ASPR TRACIE Webinar Transcript
Hidden Consequences: How the COVID-19 Pandemic is Impacting Children Webinar Series: Child Health and Wellness
September 30, 2020

PowerPoint Presentation: https://files.asprtracie.hhs.gov/documents/aspr-tracie-child-health-and-wellness-webinar-ppt-final.pdf

Recording: https://register.gotowebinar.com/recording/8135789420711565825

Shayne Brannman: On behalf of the US 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 Child Health and Wellness. First 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. Topics for future webinars including emotional and social effects on children, the impact of COVID-19 on children with special needs and how secondary or other concurrent disasters may affect children during the pandemic. Registration is still open for these additional webinars, hosted throughout the month of October.

Before we begin though, I have a few housekeeping items to note. The webinar is being recorded. To ensure clear recording everyone have been muted. However, we encourage you to ask questions throughout the webinar. If you have a question, please type it in to the question section of the GoToWebinar console. During the question and answer portion of the webinar we will ask questions we receive through the console. Questions we are unable to answer due to time constraints will be followed up directly via e-mail after the webinar. If you have to 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 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 slides by non-federal government employees are solely those of the presenter and not necessarily those of the US government. The accuracy or reliability of the information provided is the opinion of the individual organization or presenter represented.

My name is Shayne Brannman and I serve as 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 that are being presented in today's environment. Thank you for what you do daily.

I also want to acknowledge the expertise of the panel and the moderator that will be presenting today. Their willingness to take their precious time to ensure and advance the knowledge of others is truly noteworthy and we want to, again, give a virtual round of applause for them taking the time to make sure that we are able to advance your knowledge in the subject area. I also want

to convey my heartfelt thanks to the TRACIE crew for coordinating this webinar and all the myriad of administrative details and a special note of thanks to Dr. Andrew Garrett and to Dr. Mike Anderson for assisting us with coordinating this webinar through the ASPR chain of command.

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 e-mail, call, or complete an online form and we will respond to your inquiry expeditiously. This 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 presentation it is now my distinct pleasure and honor to introduce the Assistant Secretary for Preparedness and Response, Dr. Robert Kadlec, for some opening remarks. Sir, over to you.

Dr. Robert Kadlec: Shayne, thank you very much and good afternoon everybody and thank you for joining us today. I'm Bob Kadlec, the Assistant Secretary for Preparedness and Response at US Department of Health and Human Services. It is my pleasure and privilege to kick off this webinar series and titled Hidden Consequences: How the COVID-19 Pandemic is Impacting Children.

During this four-part webinar series conducted in collaboration with ASPR TRACIE and both of our Pediatric Centers of Excellence, speakers will discuss the impact of COVID-19 has on child health and wellness, emotions, social interactions, and the effect of secondary disasters on children and the impact of COVID-19 on children with special healthcare needs. Nothing is more precious than our children and all children. And approximately 74 million children under the age of 18 live in the United States, representing nearly a quarter of our country's total population. Because of their unique and disproportionate vulnerabilities in a disaster, it is critical to identify and incorporate special considerations for this population into preparedness, mitigation, response, recovery, and resilience building plans and actions. Compounding this challenge, approximately 30% of children live at or near the poverty level, and children with special healthcare needs are present in both, one in five households with families.

In 2019, ASPR funded two Pediatric Centers of Excellence to enhance the delivery of total pediatric care, clinical care through rapid sharing of expertise and assets when existing systems are stressed or overwhelmed. The first center, the Eastern Great Lakes Pediatric Consortium for Disaster Response, is led by Rainbow Babies and Children's Hospital of Cleveland. The other center, Western Regional Alliance for Pediatric Emergency Management, is led by the University of California, San Francisco Health System and the Benioff Children's Hospital. These centers span two regions of our nation with nearly 20 million children, and the outcomes of these centers of excellence pilot programs will inform pediatric disaster healthcare nationwide and beyond.

We have already seen the challenge that a pandemic, a disaster in its own right poses when it's layered on top of another incident such as a Hurricane Laura or widespread and catastrophic

West Coast wildfires. Lessons learned and best practices gained from facing these concurrent challenges will better guide disaster preparedness for children as we move forward towards the end of what has been uniquely a difficult 2020.

Again, I want to say to you for taking the time to participate in this important effort, over a thousand of you, I look forward to your input and partnership moving forward. And again, I want to thank Dr. Andrew Garrett and Mike Anderson for their great support and their special advice to me because as my pediatric consultants and to Shayne who leads our TRACIE effort. Back to you, Shayne.

Shayne Brannman: Thank you, Dr. Kadlec. And I do want to let the audience know that Dr. Deanna Dahl Grove and Dr. Chris Newton are also available in the speaker room today and we, again, appreciate and acknowledge their sustained efforts with the PCOE, and now we're ready to begin. So, I'm going to turn you over to Dr. John Hick from Hennepin Health and ASPR TRACIE senior editor who will serve as moderator for today's webinar. John, over to you, sir.

Dr. John Hick: Shayne, thanks so much, And thanks, Dr. Kadlec, for that introduction. We're essentially conducting the largest public health experiment in our modern history at this point with COVID-19 and the impacts on all of us remain incalculable, but what we can say is that the impacts on children will be impressive, and unfortunately probably lasting. So recognizing the potential for impact and opportunities to intervene, to minimize any lasting damage to social and academic development will be extremely important and we have a great slate of speakers today to address some of these issues, dealing with missed appointments and vaccination to the impact of psychological and physical trauma on children, to the impact on social and academic development through the virtual learning environment. So, we're looking forward to a great afternoon and we appreciate you taking time out of your busy schedule, especially now in the midst of a pandemic response, to join us to talk about some of these pressing issues.

We'll start in the great state of Michigan with our first two speakers and Matthew Denenberg from Helen DeVos Children's Hospital is going to talk a little bit about the impact on routine care that COVID-19 has created for pediatric patients. Matt, glad to have you with us.

Dr. Matthew Denenberg: Thank you for the opportunity and welcome to everybody on the line. With only 10 minutes to talk about really what we've been facing for the last six months, I figured what I'm going to do is give you some perspective on what happened to us here at Helen DeVos Children's Hospital and similar to the other children's hospitals on the west side of Michigan, and offer you some opportunity to hear what we did in mitigation without really specific details on how we accomplish that because, again, 10 minutes is not particularly long and I'm always open to questions and e-mails to assist in how we did that. I will start out by saying, actually next slide please.

