

ASPR TRACIE Webinar Transcript

Hidden Consequences: How the COVID-19 Pandemic is Impacting Children Webinar Series: The Effects of Secondary Disasters on Children Webinar

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Shayne Brannman: Good afternoon. On behalf of the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response, I'd like to welcome you to ASPR's Technical Resources, Assistance Center, and Information Exchange webinar titled, "The Effects of Secondary Disasters on Children." the third webinar in our series, "Hidden Consequences: How the COVID-19 Pandemic is Impacting Children." In this series ASPR TRACIE is partnering with ASPR's Pediatric Centers of Excellence to discuss how the COVID-19 pandemic is affecting children.

Before we begin, we have a few housekeeping items to note. The webinar is being recorded. To ensure a clear recording, everyone has been muted. However, we encourage you to ask questions throughout the webinar. If you have a question, please type it in the question section of the GoToWebinar console. During the question and answer portion of the webinar we will answer questions we received through the console. Questions we are unable to answer due to time constraints will be followed up directly via email after the webinar. To help you see the presentation better, you can minimize the GoToWebinar console by clicking on the orange arrow.

Today's PowerPoint presentation and speaker bios are provided in the handout section of the GoToWebinar console, and it will be posted, along with the recording of this webinar within 24 hours on ASPR TRACIE. The opinions expressed in this presentation and on the following slide, by non-federal government employees are solely those of the presenter and not necessarily those of the U.S. government. The accuracy or reliability of the information provided is the opinion of the individual organization or presenter representative.

My name is Shayne Brannman and I'm the Director of ASPR TRACIE. And I want to welcome new and old friends to this webinar. I want to thank you for what you do daily to enhance the preparedness, response, and recovery activities of your healthcare entities and communities. Your role is so vital to addressing the daily and arduous challenges being presented. So, your willingness to spend the next 90 minutes with us to further advance your knowledge is noteworthy.

I also want to convey my heartfelt thanks to our awesome lineup of panelists and moderator for this webinar. Their willingness to lend their time and share their subsequent expertise so others like you might benefit is commendable and genuinely appreciated. And lastly, thanks to the ASPR TRACIE crew, particularly Audrey Mazurek and Meghan Treber, for coordinating this webinar. For our new friends to ASPR TRACIE on the webinar today, this slide depicts the three

domains of ASPR TRACIE: Technical Resources, Assistance Center, and Information Exchange.

If you cannot find the resources you are looking for on the ASPR TRACIE website, simply email, call, or complete an online form and we will respond to your inquiry in an expeditious manner. The next slide depicts many of the virtual resources that are available to you. So, please check them out and return often as new resources are continually being added or updated. Before we begin the presentations, it is my pleasure now to introduce Dr. Andrew Garrett, who serves as a Special Assistant within ASPR for some brief opening remarks. Sir, over to you.

Andrew Garrett: Thank you, Shayne. Good afternoon, colleagues, and we are really glad you're here to join us for this important topic. My name is Dr. Andrew Garrett I'm a Pediatrician who has specialized in EMS, disaster medicine and public health if we haven't met. I spent most of my career working with and for the federal government and in academia to help take on the challenge of ensuring that children have equitable access to the opportunity to prepare for, and recover from disasters of all flavors. Right now, I'm working in a shared position where I'm faculty in EMS in Disaster Medicine at the George Washington School of Medicine and Health Sciences here in DC, and I also serve as a Senior Advisor here at ASPR, where one of my roles is as the government liaison for the Pediatric Disaster Medicine Centers of Excellence projects that you're going to hear from today.

A little background, as I'm sure many of you know, children under 18 represent nearly a quarter of the U.S. population and they have unique biological, sociological and psychological vulnerabilities in a disaster. It's critical to identify and incorporate special considerations for this population into all of our preparedness, mitigation, response, and recovery planning efforts. Compounding this challenge, approximately 12 million children live below or near the poverty level in the United States, and children with special healthcare needs are present in about one in five households with families that report.

It's the role of all of us from the federal government, including the state, local, territorial, and tribal entities, as well as public and private organizations, individuals, and families to purposefully prepare to meet the needs of all children in a disaster. To that end just over a year ago, ASPR funded two Pediatric Disaster Care Centers of Excellence in a pilot project to assess the feasibility of regional children's hospitals, serving as a focal point in a region for raising the bar for pediatric disaster preparedness, as well as catalyzing and increasing the availability of medical and behavioral health services that can be made available after disaster.

The first center is the Eastern Great Lakes Pediatric Consortium for Disaster Response led by Rainbow Babies and Children's Hospital at the Cleveland. The other center on the other side is the Western Regional Alliance for Pediatric Emergency Management at UCSF Benioff Children's Hospital. The work from these two Centers of Excellence pilot programs, just in the first year of their existence, is going to inform excellent pediatric disaster healthcare in their region, as well as nationwide and beyond.

So this week we're in the third installment of the webinar series, "Hidden Consequences: How the COVID-19 Pandemic is Impacting Children." And during this four part series conducted in

collaboration with ASPR TRACIE and both of the Pediatric Centers of Excellence, we're going to hear from speakers that will discuss a range of timely topics on pediatric disaster physical and behavioral health during disasters, including but not limited to our ongoing global pandemic.

So, in wrapping up, the sharing of this kind of information from pediatric experts to a wide audience is one of the reasons that ASPR is supporting these Centers of Excellence. It's our hope at ASPR that you will take this information and use it to assess areas for improvement in your home community. Thank you for investing your time to participate in today's webinar and thank you for what you do every day to support children and families everywhere.

I'll hand you back over to Shayne and Audrey and the whole TRACIE team. We're grateful for their hard work to keep this information platform alive, current, and relevant. Thank you to our principal investigators for this project, Dr. Chris Newton at UCSF and Dr. Deanna Dahl-Grove in Ohio and to today's expert speakers who are taking time out of their schedule. Also special recognition to my colleague and partner in crime, Dr. Mike Anderson, who is a fellow Senior Advisor here at the Pediatrics desk working with the immediate office of the ASPR and Dr. Kadlec. Back over to you, Shayne. Thanks, everybody have a good webinar.

Shayne Brannman: Thanks so much, Dr. Garrett. And again, reiterate without Dr. Garrett's leadership and that of Mike Anderson and Dr. Kadlec, we wouldn't be able to provide this to you today. So, we're very grateful to all. And now let's get started. It is my pleasure now to turn you over to the moderator for today's webinar, Ms. Meghan Treber from the ASPR TRACIE team, who will serve as the moderator and ask some questions along the way. Meghan, let's begin.

Meghan Treber: Thanks so much and thanks to everyone for joining this webinar, the third in our series on, "The Hidden Consequences of the COVID-19 Pandemic on Children." Today's webinar is focused on the effects of secondary disasters on children. As mentioned already, speaker bios are available in the handout section of the GoToWebinar console and we have a tremendous panel of speakers today, so without further interruption, let's get started. Our first speaker is Dr. Brian Blaisch with Contra Costa Regional Medical Center, Dr. Blaisch.

Dr. Brian Blaisch: Oh, hi, good afternoon everybody and thanks, Audrey, Meghan, Shayne and Andy for putting this together. My name is Brian Blaisch, I'm a Pediatrician in Contra Costa County, in Alameda County, California. And I work specifically with kids with autism behavior, and child development concerns. But I'm also a 20-year-plus member of the Disaster Medical Assistance Team, DMAT CA-6 where I'm the Team Medical Director, Chief Medical Officer. And a lot of what I have to say is informed by my deployments to such disasters as 9/11 Hurricane Katrina, Hurricane Gustav, the Haiti Earthquake, Hurricane Irma, et cetera.

And then further, my sort of experience and desires to work in this area are further fueled by the fact that I also have a son who has autism. He's 18-years-old. And just sort of going through the challenges of caring for him have informed me quite a bit in the work that I do on a daily basis. But in particular, this interest that I have in us working on helping kids with special needs in particular during disasters. So, next slide, please.

