them a voice and an arena for them to be able to discuss their experiences. We conducted two focus groups at two of the three sites, three with family present, three without. Those who were not there. And with the analysis, we had family members who were able to be interviewed. And ten focus groups. of them were present, and were not able to be present at the time their child was evaluated at the E.R. The ones on the left are similar to the ones on the right. For families who are present, they felt being there was their right. They actually gave them comfort and peace of mind that they could see what was happening and they could know what was happening to their child in realtime. Being present allowed them to contribute in real Tom the decision making. They provided information to the team. And they were able to advocate on behalf of the child. These things are ones that have commented in the literature to date. The new finding that we have from our study is that family members have expressed the understanding that they recognize the need to limit their own reactions and responses in the trauma bay. For example, one parent said in our focus group, quote, if my physical body being in the space or reaction affected on how the professional could focus on my child, then I don't think I should be there. This is the first time of new feelings of self-regulation have come about. Even in the cohort of families not able to be present, even in the missed opportunity, they felt the choice was their right and if they had been there, it would have been comforting to their child. It would have helped them Reduce their own anxiety. And even in moments when they weren't able to be there in person, they still desired realtime information. And we've had experiences with providing family presence by phone, that is actually helped families. This group also recognizes the need for self-regulation. If they were to be present, and even with them not being there, they felt that the staff gave their child the best care possible. So using a similar methodology, we explore the experiences and attitudes of trauma team providers using paper surveys that were distributed immediately after the trauma event. And returned within hours. Some -- the second methodology were the focus groups that were similar to the families present. In all three, we conducted focus groups, trauma surgeons, emergency medicine attendees, the nurses, and temperature family presence facilitators which include a variety of providers from social work, chaplain, and some of the nursing staff. Systematic analysis of the providers' experiences and

attitudes highlighted several areas in need of discussion. So there -- the first one, there were differing opinions related to family presence as to whether not it was a right versus a privilege that could be taken away. There was agreement and consensus that the procedure of family presence needs to there when needed and there needs to be a facilitator role to help with the success of this practice. They also felt that overall, it was very beneficial to have the families there. They could see that everything was being done. But despite that, there were still feelings and discussions of the presence of families being distracting and altering their ability to train trainees and in cases like prolonged resuscitation, it's having family members there did prolong fetal care. Overall, both groups -- not all groups, but overall all providers with the positive experience for both the child and the family and for them as providers. So the second aim of the study was to disseminate the tool can kit to develop and disseminate a tool kit to assist emergency departments with the implementation of family presence in their own institutions. It's important once you make a change, you guide it beforehand and then you say it afterwards. So hopefully the tool kit will assist in the development of your own policy. The content of the tool kit will focus on how to successfully incorporate family presence in tier practice. We used an evidence-based practice implementation approach where it will give some guidelines as to how to march your way through and practice change. We start off with assessing your own culture and barriers and how feasible it will be to implement family presence and to provide those that you're going to be working with the information. So collect that data. Acquire the national guidelines. Appraise your research, and present it to your group. Then once you've done that, see -- conduct site surveys of your own places, appraise what your readiness is. Next, once you've done that, it will help you apply your knowledge and practice in creating a policy and procedure that standardizes the approach to family presence and offers it uniformly to those patients you see in the emergency department. As any change comes along, you should analyze for steady outcomes and use and be updating your practice. And lastly, it's important to be able to create a sustainable practice. So, you know, adopt what you're doing or change it, adapt it. And then share your process and outcomes with other healthcare providers that take care of children. So with that, I would like to end our discussion and thank our research teams and all three institutions. You -- the hard work and dedication made this possible. And I would also like to thank in depth the friends and personnel and colleagues that really, really made this happen. So thank you very much. >> Dr. Edgerton: I want to thank our speakers for amazing presentations and for the scope of activities that you have provided. You have a long list of questions. Bear with me as I kind of tag you with different questions from the audience. This is exciting. I think they're pushing all three of you to the next level. Dr. O'Connell, we'll start with you because we heard your presentation just now. A few issues came up. One that you had success in pediatric studies. How do we expand that to emergency department environments where both adults and children are treated or adults themselves? Have you any thoughts or challenges in having this best practices adapted in those settings? >> Dr. O'Connell: Yes. Thank you for that question. We're starting to look at the beginning of the best practices and institutions that are pediatric trauma hospitals. With the help of HRSA and the tool kit, we will give guidance to nontrauma centers, nonpediatric hospitals, community E.R.'s and how to best incorporate family members at the bedside with the pediatric children that are ill or injured. We -- the next step for research is going to be looking at hospitals around the country who have different demographics, different patient populations, and different provider -- designated status for trauma. So hopefully this will help. >> Dr. Edgerton: Another webinar

