

MCHB/ EMSC Pediatric Disasters and Terrorism Preparedness Update

August 31st, 2004

DAN KAVANAUGH: Hello. I would like to welcome you to the pediatric disaster and terrorism preparedness webcast. I'm with the Maternal and Child Health Bureau. I'm the program director for the emergency medical children's program. We're trying to provide you with important information on new emerging issues associated with pediatric disaster preparedness. We're fortunate to have two pediatric disaster experts with us to provide presentations today. Dr. George Foltin is the director from Bellevue hospital in New York City. And Dr. Michael Shannon is from Children's Hospital in Boston. Both of these physicians are contributing to national efforts to improve pediatric disaster and terrorism preparedness. Before we get started with the presentation, here are a few instructions. Slides will appear in the central window and go forward automatically. They're synchronized with the speaker's presentation. You may need to adjust the timing of the slide changes by using the slide delay control at the top of the messaging window. We encourage you to ask the speakers questions at any time during the presentation.

Simply type your questions in the white message window on the right of the interface, select question for speaker from the dropdown menu and hit send. Please include your state, organization in your message so we know where you're participating from. If we don't have the opportunity to respond to your question during the broadcast we'll email you afterwards. We encourage you to submit questions at any time during the broadcast. On the left of the interface is the video window. You can adjust the volume of the audio

using the volume control slider which you can access by clicking on the loudspeaker icon. Those of you who selected accessibility features when you registered will see text captioning underneath the video window. At the end of the broadcast, the interface will close automatically and you'll have the opportunity to fill out an online evaluation. Please take a couple of minutes to do so. Your responses will help us to plan future broadcasts and improve our technical support. Let's get started with the presentation. Dr. Foltin will be the first speaker, followed by Dr. Shannon.

DR. GEORGE FOLTIN: This is Dr. George Foltin and I'll be addressing the needs and their families on terrorism and disaster preparedness. This is a very broad topic and Dr. Shannon and I can only cover various aspects of it that are vital to hear today. I'll be covering the following five topics. I'll be talking about how EMSC workers and state officials can work within their state organization. I will be touching on hospital preparedness. I will be talking about decontamination, community planning and finally touching on some resources that will be available to all of you for future work. In general, we are -- I think we all are speaking the language of all hazards preparation in terms of preparing for disasters that include preparing for terrorism. As we know almost on a daily basis from the news, these are coming together. We've recently seen the results of hurricane Charley. Last winter we dealt with the flu. The winter before with SARS. We expect to have these issues and disease entities come up again and the infrastructure that we prepare in terms of terrorism and disaster come together and this includes the very important concept of enhancing public health as we go along and as our public health system can become stronger and stronger from this work. As we look at national efforts

toward pediatric preparedness there is definitely work going on that is focusing on the general preparedness issues into national efforts. These include a consensus conference in the spring of 2003 that was HRSA and Maternal and Child Health Bureau funded that brought together national experts to discuss and bring together a document on guidelines and signposts for preparing for pediatric disaster and terrorism. This document is available through the NRC website. Around the same time the NAACT did bring a report to Congress on ways that the federal government could put forth legislation and regulations and grant summaries for pediatric preparedness and this is also available.

There is a model state disaster planning grant coming out of the Maternal and Child Health Bureau that should be available this fall that will allow all states to have a model to work from in terms of understanding how they can modify and work with their state disaster planning to make it more pediatric friendly and accessible for children and families. And finally, the American academy of pediatrics will be coming out with a practical document that will be easy to access and will give practical information in terms of disaster and terrorism preparedness for children. This is a document that is coming out of the American Academy of pediatrics, is subcontracted from AHRQ and the lead editors are myself, Mike Shannon and David Shanfield. State and regional efforts are underway in many states for general terrorism preparedness and general pediatric preparedness. In each state there are multiple programs that are ongoing. One is the hospital preparedness program out of HRSA. The bioterrorism program out of CDC and the EMSC program which usually sits in the EMS Office of each state. There is a public health department in each state termed the Department of Health. Throughout many of these programs this

year pediatrics is a written priority. How that priority rolls out is up to us. Each of us needs to understand our own state and identify those preparedness lead agencies and personnel and to continue in the process of inclusion that we use to build emergency medical services children's program in the first place. Each state has its own setup for how these programs are integrated and what offices they sit and they often sit in different offices.