So, the big question here I think for us all is, what are the pediatric considerations during disasters? And I think it's safe to say that we know that adult providers and caregivers tend to be more anxious when caring for children, particularly under difficult circumstances. Children are not just small adults. They do have significant physiologic differences, and as such, we need to sort of have a brief understanding of what those might be. Also, communication is often difficult. Injury, illness, and psychological stress often go unrecognized because of communication issues, and other reasons, as well.

And then, of course, kids who have developmental, behavioral or mental health concerns are at particular risk, both to have bad outcomes, but also to be difficult to understand how to take care of and what they may need. And of course, family separations, loved ones being sick or dying, mixed into this whole mess can be a particularly significant consideration for children. One thing that we do know is that children do represent upwards of 40% of victims in disasters and during disaster shelters may be housing intact families, which may raise the risk percentage even higher.

And, of course, psychological conditions and considerations are among the greatest percentage of problems that we may end up seeing. And they may not be always immediately evident, which is why we need to be on the lookout for them. So, my philosophy has always been that if we prepare to take care of children during a disaster response, we're going to be better able to take care of everybody and in particular if we think about kids with special needs and their considerations then we'll really be ready to take care of everybody. Next slide, please.

So, this is a picture of a child that I saw during the Haiti earthquake in our tent who showed up at the tent with this big scar on his chest, significant medical history, no medications. Next slide, please. So, you can understand why healthcare providers and general care providers are generally going to be uncomfortable with kids, because sometimes we'll see situations like this. And it's not to say that we don't see adults with these problems, but when we see a child, there's a lot of heart strings that are pulled, but also sometimes their needs are a little bit different. But what makes a child actually different than an adult?

Well, there's a couple of things. First of all, they have a higher metabolic rate, so their body just burns fuel faster and as a result, their lungs breath faster; their heartbeats more quickly. They also have a higher body surface area. So, the amount of skin that covers their body relative to the actual total volume of their body is larger. And that has lots of considerations such as absorption of toxins, fluid losses from burns, or just in general to environmental losses. And as a result, they can struggle more with temperature regulation, keeping the temperatures stable.

Kids as a result also tend to have more problems with their respiratory perspective. Now the kid we saw had a cardiac-- cardiovascular problem, he had a heart surgery and was on medications. But most of the time, the kids that we're going to see, if they're having a problem involving their basic function, it's going to be more on their lungs. Kids tend to die from lung problems whereas adults tend to die more from cardiac problems. But kids are more susceptible to things like dehydration. And of course, as we've talked about already a couple of times, psychologically and developmentally, kids are different. They don't see things the same way, they're not always as adaptable. Sometimes they're more adaptable, but often they're not as adaptable. They're more dependent on routines and on specific adults helping to guide them.

Special needs children, in particular, have greater differences and physiologic and or psychological demand from greater psychological differences. In particular kids, for example, maybe with cerebral palsy or spinal cord injury may have more difficulties with their sweat production, regulating their temperature and fluid balance things like that. So, all that to say that kids can be scary, but at the same time, if we just are paying attention, we can take care of their needs, but just think through the problem. Next slide, please.

Another slide from the Haiti earthquake. And again, this is a little bit more austere. We're thinking more about shelters. And I apologize, I didn't get my shelter pictures out in time, but it is good picture. You notice that people here are wearing the face masks, which you'll see a lot of people wearing. This is not a proper COVID setup by the way, if you haven't noticed. They're not wearing respirator face masks. And part of that was that they were just really focused here on protection from body fluids. What I really wanted to show is just the fact that usually it takes a team of people to take care of sick kids, and most of the time in our shelters the kids are not going to be sick like this. But when they are sick it does take a group of people. And as you can imagine for the person who is sick, anybody who's sick in a disaster situation, who is already -- had their world upended is going to be frightened. But if it's a child, you can just imagine how much more difficult that will be. Next slide, please.

So, what is it that makes things difficult or different for us during this time, this time of COVID? Well, I think it's safe to say that the general level of stress and anxiety is already so much higher than it is leading into a disaster. And honestly, I'm not sure exactly what that means. I mean, if you undergo a major serious disaster, then your life is so upended. But on the other hand, there's a certain resiliency that people tend to have, and I think right now, we all sort of see it in our communities and the people we care about and work with that the stress of what's going on is already reducing a lot of our resilience.

So, we're all kind of suffering from a form of trauma and stress related disorder just from the get go. So, anything that happens moving forward is just going to be amplified. But in particular certain things like personal medical supplies, prescriptions, those things maybe in shorter supply than you might ordinarily have. And then, of course, that would be important during a disaster. When it comes to the things that we require of adults and children during the COVID times, things like the mask and social distancing, we have a much harder time with children. Some children do very well other children do not.

Also, educational needs are already upended, daily routines are already upended, sleep schedules are already upended, it is pretty universal. I hear this every day and see this every day in the kids that I take care of. And of course, social distancing really gets in the way of kids being kids, having their usual play outlets. Next slide please. So in the end, what we need to do is we always need to just remember that if we try to interact with our patients directly, we're going to do a better job of being able to help calm themselves down and actually helps calm us down as well. Next slide, please.

So in particular, there are certain conditions that I'm happy to talk to people offline about, that are particular areas of interest of mine; kids with ADHD, autism, developmental delay,

intellectual disability, behavioral and psychiatric emergencies. All that to say that kids who are already struggling, if they have some of these conditions, it's going to be that much worse. So kids for example, who have ADHD, they have a hard time staying in one place, they have problems with short-term memory, they forget what you tell them right after you tell them that.

So, it's those symptoms will be amplified during the time of a disaster when it's important for you in a shelter, for example, and we need to really help them stay safe. It's going to be harder to do that. Kids with autism, other significant developmental delays, including intellectual disability, may have significant problems with basic communication, appropriate social communication interactions, problems with their schedules being disrupted, problems with emotional dysregulation, etc. And so, that's just going to again, be amplified. And it makes it very difficult on the individual, the family and whoever is running that shelter.

And then, finally, if kids are prone to, or happen to have behavioral psychiatric emergencies, and there are a lot of specific considerations, cultural, ethnic, racial issues that play out when people respond to children having behavioral and psychiatric emergencies, and that is no different in a shelter environment. It needs to be thought about and prepared for. Next slide, please.

So, what do we want to do? I mean, of course, the most important thing that we can do to help our families -- next slide, please -- is going to be to really make sure that to the best of our possible outcomes, to preserve the family unit. Even if it comes down to including pets and that's a hard ask, but it's also, I think, become increasingly acknowledged how important it is that family pets are. For example, particularly, service or comfort animals for kids with special needs or adults with special needs.

And then of course, establishing routines, no matter where we're sheltered, if we can go ahead and try to really make sure that we're establishing routines, sleep routines, dietary routines, make sure medications are being given at the right times, keep kids actively engaged, active and engaged. And of course, using any available mental health providers, teachers, volunteers to help kids, both work through the issues that they're struggling with and also at the same time to keep them active and engaged. The more engaged and active they are, the better things are going to go.

Of course, we need appropriate supervision at all times, particularly when young kids -- when special needs kids are around because sometimes bad things happen in shelters or folks when they're not being adequately supervised. And of course, emergency and identification information. Anything that's really important about that patient needs to stay with that patient so that they get separated, moved to a different facility, that whoever's at that new facility doesn't have to recreate that information, that same information.

There are specific psychological considerations working with kids. Trying to build trust and culture of safety for them. And the communication style is very important. If you notice, Allen in that picture before, he was really working with that patient. Is it possible go back to that slide real quickly? You can see that he's really on the level of the patient. He's making good eye contact, he's really sitting there listening. He's a big male, but he's not looking threatening, which sometimes big males will appear threatening. So, all these things are really critically important

skills to have when working with kids in disasters. Next slide, please. Oh, okay that's it. So that's pretty much what I had to present for you guys today, and I'll look forward to taking questions afterwards, and thanks for your attention.

