Improving Outcomes for Opioid-Exposed Newborns: Together, We Can Do Better

Robinn Yu: Welcome, everyone. And thank you for standing by. My name is Robinn Yu. And I'm the program assistant for the National Center on Early Childhood Health and Wellness. I'm pleased to welcome you to today's webinar. Before we begin the presentation, I do have some announcements for you. All participants will be muted throughout the presentation. There's a slide presentation being shown through the webinar system.

And there will also be a video shown. And make sure your ... Computer speaker volumes are up. If you have a technical question, please type it in the chat box. And we will try to assist you. There is a lot to cover within the next hour. You may submit your questions at any time by typing it in the chat box on your screen. And we will do our best to answer them at the end of the webinar. A feedback survey and your certificate are available after the webinar. The webinar is being recorded, and a link to view the webinar will be sent in the following days. And it will also be posted on our ECLKC website later on. Now, I'll turn it over to Sangeeta.

Sangeeta Parikshak: Hi. Good afternoon, everybody. Thank you so much for the National Center on Early Childhood Health and Wellness for putting on this lovely webinar. This is the second part of our three-part webinar series, which is focused on the effects of opioids on exposed infants. My name is Sangeeta Parikshak. I am the lead for early childhood behavioral health at the Office of Head Start at the Administration for Children and Families. And I am so happy to be here with the director of the Office of Head Start and Early Childhood Development at ACF, Dr. Deborah Bergeron, or as we like to call her in the office Dr. B. Before introducing our speaker for today, Dr. B and I would like to provide you all with some context related to Head Start, what we are seeing regarding the opioid epidemic in programs, and how it is being addressed through our federal office and program level. With that, I would like to turn it over to Dr. B.

Dr. Deborah Bergeron: Good afternoon, everybody. Thank you for taking time to join us. And I do want to thank Sangeeta in the center and Marco for all of their hard work on around opioids and substance use disorder over the last year and going into this year. We've got another round of amazing roundtables and webinars. We really feel like this has put Head Start ahead of the curve on this issue and really hoping that we can be a resource in the field. So, we're just going to give you a little bit of background here. Some of this may already be information you know, but it's good to sort of set the stage.

As you may know, Head Start and Early Head Start serve over a million children, birth to 5. And that includes pregnant women, which is really important in this discussion today. Lot of folks think Head Start is preschool. It certainly is early education, but it's also a lot of other things, like health and nutrition and social emotional development, family services—from finding a job to finding a house—really getting family stable, because we know when families are more stable, children are more prepared for school when that kindergarten day does arrive. We have over 1,600 grantees. That includes the territories. And we offer all different kinds of services, center-based family child care and home visiting. So, you'll see children who are enrolled in

Head Start never leave their house. Early Head Start, they might have a home visitor, or they might be going to a center full time. We've done a lot. We do a lot to collect information from our grantees. And we've learned so much about how substance misuse, opioids in particular, might be affecting our folks right now.

We definitely are seeing an increased enrollment of women misusing opioids and other substances while they're pregnant. So, then you have this situation of possibly a baby being born addicted, but probably—even more importantly—infants and toddlers being raised in really chaotic environments. Infants and children are entering care with neonatal abstinence syndrome, drug-related developmental delays or trauma-related behavioral challenges.

And I really think that last one is the key. What we've learned a lot over the last year related to opioids, in particular, is that the impact on a newborn baby is significant, but surmountable. I think it's those inconsistent sort of chaotic environments in which a baby, a toddler, is living that provides that space for trauma that ends up really having an impact in school. And we're seeing teachers say, "We don't really know what to do with these behaviors." Folks who have been teaching for decades saying they haven't seen this kind of thing before. And then you have these off the chart things that we couldn't even anticipate, like a shortage of a bus drivers, because they can't pass drug tests.

So, it's impacting our field in just myriad ways. And we're really trying to be responsive and supportive. I always like to show this slide whenever I talk to folks about Head Start from a resource standpoint, because what I want you to understand is we have the potential to be impactful on the ground in a number of different ways. The substance misuse ... The substance use disorder area, opioids in particular, is no exception. So, these dots represent all of our Head Start classrooms. And you'll see they're all over the country. And the beauty is that we can contact these people from our office at any time.

So, we have a direct reach to the ground. We can make impact quickly. We can share information easily, certainly more so than programs that are providing block grants at the state level, which at that point, you really lose that impact. And this next slide will just lay this over the death rates by drug poisoning. This is from 2016. And this map really is just a quick snapshot to show you. You can see where Head Start is just really in the mix of [Inaudiable]. And the red are obviously the more significant. And you see some areas of the country that really have few resources, too. This illustrates that, as well. We've done some very specific things to combat opioid misuse.

A lot of awareness and sensitivity training. And we're finding that just being more aware is really helpful, particularly for staff. Partnering with hospitals seems to be a real game changer for Early Head Start. The programs I've seen that are providing therapeutic treatment are most successful when there's a hospital or a medical center that's partnering directly with the Early Head Start, not just providing contractual services, but true partnership. Wrapping around welfare, child welfare, and local treatment facilities in a real integrated system is what works. Interventions within the program to improve the child bond with the parent is really important. And if you go back to that first bullet, that sensitivity training is key, because you have a tendency, when you see a parent living in a way that is so counter-productive for child development, to be judgmental.

And the reality is the minute we judge, we lose the ability to build trust with the parent. And that's not what we want to do for long-term success. We've seen a lot of outreach to kin, grandparents, great grandparents, aunts, uncles, who are taking the responsibility of raising their extended family members. And then we were even a little surprised, I think, to see in our survey that our staff are actually training—leadership is training your staff to administer Naloxone. And that speaks volumes to the fact that they're seeing this on the ground, it's significant, and they're taking pretty significant steps to make sure they're prepared. This last slide that I'm going to review just really shows you some things that we've learned from the ground, regarding their response.

