Optimizing Outcomes for Pregnant Women and Infants Affected by the Opioid Crisis

Robinn Yu: Good afternoon, everyone. Welcome and thank you for standing by. My name is Robinn Yu, and I am the program assistant for the National Center for 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. All participants will be muted throughout the presentation portion of the webinar. There is a slide presentation being shown throughout the webinar system. If you have a technical question, please type it in the chat box. 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, and we will answer it at the end of the webinar. Immediately following the webinar, you will be directed to the survey feedback forum. At the end of the survey, you will be able to download a copy of your certificate. This webinar is being recorded and an archived version will be sent to you within the week. Now, I'll turn it over to Sangeeta Parikshak.

Sangeeta Parikshak: Good afternoon, everyone, and welcome to the first webinar on our three-part series to find out how Head Start and Early Head Start programs can support children and families impacted by opioid and other substance use disorders. My name is Sangeeta Parikshak. I am a clinical child psychologist and the lead for early childhood behavioral health at the Office of Head Start at the Administration for Children and Families.

Before I introduce our speaker for today, I would like to provide you all with some context related to Head Start, what we are seeing regarding the opioid epidemic and programs, and how it is being addressed through our federal office and at the program level. Just to ground us a little bit in who we are talking about here today, Head Start and Early Head Start serves over a million children from birth to age 5, including pregnant women.

Oftentimes, we get questions—oh, we're really surprised to hear that Head Start is at the table discussing the opioid epidemic. But in fact, when you see the breadth with which we actually serve and who we serve, it makes a lot of sense that we would be talking about young children and pregnant women when it comes to both the opioid epidemic, but substance use disorders in general. Head Start programs also provide children and their families with health, nutrition, social, emotional, and family services. So, we do have a variety of mechanisms in which we can address the opioid epidemic.

Over the last couple of years, we have been speaking with grantees, and our director, Dr. Deborah Bergeron, has been going in person to many grantees to hear directly from them, how is the opioid epidemic impacting you. And these are some of the things that have really stood out to us. Grantees have been informally reporting that enrolled women, pregnant women are misusing opioids and other substances while they're pregnant.

Infants and children entering Early Head Start and Head Start are coming with a diagnosis of neonatal abstinence syndrome and programs are at a loss as to how to deal with it. They're also reporting behavioral challenges that they attribute to substance misuse in the home and other traumas that may come with substance misuse.

We have also heard grantees reporting a shortage of bus drivers because applicants cannot pass their drug tests, which is particularly concerning. We have some national data that indicates that Head Start programs have provided families with a variety of services to address substance misuse. And this includes things like referrals for mental health, substance abuse prevention, and referrals for treatment. We've also included some information around services to more than 31,000 children living in foster care, as we've been hearing that there is an uptick of children entering foster care due to the opioid epidemic.

So, as you can imagine, our grantees have been kind of trying to fast track a little bit what they are doing in their programs to address this crisis. These are some of the different activities that we've been hearing across the country that they've been doing, so things such as providing awareness and sensitivity training around substance use disorders broadly, as well as the opioid misuse specifically. They've been talking to us about partnering with hospitals, child welfare, and local treatment facilities to really obtain that wraparound care for families.

Developing interventions within the program to improve parent-child bonding. And some are even providing monthly support groups for grandparents, as we've been hearing about a rise in kinship care. And finally, there are quite a few programs that have been talking to us about training staff to carry and administer naloxone, which is a medication that is designed to rapidly reverse opioid overdose. So, since we've been hearing about all of this for the last couple of years, the Office of Head Start at the federal level has invested a significant number of resources to figure out how we can be more impactful in this area. And so the Office of Head Start funds a variety of national centers that provide us with research, informed training, and technical assistance. And the National Center for Early Childhood Health and Wellness that is helping us out with this webinar today is really spearheading the efforts in this area with us.

So, that includes the American Academy of Pediatrics, as well as Georgetown University. And we have a number of other national centers, such as the National Center on Parent, Family, and Community Engagement that is really partnering closely with us in this area. So, we've done a number of things since probably mid-2018. The first was to do an expert workgroup convening that you will see the title here-- how can Head Start and Early Head Start and other early care and education services help young children and their families impacted by opioid and other substance use disorders? And this was really a forum for us to learn for the first time how we can be helping children and families—young children and families-- when it comes to opioid misuse. And our speaker Dr. Stephen Patrick, who I'll be introducing shortly, he came and spoke with us. And we were really taken with what he said and have used a lot of his suggestions in helping grantees. We also have started 11 regional meetings, where we bring together state teams as well as Head Start grantee teams together, often for the first time, across the country. So, we've had about five of these so far. And the purpose of these meetings is really to provide information about opioid and other substance use disorders, provide that forum for state and grantee discussions, and to exchange ideas about what elements are really the key to success to make sure that we can really intentionally help children and families.

And what is great about these meetings is that, like I said, it really provides a forum for people who often are working on the same issue who may not have met before to really continue to plan together long term. So, they meet at these meetings, and then they do a plan. And we

follow up with them through our office and the National Center moving forward. Just a couple of other things so that you all know what we have to offer through Head Start. We have the Head Start Early Childhood Learning and Knowledge Center. And on this website, we have resources related to behavioral health on ECLKC. There's also a MyPeers community that is available for Head Start grantees. If you go scroll down to the bottom of this page, you can find it under Quick Links at the bottom of the ECLKC page. And there's a community there devoted specifically to opioid misuse and substance use disorders. And you can find resources there and chat with your colleagues, so it's a really nice place to go if you're working in Head Start.