Meghan Treber: Thank you so much. I just want us to focus in. That was really great information. For our listeners, I want to focus on maybe two or three key issues or changes for children that healthcare providers and staff will need to think about and address in a shelter or congregate setting due to COVID-19? What are those changes that they may not have had to consider pre-COVID?

Dr. Brian Blaisch: So, of course, I already mentioned it, but the mask wearing and the social distancing are really among the most difficult things. As I mentioned before, there definitely are kids who are onboard with the whole thing, but there are many who are not. And, of course, if you throw in some of the kids that I was referring to there, it's even harder sometimes to get that. So, we've got that issue. The compounded disruption of routines as I mentioned before, I think is just a huge hit that we've all sustained and would be further problematic in a shelter environment.

And then maybe finally, a third item I might throw in there is, during the time of a disaster, and particularly now during COVID there's a greater risk than ever of separation of parents and children or guardians and children due to the a higher likelihood that during a disaster, a family member might actually acquire COVID and may actually need to be isolated, or worse, be hospitalized. And so, these are considerations and concerns that I think we really need to keep in mind when we're thinking about how to care for children and families during disasters, during this very difficult time that we're experiencing.

Meghan Treber: Thank you. That's very helpful and definitely bottom lines fit for everybody. So next we have Annette Newman with the University of Utah Burn Center. Annette.

Annette Newman: Hi everyone, that was a great presentation. Brian thanks for that information. Good afternoon or good morning everyone, if you're in the West. I'd really like to thank ASPR TRACIE for providing an opportunity to share my life passion. I don't think there's anything more exciting than burns and disaster and mixing them together is always great. And in addition to thanking ASPR TRACIE, I'd really like to publicly recognize the wildland crews who have assisted or are currently assisting with the fires around the country right now. They are some of the bravest people that I know.

I'm one of which sent the opening picture to the presentation, if you want to forward that Meghan. And this is just -- I can't even imagine being stood there, taking this picture, but unfortunately, history teaches us the need to imagine the worst. So, we just had Beirut, we've had 9/11, we had the campfire several years ago, and most recently the Creek Fire, in which 200 people were trapped at the Mammoth Pool Reservoir area.

And it took just a treacherous rescue mission by military helicopters to evacuate those folks that were there. And perhaps one of the most notable accounts for me when I was reading up on all of this during and after that event was that of a 16-year-old who described splashing water on her hair because it was catching on fire. And she says, in one of the reports to New York Times,

nobody knew the helicopters were coming and it just flew out of smoke, and that is hard to imagine the fear of those that were trapped in that event. And I think, as Brian alluded to, this is a big problem with wildland fires, people are often trapped or hurt in places where they should feel safe.

So, these events also bring feelings of anger, feelings of grief, and feelings of helplessness to those folks. And I think also it's notable that the pilot of one of the Blackhawk who rescued many of those trapped said that the mission ranked as the number one or number two most dangerous mission he's ever flown during his 25 years as an Army helicopter pilot, including combat missions in the Middle East, which is really pretty sobering. I've been in the burn world for over 30 years and just seeing many traumatic injuries and wildland fires are amongst some of those.

It is difficult to really talk about the current physiological --psychological effects, as many are still living through it, but we do know that burn injury changes the survivor both emotionally and physically. And while there are common themes in recovery, each recovery is unique to the person, and usually continues for the span of someone's lifetime. And a quote by Lewis Carroll came to mind when I was putting this together. It's from "Through the Looking Glass" and it was used by one of my disaster mentors, the late Dr. Borrello and-and it goes like this. "The horror of that moment, the King went on. I shall never forget. You will though, the Queen said, If you don't make a memorandum of it."

Ensuring that we learn from historical events and move forward with new knowledge that assist us to plan, train, and educate accordingly is imperative, but that takes resources and commitment, which as we know can be challenging especially amidst this global pandemic. So what's really important to remember here is that it doesn't take many burn patients to completely overwhelm a system, as those patients are so resource intensive and burn injured pediatric patients bring a whole new level of intensity and stress. And this is true on a normal day, just not on an MCI. I sit here, and there's a unit full of pediatric patients beyond the door that I've closed. So it's quiet in here. So, we really have a duty to do everything we can to stay in contingency care as long as possible, and not be forced to implement crisis standards of care. Next slide, please.

So, given the previous slide's information, what have we done to prepare and respond to all land fires, which are unlikely to be going away anytime soon? So, the American Burn Association has identified five burn disaster regions, as you can see on the map on the bottom right. Each one of these regions has a coordinator like myself, who is responsible for assisting to plan and prepare for burn mass incidents within their coverage area.

Now on the slide that you see this is the Western Region data specifically, but all regions have similar information. And you can find out who is your coordinator by going to the American Burn Association website and looking in the disastrous section. And all coordinators and 24-hour hotlines are listed there. And many burn centers, you can't really see on the map those little pin pricks, are where the burn centers are located, but many are located in metropolitan areas leaving numerous patients without access to a burn specialty hospital.

And in our region, there are actually three states without burn centers, and those are Alaska, Wyoming, and Montana. And as you know, many of the big wildfires have been in the West, for sure. We have 453 beds, for literally half of the United States and those are all burn beds. We do frequent bed counts for situational awareness and this year because of the impact of COVID-19 on staffed beds and the numerous large wildland fires, we've actually done more bed counts than usual, including several real-world counts. And these bed counts are the key coordination element for triage and transport in a small and medium event.

And on average, we have about 150 to 180 immediately available beds with a surge capacity of around 200 of the 27 burn centers. And many of those burn centers as you can see, 13 of them are in California. These bed reporting sheets also identify pediatrics, specialty centers, although, just so that everyone knows most burn centers care for both adult and pediatric patients. So, they usually are a combination. And this is really important to know, because if there is an event in our region involving over 200 patients, which will need burn center admission, we don't have enough beds.

So if we think about what just happened a month ago, in history really, at the Creek Fire, there were over 200 people that were trapped and we were really, really fortunate that the worst possible case scenario didn't happen and those folks were rescued. And what is really interesting is that our burn centers greatest strength, which is our burn specialty, is also our greatest weakness because we are, like pediatrics, a limited resource. Next slide, please.

So, what are our challenges and limitations? Well, our greatest strength again is our limitation because there are less than 1,900 burn beds in the nation, and despite the infrequency of significant burn disasters, a burn mass casualty incident can quickly overwhelm, like we've already talked about, local resources, and exceed the capacity of the closest local burn center to provide care and that's really important to note. Patients will need to be cared for therefore initially at non-burn centers, and perhaps non-pediatrics specialty facilities, also that will be called on to render immediate critical interventions and prolonged care until transfer to a specialty center, be it burnout pediatric is possible.

And, and this initial nontraditional distribution may address the burn bed deficits. So, non-burn centers are our surge. But it will not address the discrepancy in knowledge and expertise, usually provided by burn center in pediatric clinicians. So, initial medical management, which really impacts long-term outcomes poses unique challenges here. On the night of the Creek Fire at Burn Coordination Center, which was activated also received reports of firefighters trapped in a Montana wildfire, and those firefighters did not end up needing to be transported, but had the night gone a little differently, then would we have been ready to transport patients across multiple states to receive specialty care for multiple wildland incidents?

Unfortunately or fortunately, I can't answer that question, but it is a question that we have an ongoing duty to plan for it. And in order to be truly prepared, our goal is to ensure all hospitals have the resources that they need to care for burn patients and to ensure activation of mutual aid for specialty care. And I think that it's great that the initiative for HPP this year is burn patients, although some centers are changing that to infectious diseases. So that's a great opportunity. And running into the COVID-19. So 2020 also brought with it unique challenges and opportunities

that were afforded by a global pandemic. And the most significant of these challenges has really been a decrease in staff.

