



Indian Health Service

# Division of Diabetes Treatment and Prevention

## Advancements in Diabetes Seminar New Directions in Understanding and Managing Childhood Obesity

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Jan Frederick:

Dr. Powell and Dr. Moses, if you would start out, go ahead and start and start out by telling us a little bit about your background.

Dr. Jill Moses:

Good morning! This is Jill Moses just like Jan said -- Can you hear me okay?

Jan Frederick:

Yes, sounds fine.

Dr. Jill Moses:

I work at Chinle Service Unit kind of in the middle, in the heart of the Navajo Nation and work as a pediatrician and also as the Director of our Division of Public Health. And have for over a year now been in the Acting Area Diabetes Consultant role. That's kind of my connection to diabetes and childhood obesity.

Dr. Jeff Powell:

And as for myself, this is Jeff Powell. I am also a pediatrician on Navajo as you said in the introduction. I first met Jill in 2002, March, when I came to Navajo to do a residency rotation in Chinle, which was a tremendous experience. As in the introduction, I've been working at the Service Unit in Shiprock since that time, since the end of residency in 2002. A lot of my focus has been on prevention, adolescent health, the network of school-based health centers we have in the Shiprock Service Unit area. Certainly in that time as we all know, the evolution of the obesity dilemma has been a central part of my career.

We have a few sections to the talk. The first will be essentially a section from me, a section from Jill, a section from me, back to Jill. With that, we have a little cartoon to kick things off. I believe if we got it in there, we have a slightly more insightful quote at the end perhaps. But basically, this cartoon kind of put us in our place and I know when I showed up in 2002, certainly youth diabetes, youth obesity was sort of front in what I was -- basically what was their, going into a job in Shiprock focused on public health and pediatrics, the top of the to-do list. Essentially for many of us, this is



why we love the field of pediatrics. This is why we love working in public health because we get a chance to start upstream and for us that means starting with kids and even before kids.

The first section really is some framing, talking about obesity and diabetes. This is the outline for this section of the talk. Framing, so that we're on the same page, then discussing several aspects relating to diabetes prevention, diabetes epi, consequences, and especially in relationship to type 2 diabetes. The reason for this emphasis on diabetes other than the fact that it's a diabetes webinar is that obesity recommends the number one modifiable risk factor for development of type 2 which of course is the most predominant form in American Indian youth.

So starting out, we need to know that we're on the same page. What is child obesity? There has been a little bit of clarification over the last 15 years in nomenclature. And then I'm going to really highlight over the next couple of slides the most recent recommendations to really focus on it, the tiered categorization of childhood obesity.

The American Academy of Pediatrics, if you look in our electronic health record, we start with the BMIs at two years of age. So the most clear definitions at this point in time are the BMI percentiles. I realized just as I was practicing, this should be 85th percentile or greater for age and gender, that's the overweight category, greater than or equal to 95<sup>th</sup> percentile for age or gender and that's obesity. And of course, we all know on this talk, that the reason it's for age and gender is because that means everything when it comes to child development.

We're all familiar with the CDC growth charts which essentially show a normal BMI being relatively high in the toddler years, age two to four, a dip in BMI between the ages of four and six. That's really the leanest part of childhood, between ages of four and six, and then an increase in the BMI until we reach adult BMIs, roughly age 16 to 19 depending on gender again.

So then I want to focus also that we have a categorization that's now in the official guidelines of severe obesity, which is BMI over 120<sup>th</sup> percentile for age and gender. We're going to get into that a little bit later in the talk, but while we're on this slide, the last point that I want to make is we're using these definitions today because they're the most clear and the most actionable within our current system. I do want to highlight that CDC endorses World Health Organization standards for child obesity younger than age two as well, and those are really based on length to weight ratios. Bottom line with that is I really want to say that just because we're using these definitions today, obviously, our philosophy is starting as early as possible is best, so many of the programs that focus on pregnancy, pre-pregnancy, infancy are critically important to this effort as well.