We definitely are seeing an increase in mental health services referrals, response to child abuse and neglect. We are seeing families with substance abuse prevention services on the rise and treatment referrals and that kind of thing. And then the really big one is this children living in foster care. That's—that is increasing. And then I would also say, if you combine that with kinship care, that number goes up dramatically. And one of the big conversations that we've been having is, how does kinship care relate to foster care? And so those are some ... That's some information that you might be receiving soon to get some clarity around that, because it's a confusing thing for a lot of folks working with families.

Sangeeta: Thank you Dr. B. This is Sangeeta. So, we've been hearing a lot from programs, as Dr. B said, about what it is that they're doing, you know. Substance use disorders have been around for a long time, but the opioid epidemic has really come on fast and furiously. And programs have really been struggling to catch up. And we're so impressed with what is happening at the local level and how people have just looked at the resources that they have and done the best that they can, but we felt from the Federal Office that it was important that we do everything that we could to really support programs.

So, what we have done is ... The National Center on Early Childhood Health and Wellness, has been spearheading our efforts around opioid misuse and substance use disorders and helped us to host an expert work group about a year ago, where we basically said, we're not quite sure what the evidence is saying around what are the best practices and strategies for early care and education. Everybody's talking about adults. Everybody is talking about kind of the long-term impacts, but what can we do specifically around early care and education? And we came out of that really learning quite a bit about what strategies are impactful. And we thought that it was really important to bring it to the local level.

And so, we've been hosting regional meetings across the country. We've done five so far. And now, we're going to be doing region 10 at the end of October. And that's really where these national webinars have come from. We thought that it was really important to bring the best plenary speakers that we have been seeing in each of these regions out to a national audience. And so, the person that you're going to be hearing from today was actually at the Region I. And no pressure on him, but I've been told he is probably one of the best plenary speakers that we've had so far.

So, I'm really excited to be able to hear from him. Before we move into that, though, the last thing that I wanted to show you is that it's really important for us to be able to hear specifically from people who have been through it, who have had substance use disorder, have come out

on the other end. And so, we actually have been having parent representation at each of these regional events. And we had a parent named Gina, who was willing to share her story with us in Region 3. And the National Center has created a video. And I was hoping to be able to show that to you here. It probably will need a little troubleshooting. OK, here we go. So, this video is about to start. It's going to come out through your computer speakers. So, turn it up if you can't hear. I'm going to press play.

[Video begins]

Gina: I grew up in a household full of addiction from alcohol to drugs my entire life. Things in your past sometimes catch up with you. I begin to use drugs at the age of 26. During this time, I had gone to jail for two years straight. I even missed my son's second birthday.

One day, while I was in jail, my caseworker pulled me into her office and said that she has a message from my son's daycare, that a few members wanted to come visit me and try to make a way to bring my son, as well. You know, I was just like, "Wow." It was that moment that I realized that there were still people in this world that care not only about me, the messed up addict, but the welfare of my child and my family. It was all from the heart. Like I felt it.

I came home from jail, and I went straight to the daycare and thanked all the staff members. Those women believed in me and saw more and me each day. They gave me brochures for job openings and getting me to and from appointments to guide me in a positive and stable path in my life.

And so, the goal is to be a better mom, to be a better person. And I'm sober. So, can you imagine?

So, yeah.

[Video ends]

Sangeeta: I really want to thank Gina for being so brave and willing to tell her story. So, with that, I wanted to turn it over to our speaker for the day, because I know that he had some really great things to share with us. And in case you don't know where to go for our substance misuse information, here is our landing page.

So, this is my pleasure to announce Dr. Munish Gupta. He is a staff neonatologist and the director of quality improvements for the Department of Neonatology at Beth Israel Deaconess Medical Center and assistant professor in pediatrics at Harvard Medical School. His academic interests focus on innovative approaches to quality improvement and patient safety. He is the chair of the Neonatal Quality Improvement Collaborative of Massachusetts and has worked extensively with state and national efforts to foster the development of state-based perinatal quality collaborative.

Dr. Gupta, welcome. We are thrilled that you can be on with us today.

Dr. Munish Gupta: Awesome. Thank you so much. Can you hear me?

Sangeeta: Yep. Loud and clear. Awesome. Great. I'm super excited to be here. Thank you to everyone for joining the webinar. I don't think I've ever been on a webinar where there's been so much chat activity. So, it's clearly people are present. Yeah, I am a little not so excited about

following the parent story. It's always tough to follow something like that. And if you get anything out of this webinar it's remembering hearing Gina's story, because those stories tell everything. I'm real excited to be here, partly because I think this—well, mostly, because I think—this partnership between what we do as state perinatal quality collaboratives and the Early Head Start and Head Start community can be just game changing for the work we're doing around perinatal opioid use and the care of opioid-exposed newborns.

So, I think this is super important. And the fact that you guys are all present and participating is terrific. The ... So, a quick outline I'm going to try to cover for the next 35, 40 minutes or so, I'm going to make a few comments about stigma just to start off. I'm going to talk a bit about perinatal opioid use and NAS. I'm going to focus most of my time talking about improvement efforts here in Massachusetts. As part of that, I'm going to talk to you a bit about improving outcomes, what we know and we don't know. And then on the end with a little a couple of comments on follow up.