And I'm sure all healthcare facilities listening today are noting that same experience. And this is a big factor in the avoidance of crisis standards of care. And in our bed reports it was noted that some burn centers had beds, but they were unable to surge due to staffing shortages, and this really limits our ability to care for patients.

Next slide, please. So, I could take hours talking through this slide. I was trying to really hone things down. So really this is just a scratch and sniff version. Obviously, all of us collaborate. And I apologize if I miss anyone out, but we collaborate on all levels with multiple partners. So the American Burn Association, the Western region, our coalitions, our State health departments, our Hospital Association, first responders, and first receivers, our federal partners and those groups they support with funding, such as the Western Region Alliance for Pediatric Emergency Management, or WRAP-EM, which is a group that I get to, fortunately, be a part of and therefore do this webinar.

And we do this because preparedness is all about relationships. In a disaster, the first post to check is our own. And we can be surrounded by chaos, but not panic. And that composure comes from existing knowledge and resources, and in addition to our individual skills and abilities and that's really important, because strong relationships, pre-disaster, educational resources, which have already been seen and used by providers and access to telemedicine, will be and are crucial.

So the Western Region just finished our operations plan, which is actually been in motion for almost a decade. And we did a virtual tabletop exercise that was attended by close to 300 partners, and some of you listening may have been on that virtual tabletop. And these partners were from 14 states and three countries, and we did this in order to ensure input was provided by as many organizations as possible to inform the CONOPS plan.

And this plan should be available on Wednesday on the website, or app that you see on this slide and as will be the recording of the tabletop and all the materials associated with this CONOPS. And the plan and the resources, it refers to contain essential evidence based clinical information, which will inform decision making by community hospitals and trauma center clinicians who received burn patients during a mass casualty incident. So getting that out there was really important. And we'll also actually be doing a deep dive into the events around the Creek Fire for those that are interested on December the 3rd, using the initial estimated, not actual patient numbers and testing patient movement capabilities across state lines.

And hopefully this will assist us to close gaps and assist healthcare facilities remain in contingency versus crisis care during a mass casualty incident that hopefully will not come, but of course we have to prepare for that.

Next slide, please. So, this picture always just gets to my heart, because words can't describe this moment. So this is -- this is when a patient who's been in the burn center for months, gets to leave our cocoon of love and continue with their survivor journey. And this is what we do, we hoop and we holler and we blow bubbles and we support the patient.

But just so, you know, those patients always return multiple times as we mentioned. Burn injury changes people, both psychologically and physically, and oftentimes they need to come back to our cocoon. And so, this road of recovery does really take a lifetime. And ironically enough, so many community preparedness initiatives. And the path is infinitely easier if like this picture, we all hold hands and we walk toward the finish line together. Next slide, please.

So the little girl on the left wrote these words, they're words in the little tile next to her. And she was asked what advice she had for a new survivor and she said, "Be tough, be buff, be strong stuff." And I just wanted to close with may we all take note of her words, as we plan prepare and exercise for the next historical lesson, because it probably will come. And in order to do the greatest good for the greatest number, none of us can forget our goal, which is to be as ready as possible, when we're called to action. Because the outcomes and those that we see in these pictures are so worth it.

And again, I appreciate the opportunity to present my passion to you and the passion of really, all burn providers across the nation, because we all are passionate about what we do and the population that we care for and pediatrics are particularly endearing. So, with that I'd like to turn the webinar back over to Meghan.

Meghan Treber: Thanks for that, thank you so much. Just a quick question. Can you describe some of the patient specific challenges from the wildland fires that you've been seeing or heard from your colleagues? And how is that with regard to the current COVID pandemic. What are you seeing that's just incredibly unique to this very specific situation so that those on the phone can sort of hear those COVID-specific issues?

Annette Newman: That is a great question. So, let's think about the mechanism of injury here. So, wildland fire patients are usually caught in a smoke filled environment and the heat from the fire is pretty intense. So now we have a patient that's been breathing in that thick dense smoke, which is filled with toxins. And that causes an inhalation injury, which is really a chemical injury from those toxins. And this damages the pulmonary bronchial tree, which increases patient morbidity and mortality, as the lungs are a huge surface area. So, these patients are at increased risk of pneumonias and develop acute lung problems which are challenging to fix.

And they need ventilator support with high pressure and oxygen for long periods of time. We also have the high heat. These burns are usually super deep, it involves lots of surgeries, and may involve amputations or just really deep excisions. And then also if we think about that environment, the challenge from wildland fire, that environment is dirty and debris filled. So, when a burn injury occurs, which is really the loss of that protective coat of armor, which is the skin, patients are more likely to develop infections, which really complicate recovery and increase length of stay. And then the other thing, because this is what we're really talking about here, is, the very young do not do well with traumatic injuries.

So now we've got problems with the lungs, we've got problems with infection, and then we've got the challenge of pediatric trauma. And COVID really has brought some pretty unique, additional challenges because although a disaster usually impacts local hospitals, it doesn't

always impact the center's ability to transfer patients to a different facility in another area. But this pandemic has impacted all of us. Not just within our region, but multiple regions and actually countrywide. So, as we do know, burn death counts and noting this inability to surge or take patients, or a decrease in that surge capability.

This is really important because it means an MCI involving specialty patients such as burns or peds or burns with -- in a pediatric patient, finding a bed might be challenging. And then also as I mentioned earlier, the patients that are injured in wildland fires need ventilator support for long periods of time and they have an extended inpatient stay. So this becomes really challenging when staff, when staff and when space is tight or just unavailable as it inhibits the healthcare facilities ability to take additional patients, and again, that is a real challenge.

Meghan Treber: Thank you so much for that. I think that's incredibly valuable information for our, for our listeners. So, our next speaker is Dr. Jay Fisher, with the University Medical Center Children's Hospital in Las Vegas. Dr. Fisher.

Dr. Fisher: Yes, thank you very much for having me today. I'm a Pediatric Emergency Physician and Medical Director at Children's Hospital Nevada in Las Vegas and UNLV School of Medicine. My interest in disasters is really just began recently with the Mandalay Bay Shooting and taught me just what the meaning of vulnerability is. Next slide please. I realize as a pediatric emergency doctor, that we deal with a disaster each and every year when we deal with seasonal flu. So, the impact of COVID on our seasonal flu is something to consider. I'm a member of the American Academy of Pediatrics, and they've been accumulating data quite robustly since the beginning of the COVID pandemic.

So, let's look at these two viruses which clearly are a tale of two different viruses. So, the 75 million kids in the country and at this juncture, we believe that about 1% of children have been infected. So about 10% of the total cases of COVID so far nationwide have been in children, roughly one in 1,000 or one in 900 children have been infected.

Next slide, please. I'm sorry, that's one in 100, excuse me. So approximately 1% of all children in the U.S. have been tested positive for COVID. We've had about 5,100 COVID-19 hospitalizations. These data are about three weeks behind now, so it might be a little bit higher. Unfortunately, even though the impact per child has been relatively low, it has still killed about one out of 5,000 children infected with COVID-19.

So, it does have some mortality associated with it. Thankfully, we've learned thus far in this moving target of a disaster that the attack rate is a little bit lower in children. We've all heard of the 'are not' phenomenon, which is about two in COVID the number of people that an individual will infect that has the infection. Attack rate, it's a little bit more intuitive for me, and that is, how many people exposed to the infection will actually get the infection. Fortunately for children, COVID has been less impactful than influenza.

Next slide, please. The influenza summary is always concerning for children. The attack rate in children is significantly higher than that in adults.

And we know that from some epidemics of seasonal flu, that up to 60% of infected in our country at any one time will be children. That was the case early on in H1N1 outbreak in 2009. Annually, this results in about 50,000 pediatric admissions annually, and about half of these are in young children under age five. So, a couple of million children each year infected by this seasonal influenza epidemic.