And finally, we have a substance misuse landing page. So, if you're looking for resources specifically related to substance misuse, you can go here and check it out. And of course, you know, we want to make sure that we're up with the times, so we do have an app for that. We have the ECLKC app. So, you can pull up those resources wherever you are at anytime and use them.

So, now, I would like to introduce our speaker for today, Dr. Stephen Patrick. He will be talking with us about improving outcomes for families affected by opioids. He is the director of the Vanderbilt Center for Child Health Policy, and assistant professor of pediatrics and health policy at Vanderbilt University School of Medicine, and an attending neonatologist at Monroe Carell Jr. Children's Hospital at Vanderbilt. His National Institute on Drug Abuse-funded research focuses on improving outcomes for opioid-exposed infants and women with substance use disorder and evaluating state and federal drug control policies. He's previously served as senior science policy advisor to the White House Office of National Drug Control Policy and he is a member of the American Academy of Pediatrics Committee on Substance Use and Prevention. He has numerous, numerous accolades and awards, and has been published in a variety of leading scientific journals, including the New England Journal of Medicine. And so now, I would like to turn it over to Dr. Patrick. Welcome. We are thrilled you could be with us today.

Dr. Stephen Patrick: It's such an honor to be with you all. And I love the engagement already in the chat box, including from almost where I was born. Beckley, West Virginia—I was born in Bluefield, not so far. So, I love the engagement there to see where everybody is from and what everybody is doing. I'm going to talk a bit today. I'm going to make sure we have enough time for questions. I'm going to provide a bit of an overview of the opioid crisis and how it's affected both pregnant women and infants. Let's see here. I have no conflicts of interest to disclose. So, here's what we're going to look at. We're going to briefly talk about the opioid crisis, kind of how we got here. We'll talk about substance use in pregnancy, neonatal abstinence syndrome. I'm going to talk a little bit about how we're delivering care differently at Vanderbilt and talk about some long-term outcomes that I think may be applicable to what you're seeing. I like to start here sometimes when I give talks.

This is from the State of Tennessee, where I live—the Medical Society back in 1892. Around this time, you could go pick up your bottle of heroin. There it is in the corner of your screen. And this is actually a case series of pregnant women who used morphine during their pregnancy and their infants had withdrawal. So, you can see a description here of a woman who used morphine. And then the baby was born and the baby was well-appearing, weighed about seven or eight pounds. And then within 24 hours, the child began to grow restless and nervous. And

then soon thereafter, the child got worse. And then subsequently, this child died. And that was the natural history of opioid withdrawal around that time.

And of course, this was in Tennessee in the 1880s, and so you can guess how we treated opioid withdrawal in newborns then. It was opium and whiskey, and unclear if it was Jack Daniel's or some other type of whiskey, but that's how it was treated. So, of course, what we've seen now is a growing complexity of the opioid crisis. And CDC now frames it as three waves. I've heard some people call it like more of a layered cake because all three are still happening. But this really began with the rise of prescription opioid use and misuse. Then we saw heroin and now synthetic fentanyl. And each time—we can talk about why this shift has happened and questions if we want—but each time, we've had a growing level of complexity with how we're responding to the crisis, but overall, it's just been a massive amount of our population across the United States that's been affected. But this is how I was introduced to the opioid crisis, and it is in my patients. So, I'm a neonatologist. I take care of sick infants in the neonatal ICU. And primarily, the types of infants I was trying to take care of are infants that are born very early or with complex birth defects. But we started seeing infants that were different. And these were infants having opioid withdrawal a few years back. And they are different.

They aren't critically ill like a lot of our infants, but they still require treatment. And you can imagine if any of you have been in a neonatal ICU, you walk around, there's a bunch of machines and babies on ventilators. And then you have babies who have drug withdrawal, and they're big, fussy babies, and so they tend to stand out. Well, substance use is not that uncommon in pregnancy. So, these data are getting a little bit old, and I just saw that these data have just been updated today actually, but around 7.5 percent of young women aged 18 to 25 used some illicit substance in pregnancy and about 5 percent overall. What's important about that is that it's still less than the general population. That's around 12.5 percent. And of course, it's always helpful to remember that legal substances are still commonly used too. So, around 13 percent of pregnant women smoke cigarettes, about 1 in 10 drink alcohol. And this is important because it's not generally one substance that we see. It's usually multiple.

And while we have so much focus right now on the opioid crisis, we can't forget about these because we know alcohol, for example, is the number-one preventable cause of developmental delay in children. But if we look together, around 440,000 infants are exposed to illicit substances or alcohol per year, but we only detect about 5 percent at birth. And that has a lot to do with some of the tools we have to detect. That also has something to do with stigma, as well. I want to talk a little bit about how we treat pregnant women with opioid use disorder because I think it's important as we think about what their infants look like. Well, really the standard of care is to use a medication like buprenorphine or methadone. And buprenorphine has a couple of drug names-- Subutex or Suboxone. And why do we do that?

So, there is good evidence to suggest that for women with opioid use disorder, particularly those who are using heroin, if they're on these medications, they have a decreased risk of overdose death, relapse, hepatitis C, and HIV. And for the infant, there's an effect too. They're more likely to be born at term and be born at higher birth weights, but this does come with some risk of drug withdrawal. You can imagine what's happening if there's uncontrolled opioid use disorder. Infants and moms go through these rapid cycles of intoxication and withdrawal,

intoxication and withdrawal. What these medications do is they get rid of that cycle and they stabilize the pregnancy. So, in some ways, what we're trading are these very preterm infants that are sometimes born in uncontrolled opioid use disorder for term infants who have withdrawal. Many women can't get into treatment, and that's a real problem across the country. We know that about half of pregnant women who even make it to treatment, only about half receive medications for opioid use disorder. This is from a small survey we did in Appalachia.