A quick caveat, there's a fair amount of them try to cover. So, I'm going to go pretty quickly. But there's also a lot that I'm not going to cover. Like, there is so much to talk about in this topic that this is just a starting point. I know the first webinar in this series was by Stephen Patrick. Hopefully, I'm going to say some of the same themes and points that he made; if not, someone let me know. A couple of the caveats, I'm speaking on behalf of a lot of people who have worked very hard in this effort here in this state. I'm going to be focusing mostly about Massachusetts, but there's lots of other hospitals and lots of other states that have done similar work. And I do tend to talk a bit fast.

So, hopefully, folks can understand me. Please make a quick comment or something if I'm going too fast. So, first a question for you, and this was brought up by Dr. Bergeron already in her initial comments, but let's say there's a mom, who's got a long history of heroin misuse, who's normally on methadone. She delivers a newborn that has severe withdrawal. The infant is distressed and inconsolable and having a pretty tough time. And if you we're involved in the care of this mom and baby, I ask you, how angry would you be at this mom for putting the baby through this? And I think if we ask ourselves honestly that there's a fair number of us that wouldn't be excited about the situation.

But what if I told you that the mom's on methadone for a couple of years and getting on methadone allowed her to get into stable housing and get a job, and now, she's actually got a pretty stable household. Then are we so mad at her—or angry at her—or if not, what if I told you she just got on methadone a month ago, but she's working towards getting into treatment and getting out of a tough lifestyle? Then are we still mad at her?

It's important to think about, because I think even within, after lots of work that's been done, there's still a fair amount of stigma around perinatal opioid use. Here's a headline from the Boston Globe, a paper that I think is actually a great paper and very forward-thinking. This was several years ago, when we first started our Massachusetts work. And you can see this headline, "Cases of Newborns with Addictions Soaring." And then the photo is not the best photo.

Lesson number one: Babies are not born addicted to opioids. The addiction is a loaded term that has lots of meanings, but babies are not born addicted, but this persisted—"Higher Rates of Addicted Babies in The State," "Addiction to Opioids up in Delivery Rooms." We've got to be careful. And this latest was just from the last year.

We got to be careful about how we describe these babies and this issue. And this kind of stigma isn't just in papers. This is a publication, or infographic, from the NIH. And they say every 15 minutes a baby is born suffering from opiate withdrawal and suggesting that this is a bad outcome and something bad happening to this baby. This is from last week, or two weeks, ago in the New York Times, "These Newborn Babies Cry for Drugs, Not Milk," by Nicholas Kristof, who is quite a good-thinking columnist. And then let's look at a couple of the quotes from this article. This is how it starts. "His body dependent on opioids. He rides, trembles, and cries. He exhausted but can't sleep. He vomits, barely eats, and has lost weight. He's also a baby, just 1 month old. He wails in the nursery. A volunteer comes and holds him. He's inconsolable. What his body craves is heroin."

And another quote from this article, "He's frantic," Dr. Maxwell, said of the infant going through withdrawal. "Big baby isn't sleeping, isn't eating, isn't growing. It's a disaster." This is from two weeks ago. I'm trying to encourage you to think in the next 20, 30 minutes that this may not be a disaster, that a baby going through withdrawal can actually be a sign of something important. That's something good happening to do this baby and family.

The ... This issue of stigmas is critical. And we think about this is for Massachusetts, our campaign StigMA. We think about it mostly when we talk about adults with opioid use disorder and not using words like junky, addict, and druggy, and other things. But what I'm going to tell you is that this stigma also applies to moms, and babies, and perinatal opioid use. There's lots of arguments to be made that, if we can get past the stigma, we can change quite a bit, about this opioid epidemic. In a box of this article earlier this year, the simple idea that could help end America's opioid epidemic, and the simple idea was we treat addiction like a disease and not like a behavior choice.

And we get rid of the stigma associated with it. So, my fairly obvious, but fairly important, but not-so-obvious, take-home point number one, we may actually want to see the number of newborns with NAS increase at least in the short term. So, I'm going to try to make you make this point over the next 15, 20 minutes and hopefully, get you to think that a baby with NAS is not necessarily a bad outcome. So, just a little background on perinatal opioid use and NAS. I'm going to go through this real quickly just for time considerations. So, neonatal absent syndrome—NAS—it's a post-natal withdrawal syndrome in newborns following intrauterine drug exposure.

Mostly, it's associated with opioid exposure. There is kind of funky biology. It develops in about 40 percent to 90 percent of infants with perinatal opioid exposure—so not in all of them. There's not really a clean relationship between the in-utero opiate dose and the NAS severity. And NAS isn't a great name. Just like babies aren't born addicted, abstinence also has kind of suggestions of behavior, or choices, or of kind of stuff that we associate more with adults. So now, you might see there's a trend towards calling this neonatal opioid withdrawal syndrome rather than NAS.

We should just take one quick pause to recognize that opioid exposure in pregnancy, while important, it's not quite as common as other substance uses in pregnancy that might have even bigger impacts on a baby—so cigarettes, alcohol, marijuana, other substances. We're going to focus on opioid exposure and the impact of that, but let's not lose sight of the fact that there's other substances as well that might have even more of a public health impact. Clinical features of NAS, here I am going to just kind of skip over this, but it's a withdrawal syndrome. So, there's neurologic signs, autonomic signs, GI signs.

The timing, it usually sets in within a few days of birth, depending on the actual opioid exposure. The management of NAS, this is just the very basics. We need to identify these babies, either through screening or testing. We have standardized scoring scales for how to assess any symptoms. More and more are recognizing the non-pharm care can be a mainstay of NAS treatment in terms of a relaxing environment, rooming in with the parents, breastfeeding, nutrition.