On a state by state basis the national resource center has a listing of what these programs are and who your contact people are in each of the states. It's just a matter of being there, again, of coming to the various meetings to do networking with the emergency management personnel, to make presentations and to work to improve the entire system. In this way the various programs and processes can be brought together. We need to mobilize our experts and advocate and link with national efforts going on such as the American academy of pediatric task force. The reason this is essential as far as further legislation and resources become available somebody will need to be there to focus on what is the most cost effective and evidence based advances we can make to help children. I would like to move from the general systems building process to specific hospital preparedness question in terms of preparing for children's disasters. An example of the kind of leadership that advocates would need to provide. As an example, we know that children gather in the daytime at schools and day-care centers. Therefore, mass casualty event involving children is not a function of population percentage, but rather it might be a function of a soft target or an intended plan. Children's Hospitals will practice mass events involving children because that's their population base. Under their mandated disaster planning they'll do disaster planning for children. However, we also

know that all facilities must establish and maintain according to standards comprehensive plans to respond that include disasters, emergencies and terrorism and have coordination with other hospitals in the area and make it an annual evaluation.

We cannot know that any specific general hospital that is not a Children's Hospital will have to deal with large numbers of children. However, we're concerned that somewhere a general hospital is likely to be faced with mass events involving children. And that general hospitals will be least prepared for such an event. Therefore, it seems important that every hospital must practice a mass event involving large numbers of children whether they normally serve children or not. And so there are a variety of ways to make that kind of event happen. One is advocacy at your state level through the -- specially through the hospital preparedness program and put into standards that every hospital, whether a Children's Hospital or not, must in every certain number of planning events do a mass pediatric casualty. I would now like to move on to pediatric decontamination as an example of a specific entity that needs to be looked at. There are many variables that we need to think about at each hospital. Strength of water stream or at each on field setting. Strength of water stream, temperature of water environment. Will the contaminated baby be carried to the car wash by rescuers, parents, on a stretcher. How will they bring them together? After the shower, there needs to be pediatric sized and designed coverings. Resources for warming. Holding environment. Reunification with family. So there are some principles that we can talk about. It's likely the smaller the child, the bigger the problem. For the small infant will you strap them to a stretcher, how will they stay on the stretcher. Will their airway be compromised by the rushing water? Older children will

scream and resist because they don't like showers. The issue here is that we need to be planning in advance for pediatric --

DAN KAVANAUGH: Welcome back to the webcast. I apologize for technical difficulties. We're trying to reconnect with Dr. Foltin. We'll have Dr. Shannon do his presentation and once we reestablish connection with Dr. Foltin he'll be able to complete his presentation. Dr. Shannon.

DR. MICHAEL SHANNON: Thank you, Dan, good afternoon. What I would like to do is try to provide a brief overview of current activities that are underway in the area of decision support as it relates to preparing for terrorists or disasters involving children. What I really hope to do is focus primarily on some of the research initiatives that are underway because there really is quite a bit of exciting activity going on in research around emergency preparedness. If I could have my outline slide, please. What I hope to do in the next few minutes is the following. First, I would like to describe briefly a history of some of AHRQ's funding in the area of bioterrorism and other public health emergencies. Again, I hope to focus on some current research and training activities that have been going on here at our Center for biopreparedness, the establishment of our center and some of our newer automated decision support instruments. And then I would like to finish by making a few comments around what I believe to be the remaining needs in thinking about emergency preparedness for disasters involving children, how I think the current information that is coming out on a regular basis should be utilized, and then I'll summarize. Next slide.

Briefly, I guess I would like to say that AHRQ in my position has really taken the lead in examining pediatric aspects of bioterrorism and emergency preparedness in general. And AHRQ has a long history of that support. This support began, I believe, by the way, the AHRQ is the agency for healthcare research and quality. Part of the Department of Health and Human Services. And it was in the year 2000 that AHRQ, I believe, began its funding for bioterrorism. Again, I believe that they have taken the lead in looking specifically at pediatric aspects of emergency preparedness. For example, as this slide outlines, it was AHRQ and Dr. Foltin mentioned also was AHRQ that has supported the American Academy of pediatrics through several of its initiatives including formation of the task force on terrorism and funding of the pediatric terrorism and disaster resource that currently is underway. It was AHRQ that has assisted in the funding responsible for the creation of the national Center for disaster preparedness, part of Columbia university and it was AHRQ that played a role in assisting us in establishing the Center for biopreparedness in Boston last year. The next slide.