I'll start off by saying that our system is a rather large system. We have 14 hospitals, 30,000 employees, we have a stand-alone children's hospital with 260 beds and so as you can imagine the impact of COVID on such a large system required us to do some things that quite frankly, I'm hearing from colleagues across the country I didn't think was possible, but was. We were able to respond to this disaster very nimbly, very quickly. We were able to get through red tape,

and you'll see in just a minute why that was particularly important and particularly a pleasant surprise for some of us who have been in executive administrative roles for many years. Next slide, please.

So, this is our COVID-19 dashboard, this is from April, and just to give you a perspective of how big our system is going into this disaster and what kinds of routine care we provide and had been providing up into this point. We have a 1200-bed hospital that sees adults and peds in our children's hospital, and as you can imagine, with that many employees, that many patients, that many staffs, on March 11th, which happened to be my birthday, we got the announcement from the federal government that we were in an international pandemic. This turning off or stopping or halting this level of care and engagement across such a large system was quite impressive. It was almost like stopping on aircraft carrier suddenly and so this is just to give you an idea of the kinds of things that we were doing as a hospital system during the pandemic.

So, you know, at any given time, we would have 100 adult patients in the system and quite frankly, like the rest of you, a couple of pediatric patients. So, the impact on the in-patient clinical care was pretty minimal as compared to other parts of the country that had a little more pediatric. So, again, this is just to show sort of the extent of the problem, especially in our adult side. So, next slide. I promise you I'm going to get to pediatrics now. Again, this is the number of cases and beds utilized in the adult spaces across Kent County, which is our hospital area with three main hospital systems in Grand Rapids, Michigan. And, again, just to give you an idea of really an adult problem for acute in-hospital care. Next slide.

So, here's our pediatric data, this is from the end of April. Really not much different now, four months later, we really have about 750 to 1000 total patients now that were positive, that were pediatrics and really only admitted, you know, less than 3%. So, again, as you can imagine, the impact on pediatrics and how we had to respond for normal and routine care really wasn't based on our hospital practice. Next slide.

I'm an ED doc, I'm a pediatric ED doc, so you can see as the pandemic hit in March our ED volumes dropped almost 50% plan. We averaged about 130 patients a day and at one point we were down to 30. As you can see from this slide we've come back, but we are still at about 80% or around 80%. So, again, we had to make some adjustments in staffing, we had to make some adjustments in our care in the emergency department. Next slide.

The NICU did not see any drop in care, we continue to as is, in fact we ironically hit a record day last month of 118 patients in our NICU. So, our NICU didn't even skip a beat. If you spent time in the NICU they would almost feel like the pandemic didn't even hit, except for some of the things we had to do on the in-patient rules for screening and visitors. Next slide. Next slide, sorry about that.

So, this is the slide I really want to spend some time talking about. As you can see, our clinic visits went off a cliff and I suspect that's similar to many of the other children's hospitals around the country and, really, the things that we had to do to just maintain normal care of pediatric patients in the clinic setting during that time was pretty phenomenal and pretty impactful, and we were able to act really quickly. So, we did things like we closed many of our primary care clinics

and/or consolidated them so that we could decrease the number of staff needed. Those staff that were displaced or those needs were shifted very quickly to telehealth. So, we went from about 10% telehealth visit rate in our pediatric clinics to about 50 to 60% of all visits were telehealth. We did not completely close to live visits.

We also, because of the size of our system, we partnered with local pediatricians in the community. In fact, most of our primary care pediatrics is provided by non-hospital pediatricians and so we very quickly partnered with them. They had to go from, in some cases, almost no telehealth to a significant telehealth presence. They struggled obviously with PPE. So, as a hospital system with you know $7 billion and 14 hospitals, we were able to help distribute that much needed PPE to our local pediatricians so they could keep seeing patient. As a health system, and this was in collaboration with our pediatricians, some of the other things we did to continue routine care during the pandemic, we started doing significant parking lot testing. We started doing parking lot vaccinations two months ago, parking lot registration where patients could register actually on the computer in the parking lot, stay in the car until their visit was ready and then one parent would come up with a child to limit the amount of PPE use, limit the amount of exposure to our staff and to our patients. And so those are some of the sort of things that we did to maintain normal visit.

Now, what I will say is, as you could see, we very quickly ramped right back up and we're almost back at 100% of our specialty visits and almost 95 to 100% of our pre-COVID pediatric visits, except for routine care and this is something that Deanna sent me last week or actually this week for this talk, and I really -- this is impressive, not surprising, but impressive. I'm going to read a couple of numbers to you real quick. I'll do a quick time check here. So, according to CMS, there's been a 69% decrease at this date and time. So, we're starting to come back from that COVID, you know, sort of bottom and starting to come back with visits, but we still have a 69% decrease in dental visits, 44% decrease in screening and routine pediatric care visits, a 49%, and this is the one that worries me almost the most, a 49% decrease in pediatric outpatient behavioral health visits, and a 22% decrease in vaccinations, which worries me coming into flu season and into the winter.

And I think what's important here is, as we ramp back up our clinics and as we start bringing patients back into routine care, we have been partnering with the Health Department here at Kent County for safe ways to come back to school. I am a little disappointed and this is why the ASPR work and why the center of excellence work is so important, I'm a little disappointed that it seems like every county in the state of Michigan is doing something a little bit different and not coordinating, so it's a little bit disjointed for our schools and our health system and how to bring kids back to school and then take it back into the clinics.

So, I think what I would share with you is some of the things that we did that I think have been critical in getting back to as normal as we can some of the routine care for pediatrics and particularly I'm worried about behavioral health and vaccination and routine guidance. We've helped our partners in the community and our health system very quickly bringing telehealth on, which in the past would have taken years and we did it in months. We very quickly done things like waiting rooms in the parking lot, pre-registration, taking advantage of technology that normally would have taken six months to a year for approvals and we've done that very fast.

So, I guess, what I would share with you is the importance of bringing care back to pediatrics. During the crisis and even after the crisis, as we ramp back up, make sure you're partnering, make sure your system is opening things up to do things quicker than we normally thought we could and then don't let up, right? Don't fall back to the old way of doing things if you can avoid it, because there are a lot of kids out there, 49% of them really aren't getting the care that they were getting pre-COVID and so I'll stop there, because I'm coming up on my 10 minutes. And, again, if you're interested in any of the specific details, how did we spin up telehealth to 50% of visits in three weeks; how did we, you know, open up a vaccination clinic in a parking lot; how did we do something -- I'm happy to answer those things offline with more details that just weren't possible in 10 minutes, but I think it was really important to see this slide. The importance of this slide, we dropped off our clinic visits almost 20% of normal, which is normal and planned for finances at a time when we weren't seeing very many sick kids and the adult load was getting slammed so we had to shift resources.