The old mainstay of NAS therapy used to be pharm therapy. So, we would treat these babies with usually morphine and then slowly wean that off to control the withdrawal syndromes. More and more, pharm therapy is being replaced by non-pharm therapy. And this last piece is critical—family support, partnership with the family, social work—making sure we have good systems and follow up. DCF is our state child protection agency—so working closely with our state agencies around family support and child support. The epidemiology of NAS, this is no surprise to anyone that it's has been increasing quite steadily. And since per thousands births, you can see overall went from about one per 1,000 up to six per 1,000 in 2014. This is for all payers.

There is regional differences in this. This is also paper by Stephen Patrick, who you heard the last time. You can see that New England—our region is higher hit. The south, I guess they say, is particularly high hit. There is some regional variation. I'll make one quick side point. This is data from Massachusetts, in the instance of NAS using ICD-9 or ICD-10 data. Lots of states are tracking this using state administrative data, including ICD codes. It's important, but we know ICD codes aren't perfect. We may know '15 to '16 , and there is a change in ICD-9 to ICD-10. And it looks like that does impact our tracking a bit.

The dark yellow lines here are infants with an NAS diagnosis by ICD-9 before 2015, ICD-10 after 2016. The lighter yellow lines are babies with diagnosis of SEN. If you are going to be tracking this at your state, more and more important to look at both NAS and substance exposed diagnoses to really get a sense of what's happening. Now, I'm going to spend the next little bit talking about improvement efforts in Massachusetts. And this is mainly through our state Perinatal Quality Collaborative.

The folks may know that state Perinatal Quality Collaboratives, they're a thing, lots of states have them. There's even a national network of Perinatal Quality Collaboratives. I'm not going to go into what PQCs are, but I encourage all of you, as Early Head Start or Head Start providers, if you're working on this base, make sure you reach out to your state PQC. There's a good chance that they're also working on this base from a clinical hospital viewpoint.

So, they can be great partners for your work. In Massachusetts, for our work around perinatal opioid use, we came up with this framework, where we try to identify opportunities during pregnancy, in the newborn period, and then post-newborn into early infancy. We set goals for each, improving the care of moms with opioid use disorder, improving the care of the newborn through family engagement, including follow up.

For each of these, we set some measures we could crack—the percent in moms in MAT, percent of these babies getting mother's milk as a sign of family engagement. And this is important. Initially, when we started this work, our main measure for follow up was a percent of these kids enrolled in early intervention. For a long time, we've known that EI is a critical partner for these families. Now, more and more, just in the past year, we're kind of recognizing the role that Head Start should play in this, too.

So, these goals will likely change for us soon. The components of our project over the years, we have training webinars and workshops. We do practice surveys to identify variances and practice between hospitals. We have a toolkit, a website with lots of resources, QI training for our teams. We now have a shared database, where teams report patient level data on these moms and babies. With that, we get regular progress reports back out to teams on how they're doing. We have statewide progress reports. You'll see some of that data. We do site visits, where we go out and see what folks are doing at their local hospitals. This is a great way of creating ideas and sharing. And then twice a year, we have statewide summits, where we bring all the community together to share progress and share ideas and learn from each other. Here's a sample of improvement efforts.

I will comment, on our project, we have lots of partners, our department of public health, EI, Early Head Start, department of children of families, lots of partners. But the core group of our project is hospital-based improvement teams.

So, OB and neonatal providers coming together as hospital-based improvement teams. And here's a sample of what these teams have done over the years. Increasing screening for opioid use disorder in pregnancy, making sure they have good systems for getting moms identified as opioid use disorder into treatment—into referral to treatment, improving reliability of scoring for any NAS, standardized pharm therapy protocols, a lot of work around non-pharm care, breast milk, rooming-in, cuddlers, and then making sure we have improving processes for getting referrals to EI.

So, that's just a little highlight of things people have done. Now, I'm going to work on and cover what we've actually learned and have we improved outcomes. So, I go through each of these time periods one at a time.

So, what have we learned about the pregnancy piece? What have we learned about the in-hospital new one care piece? And what we learned about the post-discharge infancy piece? So, in pregnancy, here I'm going to come back to that point I made earlier. And I'm going to restate my important and perhaps not too obvious take-home point number one. Outcomes for families and infants impacted by opioid use during pregnancy are far, far better when mothers are enrolled and engaged in a treatment program.

So, let me get into this. We know treatment works. This is a slide that our director of Bureau of Substance Abuse Services, our state agency that is a primary source of treatment services for lots of patients impacted by opioid use disorder, she presented this at her very first meeting of this project. And she was just trying to show us pretty clearly that treatment for opioid use disorder works. This is detox admissions by year prior to the big blue lines and then after the red and green bars, after initiation of methadone.

So, how often were patients of opioid use disorder admitted for detox before and after starting methadone treatment? And the results speak for themselves. Methadone treatment works for opiate use disorder. Medication-assisted treatment of which methadone is one type, it works. It's got to be in the context of lots of other things, but treatment for opioid use disorder, we know how to do it. This is a comment from ACOG. ACOG reminds us that for pregnant women with an opioid use disorder, opioid agonist pharmacotherapy, medication-assisted treatment is the recommended therapy and is preferable to withdrawal.

Our goal is not to get these moms off of opioids. If we identify a pregnant woman with opioid use disorder, the goal is to get her onto MAT. And there's a fair amount of science behind this, but I'm not going to get into this now, but we try to get pregnant women off of opioids through supervised withdrawal, that's tough and associated with a high relapse rate and overall worse outcomes. So, our goal is to get moms identified with opioid use disorder onto therapy, including medication-assisted therapy.