listener asked if you made any connection with the American College of Surgeons to have them adopt this tool kit? >> New Speaker: So we have plans to, yes. This information has been presented in amnesty forums that have American College of Surgeons attendance. So this information is known. And it will be the next step or I could take it to the committee, to their conferences, and let it be known. And we do have their input. So when we put the study together, we had team trauma stakeholders at all three sites to serve on these different committees. And just as a reminder, with that consensus statement from the conference back in , there were representatives from not just the American college of surgeons, but also the American trauma society and the American pediatric surgical associations. So they are in the presence and are in need of guidance and how to do it successfully. >> Dr. Edgerton: Two more questions for you and I'll speak to the other speakers. One was in the protocol or tool kit, how do you handle situation of child abuse or neglect in interviewing that family or the child, those case-specific sensitive situations? >> Dr. O'Connell: So that's -- it is a very sensitive topic. And in the tool kit, there will be guidelines as to how -- the questions that you should ask to assess a family. You're assessing them to be present to be there in a role that you would hope would be supportive. As healthcare providers, it's hard for us and we can't lay blame. They leave that up to, you know, the legal group. So it's important to try to have families together as you feel appropriate, but there are cases where we have had families and victims of child abuse in the same room with their familiar lips as long as it wasn't interfering with care. Be we leave that up to the team leader's discretion. So in all cases, there should be a conversation amongst the team. And if the team's feeling is I can't deliver the care and have the conversations that I need to have, then -- then it's, you know, it can be opted out. >> Dr. Edgerton: The last question is have you considered alternate modalities when the family members aren't present such as Skype or the phone? >> Dr. O'Connell: Yes. That's the up and coming new way of keeping a family connected. We had a case of a parent, a father on a phone while we were in the trauma bay with the He was able to hear, listen, and talk to the child while this was going on even though he wasn't present in the physical space. So, you know, the next Skyping would be an excellent -- it's more of a timeliness that's important. Because the trauma primary survey is usually complete within the first five to ten minutes. So it's going to be kind of a coordination of efforts between the facilitator and the family. But it's an excellent, excellent thought. >> Dr. Edgerton: Thank you, Dr. O'Connell. Jennifer Fritzeen, we had several questions passed your way. Who's in charge of completing the checklist for the ATLS process? >> Jennifer Fritzeen: Who in the trauma bay who is actually checking the boxes? >> Dr. Edgerton: Yes. >> Jennifer Fritzeen: That's one of the things in the tool kit that we can leave up to the hospital's discretion of how it worked best for you. Here at our facility, it's the surgical coordinator. For us, it's the surgery fellow or PTY- or higher behind the line in charge of the resuscitation. They're the ones checking the boxes and kind of getting all of that information, that intake of information. So we have been doing it. We did look at E.D.'s physician as the person to do it. We looked at the nurse who was documenting as the person to do it. We found very quickly that nurses in that role, if they were there to document the trauma were overloaded if they were also trying to do the checklist. >> Dr. Edgerton: The expansion of that or one of the webinar questions asked, have they add to that team and those arrived at the arrival of the trauma center? >> Jennifer Fritzeen: It's not something we talked about. When we looked at pre-arrival, what we were focusing on is what does the trauma team need to do in the resuscitation room is to prepare the room itself for the patient. I think it would -- we hadn't thought about it involving EMS. We may learn

something pretty interesting. I will say that that pre-arrival section of the checklist has been incredibly impactful when you had discussions with the team as far as making sure that things are now ready to go prior to a patient rolling in the door than they were prior to the checklist implementation. >> Dr. Edgerton: One more granular question is regarding the tool kit with the acuity categorization if you could maybe address that of that process of white versus the gray box and that checklist process. >> Jennifer Fritzeen: Yes, at the beginning, the acuity is just on the report. Do you hear that the patient is being bagged. Are they -- do they need ventilation? And then you would look to the grey boxes. But once the patient arrives, it's all really based on what your primary and secondary survey results are showing. And the gray boxes are very, modified to the institution. When you're using the tool kit as far as what do you feel your high-risk areas are and what you feel you need to put in a checklist so you don't forget steps. For us, we do intubation as part of our gray box. And it allows us to make sure that if a child comes in Intubated, we go through all of the steps to make sure that the air way is in the right place and we're doing the right assessment. And also to make sure if we're going to intubate, we have all of the steps to intubation and evaluation. >> Dr. Edgerton: And similar question from O'Connell's project, what is your next step with the American college of surgeons and their integration to their policies