I'll stop there and hopefully you found the information helpful and the details that I'll share with you in the future even more help. Thank you.

Dr. John Hick: Matthew, thanks. You mentioned the five-fold increase in telehealth visits and expanding telehealth into, you know, many different areas. Can you comment on some of the durable ways in which you think traditional office visits need to change in order to try to recruit some of those routine care and behavioral health and mental healthcare back into the fold and get the children the care they need?

Dr. Matthew Denenberg: Yeah, and I think part of your question actually is the answer, right? I think one of the things that we did and I think we did very effectively is we already had a telehealth platform that was ready to go and we certainly weren't engaging it to this level, 50% of visits, and I think what happened is we took advantage, and this is going to sound bad, but we took advantage of the fear that patients had coming into the hospital, especially living in West Michigan they saw what was going on the east side of the state and how, you know, how it was almost a doomsday scenario, and so we took those patients desire and willingness to do things differently and we offered them telehealth, so we went from having the capability to being begged by the patients really for the capability, and so I think it's really important to recognize that the patients are the ones that are going to ask for this and then you've got to bring it to them, and so that's really the thing that drove the difference for us is the patient asked for it.

Now, the second part of your question is I think with things like behavioral health, things like anticipatory guidance, even my wife who is a care manager and does nursing education is talking about, you know, doing some of that online and I think being able to decide what kinds of things traditionally we probably should have been doing by telehealth and by virtual visits we have to start encouraging it and getting better at it and I think behavioral health and anticipatory guidance are two areas that we really need to take advantage of because we just aren't going to have the capability to bring as many patients in for their live visits anymore.

The other thing is, and this is something we're playing with in the adult world more, remote patient monitoring. What about starting to do -- get some of those vital signs, get some of those

things that we need remotely so that we can provide a better visit to patients, and some of that is really starting to take off, even to a point where we can look in ears and listen to hearts from a distance and so as somebody who practiced in Alaska in the beginning of their career it sure would've been nice to be doing some of this for those village visits where they had to fly two hours just to get to us, so I'll stop there.

Dr. John Hick: Great. Thanks so much, Matthew, and staying in the great state of Michigan and the Michigan chapter of the AAP, Teresa Holtrop joins us to talk about the impact of COVID-19 on vaccination rates and lead poisoning. Teresa, thanks so much for taking the time today.

Dr. Teresa Holtrop: Thank you for having me. And what you just heard from Matthew is very much similar to what I -- the story that I have to tell. Now, just as a little bit of a background, I want to mention that I work with multiple practices in the southeast area of Michigan, so in the Detroit Wayne County area that serve Medicaid-enrolled children and our southeast area of Michigan probably has about two-thirds of all the Medicaid-enrolled children for the whole state, so we have a somewhat different scenario in terms of resource allocation and availability for our families than they have on the west side of the state. Next slide, please.

So, what I'm showing you here is pretty much similar to what Matthew just showed you earlier about what was happening within the clinic system at Spectrum Health in Grand Rapids. This is from the Pediatric Management Institute, which is a national consulting firm for pediatric practices and they, at the beginning of the COVID pandemic, started putting on weekly webinars for pediatricians that were very-very well attended, basically to help pediatric practices figure out how to get through the drop, the significant drop-off in visits that they were experiencing and how to stay afloat from a business point of view.

So, the black line here is all visits and we're talking about the beginning of March and this just goes through to the end of March. You can see that come around March 13th you get this real major drop. The blue line is well visits and the yellow line is sick visits and they all took a dive, and went from 100% down to below 60%, down to even 40%. Towards the end of the month, you will start to see this increase in well visits, they were starting to come back up again, but the reason for that has to do with next slide, please. Next slide. Thank you.

The reason has to do with telehealth visits. So, in this chart, you can see how over the course of the month, the yellow bars are the telehealth visits and how they became a greater and greater proportion of the total visits within a given pediatric practice, the gray bars are in-person visits, and it does include both sick and well visits. So, that was -- the telehealth visits were definitely starting to increase and we saw that in our region too, but unfortunately telehealth visits do not address things that require in-person visits such as immunizations or anything that requires a blood draw. Next slide, please.

So, this came out in the Morbidity and Mortality Weekly Report and it shows the drop-off, this is actually data from Michigan where we have a wonderful, a registry called the Michigan Care Improvement Registry that monitors both how VFC or Vaccine for Children vaccines are administered and it has become a registry for anybody receiving immunizations, be they pediatric patient or an adult. And the vaccines that are provided to offices through the Vaccines

for Children Program are monitored within this MCIR database system and so you can track very quickly what actually happens in terms of ordering of vaccines and you can see here that as of the middle of March, towards the end of March, there was this significant drop-off in vaccine ordering, and it was both for vaccines that included flu as well as the dotted line is measles-containing vaccine. Next slide, please.

What you can see at the bottom of this slide, the top side is the same as the previous one, the bottom one actually shows you the breakdown in the drop-off in vaccine ordering for the different ages of children. So, the dark blue bars are the children who are 24 months of age or younger and so the vaccines for that group, yes, it did bottom out, but it started to come back up again as you got more into April and so that was related to the fact that there was a major emphasis put on trying to get at least children less than two years of age in for well-child visits, but unfortunately what has happened is that the vaccines for the older children two and up, all the way up to 18, bottomed out and continue to bottom out and this is a significant concern because it means that there's a lot of children out there who haven't gotten their second dose of measles, mumps, rubella, they haven't gotten their preschool vaccines basically, and adolescents aren't getting their meningococcal vaccine or they're getting their HPV vaccine or their tetanus boosters, et cetera. Next slide, please.

Now, what isn't talked about as much is what has happened with blood lead testing, and these data here have been provided by the Michigan Childhood Lead Poisoning Prevention Program from Michigan Department of Health and Human Services, and in the top colorful chart you can see what has happened months to months, comparing three years in a row. So, the blue bars are 2018, and you can see that the number of children tested for lead was around in January -- it compares what happens from within each month from year to year.