We just called providers to see if they took insurance for opioid use disorder. We saw overall that only about half of providers took any insurance at all. And in my state of Tennessee, acceptance rates were very low. You can see private insurance rates about 40 percent and Medicaid insurance acceptance around 14 percent. Only about half of the providers also would take pregnant women at all. So, there are countless barriers for pregnant women trying to get into treatment. So, what is neonatal abstinence syndrome? It's a drug withdrawal syndrome that newborns experience shortly after birth. And it generally follows an opioid exposure, though if we look in the literature, other drugs have been implicated, like benzodiazepines—these are drugs like Valium—or barbiturates—drugs like phenobarbital.

The literature suggests that around 40 percent to 80 percent of infants that are exposed to either heroin or methadone develop drug withdrawal, but from some of our other work, about 5 percent of those that are exposed to opioid pain relievers, like Vicodin. So, we usually describe a baby that has drug withdrawal as a colicky baby times five. For those of us who have kids, we can remember having our kids right after they were born and them being fussy. That's kind of what these infants are like. And you can think about what drug withdrawal looks like based upon where opioid receptors are in the body. And they tend to be in the gastrointestinal tract, as well as the central nervous system. So, common GI signs are poor feeding, vomiting, and loose stools. And this can lead to dehydration and poor weight gain. Babies can lose a lot of weight pretty quickly. In fact, I've had infants lose 10 percent of their body weight in just a couple of days. Common CNS signs are tremors—so shaking—hypertonia-- increased muscle tone-- irritability, decreased sleep, some exaggerated reflexes, like the very cute struggle reflex or the Moro that babies do. And less commonly, they can also have seizures. So, here's what we've seen. And this is from some of our work nationally.

On the y-axis here, you'll see rate of neonatal abstinence syndrome. This is nationwide per 1,000 hospital births. And on the x-axis is year. And we've seen about a seven-fold increase in the number of infants diagnosed with drug withdrawal nationwide. And in 2016, about one infant was born every 15 minutes on average having drug withdrawal across the country-- a pretty stark increase from where we were just a few years ago. In total, this has been a very costly problem too. And look, we try to talk about costs in part because I personally think that, you know, the way we're using resources now to care for neonatal abstinence syndrome is really inefficient. We're spending a lot of money on NICUs, where we could be spending money on getting moms into treatment and thinking about how we can fund better services, like early intervention and Head Start. And I'm saying that not just pandering to the audience. I actually do believe that. So, how do we treat this? The goal of treating neonatal abstinence syndrome is first to control the clinical signs of drug withdrawal and minimize the complications. And that

really begins with non-pharmacologic measures, so we try not to use a medicine to treat it if we don't have to. That can be done with rooming in. I'll talk a little bit about that.

So, traditionally, babies are separated from their moms if they have drug withdrawal, but we know if we keep them together, babies do better, moms do better breastfeeding when it's appropriate. The severe withdrawal does require use of a medication, like an opioid—morphine or methadone. So, we basically load the infant to control their clinical signs, and then we slowly taper that over a period of days. So, what are we doing differently? This is what I was alluding to a bit ago. It looks like the graphics are off a little bit, so sorry for that, but the traditional model—and it's probably the most common model still around in the United States for opioid-exposed infants and those that develop drug withdrawal is they're frequently transferred to a tertiary care facility. Mom and baby are often separated, and the babies placed in an ICU, which is loud and chaotic. Breastfeeding is not allowed, or at least inconsistent.

We oftentimes focus on the correct medicine, so we're using morphine or methadone, instead of the correct care process, which we know matters. Burnout for providers is pretty common. And we've had a lack of trauma-informed care processes, which was honestly a new term for me until I started doing this work. Care processes are not standardized and we've had really long lengths of stay and treatment. So, for example, if you look at our literature for neonatal abstinence syndrome and even conversation with folks, we see lengths of stay that are 60 days for babies who have drug withdrawal. And you know, no other population really has drug withdrawal that lasts that long.

So, what are we doing differently? We are potentially not transferring infants to a tertiary care facility if we don't have to. Now that said, many local hospitals and small communities, particularly rural communities that are disproportionately affected, may not have the resources to care for this at home and their home institutions, but maybe not. We try to keep the dyad intact out of the ICU when possible. And that's what we do at Vanderbilt now.

Treatment of the baby is inclusive of the mother. We breastfeed and encourage that and support it. There are national guidelines for when moms can breastfeed. Focus on the care process, not just the medicines. Engage staff in trauma-informed care. Use standardized protocols. There's good evidence that just doing the same thing every time improves outcomes. And for us, we've had greater patient satisfaction and reduced length of stay. So, the amount of time that babies with drug withdrawal are staying in the hospital is about half of what it used to be at Vanderbilt.

So, what we've built is something that we call Team HOPE. And it is intentionally interdisciplinary. It includes physicians, nurses, social workers, child life specialists, lactation consultants, and volunteers. We've had around 210 infants. And that's about in the first 15 months of the program. About a quarter were diagnosed with drug withdrawal.

We find that if we intervene early, they don't escalate in terms of clinical signs to where they get that diagnosis. And we're only treating about 18 percent with morphine. And that's less than half of what we used to be doing. So, just keeping moms and babies together, providing resources for lactation, supporting the family really makes a huge difference. It's a really low-tech intervention that really matters. We've had about 80 percent of our infants seen by child

life We're just gearing up in terms of volunteers. For breastfeeding, about 70 percent of our moms are eligible to breastfeed. And that's indicative of moms being in treatment.