Next slide, please. So, what are the implications of a seasonal influenza epidemic and the COVID-19 pandemic? Well, there's some good news for acute care and emergency care, hopefully.

And that is that the data from the southern hemisphere suggest that the influenza impact could be mitigated actually by the COVID-19 control methods, such as social distancing and facemask wearing. Also, as I mentioned, there's decreased attack rates in children. This has been good. Also, the average, just subjectively speaking in my practice, the illness severity on average in COVID-19 is less severe than the influenza that I see each and every year.

So average illness severity is less. And because of everyone's fears of the COVID-19 pandemic, we've seen a dramatic reduction in PED utilization, about 30, 40% across the country, and this potentially increases surge capacity, which is a good thing. Next slide, please.

There is bad news, however, and that is that the bad news is that the southern hemisphere experience may not, it may not predict the northern hemisphere experience. Also, that COVID-19 could substantially reduce influenza vaccination rates with much work by all organizations, the influenza vaccination rates have reached 40 and 50%, some seasons. Unfortunately, the COVID-19 pandemic could dramatically reduce the frequency with which people are getting vaccinated. Influenza epidemics have also demonstrated that they are capable independently of overwhelming ED systems due to the high pediatric attack rate that we see with influenza in the cytokine storm associated with influenza.

Although COVID-19 is generally less severe in children, it has killed already in this country, approximately 120 children. That was as of 10/15/20.

Next slide, please. So, influenza is capable of impressive pediatric illness, severity, and mortality. A retrospective look at the H1N1 outbreak in 2009 showed that approximately 317 children have been killed over a 10-month period of time in 2009. This outbreak occurred before there was widespread flu testing available, and that so therefore likely underestimates the total number of children that were killed by influenza. And even with vaccination rates at 40%, we're still seeing fatalities each year in the rate -- in the region of 175-180 cases. Next slide, please. This is shown by this data downloaded from the CDC this past month, showing the annual mortality in children due to influenza. Next slide, please.

Unfortunately, also, we're seeing a steadily increasing of hospitalization rate due to influenza. And this, I think, is due to our sensitivity to this cytokine storm that we see. Many children with influenza have a serious impact on their vital signs. And these children, even those that are going to do well, can look quite sick on the first of few days of infection. And as we can see looking

lower left, the 2015-2016 hospitalization rates are dramatically lower than they are over the last 12 months up in the upper left there. Next slide, please.

So, just to show you how impactful this infection can be, I'm going to show you two cases from our little shop here in Vegas. We're a relatively small PED, but this influenza has impacted us fairly severely. Nonetheless, this was a case from October of last year and this healthy 8-year-old girl, had not received her vaccine yet last October. She was usually vaccinated each and every year, but last year did not get the vaccine in October. So, she presented with this remarkable history. She had one day of low-grade fever and mild headache, and she was actively playing with her siblings the night before presentation. She was found seizing in bed the next morning, by her 10-year-old sibling, literally about eight or nine hours later she came to me in status epileptic requiring intubation and life support. She was influenza B positive. Her MRI showed diffuse thalamic and brainstem ischemia, and she survived, but unfortunately with significant neurological impairment.

Next slide, please. That was a completely healthy girl. Similarly, in 2018, actually, on Christmas Eve we had this little 9-month-old girl came to me with 12 hours of cough and increase work of breathing. She was sent to us from an urgent care with severe, rapidly evolving respiratory distress, and alteration in medical mental status. She arrived to our ED with a temperature of 104 and a heart rate of 244. You read that correctly, respiratory rate of 60 and a saturation of 100%.

We gave fluid boluses and tried to resuscitate her, but during the process of intubation, she suffered a very intubation arrest and could not be resuscitated. She was positive for influenza A. Next slide, please. So, cytokine storm is a very real thing with influenza. And this is, and in a general term, has a greater impact on the individual child, than we have seen with COVID-19. But this results in dramatically elevated ED utilization in hospitalization rates. Next slide, please. This was first noticed and published in 2009 by the Children's Hospital of Philadelphia when they showed that they have a very large ED, nonetheless, suffered a 50% increase in patient volume during the H1N1 pandemic.

Next slide, please. Due to this, as part of my work with the WRAP-EM Project, I looked at eight EDs over the -- across the country that I have access to their data, and looked at the impact on these eight different PED's in their annual seasonal flu response, and looked at one week, patient volume surges during the CDC monitored influenza seasons. Next slide, please.

It showed that these eight EDs, were similar to the children's hospital of Philadelphia, and that they had rate -- they had increases in their daily volumes from 7-78% at any given time, dramatically impacting, of course, the surge capacity of these facilities. Next slide, please.

So, what can be done to mitigate the impact of influenza and the impact of influenza on our COVID response?

Well, we know that these two infections can coexist, and that will be a very bad thing to have, absolutely. So, we dramatically promote flu vaccination in children, and every child should be vaccinated. Unless you think that something bad can't happen to an entirely normal child with an influenza infection, I hope those two cases can bring that home for you. We also have better data

now, that the antivirals we have do impact shedding and while it has not been proven to reduce transmission, I am a proponent of using antivirals on unvaccinated people in particular.

We also need to expand access to care during flu season and be ready for these surges that we know are coming each and every year through the use of telemedicine, mobile units, and primary care and to continue our very careful COVID-19 mitigation with mask wearing and social distancing. And recognize that independent of COVID-19, each and every year, influenza has potential for severe morbidity and mortality in healthy children and in non-healthy children. And with that, I'll turn it back to you and I apologize for the interruption with the phone call.

Meghan Treber: That's okay. No worries. So, I want to just hone in on some takeaways here. So, what are one or two key mitigation steps that individual clinicians can take in their practices or their facilities with their patients and with family education? Any ideas here for prep for influenza concurrent with COVID-19? What are some distinct actions that they can take?

Dr. Jay Fischer: Well, obviously not to beat a dead horse, but to get vaccinated. I mean, the vaccine has been demonstrated to very clearly reduce morbidity and mortality. And so, that it, our vaccination rates of 40%, should be double that. So that's clearly number one. Number two, that we should continue to practice social distancing and also, to do what we can to practice remotely when possible to not bring patients to the hospital and to treat these infections either by telemedicine or direct to consumer care or other methods.

Meghan Treber: Thank you. That's great advice. And I will mention that ASPR TRACIE has a number of resources available on telemedicine and COVID-19. So, I would urge listeners to take a look at some of those resources as well to help implement that in their practices. So, thank you very much. Our next speaker is Dr. Berkeley Bennett with Nationwide Children's Hospital in Ohio. Dr. Bennett.

Dr. Berkeley Bennett: Hi, thank you. I want to thank ASPR TRACIE for this opportunity, and also Brian and Jay for those awesome presentations. That was great. I am an Emergency Medicine Physician at Nationwide Children's Hospital, and I'm excited to talk to you about multi-system inflammatory syndrome in children, otherwise known as MISC.

Next slide. So today we'll specifically talk about some national alerts and initial studies, the case definition of MISC, epidemiology, pathophysiology, the clinical presentation, and treatment and management. Next slide.

In April 2020, the United Kingdom issued a national alert regarding a new phenomenon affecting previously asymptomatic children with SARS-CoV-2 infection. They describe the hyper inflammatory syndrome with multi-organ involvement, similar to Kawasaki disease and toxic shock syndrome. Next slide, please.

In May of 2020, the U.S. released a National Alert and Health Advisory based on the results of these large case series, which included hospitalized patients with severe disease. One series included 186 patients in 26 states, the other from New York included 99 patients. These studies are the source of much of the information in this presentation. Next slide, please.