So, the blue bar shows that in 2018 there was actually a little bit less blood lead testing than in 2020, so in 2020 we had actually done a better job of screening for lead poisoning, but then you can see that in February it dropped down, this happens every year. In March 2020, you can see how that red bar really starts dropping, and in April it dropped down even more significantly, so there was a 76% drop compared to previous years of children less than six years of age being tested for lead poisoning. It came up a little bit in May, but it continues to be a problem. Next slide, please.

So, what are the implications of this? Implication number one for the drop-off in immunizations is that there's increased risk for outbreaks of vaccine-preventable diseases, and I spoke with the head of the Emergency Department at our Children's Hospital of Michigan in Detroit, and as he said to me in the past if I had a child coming in with the rash, measles was not the top diagnosis in my mind. Now, I have to start worrying about that because so many children are behind their immunizations. The same thing is true for a child coming in for a cough. I mean, obviously we're all going to think about COVID, but we also have to start thinking about whooping cough, because we've already had problems with outbreaks of whooping cough in the State of Michigan. We will have more outbreaks because of so many children not getting immunized.

And then, concerning lead testing, the problem is that children who are at risk for lead poisoning due to decayed housing situations, as we see down here in Southeast Michigan, are spending

more time in these contaminated living conditions due to stay-at-home orders and the inability to go out and about and have to do school on a virtual platform, and so there's a greater likelihood of significant lead poisoning and the long-term impacts on developmental outcomes are significant. Next slide, please. Next slide, please. Thank you.

So, what I'm showing you here is summarized from an article that appeared in 2013 in the American Journal of Public Health, and what the authors did was they took the blood lead levels, which are the average blood lead levels for children that were reported by state law to the Michigan Department of Health and Human Services and overlaid them with the proficiency testing that the Detroit Public Schools were doing using the Michigan Educational Assessment Plan, we call it the MEAP test, which was administered to all students in the whole state of Michigan annually.

And so you can see here that within the various categories of whether you are advanced within math, reading or science or proficient, partially proficient or not proficient, that the average blood lead level actually goes up and this is a reflection of the fact that the higher your blood lead level is, or your average blood lead exposure has been that the likelihood of you having trouble in school downstream goes up significantly, and this was a study that was done on 21,281 Detroit Public School students, so a very large sample and pretty convincing evidence that even blood lead levels less than 10 micrograms per deciliter have a significant impact on the brains of students.

And so the concern is that now we are not even doing testing, and what is going to happen in the long run we don't even know. We aren't able to identify children who are experiencing high enough lead poisoning that they really ought to be in the hospital for chelation, no one knows, they're not being tested, and much less the kids that are being exposed at lower levels where the long-term outcomes are still negative, but it's not being addressed, and the exposure is probably going to be more longer term than it would've been in previous years where regular screening was happening and identification could happen at an earlier age. I believe that was my last slide.

Dr. John Hick: Great. Thanks so much, Teresa. Trying to get those vaccination rates back up, can you comment on the use of drive-through vaccination and some other options we might use during the COVID epidemic to try to get our vaccination rates a little bit more optimal?

Dr. Teresa Holtrop: Yeah. I think drive-through vaccination campaigns are a very good way to go. The problem is that there is so much that needs to happen in terms of coordination, reaching out to the families, making sure that you are set up within your institution to be able to administer vaccines and keep the vaccines in a properly cooled situation, you have to maintain the viability of the vaccine. So, doing all of that requires a little bit of planning. It requires the ability to reach out to your patients en masse, and I have to say in our area, unfortunately, I have encountered many-many practices where the amount of resources available within the practices are somewhat limited.

If you are working in a community where you're trying to get by with basically majority of your patients being on Medicaid where the reimbursements are not that great, it is going to be very hard to find the additional resources you need to be able to put a lot of these things into place.

So, a great way to go, strongly encourage it, but help is needed in order to make that happen for an individual practice.

Dr. John Hick: Absolutely. I think public-private partnerships are just so important here in moving some of these things forward, so thanks so much, Teresa, and paddling furiously from Lake Huron into Lake Erie now and over to Cleveland where our next two speakers come from Rainbow Babies and Children's Hospital, and Carolyn Ievers-Landis is going to lead off talking about the impact of COVID-19 on sleep for children, so, Carolyn, thanks so much for taking the time today.

Carolyn Ievers-Landis: Hi! I'm so excited to be here. So, we are switching a little bit. I'm a licensed clinical psychologist, and I also have my diplomate in behavioral sleep medicine, so I'm going to be talking about sleep in the time of COVID-19. Next slide.

I wanted to let the listeners know that I am the member of a task force of the Society of Behavioral Sleep Medicine that's a COVID-19 task force, and we have already summarized some objectives and summary recommendations for managing sleep during a pandemic that came out in June and we're currently making infographics relating to this and I'm the one pediatric sleep expert on this group, so hopefully you can look for some more sleep resources coming up, but there's going to be the reference for this coming up in my slides. Okay, next.

Just wanted to talk a bit about the importance of sleep during the pandemic and in addition to my role on ASPR and also my role as a researcher, I am a clinician and seeing approximately 100 children per month, and as Matthew had said earlier, we really switched from seeing kids in person, which I was doing 100% to switching to virtual 100%, which I'm still doing, and I was using phone and switched to Doximity then switched to restricted sim. So, I'm one of those people in the psychologists at Rainbow, most of us are doing 100% virtual sessions except for our neuropsychologists, our developmental behavioral pediatric patients are split, so I just wanted to give you that as information also.

So, really the importance of sleep is even more important during a pandemic. I mean, sleep is important as you know for immune defense, emotion regulation; we're talking about a high stress event with multiple other disasters happening at the same time for some of our children in other parts of the country. Cognition and memory, we're talking about so many things changing in schools and that the mode of instruction is changing, and that's very important to be able to think clearly and remember information. Also, one of my main areas of research is in sleep and weight management, and I don't think a lot of people think about sleep and the role that sleep plays in managing weight. We found in a lot of literature that duration, but also regularity of sleep impacts weight management. Next slide.

So, I just wanted to talk about the pandemic as really as a source of stress for many children in terms of changing routines, illness or death, financial hardships of the family, with food insecurity, having to move homes, many of my patients have had to move into other homes and these are really magnified for children from lower socioeconomic groups. And then also, of course, kids with special healthcare needs, such as ADHD or kids that might be on the spectrum have learning differences, and then children with anxiety and depression. Next slide.