So moving on to the next slide to talk a little bit more about tiered approaches on specifying severity. Essentially what this reflects is a movement to align child obesity diagnosis with adult obesity guidelines. So severe obesity, same as last slide greater than or equal to the 120 per centile and a proposed provisional very severe obesity. This really correlates with class two obesity above and class three obesity as shown in this slide. So what this would equate to essentially at the time of full developmental levels of adulthood would be severe obesity BMIs over 35, very severe obesity BMIs over 40.

So, why all this talk about obesity severity? It's becoming clear and I think I know that all of us on this call really get this because of the work we do, that the severity of the child's obesity matters. There are many, many studies coming out correlating outcomes with childhood obesity severity. We're going to get into that later in the talk as well when we talk about screening guidelines for complications. But just to reflect one study with this slide, the main point -- I think I'll get the pointer here, this slide focuses on the 2015 publication from the New England Journal. A cohort of 8,500 kids ages 12 to 19. Now, what this study did with the cohort is they broke down their obesity categories with class one, two, and three in this column and they looked at lots of outcomes. I'm showing this slide on diabetes risk just to kind of focus in. They also showed very similar findings when it came to things like blood pressure, dyslipidemia. So to look at what this study defined as diabetes risk was an A1C of 5.7.

Now I don't want to kick off a grand debate about hemoglobin A1C in children. That is an arbitrary number. It's an arbitrary decision that these study authors made for a reasons that I actually don't know. However, the bottom line here is, that when we look at this cohort, they have 5% of their kids with class three obesity, having the highest percentage with at risk range hemoglobin A1C of 13%. Now the lowest category of obesity, we might call it moderate obesity. That's not an official term, which made up a big chunk of the cohort. Their percent with at risk range hemoglobin A1C was much lower, you can see 3%. So we're looking at a four-fold increase between obesity and very severe obesity.

Moving on to the next slide, hide my pointer. We wanted -- Jill and I thought as we were developing this talk, we wanted to have points in this talk that were positive. Often times we get stuck in a dilemma, kind of overwhelmed with this phenomenon but there is good news in here as well. So this is a good news slide. If more severe obesity correlates strongly with worse outcomes, it's important also to talk about exactly the opposite, once obese children make improvement.

So this slide is from a really important reference that I'll show later in the talk. It's a 2017 Pediatric Endocrine Society Guideline on Childhood Obesity. The authors of that guideline wanted to infuse some hope in their publications as well. They really comment on the fact that many of us in the clinical and even in the public health world, we get pessimistic because we see a given child, we worry about that child's outcome, we worry about that child's future and we feel overwhelmed and I certainly relate to that having worked in clinical care for the past 14 years. What this slide shows is that improving obesity leads to improved cardiovascular risk factors.

On the left what we have here is BMI and on the right, what we have is weight. What it shows is every one unit reduction in BMI, where every one kilogram reduction in body weight leads to concrete improvements in outcomes like systolic blood pressure, triglycerides, improved HDL, and triglycerides.

The research is really coming a long way here so every one unit in BMI correlates with a little over one systolic blood pressure unit with one and a half decrease in triglycerides, over half improvement in HDL and two and something improvement in the triglycerides. There's plenty of research also showing that these markers matter in childhood and directly correlate with improved life courses as these children become adults. So that's the whole point of the slide.

Now, moving on because we have a group that's attending this webinar today has already spent a lot of time thinking about diabetes in general and we're going to focus on diabetes in youth today. So what's causing youth to develop diabetes? These slides are slides that I first saw presented by Tammy Brown as a pediatric endocrinologist in Indiana. She presented these at a National ADA Consensus Conference and it really struck me that it's time for us to, as professionals, wrap our heads around the intricacies of what's happening in children's bodies as they progress toward diabetes.