The current CDC case definition defines multi-system Inflammatory Syndrome in children as including those that are less than 21 years of age, have fever greater than equal to 38 or subjective fever for greater than equal to 24 hours, laboratory evidence of inflammation, evidence of clinically severe illness requiring hospitalization and multi-system, which is defined as greater than equal to two organ involvement and no alternative positive diagnosis and SARS CoV-2 infection by any one of either RT-PCR, serology, antigen test or COVID-19 exposure within four weeks prior to the onset of symptoms. Next slide.

Our understanding of MISC is evolving, though for true incidents is unknown, but it is thought to be a rare complication of SARS-CoV-2. For example, in the New York study of patients, less than 21 years of age during a three-month period, two in 100,000 persons, had MISC, or is 322 in 100,000 persons as far as CoV-2. Next slide. These graphs from the studies in the U.S., on the left and New York on the right, illustrate the temporal relation of MISC to COVID activity in the community. And the graph on the left, the yellow line shows the percent testing positive for SARS-CoV-2 over time and the red bars illustrate the number of new cases of MISC over time. The graph on the right provides a similar picture.

The cases are typically seen two to four weeks after the peak of SARS-CoV-2 in the community. And on an individual level, MISC developed two to four weeks after infection with of SARS-CoV-2. Next slide, please.

From the large case series in New York and in the U.S., black and Hispanic children were often affected than white or Asian children. These proportions are similar to those affected by SARS-CoV-2 MISC is slightly more common in males than females. Next slide, please.

Most patients with MISC are previously healthy, but comorbidities that are most common are obesity and respiratory diseases, such as asthma. Next slide please.

Some patients with MISC have positive PCR to SARS-CoV-2. But more commonly, patients with MISC, have positive antibodies to SARS-CoV-2 and a negative PCR. This suggests a post infectious inflammatory response plays a major role in the pathogenesis of this disease. A prominent hypothesis is that macrophage activation of T cells and B cells cause a cytokine storm, similar to what happens with influenza, as Jay mentioned, and release of antibodies resulting in a hyper immune response. Next slide, please.

Collectively, multiple case series illustrate the frequency of specific signs and symptoms at initial clinical presentation. Secondary to fever, GI manifestations are the most common. Some reports have described a similar presentation to appendicitis. The symptoms highlighted in red are also seen in Kawasaki disease, illustrating the overlap between these two disease processes. Next slide, please.

Children with MISC are pretty sick. 80% are admitted to the Intensive Care Unit, 50% require blood pressure support, and 10-20% require mechanical ventilation. ECMO has been used on 4% of patients, and approximately 2% of patients have died. Cardiac manifestations of MISC are

very common and include myocarditis, coronary artery aneurisms, ventricular dysfunction, approximately 30%, and pericardial effusions.

An important difference between MISC and Kawasaki disease is that myocarditis and ventricular dysfunction is more common in MISC, coronary artery aneurisms are more common in Kawasaki disease. Abdominal imaging commonly shows findings of liver and spleen enlargement, inflamed mesenteric lymph nodes, extra fluid in abdomen, lungs and pelvis, often an inflamed or enlarged appendix and signs of enteritis or enterocolitis. This makes sense given the gastrointestinal manifestations are one of the most common presenting symptoms. Next slide, please.

Younger children and adolescents differ in the clinical manifestations of MISC. Children less than 12 years of age tend to have skin findings, and 50% meet criteria for complete or incomplete Kawasaki's disease. In contrast, adolescents will often have cardiac involvement, such as Myocarditis, and only 12% meet criteria for complete or incomplete Kawasaki's disease. Next slide, please. Thank you.

For laboratory findings, the hallmark of MISC is inflammation demonstrated by elevated ESR, CRP, Ferritin, procalcitonin, interleukin 6, and triglycerides. Many patients will be hypercoagulable with elevated D Dimer and fibrinogen. Elevations of BNP and Troponin illustrate cardiac involvement and elevated AST and ALT can illustrate inflammation of the liver. Next slide please.

These medications are used depending upon the extent and severity of the disease. Intravenous immunoglobulin, known as IVIG is a concentrated and diverse collection of antibodies prepared from the blood donated by thousands of people. Thinking back to the hypothesis and pathogenesis of MISC, the cytokine storm and release of antibodies causing a hyper immune response, my initial reaction was well, why won't we give these kids more antibiotics.

It turns out that IVIG has strong anti-inflammatory properties. Additionally, the antibodies in IVIG can bind to the cytokines and antibodies in the body that are causing all the havoc and diminish their damaging effects. Other ways to further reduce inflammation are via steroids and a biologic called, Anakinra that blocks activities of interleukin1, which is one of the initiators of the cytokine surge. For patients who are hypercoagulable, Aspirin and Enoxaparin can prevent clogging. Next slide, please.

The affirmation case series had provided excellent data on the epidemiology and clinical presentations of MISC. The data has come from hospitalized patients. Currently, there's no data to guide emergency medicine physicians like myself and primary care providers on how to approach children who may be early in the illness or having less severe disease. In July, the American Academy of Pediatrics provided interim guidance on initial testing for MISC in the outpatient and emergency room setting.

Any child with fever for greater than or equal to three days, who is a moderate to severely ill and has clinical signs of organ dysfunction should be evaluated with vital signs, assessment and perfusion and screening for systemic inflammation. As you saw in an earlier slide, there are

many laboratory abnormalities with MISC. So, obtaining all the labs on every patient that meets this criteria could be resource prohibitive. So, what we've done at our institution is we're giving a CBC and an ESR or CRP as an initial screening. If the patients have an ESR greater than 40, or CRP greater than three, or lymphopenia less than a thousand, we'll proceed with obtaining additional laboratory work, either in the emergency department or via direct admission to our infectious disease service. Next slide, please.

These are my references. And now I'll turn it back to Meghan.

Meghan Treber: Thank you so much, Dr. Bennett. And I'm going to ask a difficult question, and it's difficult because, you know, we are so early into the course of COVID. But I know people are thinking about this. Can you describe a little bit about the longer-term disease course. And I'm using longer in air quotes, and the outcome for these, and outcome for these MISC patient. What does recovery look like? So you got some -- you talked a little bit about outpatient management, but what is the what's hospitalization course, how long are we looking at and what does this look like for the kiddos once they're discharged.

Dr. Berkeley Bennett: So, you're exactly right, we don't know the long-term prognosis for this, because it is so new. But we do know that the average hospital course is about seven days. Many of these kids require Intensive Care Unit admission and support, and it's usually about a week of hospitalization for that. We've seen that the overall patients get much, much better after getting IVIG and other anti-inflammatory therapies. And the cardiac dysfunction which is one of the most concerning manifestations of MISC, does improve as the inflammation and fever subsides. But some studies have shown that you could still have some cardiac dysfunction like ventricular dysfunction, even after discharge, meaning that these kids need to be monitored really closely, especially from a cardiovascular standpoint, to make sure they continue to get better.

Meghan Treber: Thanks, that's helpful. I just -- once they're discharged, you know, we want to inform our clinicians on the call that there are longer term follow on, that are going to be needed in community care setting.

Dr. Berkeley Bennett: Absolutely.

Meghan Treber: Thank you .

Dr. Berkeley Bennett: Absolutely. And I say that you know, follow-up cardiology is most important, yeah.

Meghan Treber: That's really helpful. Thank you so much. So, our final speaker today is Dr. Greg Nelsen with Primary Children's Hospital with Intermountain Healthcare. Dr. Nelsen.

Dr. Nelsen: Thank you so much Meghan and to all those speakers so far you have relayed a ton of awesome information. And today, I want to talk to you a little bit about the supply chain challenges and challenges around shortages with the pediatrics. Next slide, please.

So, one of the challenges within the supply chain is it's an extremely opaque system. There's a lot of corporate secrecy and proprietary information that are a part of that. There's a lot of subcontractors that play into the supply chain and a lot of different countries. And for perspective, India supplies about 40% of the generic medications to the world, but 70% of their active pharmaceutical ingredients are from China. And so, this isn't just isolated to one region, here in the US, we did have a geographically concentrated number of pharmaceutical manufacturers down in Puerto Rico.