What I really wanted to talk about is the different modes of instruction and how those might relate to sleep, and that's what one of the infographics that I'm working on is going to talk about, because as Matthew had said earlier and our other presenters have emphasized, so many school districts are doing things differently, and even within the same city there might be multiple school systems that are doing this differently. So, I wanted both professionals that take care of children, health professionals, in addition to parents to really think about what are the pros and cons on sleep of some of these different modes of instruction.

In-school instruction interestingly, I found this in one of my patients, some schools actually have staggered start times due to busing and other factors of trying to not have as many people in the school at the same time, but unfortunately that impacts sleep with some of the schools are continuing with very early start times of 7:40. We know from research in this area that we really recommend a start time of 8:30 or later. This is so important at anytime, but particularly during a pandemic. We found that later start times improves mood, kids are getting better grades, it even affects car accidents and I have a reference below that has shown how motor vehicle crashes increase when children have to get up earlier for school and vice versa, they decrease when children have an extra approximately hour of sleep. This is particularly challenging for kids that have later circadian rhythms and with the added stress from the pandemic I'm particularly concerned about this. Next slide.

In the school instruction there are some added stressors. You are around peers, but really having limited social interaction. Students are spread out, even at lunchtime. Some of my patients tell me that there could be maybe two students at a table, it's very difficult to talk and as students are assigned places to sit, they may not be with close friends and lunch times are really varied to have fewer students in the cafeteria and from a sleep vantage point changing the times that you eat affects sleep. So, I have some of my patients that are eating as early as 10:30 lunch in the morning, and some of my patients, including some of my patients that I'm working with on weight management are not eating until as late as 1:30 with no way of getting a snack. This really is disrupting circadian rhythm in addition to weight management. Next slide.

There are some real benefits of in-school instruction for sleep, which I want to make sure I acknowledge. Really, it gives you a need for regular wake time on weekdays, which entrains the circadian rhythm. I mean, during the summer it was very difficult as children were sleeping in and probably even more so than usual because children were home more than they were in the past. There is more activity possibly for in-school instruction. Both physically, you want to actually walk around the school and socially, which helps build up the need for sleep, that we're more cognitively stimulated and there's more going on than just being at home all the time. And for some children and adolescents there is really this psychological benefit that they feel like I'm kind of getting back to a normal life, which reduces stress, which also impacts sleep. Next slide.

Some of the mode of school instruction is a hybrid instruction. So, some of my patients and some students are attending school two or three days a week and our home on the other days, others might attend for half days and I think what's really tricky with this for sleep is that sometimes in-school start times differ substantially from virtual or online class schedules. I just talked to a patient yesterday that gets up at 5:30 on her days when she has to go to school, but when she's

not going to school she was sleeping until noon or one and I had to work on that. So, this isn't just the shifting of schedule that typically happens when students sleep in on Saturday and Sunday, this is sometimes now happening two or three times during the week also. Some of my patients are also working part-time jobs and those are varied schedules and they might interrupt routines more. Okay, next slide.

So, as I stated, irregular sleep is now happening throughout the weekdays and weekends, and during the week wake times vary. Irregular sleep has really been a focus of more research and pediatric sleep recently. We found that it has negative effects on mood, on break regulation. I have a publication on it. It increases preference for sugar-sweetened beverages and other health parameters. We really talk about this as almost being socially jet lagged. That's the term in the literature, it's called social jet lag, when your sleep changes so much. Next slide.

There really are though some benefits of hybrid school instruction for sleep. Really, it's been nice from a stress vantage point to have a break from wearing a mask and having to maintain physical distancing. It's also kind of nice to have flexibility in the day so that children and adolescents are able to go outside and be physically active, which is more difficult possibly when they're in school. Next slide.

So, let me just finish it by talking about virtual online instruction. It really depends upon the school and the age of the child. Those are so different. Some students are at home watching their teachers teach the other students, so they have to have a regular wakeup time, but some school districts are assigning work or having videos that can be watched at the student's discretion, so then students can have whatever wake time, sleep-wake schedules they would like, and then obviously the virtual/online instruction is more challenging for parents that are working outside of the home. Next slide.

So, if those students that have a flexible virtual instruction, they are most at risk for delayed or irregular sleep schedules. Some of these patients may stay up very late at night or even into the next morning. I have some patients that stay up till 6 a.m. and then might sleep an hour or two or depending upon when they have to do their virtual classes. Some students might nap during the day. They're just bored or they're trying to avoid doing the work, and it lends itself to napping. Some of my students that are adolescents have very irregular schedule, not just flip-flopped ones where they could have like three or four hours of napping during the day, up during the night, up at all different times, which is very concerning for sleep and for health. Next slide.

So, there are some benefits. I think some of my patients who have a more delayed circadian rhythm, which is they could even have a delayed circadian rhythm disorder, particularly older adolescents can plan a schedule allowing for synchrony, which is really a fit of your circadian rhythm with your actual schedule. So, that's wonderful and I do that for some of my kids anyway, but I think during a pandemic we need to pay attention to synchrony and try to ensure that for our children. Next slide.

So, I just wanted to, I know I'm nearing the end, so I just wanted to talk about 10 behavioral strategies for healthy sleep during the pandemic. It's really important to establish regular sleep-wake schedule, trying to wake up within a two-hour window. So, you don't want your wake up

time to be more than two hours later. Really, having natural sunlight in the morning is extremely important, even if it's sitting by a window with sun exposure. Keeping a routine, as I talked about how challenging it is when students have different lunch times. Sleeping, eating, physical activity, even socialization, our bodies thrive and do very well with routine. Getting plenty of physical activity daily. Many of my patients who have trouble sleeping, including some of the little ones I see, are just not getting as much physical activity as they were before. And planning regular fun activities to be cognitively stimulating. Next slide.

Eating healthy foods and limiting caffeinated beverages/foods, particularly in the afternoons or evenings. I feel like people are really reaching for these caffeinated beverages/food. We know that even the sale of chocolate has increased during the pandemic, and that is affecting our children's sleep. Setting limits on electronics. We know electronic use has gone up, particularly news about the pandemic and exposure to light should be limited from electronics, especially one hour prior to bedtime and getting into bed only when sleepy. Parents should not make kids go to bed when they are not sleepy enough because that perpetuates insomnia and if you're not sleepy enough get up and do an activity outside and then return when sleepy. And next slide, my final slide.