So, moms who are stable in treatment absolutely can breastfeed. Still about 80 percent of our moms are providing breast milk at the time of discharge. And that's extraordinary for this population. Most of our infants are being discharged outside the NICU. And again, that's a big win for us in terms of the culture.

And so I oftentimes say, you know, it's not just the fact that we're keeping moms and babies together. But you can think about me—I'm an intensivist and my mindset when I walk into a room is I've got to go do something. I've got to go put in a breathing tube or something like that. And these infants don't need that mindset. What they need is a normalization mindset of we've got to keep mom and baby together, promote things that are normal, as opposed to lots of intervention. I think for a lot of these infants, less is more. Doing the things that's intuitive really does help.

So, we have a median length of stay for all comers is about five days and for NAS, it's about 13 days. But we've been thinking a lot about improving transitions home. And I wanted to focus on that here because I think it sort of highlights a lot of the challenges that families face when they're leaving the hospital. So, a lot of the emerging challenges that we're starting to see are things that we just hadn't thought about before. And one of those is hepatitis C.

So, this is from some of our partnership with Tennessee Department of Health looking at rates of hepatitis C among pregnant women across the United States. Here, the darker the color, the more intense rates of women with hepatitis C. You can see my home state of West Virginia—1 in 50 babies were exposed to hepatitis C in 2014. And that likely has just been increasing since. And so why does that matter? It matters because even though there's a low transmission rate from mom to baby—it's about 6 percent—we don't have good systems of care that follow these infants to see if they go on to develop hepatitis C.

Hepatitis C exposure in infants is completely silent. We don't know unless we look for it. So, some data from Wisconsin Department of Health found that only about a third received recommended testing to see if they converted. In some of our work done by one of our fellows, we found about 22 percent of Tennessee infants were followed to see if they developed hepatitis C with a pretty big health equity issue in terms of a difference in about African-American infants were 60 percent less likely to be tested than Caucasian infants. So, what does optimal discharge look like?

So, I should have added Early Head Start to this slide, but it starts, I think, with the hospitalization. So, how can we engage families early? I think so often the way our systems are built out, it's built to disengage families. We transfer infants off to the NICU. We don't engage families at all. So, beginning early where we promote breastfeeding, engaging the family, assessing the family needs—not just the infant needs, including moms need for treatment—assessing other risks—mental health risks, as well as hepatitis C for both mom and baby. And it considers the post-discharge needs—things like Early Head Start, home visitation, a good engagement with the child welfare system, which is something we've been trying to work on as

well, early intervention, more frequent pediatrician follow-up, and well-coordinated care. Yes, I see EHS. I totally agree, Early Head Start.

So, what have we done? We've done some pretty low-tech stuff in the space. We've just created a checklist. We're a pretty engaged group who focuses on this population. So, we said, OK, well, if you go home, what we think you should have, we think you should have a scheduled pediatrician follow-up, you should have hepatitis C follow-up if that's relevant, developmental follow-up, EI. And the question was, were we doing this every time? And the answer was, no. We were doing this about consistently, all those things, 2 percent of the time. And all we did was introduce a checklist, and we increased that to 60 percent on average. And now, it's closer to about 90 percent.

Go through those for time. OK, I want to talk a little bit about community. So, a lot of our work, a lot of our research really focuses on the bigger picture in terms of what's going on. So, we do work around various access to treatment for infants. And in a paper earlier, you know, we did some work thinking about communities. So, recent evidence suggests that adverse economic conditions, lack of economic opportunity may be associated with some of what we're seeing in terms of overdose deaths. There's a group of economists who have termed this "deaths of despair." Actually, a lot of people term their work "deaths of despair." We know that opioid-related complications, including NAS, are disproportionately in impoverished and rural settings. And we wanted to understand how neonatal abstinence syndrome may be affected by the supply of access, like mental health professionals, as well as how long-term unemployment may affect rates of neonatal abstinence syndrome.

So, we looked at 580 counties in eight states to try to understand—I'm going to focus a lot here on the economic consequences—what was going on. So, here, we'll highlight three states where I live in Appalachia. So, here in Kentucky, North Carolina, and Tennessee, this is rate of neonatal abstinence syndrome for 1,000 hospital births. And we'll begin with 2009 and kind of march through. So, I can't hear you all gasping, but you can see how this has increased and it's spread just like an epidemic across these states. And in particular in Appalachia, it has gotten deeper, the rates have gotten higher.

And this is true in other parts of the country too, so the UP and Michigan looks very similar and other rural settings across the country too. So, this is overlaying rates of neonatal abstinence syndrome with long-term unemployment. So, we looked at a 10-year moving average of unemployment. And you can see some counties really pull out in terms of—that have high rates of unemployment, as well as neonatal abstinence syndrome.

So, we found that counties that had high rates of long-term unemployment in remote rural counties had about twice the rate of neonatal abstinence syndrome. And even after we accounted for a slew of other factors, including clinician supply and job types, this persisted—that counties, particularly remote rural counties, that had long-term economic downturns were associated with higher rates of neonatal abstinence syndrome. And look—by the way, you can play with this on our website.

So, our website is childpolicy.org/nas. You can put in any of the 580 counties. That's Apalachicola, Florida. I think I saw a Florida State person on there. Apalachicola, Florida is home

of the University of Florida. Go, Gators. But you can go there, and put in your county, and play with the characteristics. You can also look how states go in terms of incidence of neonatal abstinence syndrome and kind of play with things. But what this means is that I think one of the things that we oftentimes don't do is we think a lot about how there's cause and effect in terms of the drug supply. And drug supply matters, right?