These next slides can be a little bit geeky and kind of detailed. There are three main points that I want to convey. So if you find me rambling, just remember these three points. Number one, glucose levels are controlled by an interplay between insulin resistance and insulin secretion. So, that interplay is projected by this slide on this, called the disposition index. This is the line of normal glucose levels. This interplay evolves over time in any given individual. We're going to look at a few of the things that make it evolve. The bottom line on this first point is there is a lot metabolically changing before a child is diagnosed with diabetes.

Point number two, obesity and other modifiable risk factors impact, insulin sensitivity. So this should be a major goal in obesity care. This slide, to get back to the graphic, basically is showing us, this is the first of set of two slides as we progress or if we don't progress, we move this line of glucose control towards impaired glucose tolerance, pre-diabetes, type 2 diabetes. So what happens here in a lean sensitive person, you've got great insulin sensitivity. As I'll show in a couple of slides down

the line, that insulin sensitivity becomes poorer, now we have insulin resistance. But what happens to compensate; insulin secretion goes up, right? So here we have our insulin resistant individual often with obesity as I'll show you in a couple of slides, and we have that compensation of the hyperinsulinemia, and drive to the next slide.

Now, what's happening here, this slide is really focusing on these points that I said verbally just a minute ago. Genetics and epigenetics are thought to really impact first phase insulin secretion especially in children. We think modifiable risk factors have more of an impact on that insulin sensitivity. So here we have our obesity, our diet, physical activity. I'm first in line to ask how modifiable are these risk factors? I think that's something that we really need to grapple with moving forward, especially among our most severely obese youth.

Now, the next slide gets us into a little more of the dynamics. We've already really covered these risk factors shown on this slide. So what this slide is portraying is in a given individual over time, we have asymptomatic over here, we have pre-diabetes and progression to type 2 diabetes. What's portrayed here are several things. Number one, the black line is insulin resistance. Number two, the blue line is insulin secretion, and really concentration of insulin. Red line is concentration of blood glucose. The take home point that I wanted to really communicate here is that we really need to have in our mind that so much has changed even before the diagnosis of prediabetes. We have a great increase in the concentration of insulin, a great increase in the insulin resistance, and we have a stable glucose level.

I will say as well, there are a lot of active research going on right now, and really, this period of time between prediabetes and diabetes. What's happening with beta cell function? What's happening with insulin resistance?

I wanted to put also a note of compassion in this slide because one of my personal opinions is what are we doing here? We've had all of these changes going on for years and years. And look insulin resistance is pinned pretty high, right? I sometimes feel that we look at patients and we try to say, "We need to do all of these lifestyle changes so that insulin resistance changes." Well, we have a lot of metabolic undoing to undertake at that point. And I think it takes great compassion for us to really wrap our heads around the idea that, "Look, this insulin resistance is going to be tough to move." Let me get back to that a little bit later in the talk when we talk about management of child obesity.

So we're transitioning a little bit here. This is a little bit of a preview to what we're really doing. So, that last slide with all the graphs, so what's that really talking about? That's really talking about a life course perspective, right? That's what this is. Jill is going to highlight the life course perspective in her section that really metabolically there has been a lot happening. We have so much happening from pregnancy to child birth, to infancy, all the way around to adulthood. And we're learning, what happens really, generations ahead of time and early on in the life of children impacts what's happening down the road.

Now, why all this talk about severity of obesity and what has already occurred prior to the onset of diabetes? This slide is presenting a 2017 publication from the SEARCH for Diabetes in Youth study. So SEARCH is a longitudinal cohort study that represents five million children in the United States, that's the denominator. The study is also very representative when it comes to ethnicity.

Now, what this publication that really just came out in the last several weeks highlights, is that early in the course of youth onset diabetes, type 2 especially, there are remarkably high rates of diabetes complications. And just to give everybody a sense of what that means, that's retinal photography, these are measurements, digital retinal images, blood pressure, dyslipidemia, this sort of thing.