And Hurricane Maria really illustrated the fact that we had that concentration because 43% of our saline used in the United States was from there previous. And when that hurricane came through, there was a huge impact to the supply chain within the United States. ASHP, the American Society of Health System Pharmacists, partnered with the American Hospital Association, the American Medical Association, United States Pharmacopeia, and many others to have a supply chain summit addressing the strengthening of it. And I unfortunately was unable to get any information about what was talked about there, but what I'm mostly excited about is that the major partners are sitting down at the same table to begin talking. Next slide, please.

Within shortages there's a lot of different factors that affect it, and I've listed just a couple here. And there's many, many more; there are many articles that you can look up and see all the different parts of it. But one of the big ones that we've seen that impacted in the early COVID was a large number of intubated patients with utilization changes specifically during that time, which -- sedation medication. And there's a lot of reports of being short of medications to keep those patients that were intubated asleep. And it did come and affect many pediatric hospitals as well. I know at our hospital, we almost ran out of Precedex that we use a lot for our ICU patients.

There can be recall and manufacturing problems, whether it's sourcing of ingredients or just simply something that wasn't quite right in the medication and the manufacturer has to recall it, and the products are no longer available. In the supply chain disruptions that can be from sourcing those active pharmaceutical ingredients to make that medication. But if you think about the vaccine that is currently being worked on for COVID, it's not just the vaccine; you've got to have the vial for the vaccine to go in, the box for it to go in, the cork, the little metal strap around the top, the package insert. There's a lot of different components that come together to create that pharmaceutical or supply item.

And then you also have emotional interactive purchasing when information comes out or like a news article or something like that. I'll talk a little bit about Decadron on the next slide. In the supply at each of your facilities; whether it's a clinic office, whether it's in your own personal medicine cabinet, or at a large hospital, I advocate to have a little bit of a buffer supply. If it's your home medication, you know, try to get a little bit ahead, because if there's ends up being a shortage of something like, it seems like most years, there's a little bit of a shortage of Albuterol during the respiratory season, you can withstand that because you would have a, moving from a three day to a seven day supply to 14, or even a 30 day supply ahead of those critical medications. And those shortages will have a decreased impact on the individual patients, both on the adult and pediatric.

And to do this, you need to work with your finance and pharmacy leaders for what makes sense with your institution. With the financial challenges currently with the COVID and the decrease in patient numbers and a lot of health systems have that financial challenge; it can be a large amount of money to have that increase in supply. But if there is a disruption in the supply chain of getting medications to an individual hospital, wholesalers are very dedicated to getting those medications to their hospitals. They've got plans to get their essential medications that they've got on file to each individual location. In 2017 AmerisourceBergen used duck boats, and helicopters to get meds to clients within the Hurricane Harvey and Irma aftermath -- after that incident.

And so, there's a lot of creative ways and they're dedicated to get that to help take care of the hospitals so that the hospitals can take care of patients. Children's Hospital Association and Vizient, one of the largest buying groups has also addressed it and looked at this a lot. And one of the things that they looked at was how many days' supply at each of the individual standalone children's hospitals. And one hospital did have up to a 30-day supply and had different mitigation strategies within that. Next slide please.

Within COVID-19, I'm not going to discuss specific therapy options, it's beyond the scope of my presentation today. There's been other speakers that have spoke a lot on it and really relayed some great information. But the sedation shortages during the peak of the ICU patient really has a broad impact. And Dexamethasone, I think, is a great illustrator of that. From June 16th to 19th hospitals demand jumped 610% and the so-called fill rate -- the rate at which orders were able to be filled and shipped to hospitals plummeted from 97% to just 54% by June 19th. And this is after the release of the study that said Dexamethasone had great outcomes in regard to the COVID-19 illness.

And the problem with the news articles or studies coming out and the reaction, the emotional purchasing -- reacted purchasing to that, is it disproportionately affects pediatrics. And pediatrics, you have a limited number of dosage forms that you are able to safely use. If you've ever tried to give one-fifteenth of a tablet to a child, it's impossible to cut it down to that, and you've got to have very creative ways from compounding and other ways, working with your pharmacy to be able to make that available. But the shortages within the Vizient and Children's Hospital Association document illustrated the increased amount of time and labor that each of the hospitals were dedicating to make sure that during shortages each medication could be done safely and then changing the prescribing of the practitioners over to that. Next slide, please.

Within the supply chain, next slide. There we go. Within the supply chain, there's some really good news that has come along as well. Remdesivir, as of October 1st, it was able to be purchased directly through the normal distribution channels and yesterday it was just approved by the FDA for treatment of COVID-19 by the FDA. And so, when this comes into the supply chain, this is going to make it much easier and much more part of the normal supply chain to be able to make it easier for hospitals instead of going through the alternative methods, which were very effective. But when you add additional complexities, then it can make other challenges. Next slide, please.

In the future, I'm sure that there's going to be other medications that are going to come out as being effective. Within the medications and treatments, whether it's in pediatrics or adults, the right medication at the right point within the therapy or disease process is, I think, critical. We all need to be extra skeptical of any therapies that are publicized by the mass media. We need to continue using the scientific journals and processes that we would have normally followed prior to COVID-19 and for that literature-based data.

And the biggest thing today is don't emotionally or reflexively purchase because it's going to lead to additional shortages, which will have a greater negative impact on the care of pediatrics within the US. Decadron is a great example of that, I'm sure that there'll be more examples of that by the time we get through another year of our current process and just time going on. With that, Meghan, thank you.

Meghan Treber: Thank you very much. And that final slide was very helpful. I'm going to ask you to hone in just a little bit on --we talked about some of the shortages and some of the supply chain issues that have occurred throughout the whole of the COVID response to date. But what continue to be -- two part question. What continues to be some of the key challenges for pediatric providers for these issues and part two, how are you adjusting your operations? I think that's the key takeaway. What are you doing to address or mitigate those that other providers listening or other facility leaders listening on the call right now can think about those mitigation strategies? What are you doing to work around those?

Dr. Nelsen: So I would advocate -- so some of the challenges are just the changing landscape of shortages. It seems like every day, there's a different medication that's on shortage. And most providers and people that aren't a part of the pharmacy don't even realize that they come up on shortage for a couple of days. And then "Oh, we're able to get a little bit more and a case from over here. Hey, we're able to borrow over here." A lot of people don't even realize that there are so many shortages that are affecting the pharmacy and the buyers and whatnot are stressing about. And they're working really, really hard to make sure that the current therapies are available.

The biggest thing that we can do is, as it was mentioned earlier, is to work together as a team because we need to look at alternative therapies. We need to look at alternative ordering and each shortage is going to be a little bit different as they come and go. And when do you let the frontline practitioners know that there is a shortage. Where does that breakpoint come within your institution because it really is a team-based approach. I look at medicine and disaster work and everything as a team based sport. And without everyone working together to achieve, to get over these obstacles, it will be really difficult. But when we work together, we can really overcome and get past most challenges.

Meghan Treber: That's very helpful. Thank you. And thank you all very much to all of the panelists. We'll now begin the question and answer portion of our webinar. As a reminder due to the number of participants on this webinar, please submit your questions through the questions section of the Go to Webinar console. We'll then ask your questions directly to the presenters on your behalf. If you have a question for a specific presenter, please note that in your question. Questions that we're unable to answer on today's webinar due to time constraints will be

answered directly to you via e-mail. And we'll post a redacted Q&A document on ASPR TRACIE shortly after this webinar.