So, this is the COVID-19 task force reference for sleep and there are also many handouts if you go to this and you can see those, and again, as I said, there's going to be more infographics that are going to be coming out from the same group. All right. Well, thank you so much for the opportunity to speak about sleep in the time of COVID-19.

Dr. John Hick: Thanks, Carolyn. What are some indicators that you would look for that a child should be referred for professional help with sleep disturbances?

Carolyn Ievers-Landis: Thanks so much for asking that. It's such an important question because just like other psychological disorders it's very important to think about are the sleep problems causing subjective distress, and that's not necessarily just for the child. Sometimes, especially for the younger children, they're happy with their flip-flopped sleep schedule, but it's really affecting the parents where they are really struggling to function, work and do everything they need to do, so let's say its subjective distress of the child or the family, and also does it affect functioning? Is it affecting the child's functioning? Is it affecting how they're doing at school? Is affecting relationships with family members? Is it affecting them in terms of increased symptoms of anxiety or depressed mood? Is it affecting the mood and functioning of parents and other family members that they have a family member who's not sleeping well?

And I think if those are things that are a problem, it's important to have the child seek help from the pediatrician, and then possibly seek help from someone like me who is an expert in behavioral sleep, and as I said we also have diplomates in behavioral sleep medicine where people can go online to the Society of Behavioral Sleep Medicine website and see if there are diplomats available in their area and we're doing telehealth now, so I think we have a much broader reach. Thanks.

Dr. John Hick: Great. Thank you. Telehealth does offer the opportunity to do a lot of work across geographies that normally wouldn't be conducive to those kinds of visits, so a great call. And

last, but certainly not least, Lolita McDavid is going to talk a little bit about child abuse, understanding that when parents are working and children are studying at home and with the stress of the social, economic, and medical aspects of COVID-19 that unfortunately many times children are impacted by the transference of those negative emotions, in either psychological or physical ways. So, Lolita, thank you for your time.

Dr. Lolita McDavid: Thank you. Slide, please. So, everyone needs to understand that in most jurisdiction every type of professional who works with children are mandated reporters, and so you really can't get out of -- in some states some religious people are excluded, but in Ohio any type of professional who works with children are mandated reporters and mandated reporters are held harmless, meaning that they have immunity from prosecution as long as the report was made in good faith and on a reasonable basis. You can get into a lot of trouble if you have suspicions and you don't report, and so I tell my residents and my co-workers, you just want to be very upfront with people and say the law in Ohio is very clear, when these kinds of things happen or I see this I have to report it, I don't have a choice. Other people will be involved and they will also interview you and interview your children, but this is something that I have to do by law, and if you approach it that way you will not get in trouble. Next slide, please.

So, one of the things that you want to be very concerned about is you can lose your license if something happens, and you should have known or suspected. Not long ago it came to my attention that we had a pediatrician who told a mom who had left her child with a sitter and the child had multiple bruises. She told the mom you need to find another babysitter and the child came in here on life support. So, this is not something that you can skirt around. So, 20% of the reports of child abuse and neglect are actually made by educational personnel, which makes them the primary reporters. I mean, if you think about it, the kids that are out there, nobody's seeing them now. The majority of children reported are reported by family members, neighbors, and teachers or school resource people, not by me, they get to me later on.

So, we aren't seeing these kids and my colleagues who are in the rural areas are even more concerned because nobody really sees these kids. At least in urban areas you may have some places where they're seen, places where meals are distributed, but for children who are in rural areas they may really not be seen. And remember, right now, there are financial constraints on people, so people are being evicted from homes, they're living doubled up. People are living with people that they may not want to have in their homes, but they have them, and moms have to go to work.

So, we had a two-week period where I saw two children who came in with abusive head trauma and who died because they had been left with inappropriate caregivers, and the moms had to go to service jobs. When we talk about service jobs we're talking about the people who clean our hospitals. We're talking about the people who serve you your burgers at McDonald's. We're talking about people who clean hotel rooms and they have to go to work, and they don't have or cannot afford quality childcare, so you always have to be thinking about this.

There's been a double-digit percentage decrease in report to child maltreatment hotlines as a reflection of the decreased contact between child and mandated reporters such as teachers, community, youth programs, and healthcare providers, such as those of you who are on the line.

And then telehealth limits the ability to assess children or parents in a space where they have privacy from an abuser. So, remember that. We did telehealth here too, it was good. I ended up having to talk to grandmas who were confined in homes with children, and some of them just wanted to talk, I mean, they just needed to have an adult to talk to, but remember, you're not going to be able to see the same things, and people aren't going to tell you the same things they may tell you in a room where the door is closed. Next slide, please.

So, what you want to remember, and this is called TEN 4 FACES P, and remember that, and you can actually print this up, distribute it to your house staff, distribute it to medical students, distribute it to your faculty, and these are things you think about. So, TEN is trunk, ears, and neck. Remember, most kids, if they fall, they hit their forehead, their elbows, their knees. If you see something on the ears you really have to ask about it, on the trunk, and especially on the neck. Anything in children that a four years or younger you really want to ask about. And the 4 can also be any bruising on a child less than four months, but what we like to say is, and what we do here is we undress all children, for whatever reason they come into the emergency room, under six years of age, and look, because research has shown that things get missed.

People bring children into the emergency room for one reason, but then there may be things there that we're not asking about. And Naomi Sugar at the University of Seattle years ago wrote a paper, all of us in this work wish we had had this paper. It's called If They Don't Cruise, They Don't Bruise. So remember, children under a year of age probably aren't walking. They may pull themselves up and they may cruise by holding onto furniture and going around, but if you see a child under 12 years of age with bruising, you have to ask the questions. And then for the faces it's the frenulum, frenulum tear; auricular area, that's again the ear, people will slap kids on the ear; anything on the cheeks, the eyes. Think about it. Your eyes are recessed, so they have some, a bit of protection, anything on the sclera. Two days ago I saw a 56-day old with bruising on the face and scleral hemorrhages. And then pattern bruising and that's what you're looking for, if it looks like a handprint, if it looks like it was done with a cord, if it looks like it was done with a ruler, you want to ask questions. Often, you want to take photos. Next slide, please.

And so with the photos, you're really not supposed to use your cell phone because the photos go to the cloud, but in a pinch you can do that, and then if you have Doc Halo you can store them in there, so that they don't go to the cloud, it's very important to have. What we do at our hospital and we urge them to do it in our outline hospitals, is to have protective services do the photos, and you want to make sure when they take the frame that you get to see it, so it looks like what you want it to look like before they move on to take the other frame, and you have them show you what they've gotten, and then that keeps a chain of evidence, because it's on a disk or is on a camera somewhere and you can access it.