But this is where that point comes up. So, it's better for moms to get into treatment, including MAT, but if we do a better job at screening, identifying moms with opioid use disorder and getting them into treatment, won't that lead to more NAS? And isn't NAS bad for babies? And this is tough. This is tough. A relatively big problem is that we don't know much about long-term outcomes of NAS. But, and I'll show you a couple of slides try to support this, what we do know suggests that in-utero opioid exposure, particularly if that exposure is MAT, it may have limited effects on long-term outcomes for children, and that the social factors surrounding that opioid use play a far greater role in determining growth and development.

And getting moms into MAT may be one of the most important ways we can impact these social factors. So, here's a little bit about outcomes. Well, we know there are some population level studies. Here's another one by the same Dr. Patrick, that outcomes after NAS might be tougher. This is looking at readmission rates, 30 days and one year for babies diagnosed with NAS. They're higher as compared to term newborns. And they're similar as late pre-terms. So, babies with NAS have a higher likelihood of getting readmitted. This is population level data from Australia, where they looked at school performance at grades three, five, and seven. And kids with the diagnosis of NAS had lower measures of school performance than other kids, including match control.

So, concerning data, but I tell you it's super hard to control for social, economic, other risk factors that might be impacting these outcomes. A couple of studies have tried to do that. This is one study that looked at 87 babies with a diagnosis of NAS. And they looked at Bayley scores at age 2. And they found that Bayley scores were a little lower than population norms. For this testing, the score should be 100. It's normalized to 100. And they found their scores were a

little lower. So, these guys concluded that children with NAS were at risk for lower developmental scores.

So, concerning again, 87 infants, and this was all babies diagnosed with NAS. Another group—and you may have heard of some of these folks—[Inaudible] Dr. Jones, some of the leaders in this field—they looked at 96 babies through 3 years of age. And these are all babies born to mothers on MAT—so different than the other study, which is all-comers of NAS. They found ... The slides are distorted a little bit—I apologize—or squeezed. But from 3 months through 36 months of age, children previously exposed to buprenorphine or methadone, MAT, were well within the range of normal development and physical growth measured, cognitive development, and language development. These folks commented—this is again distorted a little bit, apologies—but they commented on that other studies.

So, this was some of those authors commenting on that other study, the first study I showed you about those 87 infants with NAS. And they said, "This well-meaning causal explanation is likely errorful. Children experience developmental problems due to a variety of reasons. Moreover, those reasons may or may not be related to maternal opioid use. Control data strongly suggest that most children who experience NAS will function during the first three years of life within normal developmental limits on a broad variety of measures of cognitive and social function."

So, tough stuff, but there is reasonable data to suggest that the developmental outcomes may not be that different for babies who are being exposed, particularly if that exposure is to MAT. And we know that MAT is going to make outcomes for mom a ton better. Just this month in Pediatrics, there was a state-of-the-art review article on this topic, Neurodevelopmental Consequences of Perinatal Opioid Exposure. And overall, the conclusions from this were that there's limited studies. The studies that are present sure suggest that there's no short-term effect on these kiddos—meaning three, six, nine, 12 months later—long-term effect, meaning into childhood.

Some of these studies are more suggestive of association, like the one I showed you, but the results are mixed. And they acknowledge that poverty appears to be a strong driver of the observed long-term outcomes. So, overall, I think this conclusion by Dr. Schiff from Massachusetts and Dr. Patrick is a right one, that efforts to expand treatment options, including opioid agonist therapy for pregnant women with opioid use disorder with methadone and buprenorphine, may in fact increase the number of cases of NAS, but this should still be considered a treatment success.

So, in pregnancy, our goals—get the mom into treatment. For babies of the opioid crisis, best care may be mom's recovery. Mom's recovery is going to include medications as a treatment, even if that means there's a higher chance that these babies will have NAS and more babies will develop NAS. So, that's been our goal in Massachusetts in this area. Now, I'm going to show you some of our numbers and how we're doing. What we're doing, the main measure we're looking at is the percent of moms of opioid exposed newborns among hospitals in our collaborative that are on MAT. This is a graph over time. You're going to see several graphs.

This is a control chart. The dash lines are control limits. They give us a way of assessing rigorously whether or not we're making a difference. Don't worry too much about those. Just focus on the blue line, which is our main outcome. You can see over the past three years—two and half years—the percent of mothers of opioid-exposed newborns in our state, in our collaborative that are on MAT hasn't changed. So, as one of our primary outcome measures, here we're not making a difference just yet.

On the other hand, our rate is high, 80 percent. So, we're excited about that. I think that reflects a lot of work the state has done over quite a bit of time to combat stigma and to get more of these moms into treatment, but it would be great if we get this number to inch upwards. Alright. Next area ... Now I'm going to talk to you about post-birth neonatal care. So, caring for the newborn at risk for NAS after birth. And here's my take-on point number two. I think this one's important and pretty obvious. If we can increase engagement and partnership with families in the care of opioid-exposed newborns in that birth hospitalization, that's going to improve outcomes.

And there's a fair amount of data on this now. This is a paper by our colleagues at Boston Medical Center. They looked at several different outcomes—length of stay for babies, NAS severity scores, days of opioid therapy, amount of opioid therapy the babies required. They examined each of these as compared to the percent of time that the parent was present during the hospital stay. And the more the parent is present the better the outcomes were on all these areas. So, parent presence during that birth hospitalization is going to be good for the baby. Here's a meta-analysis that looked at rooming-in.

So, rooming-in meaning, did that baby at risk for NAS or with NAS stay with the mom in her room or in a room, rather than in a separate area, like the NICU or the special care nursery? And multiple studies all show the same thing. The more rooming-in we have, the better outcomes we have. This particular outcome was the chance of needing pharmacotherapy. So, what percent of these opioid-exposed newborns, what percent of these babies at risk for NAS needed pharmacologic therapy for NAS? And you can see rooming-in drops the chance of needing pharmacotherapy for NAS in these babies.