I'll tell you only briefly about our center. We were established in July of 2003. Again, with the assistance of a contract from AHRQ and our center has two primary goals. We conduct research in pediatric aspects of bioterrorism emergency preparedness with a focus on automated decision support. And then another parts of our tasks is to really try to take a small role in developing some of the needed protocols, plans, practice guidelines for taking care of children who have victims of disasters, including terrorist disasters. The next slide I show you only to give a sense of the size of the Center for biopreparedness.

We are a group of almost 20 at this point, including primarily pediatric emergency physicians, but also infectious disease experts, toxicologists. We have several project scientists, a very large group of computer programmers and public health educators as well. Next slide.

So what I would like to do now is again just briefly describe some of the current activities that are going on in our center around the area of decision support. I probably should begin by defining decision support. Decision support is simply those tools that are created to assist the clinician in the recognition and management of important clinical events. So the simplest form of decision support might be an article, a journal, or the daily newspaper because those are sources of information that help us as clinicians recognize when a covert incident has occurred. Those are resources that help us to be astute clinicians and that is what decision support means. There is a newer term automated decision support which simply means the utilization of the computer technology that is currently available to us, including medical informatics, artificial intelligence, the creation of detection algorithms. A whole spectrum of technology now available to us that helps us in this area that we call syndromic surveillance. Next slide.

To outline -- I'll outline three of our automated decision support projects. The first one being E.D. scope. E.D. scope was a program that was created in the emergency Department of Children's Hospital Boston and simply speaking, it is a realtime tool that is on a regular basis really on a minute by minute basis it's surveying who has come into our emergency department. In the area of public health preparedness and the recognition of

covert incidents and emerging infections it has become useful to try to categorize emergency visits into seven, nine or 11 chief complaints or syndromes, if you will. We've utilized the 11 syndrome system that has become most popular. So we are able to divide every emergency department visit into a category of syndromes. From there, having conducted a ten-year analysis of visits to our emergency departments, more than half a million visits, we are able to calculate with a fair degree of accuracy, how many children will come to the emergency department and what their chief complaint will be. So having conducted this ten years of analysis we actually are fairly able to predict tomorrow, for example, how many children should come to our emergency department and what their chief complaints will be among these 11 syndromes. Having done that, we can create systems that will forecast, will tell us what the expected number and pattern of visits to the emergency department will be on a day-to-day basis and in doing so, should aberrations occur, should there be more visits than usual, or more of a chief complaint than usual, we can set the threshold that, when crossed, would lead to an alarm. Next slide outlines E.D. scope.

This was one of our first automated decision support systems and what I would highlight for you is that across the top row what you see are days of the month and then beneath each specific day you see actual and forecast and then the rows outline the 11 syndromes. Simply speaking, where the threshold is being set the red indicates for that particular day, we saw more children with a chief complaint in one category than we expected. And an alarm was created. This is probably part of the future of automated decision support and syndromic. Every hospital is able to do this. Once that has occurred,

and visit and patterns can be forecast, then aberrations can be quickly detected. Next slide.

E.D. scope is still in use, we've now moved to another step, another stage automated support and surveillance and created an instrument known as EGIS. It's automated epidemiological geotemporal information systems. It's an extension of E.D. scope but now provides a geotemporal data. It is like E.D. scope, a realtime syndromic surveillance program that does add the geospatial data. What we've done with it as a research tool is to begin linkage. We've been fortunate in being able to partner with now more than ten emergency departments in the Boston area in one research project and nine Children's Hospitals across the nation in another research project. And in the process, build a network, build linkage that creates an even more robust system. We also have been fortunate that the system is really proving to be valuable enough, that is at least in the Massachusetts network it's being used by the Massachusetts health alert system, which is a system for rapid identification and notification of unusual public health events.