We do have a couple of questions to our panelists. But I'm going to start with Dr. Fisher for this question, give you a heads up there so you can get off mute. But then, I'll turn it over to a few others to give your thoughts. But -- what are -- you really honed in on a couple of times the importance of vaccination for influenza right now. So, do you have any thoughts on the logistics and the structure of vaccination clinics, and vaccinating kiddos during COVID-19? Any thoughts on those -- on best practices or promising practices, or thoughts on how to effectively vaccinate for flu during COVID-19?

Dr. Fisher: I think it's really imperative to have as many outlets as possible, essentially. I know even when I was a child, I think it was polio; it was given to me in a sugar cube in mid-60s. But whatever method we can get it out to the children, whether it be through, you know, CVS or school-based clinics or ERs, primary care practices, obviously. Any method possible, I think this is a -- still an underutilized strategy to reduce our vulnerability to this seasonal epidemic that we go through each and every year, some years worse than others.

Dr. Blaisch: I could add to that.

Meghan Treber: Yes, please Dr. Blaisch.

Dr. Brian Blaisch: Yes, Brian Blaisch. So what's happening, what we're trying to do in the clinics in the Contra Costa Regional Medical Center system is grapple with this notion that we're trying to minimize the number of visits of patients in general, kids in particular into the system. Whereas at the same time, they need to come in for vaccinations, standard vaccines that they need, et cetera. So, basically, what we're trying to do is to try to leverage any -- I mean, we do this anyways with influenza, but any reason for a child to come in for any required treatment, or therapeutic or whatever should be leveraged in and utilized to get the influenza vaccine.

And so basically, if they're coming in for lab work, then we go ahead and arrange to have the nurses make the arrangements for the child to be able to come in to the unit for the vaccine; the flu vaccine that is. So basically, just trying to leverage any other kind of need to go to the medical center as a reason to get the vaccine.

Meghan Treber: Great, thank you. Any other thoughts from any of our other panelists in vaccination?

Dr. Berkeley Bennett: I have one that I can add to that.

Meghan Treber: Yes.

Berkeley: This is Berkeley. One thing that we've been utilizing is, I know many, many other places are doing as well is the drive -- drive through COVID testing clinics, I know of Story Clinic because you drive through. But something similar to that, if we really need to get the

vaccine out to a lot of people in the short period of time, it might be a useful addition to the traditional ways that we normally have people get vaccines.

Meghan Treber: And I know I've seen, at least in those locations where the climate is supportive of this, certainly, outside socially distance vaccination clinics as well as is an option and has been implemented. Okay, I have an additional question, here. This is for everybody, so we'll start with Dr. Blaisch and go down our speaker list. But, in your opinion, so we understand that this is your perspective, what are the potential secondary disasters that, you know, reasonably could occur during this COVID-19 timeframe, concurrent with COVID-19 that pose the most concern for you? So, what secondary disasters keep you up at night? What do you think about when you think about concurrent issues with COVID-19?

Dr. Blaisch: Well, the two that come to mind are seasonal, and so we just are coming through the hurricane season. That's as a DMAT person, that's one of the things that our teams are often used for us to respond to. And responding to hurricanes, and what happens to people when they're displaced and needing to -- shelters and stuff is -- so right at the center of this discussion we're having. And of course, being on the West Coast, as we've been talking about the wildfire thing, there's also sort of a secondary thing that happens as a course of wildfires, which is under reported, which is basically extended power outages, even though that's not sort of technically a disaster.

If you think about the way that we live our lives, and also, in particular, the fact that there are a lot of people that are really dependent on their electricity, technology, et cetera. I can state again, even just as a parent of a child with autism, that when the power goes out and we had five power outages last year, significant power outages and I live in an urban environment. But when that -- even when that happens, that causes such a level of disruption that it's truly significant. So the short answer is, hurricanes and wildfires, and again, when we're having to flee to find some other place to stay, how are we going to be able to put in -- keep in play, particularly with kids, the things that we know are necessary to prevent COVID from spreading, mask wearing, social distancing, et cetera.

Meghan Treber: Great, Annette.

Annette Newman: I love that Brian just mentioned that, particularly because I wore my puffy coat into work this morning. It's freezing here. So, I have an aversion to being cold, so the thought of a power outage, which we just had a huge wind storm that came through Salt Lake about a month ago is horrifying to me. But I think the thing that keeps me up at night, that wakes me at 2:00 in the morning, is earthquakes. We're right on the fault lines, so our center and our pediatric specialty center. So, that's the burn center and the peds specialty center are both on fault lines. And were there to be an earthquake, there would be nowhere, there would be limited spaces for specialty patients to go.

And then the other thing I think of is not necessarily an earthquake in Salt Lake City, but in California, because 13 of 27 burn centers are in California. So were there to be an earthquake in the West, especially on that ocean line, then that would severely diminish our ability to take patients in a mass burn incident, which, again as we saw from the Mammoth Pool fires could

really occur at any time. They kind of blindsides you sometimes, even though those wildfires go and are just down the road from us all of a sudden maybe that could hop the road and now we have 15 patients that need to be admitted, and we're already a full unit. So where do we put those patients when our other ICUs are at capacity with COVID patients and we're in COVID surge right now. So earthquakes are the secondary disaster that keeps me up at night, obviously, in addition to wildland fires.

Meghan Treber: Thanks. Dr. Fisher.

Dr. Fisher: Yeah, I think that one of the things as a PED provider I have been concerned about is that we sort of have a one size fits all disaster response system in this country right now. I think in terms of emergency medicine, being the sort of catch all for whether it be a no notice event, or an epidemic or a fire. I am little bit -- that's one of my main concerns, is that it's very difficult to deliver expert care to a child with life-threatening injury or illness while you are also simultaneously managing a huge surge.

Anyone that's worked in a hospital knows what that's like. At some level where suddenly a slow place becomes extremely busy and that divides up the resources. But as it stands now, our system is built in a manner that's not entirely, I think, thought out in terms of its response to disasters. So that's what I was trying -- to the point that I was trying to make with our seasonal influenza. We do know that it's going to come between October 1st and May 1st essentially, but not exactly. And we're trying to learn on how to expand and contract appropriately, but it's difficult.

Meghan Treber: Great, thank you, Dr. Bennett.

Dr. Berkeley Bennett: Yeah. One of the things that worries me is now that we have more physical distancing and also social distancing as well is, kids are in circumstances where they're not in school. They're not being seen by people outside their family. And we're seeing a lot of not necessarily an increase in physical abuse of children, but some more much more devastating cases that I recall seeing in previous years. And so, just knowing that that we don't have that safety net that we normally have where children can go to school, they can be seen by others, and they have those outlets for protection, is not as robust as it usually is, worries me quite a bit.

Meghan Treber: Thanks. That is a different kind of disaster, a kind of concurrent issue. Thank you. Dr. Nelsen.

Dr. Nelsen: The concern that I have that keeps me up is the single source pediatric supplies and medication. And with it being a single source, a small local event, such as the large windstorm that we had here in Utah along the same time as the Hurricane Laura. But if that were to cause impact a negative impact, a supplier, that was the only source of that, would have a huge impact. And I think of it from everything from antibiotics, other medications to the supplies like -- if [Indiscernible] [1:28:14] pigtales were made at a single place where that's used a lot in the pediatric. So, my biggest concern are all the unknowns of the supply chain and the single source providers and what impact a small, localized event could have really nationwide.

Meghan Treber: Thank you. And this is all the time that we have today. I want to thank all the panelists for taking the time to speak today. Again, this webinar will be archived and posted on our website at asprtracie.hhs.gov. Please be sure to join us for the final webinar in this series next Thursday, October 29th, on “The Impact of COVID-19 on Children with Special Needs.” We want your candid feedback on today's webinar and how ASPR TRACIE can better serve your needs going forward.

To that end, we've started a few threads on the ASPR TRACIE Information Exchange to continue the conversation from today and to get your feedback on future webinar topics. On behalf of the ASPR TRACIE team and all of today's speakers, thanks for joining, and have a great day.

[Video Ends] [1:29:24]