Non-pharm therapy works. You may have heard of this new trend of eat, sleep, console. This was the paper that started it. This is by Dr. Grossman and colleagues at Yale, where they said, look, let's rethink the way we approach NAS treatment. Instead of a baby with NAS, taking them out, put them in the NICU, putting him on morphine, let's keep him with the moms. Let's work on breastfeeding. Let's work on rooming-in. They didn't call this eat, sleep, console. They just used those terms to say, "We're going to treat if the babies can't eat, if can't sleep, if they can't be consoled, basic things." And they saw a dramatic drop in the percent of their babies needing pharm ... Morphine therapy.

So, again, the percent of babies at risk for NAS who needed pharmacologic therapy for NAS dropped a ton. Our colleagues at Boston Medical Center, Dr. Rothman and Group, they did a similar project adopting this Eat, Sleep, Console method—or ESC as it's known now. And they dropped their rate or percent of kids needing pharmacological therapy quite a bit as well. So, in Massachusetts, we've started a rollout now of this. A lot of hospitals are interested. They want

to adopt this. And we put together toolkits and planning resources for hospitals that want to. Importantly, we think that we need to track outcomes of these kids.

There are some good promising data on this, but we don't know about long-term outcomes. We don't know about, if you're getting these kids home quicker, are they doing well at home, or are they coming back into the hospital more? So, we're trying to track that kind of stuff to really get a sense of whether ESC is making a difference both short term and longer term. To date, in Massachusetts, about 10 hospitals have implemented ESC. I will say far more have greatly improved non-pharm care practices and rooming-in, breastfeeding, cuddlers. And I'll say—and I think—and I think a lot of people will agree—that stuff is even more important. ESC, at the end, is that scoring tool that you use. You use the Finnegan or they use this eat, sleep, console assessment. The non-pharm care part is the biggest part of it, the most important part. And you can do that whether or not you're using ESC.

So, how are we doing in Massachusetts in this area? Again, this is improving the care of the newborn post-birth. We're looking at several outcomes. One is, what percent of these infants needed care in the special care nursery or NICU? So, as a state, we're trying to get more and more of these kids to stay with their moms in a non-intensive care setting. And it looks like we're making a difference.

We started off around 40, 50 percent. Now [Inaudible] around 30 percent of these kids are getting cared for in an intensive care setting. And that's a drop of over a third. Just like those other papers, we're looking at pharmacologic therapy. And here we saw it drop from 50 percent to around 35 percent. So, over a 30 ... Over a 1/3 decrease in the percent of these babies needing pharmacologic therapy. Alright. Now, I'm going go to the next area. So, this is post-discharge now.

So, we went over pregnancy. We went over in-hospital care. Very quickly, I'll acknowledge, but just at least highlights. And now, this is post-discharge. So, here's my fairly important, but reasonably obvious take-home point number three. We should improve follow up and services for infants with NAS and moms with OUD after discharge. Like I mentioned, we don't know a lot about long-term outcomes of NAS. We also don't know a ton about short-term outcomes in terms of what happens after they leave the hospital, but we do know that post-delivery is a high-risk time, particularly for moms.

So, here is some data again from Massachusetts. Davida Schiff, whose name you've seen before, did this in partnership with our state DPH colleagues, where they looked at overdose events among women with opioid use disorder prior to pregnancy, during pregnancy, and then after pregnancy. Actually, I'm just realizing, you probably can't see my pointer here. But you can see that during the second and third trimester during pregnancy, overdose events dropped a lot.

This is likely, because we're getting these moms identified, we're getting them into treatment, but then several months after pregnancy is a high-risk time. Overdose events jump back up. The gray bars here are for moms who are not on pharmacotherapy.

So, those are the highest risk. So, we're doing a decent job of getting moms into treatment during pregnancy at least by this data. We're not doing a great job of keeping them engaged

post-delivery. Here are some state data on early intervention. So, as I mentioned, for quite some time, we focused on getting more of these babies into EI, mainly by increasing referral rates.

So, this is by year the infants within NAS referred to EI within six months of births. We're making some good progress here, but you can see this is from 40 percent up to 65 percent. It's be great to get that number up to 80, 90, 100 percent. In Massachusetts, a diagnosis of NAS is automatic eligibility for early intervention. On the right side, though, is the percent of infants with a NAS enrolled in EI by a year of age. This is a lot lower, 35, 40 percent. So, we need to get more of these babies referred, but even among the ones that are referred, there's still more work to be done to get them enrolled. And some of this might be back to that stigma. If moms are not excited about seeking care or getting engaged with state agencies, because of stigma around opioid use, that might be a reason why some families choose not to engage with early intervention.

Here's a graph showing some of the work we're doing in this area. This is from one hospital. So, partnering with the state, they're trying to get a real sense of why the enrollment rates are so much lower than the referral rates. So, they looked at all the babies with NAS over several years, what percent were referred to EI, what percent had their intake done, what percent were evaluated, what present were deemed to be eligible, then what percent were enrolled. And you can see at every stage, we see a drop off.

So, there's opportunities for improvement at each stage in this process—from being eligible for EI to getting them enrolled in EI. So, how are we doing? Unfortunately, the only measure we have for this is referral to EI. We're working with the state on getting data for enrollment in the EI, but since by and large, we're still a hospital-based collaborative, the data we have is referral to EI by the time of hospital discharge. Here, we have not yet made improvements. We're around 75 percent. We want this number to get up there. We want all of these meetings to be referred to EI at least by the time they leave the hospital.