The next slide should outline what the EGIS dashboard looks like. The main points I would outline would be in the dashboard across the left what you see are panels that outline chief complaints. You should see G.I., neuro, respiratory, a specific chief complaint. This represents, by the way, Children's Hospital emergency department data only. In our emergency department what you're seeing are visits by syndrome, by chief complaint, actual versus predicted, and in the map on the right every dot that you see represents a patient. Represents a patient that has come to the emergency department and what we've

been able to do is not only outline where this patient is from a geospatial standpoint, but each of those dots, if we were to take a mouse to it, has the ability to explode that dot and to show -- to provide quite a bit of data, patient demographics, chief complaint, laboratory studies that are set simply by exploding each dot. This is, again, what I think is the next and probably the most important next step in automated decision support specifically around syndromic surveillance just having the geospatial data will make it easier to identify clusters. The unique and nice thing about this system is that it's realtime, automated analysis of data that are already being collected on a regular basis in your own emergency department or in whatever data stream that you choose to mine.

Going to the third product, the third automated decision support product that we've been working on, we are hopefully in the finishing stages of a program known as BDP. The bioagent diagnosis program. What we've attempted to do is using the so-called Delphi approach we assembled a group of infectious disease experts and used their knowledge and resource to gain as much information as possible about public health infections of interest. These include not only bioweapons but even emerging infections such as SARS. Once this group is assembled and we can add quite a bit of detail about any infectious agent of interest, including its temporality, we can now build a table where the clinician is able to enter certain clinical features and have the -- and train the bioagent diagnosis program to recognize some number of bioweapons or emerging infections. At the moment BDP is trained to recognize 14. And then to have the clinician access it from the web, to enter certain data about the patient that they're taking care of. That they're actually sitting

across from and to have BDP give back to that clinician what the possible bioagents are even with degrees of probability.

The next slide hopefully outlines our -- gives a snapshot of what the bioagent diagnosis program looks like in its current form. Again, it is a web-based program and you as the clinician working in your busy emergency department or your busy office or in your health center will go to this website, ask specific information about your patient, and then have as the next slide shows, have the bioagent diagnosis program give you a differential diagnosis answering the question, if this were a bioweapon, what might it be? If there were an emerging infection what might it be? We can quantitate that probability based on the information and the granularity of the information we've obtained from our infectious disease experts. Our hope is that the next -- we're now testing the true performance of BDP in a research project among emergency physicians in the Boston area and if it works, I hope it becomes posted as a web-based program. Next slide.

The other part of our -- of what we're hoping to accomplish is in the area of again traditional decision support. That is, the creation of resources, algorithms, monographs to assist clinicians in their recognition and management of children who could be victims of terrorism or other disasters. I would like to outline some of those protocols that we have been creating. The first is a school-based preparedness protocol. One of our charges from AHRQ and something that we've been working on for the last year has been to try to create a best practices monograph on what school-based preparedness for terrorism and other disasters should look like. We've been -- we've done this by obtaining as much

information as we can from school districts throughout the country analyzing what programs are in place, trying to learn from those school districts that have spent a lot of time and have created systems that truly work. And in addition to that, we've partnered with a local school district. In this case the Town of Brookline, Massachusetts and spent the entire year last year in the Brookline public school going to every single school and really from beginning to end process of assisting the town in its school-based emergency preparedness by meeting with teachers, principals, custodians, doing site surveys, reviewing disaster plans and we are placing finishing touches on that monograph. And next slide.

The next monograph that we hope to produce or again in the finishing stages of production is a monograph that attempts to outline some of the main principles in surge capacity around multiple casualty incidents involving children. I suppose the probably the paradigm for such an incident would be something that occurs at a school. A disaster that occurs at a school. For example, a roof collapsing. And I think it's safe to say, and I would hope that most of the viewers would agree, that there is still a relative inadequacy of such algorithms on how to take care of large numbers of pediatric casualties, particularly in non-Children's Hospitals. So we have been able working with experts in disaster medicine around the country really taking advantage of their expertise, we've been performing an analysis of what surge capacity for pediatric casualties might look like and the product we hope will be a series of guidelines, a monograph that can be utilized anywhere. Next slide.

We have another monograph underway, this is again a charge from AHRQ to really examine the role of the disaster medical assistance team. Part of the national disaster medical system. Examining specifically, are all these teams adequately trained to take care of large numbers of pediatric casualties? And is there a need to develop pediatric-specific teams? As you may know, there are currently two existing pediatric DMAT teams. One at Children's Hospital in Boston and the other in Atlanta. Of the 20 odd DMAT teams in the U.S., one can argue, I think, that two pediatric teams isn't sufficient and that perhaps even the other DMAT teams aren't as well trained as they might be in pediatric aspects of consequence management. We have, therefore, been taking advantage of the leaders of the pediatric DMAT team here including Dr. Fleischer, Dr. Weiner, and what we hope to do is CODIFY the process. Outlining the training as well as the maintenance of training that a pediatric DMAT team probably would need. Next slide.