So, the history, what you want to know is who witnessed the injury? Who was there? These are the four questions to get me asked. If nobody was there and nobody saw anything that's very concerning. Is the history consistent with the extent of the injury? So that says if a child falls off of a couch and has a comminuted skull fracture and humerus fracture, well, that's not consistent with just fall off of the couch, two to four feet, I mean, two feet or less. Is the injury consistent with the developmental stage of the child? And for that, you know, in pediatrics, you have to know developmental stages. So, a one-month-old does not roll down off of a couch or down off

of a bed, because they don't roll front to back, back to front. So, you have to -- I call it does it make sense. And then, does the history change? Does one thing happen, you're told one thing when EMS picks up the child, something else is told when the child comes in to the emergency room, and then there's a different story when the child gets on the floor.

So, those are the things that make you concerned about whether or not it's inflicted injury and you really don't want to miss it. We're concerned that we're missing a lot of these kids because they're just hidden to us. We know that in our domestic violence agencies here, their numbers have fallen off because the people who are being abused can't get away from their abusers to actually make the complaint. So, you want to think about these things and don't miss them. It can have great ramifications for you and your practice of medicine. Thank you.

Dr. John Hick: Thanks, Lolita. Are there particular age ranges to children that are most subject to abuse?

Dr. Lolita McDavid: Yes. So, infants are more likely to be shaken. They cry, people pick them up and they shake them, and what happens is you give them a little concussion, they get a subdural bleed and they go to sleep, and it's like, oh, well, I didn't hurt them, I just shook them a little bit. Well, if you do it again and in too much of a time proximity you can end up with a serious problem, and brain swelling and herniation, we've seen that. So, infants tend to be squeezed, they may be shaken, they may get struck.

Kids who are running around, who are ambulatory, people will drug them. They end up with broken limbs. They can have abdominal injuries, because people punched them. We're more likely to see bruises on them. Children who are in that phase where people think they should be potty trained, but they aren't, are more likely to be burnt, and I've never been sure why people think that burning a child will make them stop soiling themselves, but you want to think about that.

And then older kids, you see what I call combat injuries. So, you see things like eye injuries, ear injuries, where they get punched because they may fight back and as kids tend to get in those middle school years they are more likely to fight back and so you have to think about things like strangulation and understanding that and you're looking for particular injuries around the neck and you're looking for eye injuries where people have punched a kid. So yeah, there are different -- think about it like this. Babies don't do very much, so things are done to them. Toddlers are running around and doing things, things are done to them, but in a different way, and you want to make sure that you are describing everything that you see.

Dr. John Hick: Great. Thank you, Lolita. Well, the good news is we have some time for questions now, and we do have some questions in queue, but please feel free to submit additional questions that you have using the written question box. And for our first question I'm going to turn to Matthew. A number of private payers and even the public systems have created incentives for telehealth through waving of copays and things like that. At the same time, some of those loosening of restrictions and some of the loosening of the need for copays is going away on the part of a number of payers. What do you see are some particular challenges and maybe some opportunities here going forward?

Dr. Matthew Denenberg: Thanks for the question and I think it's an excellent question. We've been talking about that recently. One of the reasons why we were able to be, and when I say we, I don't just mean here at Helen DeVos Children's Hospital, I mean across the country, been able to spin up telehealth pretty quickly as some of those rule changes and exceptions that were made to allow us to quickly bill and collect for telehealth, but to actually get some opportunity for equipment and those kinds of things. The problem is, as you point out, we're starting to see some of that, at least some talk of those rolling back and as states are pressed, especially in pediatrics with Medicaid, and if some of those start to get phased back, we'll be left with practices and systems not necessarily being able to afford to give telehealth for free and what we might end up is back where we started without as robust a telehealth, and I think it's interesting because one of the reasons, and I was kind of joking at the beginning, but one of the reasons why we struggled with spinning up telehealth before COVID was it wasn't necessarily cost effective, it wasn't that we didn't have the ability to go fast, and so I think if you take away those incentives we might find ourselves not being able to provide virtual health to the levels that, quite frankly, we need in today's day and age. I hope that answers the question.

Dr. John Hick: That's really helpful, Matthew, and I think, you know, we are going to need to be re-visiting with payers, you know, what constitutes an effective patient visit, because I think a lot of the parental demands will drive us more towards providing telehealth services for those that are relevant for that kind of encounter, which is a great segue to my next question for Teresa. Can you talk a little bit how, during drive-through and other vaccinations that are done in non-traditional environments, how do we make sure that the patients are adequately counseled, that documentation of the vaccination is appropriate and any comments about billing? And, Matthew, you may have follow-up comments to that reply as well, but Teresa, we'll start with you.

Dr. Teresa Holtrop: So, yeah, you have to have your protocols in place to address all of those things, and really it's going to be dependent on what capability you have within your own institution to set these things up. I mean, an institution that has the capability of using text messaging, that a patient drives up and sends a text to a certain number and then receives the JotForm where they can complete all the information, and then perhaps be sent another link that connects them to an informational module about the vaccines that they are getting. That would be an easy one, but not everybody's going to have that capability. So, then you have to reach to the old way of paper and pencil where you hand out the vaccine information sheets, and you do have the opportunity to answer questions when they -- at one point there is an actual interaction and so you need to make sure that the families know ahead of time that that's when they need to ask the questions.

From a billing point of view I think that's completely depend -- there's no reason why billing has to be any different than you would use to do your normal kinds of visits. I think the bigger challenge really in drive-through vaccination affairs is the storage of your vaccines and drawing up the vaccines in a way that you're, you know, you're going to be outside in these kinds of situations, and so weather is important, where the car is parked is important, where the refrigerators are kept is important, all of those things need to be thought through.

Dr. John Hick: Yes, we certainly have no trouble maintaining cold chain in Minnesota, but drive-through vaccination in January can be a problem. Matthew, any comments that you have based on your experience with the drive-through and other methods of vaccination?

Dr. Matthew Denenberg: Yeah, the thing I would add is, and, Theresa, you know, touched on it, is you have to have a robust ability to transfer information back and forth for patients, and I think that's one of the things that we've struggled with in healthcare with having disparate EHRs. Right? So, if everybody -- and I'm not saying one is better, everyone had Epic or everyone had Cerner or everyone had Allscripts it would be easier, right, because patients, you would start to drive that to their phone and I think we also have to rely on our EHR companies to start being information sharers and not just, you know, revenue cycle generators, and I think they're getting better at it.