So essentially, three-quarters of T2D youth already have one or more complications as early at seven or eight years in the course of illness. So why is this? And one of the leading rationales, is you can see 70% of type 2 youth are obese versus 14% of the type 1 youth.

Now, this is an earlier study also from the body of works in the SEARCH Study. And really, it just reinforces the previous slide. So this is what we're looking at previously, the difference between type 1 in the green and type 2 in the brown. So you can see here, the biggest difference between all of these factors, it all bottles down to this, we have a percentage of type 1 youth with signs of metabolic syndrome, which is defined as the blood pressure, dyslipidemia, waist circumference, et cetera versus 90 plus percent of type 2 youth without metabolic syndrome. And what we're learning is, that this means that the children have been ill really metabolically challenged with the pro-inflammatory state. So many things are happening throughout the entire child physiology for years prior to onset of diabetes.

So the last slide in this section is just a review of basic type 2 diabetes epidemiology. So this is sort of the classic slide from the SEARCH for Diabetes in Youth Study. This slide actually I got directly from the CDC webpage. So this is 2008-2009 and basically, what this is showing here, again, light-green is type 1 diabetes in youth. Dark green is type 2 diabetes. And what we're showing here is that less than 10 years, most diabetes is type 1. Okay, I think we all get that. Ten years through nineteen years of age, it starts to become a lot more complex. And this is where really a lot of the trends and the movement is right now in diabetes epidemiology. So we can still see -- it's important I think we tend to focus a lot on type 2, but I think we do have to remember a couple of points. Number one, type 1 diabetes remains the most common type of diabetes in children overall. Number two, diabetes is relatively rare in youth.

I think this audience knows more about these things than I do off the cuff. In the context of adults where we're getting in the populations with 15% to 25% of the adult population having diabetes. Look at the denominator here, this is per 100,000 per year. So this isn't a prevalence. This is every year. This is roughly for American Indian youth. We have 35 out of the 100,000 obtaining the diagnosis of diabetes under age 20. And again, for American Indian youth, this is the breakdown. Some type 1. There was a time quite a while ago where folks didn't think American Indian youth got type 1, but American Indian youth do get type 1, predominance of type 2. And this represents the highest rate of type 2 in any known specific population in this country.

So, that reviews a little bit of the epidemiology of diabetes in youth. And I'm going to turn a little bit now to Jill. She's going to talk about some temporal trends in child obesity. Focus us back in on that topic.

Dr. Jill Moses:

Yeah, thanks, Jeff.

These are the pictures of maps at three different time periods that showed the progression of the development of obesity and diagnosed diabetes over the last couple of decades in the U.S., in U.S. adults. So, you guys may have seen these before. I'm sure that the map, a couple of decades ago, they were much lighter in color and they progressed dramatically. You see a very dark in color which represents higher prevalence of obesity and diabetes in adults. We're going to have those maps on there. We're going to go to the next -- oh, there it is, sorry. Oh, there they are. Okay, so you see a very light and lower in the '90s, 2000 starts to see an increase and then like 2014, quite dramatically increased across the whole country. So, yeah, this is an issue for everybody. And actually, there are some global trends paralleling the U.S. is in the lead when it comes to obesity.

This is a graph taken, this is from the National Center for Health Statistics 2015. It shows the prevalence of overweight and obesity in children and adolescents, two to nineteen years of age. And that starts from the 60s and shows the progression through the decades going to the 2000s. This line here, the dark line in the middle is two to nineteen all together. And you can see from around 2000 that line overall kind of starts to flatten out. We can see the oldest age groups, 12 to 19 that line really continues to increase. But in the six to eleven-year-old, the younger school-aged kids that kind of flattens out in the 2000s and that the two to five-year-old, the youngest group may even

be decreasing in the last fifteen years. So that's really encouraging that the youngest cohort, that we may be seeing an improvement.