We've seen if you watched the news just in the last few weeks, a lot of attention around pharmaceutical companies in particular dumping loads of opioids into communities like West Virginia. And that's important, but it's not the only issue. So, we can't just tackle supply. We have to tackle a lot of these core issues, like economic opportunity.

So, one of the things I think that's important for us to talk about is that we're facing the opioid crisis now in a very different way than we focused on the crack cocaine epidemic just a few years ago. This was the view of—this is the cover of Time magazine that's "Crack Kids." And it's a really stigmatized language. And you can see this disproportionately affected minority populations. Now, we have an epidemic that disproportionately affects Caucasians. And our language is very different and our policies have been somewhat different, too.

And I think it's really important that we're mindful of the missteps we've made before. And as this crisis grows and it changes, this language of compassion, this language of public health persists when other populations are affected, too. Because it's not just the way it's framed in the press. It's been the way it's framed in terms of policymaking, too, in terms of punitive policies, particularly around families affected by the cocaine crisis before.

A lot of the worries that we had before, which we'll talk about, about the cocaine crisis and children development really turned out to not be true. Maternal drug use doesn't occur in isolation. It often occurs in the context of poor health, poor nutrition, food insecurity, poor prenatal care, social stress, and violence. And I think this is where intergenerational care like the work that you guys do is so important, as we think about the complexity of these issues. Each of these things can be associated with poor obstetric outcomes, and each could be a factor in neurodevelopmental outcomes. And I say this because we're going to talk a little bit about developmental outcomes, and we really have to understand that a lot of this developmental outcome literature is really confounded by these issues as well as alcohol use.

So, alcohol use is frequently under or completely unrecognized. And it's the chief preventable cause of developmental delay in children. It's pretty common, particularly among moms who also misuse opioids. So, in some of our work, about 20 percent of pregnant women who misuse opioids in the last year also drink alcohol when they're pregnant. And how do we account for this in terms of our long-term outcomes? And the answer is, we don't do it terribly well. The other thing about trauma and of toxic stress. We know that trauma is very common for women in treatment, but 74 percent report sexual abuse, 72 percent emotional abuse, and about half physical abuse.

And certainly we know adverse child experiences are common in these families, too. People with adverse childhood experiences are eight times more likely to have a lifetime substance use. About 10 times more likely to have injected drugs. So, many of the long-term outcomes may fail to account for these things. The additional stressors, adverse health experiences,

trauma. And I think that's important as we think about some of the things we're going to talk about. So, what does the literature suggest? Infants with NAS do seem to have different utilization patterns.

We know some of this data from Australia, actually. They are more likely to be admitted in the first few—readmitted to the hospital in the first few years for things like anxiety, behavioral or emotional disorders, strabismus or lazy eye, poisoning, maltreatment, or assault. What about neurodevelopmental outcomes? A lot of these data are somewhat older, as you can see. Methadone verses a match control group looking at differences. Try accounting for race, socioeconomic status, sex, birth weight, and gestational age. But did have differences in smoking and alcohol use. Initially they found in this small study differences in speech, language delay, and but they did find that factors improved over time. Similarly, you can see the small in here, heroin and methadone versus control—versus the control group found initially some intellectual disability. But after accounting for prenatal risk, home environment, these things didn't pan out in terms of being significant factors after accounting for those things.

So, accounting for other exposures, accounting for other risks is really important. Another study from Australia looked at testing long term, and found that infants—this is at grade level 3, 5, and 7—tested lower than other infants. And I bring this up just because it's really important to understand how these studies are constructed. One of the worries of this study is that those match controls were matched on four factors at the time of birth. Gestational age, socioeconomic status, whatever that is. I think that's really hard to define. As well as sex. You can see how these things would change. I mean, those are things at birth. How might that be different at the time of a third, fifth grade.

So, I think we have to take all of these studies with a little bit of skepticism. So, I'm going to close a little bit and talk about policy change, because it's really relevant to what I think a lot of our families are going through. This is from some of our work recently looking at the number of infants that have been placed into foster care. And we've seen an increase of about 10,000 from 2001 to 2017. That's 50,000 infants per year are placed in foster care. That's a bit more than 1 percent of all infants in the United States.

We know that at least half of that is due to parental substance use. We think that parental substance use variable in the data that is collected likely undercounts parental substance use. It's very—it varies very much state to state in terms of foster care placement. So, you can see, again, who's comparing 2011, 2017. Again, my home state of West Virginia. More than 4 percent of infants in West Virginia are in foster care.

So, you can see it mirror a lot of where the opioid crisis has been disproportionately affected. There have been lots of changes to the child welfare system in terms of federal changes recently. One is the Families First Prevention Services Act. And what it allows is it allows states to use child welfare funds for prevention, including even targeting treatment for moms. The Budget Act, one of the budget acts that passed last year allows for funding for planned Plans of Safe Care, and we can talk about something if you guys have been engaged in Plans of Safe Care. Plans of Safe Care are essentially supposed to be plans that engage the family, including moms treatment needs to keep the infant safe, but also take into consideration how we get moms into treatment.

The Support Act that signed, that was signed in the fall, provides much, much greater detail of what Plan of Safe Care should look like and provide some money, as well. You can see the complexity here. The secretary shall make states—grants to the states for the purpose of assisting child welfare agencies, social welfare, substance use treatment, public health, mental health, maternal child health. Even the list here of agencies that need to be engaged in supporting these families is a bit daunting in terms of the amount of places, the amount of public programs that are engaged. So, who's all engaged? All these folks are engaged. And this is just specifically from the legislation. OK, so what's happened with state policy, I think it's important because we see states enact various policies, including my own state. So, I'll use Tennessee as an example.