And then the other thing is, you know, we've heard from the government, right, that, you know, we have all kinds of ability to go forth and give vaccinations if and when it's ready, I think we have to start thinking outside the box and be innovative in how we give vaccines. Whether it's the National Guards, the military or a self-injecting, you know, device like your EpiPen in the future, right? We have to be able to get away from that traditional has to be at the doctor's office or even in a parking lot a doctor's office. So, the information sharing, as well as different ways of actually giving those vaccine.

Dr. John Hick: Great. Yeah, great thinking for the future. Carolyn, question for you about Zoom and use of other virtual platforms and their potential effect on sleep.

Carolyn Ievers-Landis: Yes. I mean, we've been very fortunate to have different ways of virtually engaging with our patients. You know, I find it very effective to talk to patients, you know, about sleep, it's trickier with the little ones, but when you're seeing little ones that have sleep problems you're mostly talking with parents and then once in a while if you need to talk to the child about something about bad dreams or about a behavior plan or something then the child can come, you know, into the screen and with adolescents it works very well and we use restricted Zoom, so it's very safe, and we give the invitation just to that child and family for that particular period of time. So, we've been, across the country, all the psychologists and other providers have been able to continue to support sleep.

Dr. John Hick: And, Carolyn, as children are using virtual platforms more and spending hours at a time on them, is there any data or any thoughts that you have about the amount of screen exposure that that's generating and the effect on the child's sleep?

Carolyn Ievers-Landis: That is a concern both in terms of there's more sedentary behavior and also in terms of the light exposure in the later evening and that does affect the circadian rhythm, and we have a lot of data on that from Mary Carskadon who does a lot of circadian rhythm research, that we are actually changing our circadian rhythms, probably as a world right now, because we are exposed to light more than we have been before. So, it is very important for parents to work on that with children, but we also don't want to increase conflict. I mean, just like we were talking earlier we don't want to just be yanking away electronics from teenagers,

because that's also their link with their peers. So, it's a very difficult dance in terms of wanting to limit exposure, but also wanting teens to be able to socially engage with each other.

Dr. John Hick: Great. Thank you, Carolyn. Lolita, a question for you. If a provider refers a child that's suspected of being abused to a specific child abuse clinic or a specialist, is that considered meeting their obligations for reporting or not?

Dr. Lolita McDavid: In Ohio, you have to report to either of the Child Protection Services, so that's your county service or law enforcement. I tend to, depending upon what it is, but almost always will report to both, because what happens is you will report to the Department of Children and Family Services, they may take a while, but if it's something with this child, for instance has been burned, then you want law enforcement involved early so that they can do their investigation. So, for instance, the children that came in with the abusive head trauma, we reported to both, but your state law will tell you, you have state statutes that tell you, you have to report children up to 18 and people who have may have a physical or developmental disability to age 21.

Dr. John Hick: Great. So, familiarity with state laws is really important in this regard. Matthew, we've talked a fair bit about the patient satisfaction with telehealth visits. How do you feel that providers are feeling about telehealth visits? Do they get the information they need via telehealth platforms? And are there any criteria that you can point people to as far as when an in-person visit might be needed?

Dr. Matthew Denenberg: So, two particularly different questions. The first, and again, in addition to reimbursement and technical needs to get telehealth up and running prior to COVID, you know, providers' willingness to do it, and I don't mean that in a necessarily negative way, but, you know, convincing providers to do something new outside of their traditional practice, especially pediatricians and specialists, has been a challenge, and so one of the reasons why our telehealth visits were so low before COVID was people didn't see how they could possibly do telehealth visit, how would they fit it in their day, and now we have providers, and not just providers, but providers and patients, you know, begging to do telehealth visits, because they found that, you know, they can do more visits, it's more convenient to get as much information back and forth to the patient, and for those patients that need to be seen in-person obviously they'll do that. So, I think, and again, like a lot of things in medicine, once they started doing it they were like, oh, I guess this is really kind of cool and we want to do it as opposed to trying to convince them. It's like the EHR. As much as we hate the EHR at times we would never go back to paper.

And then, the second part of your question was about families. No, I think the second part of the question was how do we -- you asked about how we measure that experience or–

Dr. John Hick: Basically, how do you determine when an in-person visit might be needed?

Dr. Matthew Denenberg: I think we're figuring that out, right? When the sharing of information and the personal conversation is all you need, so follow-up, guidance, easy things. There's no question. I think it's going to be important as we start getting the ability to do more and more

things in the house, things like vital signs, even, you know, with Teresa's conversation, you know, sending someone out to grab a quick led level or to do blood work, right? Does a family really need to get in their car, get on the bus, you know, find an Uber ride or not be able to get to our lab or can we send someone out to the house and do a virtual visit with the results? Save everybody a lot of time, money, and effort. So, I think it's really opened our eyes to how much we can do with telehealth. I analogize it to, can you imagine, and I'm at an age -- could you imagine 20 years ago telling someone that they're not going to have to go into the bank to deposit a check?

Dr. John Hick: Right. I do that too infrequently, but thanks, Matthew. We have one clarification that the shaking of children is not the gentle, you know, rocking back and forth motion, soothing motions that are often used. It's much more of a violent back and forth, you know, motion that causes the head to snap, you know, front and back and winds up bruising the brain, so I think that's an important clarification that, you know, very gentle shaking, like putting a child in a car seat on the driveway, as I've had to do many times with my colicky infants, that can work pretty well, but the violent shaking is really what causes a lot of the catastrophic head trauma that we're seeing some increases in. We do have a few other questions in queue. We'll make sure that those do get addressed in writing, and I'm going to turn it back over, as we're at the end of time, to Audrey Mazurek to close things out and just one more big thank you to our panelists today for all of their expertise and their time.

Audrey Mazurek: Great. Thank you so much, Dr. Hick. Thank you again to all of our speakers. This is all the time we have for today. Again, this webinar recording and the answers to the questions that were submitted, but were not able to be asked will be posted on ASPR TRACIE within 24 hours. Please be sure to join us for the other three webinars in this pediatric series coming up in October. On behalf of the ASPR TRACIE team and the ASPR Pediatric Centers of Excellence, thank you for joining today and have a great day.

[Audio Ends]

[1:15:57]