We are putting the finishing touches on a video entitled, the decontamination of children. This video will be an actual how-to including child actors, infant actors that will outline the step by step process of decontamination primarily for non-Children's Hospitals. But Children's Hospitals as well. In its final stages we'll probably make it available in CD-Rom as well as DVD versions. Then our last monograph. Our last initiative is to examine the role and the potential utility of including neighborhood health centers, community health centers in all aspects of emergency planning. I think that it's safe to say that community health centers are being increasingly recognized as a resource that could be used in a large-scale public health emergency. They are the perfect site, for example, perfect alternate site to use when hospitals become saturated with critically ill and walking

wounded. We're in the process of, again, analyzing all the ways in which community health centers could be utilized in a public health emergency. The next slide.

To -- I have just a couple of slides left and would just make a couple of additional comments. If someone were to ask me how are we doing in terms of being prepared for large-scale disasters involving children, I would say we're doing well. We have an awfully long way to go. And in my mind, at least, there are two things really that stand out as unmet needs in thinking about pediatric emergency preparedness. First continues to be the mental health aspects of disasters and really consequence management. It is clear that children are more vulnerable than adults to having mental health behavioral consequences after a disaster, which can be enduring. And I think it's still safe to say that we've not done as much as we can or we should to really create a safety net for children such that when a disaster or public health emergency occurs, that we, along with parents, pediatricians are able to recognize and provide intervention. I think the next most important need that we have really is the research. We do, I think, appropriately now live by the term of evidence-based. And I think it's fair to say that there is -- there has been so much effort, such a massive amount of resource creation of algorithms and they haven't been tested. And it's not at all clear that they work. Do all of them work? Do any of them work? And I have a personal worry that so much federal dollars, resources that are being appropriated, invested in public health preparedness are for activities that will not work. And I think a critical need in public health preparedness, pediatric or otherwise, has to be the research, to show that the systems that we are creating will work. Otherwise, the risk

is that we continue to invest dollars for useless products. I see that as a critical remaining need. Next slide.

Having outlined quite a few of the decision support -- automated decision support tools that we have underway and some of the practice guidelines that we and others have tried to put in place, I would quickly say that these are research tools. Everything that I outlined in terms of automated decision support really should be considered research. Our hope, of course, that it still can be used in the clinical environment but it is not yet and it is important, I think, to emphasize that neither it nor the guidelines and monographs that we're creating to be considered more than research tools. Having said that, I do hope, believe, would encourage that as programs are being created, that we do try them. That we do look for opportunities to bring them into the clinical area to see if they truly work or not. The research is still needed, but I do believe that many of the products that are currently being developed do have a potential role in the current clinical environment. The next slide should be my summary slide and I would just close by saying that our Georgia center, other centers, public health agencies as well as other agencies, as well as interested clinicians as I'm sure many of you, the viewers, should and I hope are going to continue to focus on the areas that I think are continuing to be left undiscussed at planning tables and we'll continue to play the role of advocates for children in this entire area of public health preparedness. And it is only with our continued effort in this ongoing work that we can feel comfortable, feel relatively assured that the needs of children will be met. That we will do everything that we can to make sure that children get the proper care and

management when terrorist events or other disasters occur. Thank you very much. I'll turn it back to you, Dan.

DR. DAN KAVANAUGH: Now we would like to reconnect with Dr. Foltin again. Apologize for earlier. Thank you, Dr. Shannon. Dr. Foltin will take us up until 5 minutes to 3:00. At that time we'll have questions for one or both speakers. Any questions that are not able to be answered, we will be emailing you back with answers. Dr. Foltin.