So what's happening? That's nationally, that's all like across the U.S. In kids that in lower income, so this is WIC participants in that youngest age group. We see, again, like -- this is broken down by different races and ethnicities, and so this top line here is the Native American/Alaska Native line. So it's the highest group but even here, we see, it looks like maybe coming down so that's sort of encouraging, so all the groups are seeing downward trend especially since 2010. So that, I think, is really encouraging news for us. And that's actually born out here.

This is the trend from the GPRA data, so this is IHS data that's submitted every year and we can see that for the two to five-year-old, the highest BMI percentile over 95th percentile, they kind of peaked in 2009, 2010 and then we've actually seen that declined. Like it's not an enormous decline so the peak is 25% and it gets down around just over 22%. That looks like there is a decline.

Then I just wanted to remind you guys that it's not -- when we look at Native American data, just to keep in mind, that as we know, not all Native Americans are the same. We serve a pretty diverse population and there is quite a difference in obesity rates across the Areas. So let's see like the -- like just over 15% in Oklahoma Area and then in Bemidji and Tucson, rates over 30%, so there's quite a range and the diversity in the populations that we serve.

So I wanted to go into a little bit on how -- I like to think about obesity, childhood obesity, and thinking about how best to frame our plan of what to do about it? How to address it? And I think it's helpful to start by looking at some models on the determinants of health. And when you look at this model here on the left, on determinants of health, one of the things to notice like in terms of determinants of health in general, clinical care really has a small contribution about 10% and genes and biology, it's the genetic factors also relatively small contribution. And that the majority of factors influencing health around health behavior is 30% and socioeconomic factors at 40%. So a lot of what impacts health is happening outside of the clinical environment.

And in this model here on the right, the socioeconomic determinants of health, kind of presents the -- similar information in a little bit, but organized a little differently where the factors, the individual lifestyle factors like age, sex, and heredity; the social and community factors; and then more of the environment - socioeconomic, cultural, environmental conditions that impact health.

So how does that help us understand the determinants of obesity? So I think one thing to keep in mind is that the genetic, specific genetic syndromes, that result in obesity account for a relatively small percentage of cases of obesity. And that individual and family practices like diet and eating and physical activity, and even coping strategies play a much larger role than genetics and that school and community factors like, are there safe places to exercise, do schools have effective wellness policies, what kind of practices in the school support health, then the environment in general like for example, like is healthy food and clean water accessible? Those factors are probably more important to consider.

So here's a cartoon that kind of highlights the way that the school can influence obesity in children. And you see on the left, the teacher is saying to the kids, "We have no recess. We have to keep our scores up." And the child standing on the scale looking at it go, "oh that works, get your scores up." I think that that's something that a lot of people see when working with the schools, that the pressure, that national policies to keep test scores up can get in the way of kids having plenty of time to spend in active play during the school day. And that we know from the YRBS data on Navajo, that over the last 15 years that the percent of kids that have daily recess has really decreased.

This is a slide that shows food is about child food insecurity. So from 2014, and the darker counties are the ones that have higher percentage of food insecurity. If you look at, for all of you guys from around the country, look for your county and see what color it is. I know what county I'm from. I'll show you it's this one. Right here, that is a very dark county, Apache County in Arizona. And the

counties with majority of American Indian/Alaska Natives have some of the highest food insecurity rates in the U.S. I think the two highest counties are Apache County in Arizona and a county in Alaska.

Food insecurity can impact -- had been shown to be associated with obesity in many different studies, and it seems like it's linked perhaps because of the limited availability of nutritious food, that transportation is not good in low-income communities, that there is more fast food restaurants in low-income communities, that limited food and hunger can lead to overeating practices. And that stress that you'll see more in low-income communities can also be linked to obesity, as well as decreased opportunities for physical activities. So that's a way that the environment can really impact the development of obesity.

So Jeff had mentioned the life course perspective earlier. And this, I think, is helpful to think about when trying to understand the causes of obesity. And this concept, takes into account that we all have a past and a future that can impact health. And that these health influences can even cross generations.