So, Tennessee had something called the Safe Harbor Act was that this approach doesn't get women into treatment. and it was passed in 2013. It was to ensure that family-oriented drug abuse—that's the language they use—or drug dependency treatment is available. And if a woman were to engage in treatment by the 20th week of pregnancy, there wouldn't be—couldn't be prosecution or child removal just for the history of drug misuse. This is, again, the language I have already seen some things about language. I agree language is important. This is the language from the legislation. Public Chapter 820 was passed soon thereafter that a woman could be charged with a misdemeanor if she illegally used a narcotic during pregnancy, and if the baby was quote harmed as a result including the Neonatal Abstinence Syndrome. This law was on the books for two years, and a bit more than 100 women were arrested as far as we know. And it wasn't just the fact that women were arrested. There was the fear of abuse, the fear of being arrested.

So, women were delivering out of the hospital, delivering in cars. I think the worry, at least from all of us from the medical community, it sort of keeps them away from treatment. This was the most extreme state policy during this time period. And this law sunset in 2016, but this law has reappeared in the last session here in Tennessee, and I've seen the language pop up in other states like Missouri and North Carolina as well. So, on the heels of this, my committee, the Committee on Substance Use and Prevention drafted a policy statement on what states could do in terms of a public health approach to opioid use in pregnancy, and it has a few key tenets focusing on prevention, including improving access to highly effective forms of contraception. Universal screening for alcohol and drug use to get women into treatment.

You do need informed consent for women to be drug tested, and we sort of—this a Supreme Court case on that. We want to make sure that was out there. Improving access to comprehensive addiction and prenatal care. So, we have a clinic here for women with opioid use disorder that's comprehensive and includes prenatal care access, includes addiction treatment. It's just very rare. Those women travel from hours away to come to clinics like that. It's hard to find. And approved funding for the child welfare system. You know, we've seen a little bit of increase in recent years.

But the child welfare system really struggles, it with funding and it struggles with shifting to substance exposed infants. It was really designed for and protecting infants from severe physical abuse. Families affected by the opioid crisis and substance use disorder more broadly

are just different. OK, I left a lot of time for questions by talking my usual fastness, so I apologize for talking so fast. But I wanted to have time for us to engage in conversation.

But to conclude, pregnant women and infants have been substantially affected by the opioid crisis. And our approaches do have to be tailored, that address the specific needs of them. A lot of the conversation, even a lot of the policy changes that we see throughout the country, are focused on the opioid crisis more broadly. But we all know that our families have unique needs that are different than a 50-year-old man. Improving outcomes begins before birth. So, we have to improve access to treatment for moms.

This is not just about drug use. It's also about the community, economic opportunity, social network and how that's changed. The data on long term outcomes is inconsistent, confounded, underpowered. So, I think we should be careful with how we interpret it. But that doesn't mean we shouldn't be providing the resources to optimize the development of infants through programs like Early Head Start and EI. I think the opioid crisis may be a vehicle to connect all of us. I mean, the fact that we're talking together now and the amount of different conversations—I was on a panel last night with the judge, and look, there—I think the opioid crisis is bringing people together in unique ways. And I hope that we'll build bridges that will last well beyond the opioid crisis to improve outcomes for pregnant women and infants. And I think we have to move beyond the medical model. Right?

What I do in the hospital doesn't matter a lot. I mean it matters some, but it's really the things we do outside that matter. And a lot of the funding, a lot of what we do is driven by money, right? People respond to incentives. So, how do we build perhaps even alternative payment models that are innovative, that include connection to Early Head Start. How can we continue to have child welfare reforms and implement them better through like Families First and plans of safe care. Can we inform existing programs better for things like trauma, and connect family to resources, and how can we make sure that Early Head Start plays a central role in this, as well. Lots of folks to acknowledge. I cited a bunch of people here from our team, as well as our funders from NIH and Tennessee Department health and RWJ. And I look forward to taking questions.

Sangeeta: Dr. Patrick, thank you so much. You're right, you do talk fast, but it was important because you packed in a lot of good information for us. Before we get to the questions, I just want to highlight a few things that really stood out as you were talking that I think will resonate with our Head Start audience. You talked about the importance of family engagement. I don't think you've called it family engagement, necessarily, but I think that's what you're talking about. And that's really at the heart of Head Start and Early Head Start. And so I think you're right when you say that we have a leading role to play in the epidemic.

And I also really like how you talked about how this isn't just about opioids. We're hearing from our grantees in certain regions, they're saying the issue is not really good for us. It is meth, or it is alcohol, or it is something else. But we really want to have a focus on substance misuse. You also highlighted the importance—and I like the way you said it—a language of compassion. That's something that we've really been talking about a lot in our office, and within the regions and the local programs, is how to have this discussion.

And like you pointed out, it wasn't that long ago that we were talking about the crack epidemic and crack babies in a super—I mean even just that terminology is so negative, and that's not how we want to be addressing this. But you also talked about disparities and that we really need to recognize that there is unequal access to treatment. Sometimes depending on the color of your skin. And so I'm really glad that you raised those points, as well. There are a bunch of questions in the chat. The first one that came up was, can you define what is meant by drug related developmental delays.

And there were a couple of other questions that sort of fell into that bucket, where there was one question about neonatal abstinence syndrome, and the connection to maybe autism. Is there any connection there? And just in my own experience, I've been hearing from grantees about saying that they're noticing an uptick in behavior problems, and wondering if there is a link to being exposed in utero to substances. Maybe you could take that for.