DR. GEORGE FOLTIN: Thank you very much, Dan. I want to reassure everyone that everything is fine in New York City. So I'm going to continue where I think I left off, which was just finishing up on talking about the issue that general hospitals are likely to see a mass casualty event somewhere in this country at the same time involving children. We can only pray that it doesn't, but this -- we can't expect that we'll have Children's Hospitals nearby to handle everything. Therefore, I think it's important for us to advocate the general hospitals must include in their training the issue of mass casualty events for children and I think that this can be worked through a state hospital disaster preparedness programs such as the HRSA and through thinking about JCHO and their requirements and they should include a requirement that every hospital do a pediatric mass casualty training. I'm now going to move on to pediatric considerations, practical considerations of decontamination.

I'm pleased to note that Mike Shannon is working on a resource for that. But in general each of us needs to be thinking both in terms of hospitals and in the field how we'll carry

out decontaminations for children and efforts in terms of strength of the water, temperature of the water in the environment. If you're going to use cold water in a cool environment you need to plan to warm the child afterwards. If you can use warm water that's better but not always possible. Just practical issues as who should be carrying the child through. The rescuer, the parent, if it's a baby on a stretcher, how will we manage their airway, can we use a car seat where the material is stripped out as Dr. Shannon had mentioned? Many of these recommendations that have come up are not based on evidence base or research but rather on what we think might work. And it certainly is important to think of terms of banding the children prior. Do we keep them with their parents. How do we reunite them afterwards. Next slide, please.

And then after the shower, we need to think in terms of resources for warming. What holding environment will we use for children and how we plan for reunification with the families. Certainly national efforts to allow all locality to plan will be useful in terms of thinking about the practicality of this. We hope the AAP resource will be a practical guide for issues such as these. Next slide. So as we think about planning for children, in terms of pediatric decontamination we came up with some principles that the smaller the child, the bigger the problem. And the older children do not like showers they'll scream and resist and we would like to think through these problems in advance. Next slide.

Moving on to general community planning, each of us needs to ensure that disaster plans are updated at our schools, at our gathering places, at our childcare centers, at our sports facilities. Have they looked at their evacuation plans especially in light of the issue of

sheltering on-site if there is release of a toxic substance it may be better to wait indoors until municipal instruction tells us to move on. Evacuation may not be the right thing to do at any time. These preparations need to be made in conjunction with local authorities, police and fire. There should be pre-planning now for contact for parents in a crisis. Stocking up supplies at schools both for children in case they need to stay on-site for more than a day or if the schools are going to be used as shelters, as they often are, what supplies are there? More and more children in our environment have technical support whether they're on ventilators or in a wheelchair or using other equipment. What planning have we done in terms of backup power for them and ensuring that needs can be met and how will we evacuate them from given situations? One area that has not had a lot of planning, as Dr. Shannon mentioned, there are points where we still need to do a lot is children en route. On 9/11 the event occurred when children had just arrived at school. If it had occurred 20 minutes earlier there would have been almost 500,000 children in buses being transported towards school and there has not been adequate planning in general for when children are en route and a disaster occurs. Next slide.

So in general, there have been resources that have started to come out but we need to focus nationally on a state by state and a local basis in terms of models for pediatric disaster planning. We must coordinate our pediatric emergency disaster response with regional trauma and burn disaster responses. This is particularly important in fact that despite our concerns about chemical, biological and radiological events the most likely event that could occur would be a blast with multiple trauma and burn disaster patients and so that is where more of our attention should go. Pediatric clinical care centers will be

the center of the care that should be delivered to critically injured children over time, but those resources are regionalized and not spread out so we need to figure out how to work with all emergency departments and their pediatric capabilities and how they're connected to our pediatric critical care infrastructure. In general, we would like to think in terms of not only national DMAT teams as Dr. Shannon has mentioned but also regional teams.

Pediatric components for medical incident response teams could be designed for a local response where they would spread out to general hospitals in much the same way the national teams do and bring their resources. A lot of people are thinking this issue true and I hope more attention will come to this plan in the future. Next slide.