So for example, the parent weight or maternal health particularly, the mother had diabetes during pregnancy can impact the child's weight later. That birth weight like, especially, small for gestational age or large for gestational age is associated with increased risk of obesity. Parenting and feeding practices in early childhood can affect the development of obesity later in childhood. Even weight early in childhood is associated with increased risk of obesity later in life.

There's a couple of things that I wanted to highlight specifically, and that is epigenetics, and adverse childhood experiences, because these are, I think, are really important emerging fields of study that the more we learn, the more we find that these are important to consider. They really help us understand the development of obesity and perhaps some ways to address it.

So epigenetics, refers to really, the kind of the packaging around the genes. So it's not the genetic code itself but it's here in this picture, they're like point of these little histone tails or methyl groups. You hear people talk about it. These affect how the genes are packaged and how accessible they are to having the genes be expressed. So when the gene is more unrolled and the genetic code is more accessible to be turned into proteins and the gene can be turned on. Or if it's rolled up tightly, it's turned off. This is really just a way to think about it, but epigenetics, even though they can be passed from a parent to a child, they're not actually -- they are not the genetic code itself but more like what's around the genetic code that affects the genes ability to be expressed. And then that means that how -- things that happen in one generation can influence the health in the next generation. And we know that epigenetics can impact cells in the brain, heart and kidneys. That they're modified in certain periods of development, especially early in life. So there are times in life where we're more susceptible to changes in epigenetics and that there are these external factors like chemicals, nutrition and stress can modify the epigenetics. But fortunately it seems like some of these changes can be reversible.

The other thing I wanted to -- it's kind of related epigenetics, actually, the epigenetics play a role in this we think, that's adverse childhood experiences, so that's some research that's been known for quite some time. But we -- I think there's more and more evidence that this plays a big role in health in general and certainly in obesity and diabetes. So, when people are talking about adverse childhood experiences, they're referring to things that happen during childhood like physical or sexual abuse, neglect, witnessing domestic violence, mental illness in the home, substance abuse or loss of a parent. So like kind of traumatic events during childhood that happen during like in a sensitive developmental periods that then impact the development of the brain. And that the way then that that brain developments and the way the brain then gets wired that that influences how people responded to events and then can lead to increased risk of adverse health, risky behaviors and adverse health outcome.

That there is -- fortunately, I think some evidence that interventions that provide early support can help build resilience in a child and protect against the negative impact of these adverse childhood experiences. So, a way to think about it is that, if there's a lot of stress so -- there is a lot of stress and very limited support, then there's not much opportunity to build resilience and that can result in more negative health effects. But in a situation where let's -- oh yeah, okay, so more propensity for illness. In a situation then where there's stress, but a lot of support that then -- that that helps build resilience, it's protective against those negative impacts. Very helpful. I think Jeff added these effects -- okay. I'm going to turn it over to Jeff to talk about the recent guidelines in managing obesity.

Dr. Jeff Powell:

Yeah. Thanks, Jill. So, obesity guidelines 2017, this slide -- we're going to review the next two slides quickly. So this slide is really the concept that we have a base of a pyramid, we have the smaller part of the pyramid. I'm on purpose not saying the top of the pyramid. We have primary prevention, we have secondary prevention, tertiary prevention. I think when we step back and think about it, what we're realizing today is there's not one approach that fits all of these, and we need tiered approaches and then we have to approach what most of the population needs, especially early childhood experiences, ACEs, resilience in childhood, all these types of things. We quickly move up in our clinics to primary medical care and really, we all know, we do a lot of secondary medical care as well. I'm going to present a couple of slides that are bringing our awareness to what's happening in this tertiary care realm as well.

So I want to -- we're not going to review all of the obesity guidelines clearly in this talk. But I want to make sure that people know where to find them. This again is the Pediatric Endocrine Society Guidelines in 2017 and there is the link publicly available. The guidelines really encompass every body system, right? And this makes sense really, doesn't it? Because we're talking about the all encompassing physiology of a child. So really there is no body system that is skipped.