Dr. Patrick: Sure. I'm not aware of a link between autism and neonatal abstinence syndrome. The literature, the things that are strongest in the literature, are in inattention and some behavior issues. But they—the deficits solely affected by opioids don't appear to be profound. At least the literature that we have. Now with all that said, the literature is pretty weak. And I think there are a couple of studies that are ongoing. NIDA is doing on very large study right now. So, there are things that are launching that may get better answers, because I hear anecdotes all the time from teachers, from about deficits and delays in kids, and I think there are things that are there.

The question is: Where are they coming from? Is it the opioid itself? Is it alcohol co-use that we don't understand? I think that's really one of the questions. And one of the reasons why it's important to frame this carefully is the whole concept of harm reduction. what we don't want is pregnant women not getting into treatment with Subutex because they think the Subutex is going to harm their child, or create systems that dissuade moms from getting into treatment, because they think it's going to harm their child. Because we know the outcomes are better, including long term outcomes, if mom is in treatment. So, it's sort of a nuanced message, a little bit. You know what is the trade-off between the developmental—potential developmental outcomes of uncontrolled heroin use, and opioid use disorder, versus a mom being on Subutex. It's likely better, but gosh, we just don't have great data.

Sangeeta: So, it sounds like we're not sure what may be the long-term impacts are going to be, necessarily. But would you agree that regardless of what the origin is, if a child comes to a Head Start program with maybe behavior challenges or a diagnosis of autism, would we treat it any differently if the child was exposed in utero? Or would it—

Dr. Patrick: No, I don't think so. I think you respond to what you've got in front of you. Because it's really hard and I don't know that that would change what you've got. I think sometimes [Inaudible] syndrome, if it's anything, it's a proxy for higher risk. It's a proxy for a lot of the social stressors that are there. But I think if you've got an infant with—or a child with behavior problems, you're going to respond to that child and that family in the way you respond to them. And I think there are—we have, and I've seen in the thread here, too—there is the increased challenges and complexity of perhaps maternal mental illness, and uncontrolled substance use

disorder, that is an additional challenge. But I think you respond to the child in front of you the way that you ordinarily would.

Sangeeta: OK, thank you. We have another question here. You talked about Team Hope. How does Team Hope help poor mothers and babies after the hospital stay? Also, how do you help with the initial concern some mothers may have about admitted to drug dependence leading to legal follow up or concerns that their children will be taken away after their hospital stay. Two really great questions.

So, we have—I would say us supporting families post-discharge is in process now. So, we have some grants funding to try to have a coordinated primary care clinic for moms and babies. It's really a resource question. We don't have the resources to do some of the post discharge things that I think we would like to do. So, what we're doing is relying on partners, like home visitation. We have a local program that we refer to, and other groups to help us with that. And we work with community pediatricians to make sure there's a good handoff. But, you know, look, I think it's inadequate. I think we need better coordinated care for that. And in terms of the potential, there are two questions you asked in terms of—there's legal ramifications and there's child welfare, and oftentimes they're slightly different.

So, what we've been trying to do is work proactively with the child welfare system to craft play it safe care. So, that we can help, particularly for moms who are long term recovery, minimize the intervention that may happen. So, we have to keep infants safe, for sure. Right? That's our priority. But oftentimes the way the system responds is inconsistently inconsistent, to be honest. And so how can we provide data and input that can help our partners in child welfare?

So, overall, I think about 10 percent of our infants end up not going home with their moms. What we're trying to do is begin to create planned and safe care that began in our prenatal clinic, so that we can say hey, this mom is getting treatment for this long, and she's doing everything right. Here's the information. That sometimes is helpful to an overburdened child welfare system, that oftentimes just finds out about the child on the day of discharge.

Sangeeta: Oh, I see. OK. And then, at discharge child protective services is usually collaborated with, or does it just depend on the situation?

Dr. Patrick: So, every state is somewhat different. So, many of you may have heard of CAPTA, the Child Abuse Prevention Treatment Act. And it's been modified by a few different laws since then. So, this is where reporting the child welfare, some states view that as all substance exposed infants have to be reported to child welfare. States are innovating around that. In some cases, like in Connecticut it is like an aggregated report that goes to the states. So, it's really unique in terms of what states require.

And so, this is something that we've had—we're working with partners nationally on, and we're working locally so that we can—so that we can sort of help target to the families that need it the most. A lot of the needs of these families has nothing to do with child welfare, and oftentimes the child welfare system gets used, including by providers like myself, for things it wasn't designed for. I've seen providers like, oh, they have housing issues, so we'll refer them to child welfare. Well, that may not be the right place to send them.

So, I think we're trying to figure out a way I think nationally that we can target resources like housing, other things like that, first, and then for family that truly need the child welfare system engaged, engage them at that point. But that is also something that's in process I think nationally.

Sangeeta: OK. And then we've talked a lot about mothers and breastfeeding, but what about father engagement? What have you seen in your clinical practice related to engaging with fathers in the transition to home care?

Dr. Patrick: It happens, for sure. I think that's also an area where we need to be more engaged. I think we—you have to acknowledge at least from us, like sometimes dads—and I say this as a dad—some dads are value-added and sometimes not. And in this population, there can be some complexity. Sometimes there's domestic violence, sometimes. So, I think we have to do that thoughtfully. Where there is a supportive, engaged partner, then we need to be supportive and engaged. Oftentimes that is difficult, but there are targeting the right types of support is important.

Sangeeta: Ok. It sounds like everything related to this population and the transition home we need to do thoughtfully. Right? It's like not really—there's not like one kind of set method but there are partners that you use consistently.