As we're doing all of our planning across the board, though, we need to remember in terms of both public health and child health that there are 10 million children uninsured in this country who lack basic healthcare or access to healthcare and this has resulted in the lack of support system and often the overburdening of emergency departments and this affects all of our planning in all phases of our disaster and terrorism preparation. I want to take my remaining moments just to point out that as you are developing your policies and doing your work that you should be aware of the excellent resources starting to develop across the country and this is just a limited list and the -- by keeping in touch with the NRC you can keep up to date where resources are. The Center for biopreparedness in Boston, you heard from Dr. Shannon. The national Center for disaster preparedness at the School of Public Health at Columbia. There is the terrorism and disaster branch of the national Center for child traumatic stress in Los Angeles. Next slide. There is our Center for preparedness in New York City where the Center for emergency medicine is located. You

can turn to the FEMA for kids for good information for families. The American academy of pediatrics and physicians are excellent sites. The academy will be starting to post materials that we're working on. The final slide, please. And finally, I would like to finish my portion by mentioning that the national resource center has an excellent website that is constantly being updated in terms of valuable links. We have a subcontract with the national resource center to provide technical assistance and we work with them. They put out an excellent list serve and that is a way to access constantly emerging resources. I will now turn it back over to Dan to get some questions. Thank you very much.

DAN KAVANAUGH: Thank you, Dr. Foltin. I would like to address the first question to you. Can you expand a bit on including children with special needs, those in terms of technological dependence and developmental disabilities in disaster planning?

DR. GEORGE FOLTIN: It's essential for groups that advocate and work with these children to make themselves available to be at disaster planning at state, city and regional levels and just as important for those planners to reach out to include them so they can understand the scope of their patients and to be able to include them in their plans. There have been some resources produced by the emergency medical services for children's program looking at EMS and their response to these children and I think those kind of plans and work could be utilized very well in disaster and terrorism planning.

DAN KAVANAUGH: Thank you. And Dr. Shannon this is a question that came through for you. How do you categorize geospatial data? Is it by home address, the location where the child became ill. Where the child contracted an illness such as a school?

DR. MICHAEL SHANNON: Any of those would be possible. What we currently use is the patient's address. And if I can try to guess the basis of that question. One issue that comes up in using the patient's address would be if everyone were at Fenway Park when there was an event of some type and then went to their respective homes to simply see where events are occurring by dots on a map wouldn't identify an epicenter where something occurred. It's one of the reasons that it will take more than a program like EGIS to really get us where we want in terms of syndromic surveillance. I think for what a program like EGIS will ultimately need to have is some mechanism for obtaining additional information for patients as they come into the clinical environment. The specific question you would want to ask someone is not only where -- how long have you been sick but where were you when you became sick? Really, the process of getting more historical data than we currently acquire during a clinical encounter. I think once we have better historical data we can now start to use geospatial data to help identify an epicenter where an event may have occurred two or three days before.

DAN KAVANAUGH: Dr. Shannon one follow-up question from Tom in Washington. Any suggestions you might have in terms of for small rural hospitals in terms of practical care? They plan on using the local motels and local junior high for volume. That was his question.

DR. MICHAEL SHANNON: I think it's safe to say that for hospitals, not just Children's Hospitals, but hospitals in general, there certainly have to be surge capacity protocol. And it seems to me that just about every hospital is going to have nearby a clinic. And auditorium. A school. Someplace that could potentially be used as an alternate site of care. Community health center. It's all about advanced planning. Thinking in advance, remembering in advance that the general ratio of walking wounded to critically ill is somewhere on the order of 10 to 5 to 1 or 10 to 3 to 1. The overwhelmingly you'll have worried well. Patients who are well but coming to your healthcare facility for evaluation. You don't want them in your healthcare facility. You would like to provide your assessment and care for their needs somewhere else so that your resources are being carefully preserved important the sickest patients. One does that by planning in advance for where might we take a team with equipment for taking care of minor illnesses that is not in our emergency department or that is not in our hospitals? That's the basic concept. And anyplace will do as long as it's nearby and you have a means of getting patients there quickly. It wouldn't be a good idea if your site for worried well or walking wounded requires a bus trip. That would be less than ideal. You would really like something that is much closer.

DAN KAVANAUGH: Thank you, Dr. Shannon. We do need to conclude the webcast. However, we have many more questions that we will get back to you and we will get a log of those questions that we can work with Dr. Shannon and Dr. Foltin on getting those answered and archived. I hope you've enjoyed the webcast today. I would like to thank Dr.

Foltin and Dr. Shannon for their presentations. An archive will be available in a few days on mchcom.com. At the conclusion of the webcast the interface will close automatically and you'll have the opportunity to fill out an online evaluation. So please take a couple of minutes to do this for us and your responses will help us to plan future broadcasts in this series and improve our technical support. Thanks again for viewing and your participation in this EMSC webcast.