So my view is that there are three major breakdowns when it comes to these guidelines. Number one: screen for BMI, screen for early child weight status under age two as well and make the correct diagnosis. Number two: screen for obesity comorbidities using really the national recommendations, the guidelines of your choice. I think it's important for us to have a plan because it can get overwhelming pretty quickly. Number three: develop resources and recommendations to achieve weight loss according to these current guidelines.

So this slide, I want to present the good news. Here's a direct quote from that 2017 Endocrine Society paper. It's quoting a major publication from 2011 New England Journal. "Cardiovascular disease outcomes for obese children who become non-obese adults seem to normalize." So I think this is the bottom line. Remember that slide where one BMI unit improvement reduces risk markers and that is true from a macro perspective as well. So we shift part three of this recommendation, which is specific weight loss goals.

Now, in my view, this a bit of a change in the last five to ten years. We used to in pediatrics say, "Well, we're going to outgrow this." I think the research is at a point today and the guidelines specifically provide the guidance on what the weight loss goal should be for a given child at a given age at a certain class one, two or three obesity. I think it's important that we reframe ourselves into that perspective.

Now, getting into couple of thoughts about the frontiers of child obesity care. This is where we're getting more to the smaller part of this pyramid. So this is engaging tertiary care and really the questions are, how can we ensure American Indian/Alaska Native youth experience the best outcomes. Frontiers such as medication and bariatric surgery, reviewing all the findings here are going to be beyond the scope of today's talk. But suffice it to say that right now, there are 2016 Cochrane Reviews over here. So 2016's Cochrane Review, looking at both medication and bariatric surgery, and then the 2017 paper that I've referenced highly goes into great depth as well. The

potential is there for even the most severe youth to benefit, especially after the age of 16 and after the age of skeletal maturity. And certainly, this is going to be in partnership with our specialty resources and whatever region we're working in. But I certainly really encourage all of our centers to start really thinking about how are we engaging in this tertiary care for further support. And now, back to Jill.

Dr. Jill Moses:

Thanks. I know we're almost out of time, so I'm going to -- just want to shift gears and end with like, "What can we do?" We certainly want to like as Michelle Obama's Let's Move campaign really promotes good nutrition and physical activity. But if we're looking to build a system to achieve success in addressing childhood obesity, we want to make sure that we're supporting early intervention programs to support parents when it matters the most, pregnancy and early childhood. We want to have trauma-informed primary care, make sure that we're really providing safe, supportive care, not providing additional trauma when people come to primary care.

We want to coordinate with behavioral health services. We want to provide lifestyle modification interventions for kids that are culturally-based and are in the community, to improve where the kids are. And then we want to look at exploring partnerships at tertiary care centers to provide care for the very severe obese kids, those that have obesity with comorbidity. In clinics, we want to make sure that we first do no harm and that we -- that we want to measure BMI and talk about it at each visit. We want to take into account contributing factors like adverse childhood experiences, or if a child is an infant of a diabetic mother or if there is food and water insecurity, factors like depression, in developing plans with the patient. Take those things into account. We want to use an age-specific approach and really use motivational interviewing, assessing readiness to change, setting goals with the patient and helping identify resources for families in the community, and doing regular follow up.

Things that you do as a diabetes coordinator, if you have funds like SDPI funds is to arrange for training on motivational interviewing, trauma informed care or childhood obesity management for staff, to help provide educational material for the clinics, to look, explore health coach positions to provide lifestyle intervention that could be really helpful, to prioritize pregnancy and early childhood services like Family Spirit or other home visiting programs, and to explore partnerships like I said with tertiary care institutes.

So I want to just end with this quote that "the best time to plant a tree is 20 years ago, but the second best time is right now" and I think that's exactly the position we're in.