Dr. Patrick: I think that's right. I think that the issue is that what has happened traditionally is it just all happens by default, and you have—it's like a scattershot of all these potential programs, and they don't talk to each other, and it's not well coordinated or targeted. But we know for maternal child health programs, for example WIC, like half of eligible pregnant women for WIC are not enrolled. So, we do have our jobs cut out for us to try and coordinate this better than we currently do now. And we are doing, what we're doing locally. I do think it is structural change that I'm hoping the opioid crisis will continue to have both at the state level, as well as federally.

Sangeeta: We had some more questions popping up. So, there's some questions around supporting parents who struggle with their own mental health. Within Head Start we require all programs to have access to mental health consultation, which is different from treatment. But people are curious around how are there different ways that you've noticed around supporting parents who have their own mental health problem?

Dr. Patrick: Yeah, so it's very common. Having a co-occurring mental health disorder, anxiety, depression is very common in this population. What we've done, and what we're building out, is a combined psychiatry OB that's how our clinic works now, and what we're continuing to grow. So, that we can address both the substance use disorder, the mental health issues, and actually we're building partnerships with infectious disease both for moms and babies, because oftentimes there is untreated infectious disease to both STIs as well as hepatitis C that need to be addressed.

So, it's very common, oftentimes under recognized. And oftentimes it is one of the things that precedes the substance use. We know that untreated mental health disorders is a risk factor for subsequent substance use. In this study I put up before where I was looking at long term economic downturns, the other thing we looked at with mental health shortages, provider

shortages. We found particularly in urban areas lacking access to mental health providers was a risk factor for higher rates of neonatal abstinence syndrome.

Sangeeta: Yu know, that—that lead me to think about all the big pushes that we've done around maternal depression. Particularly those first three months right postpartum, and how that looks in that population. I mean, do you have screeners that you use in your clinic fairly consistently around that with people who have a substance use disorder, and without?

Dr. Patrick: Yeah. So, and in fact—it is—it's actually standard of care. So, on labor and delivery for every woman who comes in gets screened. For that, for domestic violence. That's a pretty standard process. And there is increased attention not just for obstetricians, but also for pediatricians to think about the fourth trimester, and the particular risks for moms in terms of postpartum depression. One of the wrinkles, here, too for some women will lose health insurance at 60 days if they're on Medicaid, and they're in a state that didn't expand Medicaid. Some women will lose coverage, and then subsequently also lose their addiction treatment at 60 days, too. So, I think that's another wrinkle that adds to the complexity of the need that many of these families have.

Sangeeta: Yeah, and we have been hearing about that from our grantees, as well. And how our programs are trying too hard to keep—help mothers keep their insurance coverage in place. But sometimes it's out of their hands, right?

Dr. Patrick: Yes, eligibility is different.

Sangeeta: Right. So, you—there's one other question here. So, Patty Casper says, "I appreciate that you recognize the importance of keeping the diad together in the post-natal period. Breastfeeding and bonding in this period is so beneficial. What are the times when you do not allow breastfeeding?"

Dr. Patrick: That's a great question. So, HIV is a contraindication. If there's bleeding or cracked nipples, and you have Hepatitis C, that's also a contraindication. And active substance use. So, relapse—generally we say relapse within the last 30 days is a contraindication. Otherwise if a mom is stable on a maintenance medication, she can absolutely breastfeed.

Sangeeta: And then, this last question here, again, relates to kind of future outcomes for the child. But this question is, do you have a screening that you can do on the baby to see if that baby will grow up to be a person with a substance use disorder?

Dr. Patrick: No, we don't. There isn't good evidence that that's the case. And again, going back to the cocaine crisis from a few years ago, there are some small studies that looked at infants that were exposed to cocaine, did they go on to develop cocaine dependency, and the answer was no. I think these things are complex. I don't think we have a lot of answers to that. But I think one of the things that I think we all know about infants, about children is how modifying the resources, the work that we all do, to optimize their outcomes really matters. Even if we could score them one of the things I would say is, what we need to be doing are providing the wrap-around resources for these families to optimize the outcome regardless of that risk.

Sangeeta: Wonderful. And I know we have just a couple more minutes. I have a question myself. You mentioned that towards the beginning of your presentation, you talked about in

your clinic engaging staff and trauma informed care, and I'm curious as to what that looks like. Because staff in our Head Start and Early Head Start programs are very interested in trauma informed care, and there's—it's become kind of a buzz word. So, I was curious if there was sort of a standard kind of training you were talking about, or what you meant by that.

Dr. Patrick: Yeah, we're developing it, actually, with some of our nurses that are part of our team are developing it with psychiatry. We've done some specific trainings with them, understanding people's different experiences and how that affects and how we use language. There's also some tools from a group that we partner with before called the Vermont Oxford Network. They had a collaborative focus on this from 2013 to 2015, and they produced a series of videos that I think can be really helpful, sort of insightful to know what families are going through. I don't know how widely those are available right now, to be honest. But I mean actually I have the DVD sitting on my desk that follows families through their journey so that you kind of understand where they're coming from. That's what we've done. I agree it is buzz wordy. But I think part of it for us has been engaging that process with folks who deal with it commonly, and think about that, and that's been our psychiatry folks.

Sangeeta: Got it. Yeah. I think what we're trying hard in our central office here, Office of Head Start, to really push out what trauma informed care looks like, and what it means, and so we've been gathering kind of evidence around that. So, that's great. I mean we would love to see it when you guys there are done developing what yours looks like. Will be interesting.

Dr. Patrick: I thought to make—repeat the name of the DVD. It's called "Nurture the Mother, Nurture the Child."