We're also tracking, just so we know, the percent of these babies that go home with the biologic family. We know there's lots of things that determine whether or not a home is safe for a baby and whether or not a family's in the best spot to take a baby home. So hopefully, we'll see this number go up over time, but we recognize that might take some time. We're pleased that 75 percent of these people opioid-exposed newborns go home with a biologic parent. I think we'd all appreciate seeing this number go up.

So, here's where I'm going to get into Head Start a little bit. We know—we know that comprehensive, longitudinal, family-centered care and support from pregnancy through birth and into childhood will give families impacted by perinatal opioid use the best chances for a long-term recovery and health. We know that from data. We know that from what's obvious and what makes a lot of sense. And isn't this exactly what Early Head Start and Head Start do—comprehensive, longitudinal, family centered-care? I think for a lot of us who are in the hospital caring for moms and babies around birth, Early Head Start and Head Start are not typical partners. We don't know a lot about what you do.

I think a lot of folks in pediatrics do, but we don't. But we've got to learn, because it makes all the sense in the world for us to partner with EIs, to get more of these families engaged with services, to help with this longitudinal family-centered care. Alright. So, I'm going to wrap up in the next couple of minutes. A few take-home points. So, getting moms with opioid use disorder into treatment, including MAT, may be the most important intervention we can make. And I'll acknowledge that we don't have terrific data on long-term outcomes of NAS, but I think we have enough data, particularly around the impact of MAT on people with opioid use disorder that we know that this is the right path to take.

So, we shouldn't think of NAS as a bad outcome. If a baby is born and has symptoms of NAS, but that babies born to a mom with opioid use disorder who got onto methadone and is stable on methadone, engaged in treatment, that's a win. That's a good outcome. We know that family-centered non-pharm care works. And it's good for the baby and family. And we got to think about opportunities to improve follow up after discharge.

If you look back at it there's little framework I put up, I think we're making a lot of good progress around improving the care of a limited opioid use disorder during pregnancy. I think we're making a ton of progress on improving care of the newborn during the birth consultation, particularly around family centered-care and non-pharm care. And I think here's a weak area. I think there's still lots of opportunities in this infancy period, post-discharge to support the mom, and support the baby, and support the infant, and support the child. And that's really why this webinar and all the work that you guys are doing is so critically important. Hospital-based teams will make an impact through here, but we're really going to need, kind of partners, like all of you, to make an impact down the road.

So, just a few final thoughts. It does seem to me—and to a lot of us—that EHS and Head Start providers, you might be in a unique spot to see the real-life needs of these families and offer frontline interventions. I think all of us could use more training on stigma, addiction, trauma-informed care. And even those of us who are well-intentioned still have a ways to go on recognizing that these are moms with a long-standing disease who are looking to get better.

And we should make sure Early Head Start and Head Start programs are well-connected to the hospitals and pediatricians in their area. And we heard this in the intro comments. And the one thing that PQCs can do and hospitals in this area is to get EHS and Head Start into that same community that is trying to work on the hospital piece of this at least. And if you work in this area, don't focus on the diagnosis of NAS, but rather focus on all infants infected with opioid use during pregnancy.

I showed you those numbers of NAS versus opioid exposure. Whether or not a baby has symptoms of withdrawal doesn't matter as much as the fact that—that family is impacted by opioid use disorder and needs long-term engagement and treatment. Keep families engaged. Keep them in treatment. And then we saw the best example of this with that video—from Gina's story. Listen to the family stories.

At our summits, at our meetings, more and more, we have families coming and sharing their stories and being part of our teams and part of our breakouts. And this is one mom who told her story to our whole community a few months ago, 400 people in the room. And she got up

there bravely and told her story at the start of the day. She has two kids. They're doing awesome, but she is working super, super hard to stay on the right road and stay in recovery. And we could have ended the conference right there. And it would've been a success.

For those of you who are in Massachusetts or in the area, our next statewide summit is coming up Nov. 21. Feel free to register and come by. It should be a great day. I think lots of states have similar summits. So hopefully, you can find one in your area, but feel free to join us if you're in New England. It will be a good focus on Early Head Start at this summit. OK, I think that is the end of my presentation. So, thank you so much for taking the time and listening.

Sangeeta: This is Sangeeta. Thank you so much, Dr. Gupta. We've had a bunch of questions come through, that since we have a few minutes, I would love to see if you can help us answer some of them. So, one question that came through has to do with all the lovely data that you're presenting from Massachusetts, and how can people get similar types of data from their particular states? Is there a website or a place that you can go to easily access that?

Dr. Gupta: Yeah. It's a great question. Let's see. I'm not sure kind of a standard website that shows this data across all states. There's two sources of data for some of this stuff that I showed. One is administrative data, so public health vital test data, where you can track at least NAS incidence, SEN incidence, meaning substance-exposed newborn incidence, EI enrollment, maybe even stuff around kind of custody of the biologic family or not. That data would be through the Department of Public Health.

So many states, virtually all states care about this space. So, I imagine that almost all Departments of Public Health have started to pull this data and started to track those kinds of outcomes. So, I encourage you to check in with your DPH about whether they do have at least public health stats around perinatal opioid exposure and NAS. Some of the data I showed, which is targeted more towards clinical improvement goals, such as care and special care nursery or NICU or percent of babies needing pharm therapy, that data is largely through the state perinatal quality collaboratives.

So, I know among PQCs, almost all states have them. And there's probably 10 or 12 state PQCs that are actively working in this space. And people can reach out to me or to you and you can forward them to me, and I can let you know if I know whether or not their state is working on this. The CDC has a website, which you might be able to post in the chat column. If you Google CDC perinatal quality collaboratives, they kind of list PQCs by state, including links to each state PQC. So, that may be a starting point to see whether your state has a perinatal quality collaborative or not and how to get access to them if you're not familiar.