and procedures? That's for you, Jennifer. >> Jennifer Fritzeen: I thought you said Karen. >> Dr. Edgerton: Sorry. Karen had a similar case. You are the next step. >> Jennifer Fritzeen: The two papers, one for publication, the other was just submitted. We wanted to submit our findings. It really is our hope that it will have some impact and could be utilized between ATLS and UTCM is part of the tools that really makes the ATLS effective. So baby steps to that one. >> Dr. Edgerton: Moving there. When I met with the American College of Surgeons I point out that we could look to pediatrics to the model setting and translate over to the adults versus vice versa. >> Jennifer Fritzeen: That would be novel. >> Dr. Edgerton: A lot of people interested in the components you presented. A lot of questions on the access to the educational modules. I don't know if you want to speak to that? >> Dr. Brice: I would love to speak to that. The course is on-line, free, anyone can take it. It was designed to be applicable no matter where you live in the United States. So it is U.S.-centric. But it is not North Carolina-centric. We presented data on the North Carolina participants but we have that many again take it across the country because it was geared specifically to make changes in North Carolina, we only presented that data today. But we have data on the rest of the people from across the country have taken it. And we have had several EMS systems to make it the foundational training for taking care of pediatric trauma and mandated for all of the providers to take it and we would love for them to take the course. It's freely available on line. I'm not sure how you want me -- for the administrators on-line to convey those websites, but I'm happy to do that. >> Dr. Edgerton: What we may do is send a quick update to our newsletter and also when this is posted, we can add the websites on as a slide. So we'll be in contact with you, Dr. Brice to get that information. Another question that I had for you that I think is fairly novel about your systems approach is pulling in the telecommunicators. They're the start of the chain of survival. Were there any lessons learned in the sense of their perspective on EMS or their first contact with families or engaging them in the need for continuing education? >> Dr. Brice: I wouldn't say exactly lessons learned. They were the most eager of the groups that we approached for education because they are just desperate for someone to provide them with education, to include them in the system of care and to recognize their roles. So once we did that, they were our biggest fans. >> Dr. Edgerton: That's great. Another question, in the sense of recruitment for other individuals

to take the courses, there seemed to be a higher proportion of the data that you shared coming from non-voluntary kind of demographics or government structures. Any thoughts about that? Or approaches to reach those other groups that didn't seem to access the educational opportunities as much? >> Dr. Brice: Almost all of North Carolina is governmental nonfire. It's classified as governmental nonfire provider. Almost every agency in North Carolina fall unless that demographic. We have no fire EMS in North Carolina. As far as reaching the world and the rest of those folks, that's more of a task we're working with our state office to address. >> Dr. Edgerton: And I wanted to answer a few other questions, that are just general questions. For those who joined the webinar a few minutes late, the slides and the webinar will be available in two weeks. You will be sent an e-mail notice if you registered for the webinar and interesting if you have colleagues if they want the information they can access it at that time. They're also questions, not only to access Dr. Brice's educational components but when the tool kits of Jennifer and Karen's work, that can be posted on our quicknews if you're not already signed up for that, the EMSC quick news. We'll have a slide or you can go to the EMS for Children National Resource Center. If you Google that, you can get how to sign up. But that's kind of where we notify people of tool kits that support our targeted issues. Grants are being available. Again, I want to thank the speakers so much for the time they've taken and just give them the opportunity if they had any closing comments they wanted to make before we -- we close this webinar. Dr. Brice, anything that you would like to add that we haven't challenged you to answer yet? >> Dr. Brice: No, but I appreciate the opportunity to present our work. We are very excited about it and we are intrigued that so many other people want to take the course. So that's good news. >> Dr. Edgerton: Great. Jennifer Fritzeen? >> Jennifer Fritzeen: I saw a question about someone asking about being able to access the checklist in the tool kit. It will have a mod final version so every institution can alter many of the sections just to fit the needs that you have at your place. Thank you for letting us be on here and we're very excited to get this out. >> Dr. Edgerton: Do you have last comments or thoughts? >> Dr. O'Connell: Yes, I do. I am looking at a question on our board about EMS and the relationship with the family. We encourage establishing a relationship with the family. I would like to speak about the pool education about the family presence. Children are often with their kids at the time of They are at their side. And the pre-ops have most experience where family presence, historically. When they get to the hospital, which is kind of when the kids and family get separated. So we have -- I have -- we have done several different things with providers. Someone has already contacted me. But if you would like our information or contact information is available, we can discuss ways to educate and help the arena with family presence. >> Dr. Edgerton: The current slides you're seeing on the webinar is again that link if you want continuing education credit. October is the deadline to be able to access that. And, again, I would like to thank everyone on this webinar and our speakers for joining us and on EMS for children, opportunities to enhance pediatric emergency care to trauma performance improvement. Thank you very much. This webinar is coming to an end, thank you.