Sangeeta: Thank you. Another question that came through is, do you have any information about babies exposed to meth?

Dr. Gupta: Meth, not methadone, but methamphetamines or the illicit ones? Or ...

Sangeeta: Methamphetamines, correct.

Dr. Gupta: Yeah, you know, I don't. I don't. We do—in our collaborative—which is hospital reported data. So, hospitals in our collaborative, they fill out a data form on every birth that's impacted by opioid-exposure during pregnancy. So, one of the questions we ask is, what are

other known exposures other than the opioid? And we do ask about methamphetamines. That data is OK. It's not perfect, but if it's not documented in mom's chart that there was exposure to methamphetamines, they may not know. Like this data is from chart review. So, it's not that people went out and interviewed moms. And it's not researched data. It's QI data. So, we do have some data on the rates of use of other substances, methamphetamines, benzodiazepines, tobacco, marijuana.

We haven't started to break that down too much. Our main focus has been opioids. I think we know informally that exposures to other substances it's not great. It increases the severity of NAS. It probably increases length of stay. And probably it increases the chances that moms will have a tougher time to stay compliant with treatment, but that's just informal. We haven't looked at that in detail. We don't have long-term data on the impact of exposure to methamphetamines.

Sangeeta: Thank you for that. There's so many questions that are coming through. We had one question over here. Dr. Bergeron and I were wondering what SEN stands for on one of your slides.

Dr. Gupta: Oh, yes, sorry about that.

Sangeeta: NAS. Yeah.

Dr. Gupta: Yeah, sorry to interrupt you there, too. Yeah. So, SEN is Substance-exposed Newborn. We really care about opioid-exposed newborn. The ICD codes for opioid-exposed newborn versus SEN overlap quite a bit. So, baby exposed to marijuana, no opioids might be considered substance-exposed newborn or baby exposed to cocaine and not opioids might be considered substance-exposed newborn.

So, for the purpose of our collaborative, we started off with the term substance-exposed newborn. We're trying to switch to opioid-exposed newborn just to emphasize that we're focused on opioids. Not that those other substances aren't critically important—they are—as some of these questions asked, but just to kind of keep the project focused, we're trying to keep it to opioid exposure. So, it stands for substance-exposed newborn. If you're looking at ICD data, there is a code for that, that might be a good marker or a good code to track all opioid-exposed newborns. There are some more specific ICD codes that try to be specific to opioid-exposed newborns, but SEN might be a good starting point.

Sangeeta: And one question that had come through, what is the proper language for identifying babies not being born addicted? So, it sounds like substance-exposed newborn might be that terminology that we should be using.

Dr. Gupta: Yeah, I think so. As well as exposed to opioids, and neonatal opioid withdrawal syndrome is a decent term. I think some people don't like that either too much, because it's not so much that they have withdrawal, it's just that they're born exposed. Some people promote newborns dependent. They're born dependent on opioids if they do have withdrawal syndromes. I think that that's a reasonable term as well, but certainly not addicted. So, if you have a withdrawal, you can say this was baby that has been on in-utero opioids. This was an opioid-exposed newborn with symptoms of withdrawal. Those are all fair ways to describe it.

Sangeeta: And a final question before we're done for today is, Dr. Gupta, can you mention the impact of alcohol on development?

Dr. Gupta: Yeah. And I'm not an expert in that area. I mean, alcohol among all the prenatal or exposures in pregnancy, probably alcohol is the most important in terms of substances that aren't good for the baby. Maybe tobacco's up there too, in terms of incidents, but we know that fetal alcohol syndrome is a real condition with the long term and impacts that aren't really amenable to intervention. We also know that fetal alcohol syndrome is vastly under diagnosed and under assessed. We know that screening for alcohol use in pregnancy is not great and not consistent.

So, it's critically important. And at our summits on opioid use, on our pregnant opioid use summits, invariably some people will get up and say, why are we worried about this? We got to deal with alcohol. It's even more important. It's a fair point, fair comment. So, fetal alcohol exposure, clear impacts on fetal development and long-term development of the child. And as a community, we definitely should be focusing on that. I don't think that means that the opioid work is not important, but it's different.

Probably there are some states that have gotten real creative and very forward-thinking, where they're tying this all together, where they're making interventions that address opioids, also look at alcohol in terms of at least screening, or referral to treatment, where they're are trying to build these kind of programs that look at multiple different types of potentially problematic behaviors in pregnancy. I think that's a great goal. We're doing that a little bit Massachusetts, but at present, we're keeping them a little separate. So, none of this is suggesting that fetal alcohol syndrome is not important or we shouldn't worry about it, it's critically important, but at least for us, it's been helpful to consider them separately for now.

Sangeeta: Dr. Gupta, thank you so much for your time today. I know that we have run out of time. So, if we weren't able to get to your question, please join us for the third part of our series. It's going to be on Oct. 16. We're going to be here from 3 to 4 p.m. Eastern Standard time with Dr. Kaitlin Baston. And we're also going to have a special guest. Sesame Street Workshop is going to be joining us as well to talk about some of their materials that they are developing around substance misuse that we can use in Early Head Start and Head Start.

So, please mark your calendars for that. And we look forward to seeing you all again soon on our next webinar.

Thanks again, everybody. Have a good day.

Robinn: Thank you, everyone. That was a very informative presentation. If you have any more information or you have additional questions, please feel free to contact the National Center on Early Childhood Health and Wellness at health@ecetta.info or call us at 1-888-227-5125.

Just a reminder that a feedback survey with a link to download your certificate will be available after this webinar, along with this slide handout.

That concludes this webinar. Thank you for your participation.