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ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Oh, the Hats You'll Wear! The Many Modalities of Pediatric Obesity Management

Announcer:
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Dr. Cuda:
We're going to first establish some trajectory to talk about this. So this is sort of an introduction piece. I'm going to go through it pretty quickly, because we really want to spend most of the time on the cases, but so I'm not going to cover everything on the slides. If you have questions, we'll be happy to answer them later, but we're we want to get to the cases basically.

Okay, so this was based on an interactive group with parents of children with obesity. It's called Smart Patients, Caregivers Corner. And basically the message is that the parents did not feel like their children's problems were being directly addressed, or there were no solutions if they were being addressed or they were just got referred to a dietitian. And then they stated that the caregivers didn't really seem to have much training in obesity.

So the next point we wanted to cover was that children with obesity have consequences. It's not a disease without consequences, and these can start really early in life. Even preschoolers are likely to go on and develop obesity as a child, as an adolescent, and as an adult. The more severe the obesity, the higher the likelihood. Eighty-eight percent of children with severe obesity have greater than one abnormality, even at preschool age.

And the second point is this is a chronic disease. Most patients need treatment. They're not going to magically wake up without obesity one day. They're not going to quote grow out of it. And there are multiple issues with this chronic disease: adiposopathy, you know, the endocrine and immune response, fat mass disease, based on limitations, restrictions in activity due to size, and then of course quality of life.

So this is a multifactorial etiology for obesity, ranging from physiologic, genetic, behavioral, and environmental. Basically, each of these subtopics is a talk. So I know I'm skimming over the top, but it's because we want to talk more about this.

Okay, so what's unique about pediatric obesity as opposed to obesity in adults? Well, in kids, there's a little bit more plasticity. In other words, we have, I think, a better opportunity to treat obesity in children than our adult counterparts, where they're really just managing, you know, the complications of obesity. We don't know for sure what the timeframe is where we can still, you know, bring kids back from severe obesity to lower stages of obesity, into overweight, and even into the normal range. But there is some ability to do that.

There is also an ability to affect the epigenetics, especially I think, like for—in my experience—it would be as if I'm taking care of a child, but the mother is pregnant, you know, so now you're really trying to prevent disease in the next child. You have an opportunity to intervene at that point.

And then very commonly, we see children with obesity have accelerated growth. They're, you know, taller, bigger than their peers.

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Parents are often kind of proud of the fact that their kids are bigger, but it's not necessarily a good thing. They have hyperinsulin. They're very good—young children with such healthy pancreases, they're secreting insulin at high rates. In combination with a high-carbohydrate diet and then the natural physiologic increase in insulin in puberty, ends up in a bad situation where we get that accelerated growth, that rapid weight gain, and so on.

So why should we address it? I think you're all here because you think it's important. We know the prevalence has been increasing, especially for severe obesity. We know that our kids are already developing complications, the comorbidities. It's not going to just go away. It's not going to resolve on its own. And the earlier we address it, the better.

It is not simply a reversible condition that's due to them eating too much and exercising too little. It's a complex chronic disease. And we do know that we can be successful. We have had very good results in treating children with obesity, and I don't think that's widely talked about, because we do see responses with treatment. I mean, it's pretty rewarding to treat these kids.

Dr. Paisley:
All right, so we're going to go ahead and start into our more interactive portion. And so our first case is going to be focused on starting kind of those conversations around pediatric obesity management.

So our first patient is Mariah. She is an 11-year-old who you've been following in your clinic for the past 6 years. She was diagnosed with asthma 3 years ago, but in general has been very healthy. Her BMI since her asthma diagnosis has slowly increased from the 87th percentile to the 95th percentile.

Her mom has noticed changes in her behavior, such as quitting soccer and softball, spending more time on her phone, preferring to have more non-nutrient snack-type foods such as cakes, cookies, sodas, and noticed that she has become increasingly self-conscious of her changing body.

Her vital signs, as you can see in front of you, I did want to highlight, you know, our BMI is at 24, or right at the 95th percentile for age and gender. And she otherwise has a normal blood pressure, heart rate, and O_2.

All right, so we have a quick poll. I regularly use BMI as a screening tool to identify the need to discuss obesity management. Hit A as your green light for yes, or B as a red light for no.

And I think—are we going to see the polling part? Oh, there we go. Okay, good. So I can fly, like, through the next slides. That's excellent.

So what screening tools do we use to identify children with obesity? BMI still remains our best screening tool. We want to encourage people to use BMI and not rely just on a visual assessment. You can assess percentiles using appropriate growth charts, and we will show an example of both the CDC growth chart and then, especially if you work with children who have very severe or significant obesity, what we call the extended BMI growth chart. And you can kind of reference those BMI percentiles here on the slide to kind of give you how we clarify the percentile curves for both obesity and severe obesity.

So this, for all of us, as our brief refresher, is our standard CDC growth chart for children based on BMI, if you have not seen it before. And if you do use certain EMRs, have this is built in. This is the CDC extended growth chart. And it actually—you can't see it very well on this part—but they do have it a little easier to see where you can zoom in on the slides if you download them. But they tease them out by the percentiles above the 95th percentile. So you're able to kind of track those lines for 120th, 130th, 140, and that can kind of help direct, you know, how severe someone's obesity might be, or also help you think about, as we go through our talk today, occasionally where we might want to be a little bit more aggressive with our treatment plans.

Okay, but before we really start any discussions about weight, especially when we think about Mariah's case, the main point we really want you to think about is how we address bias within our practice.

And I think the first big place to start is really making sure to do that self-reflection on whether or not we have any of our own internal bias. And then even potentially—not our own internal bias—but also asking our staff and those who interact with our patients to also address, you know, their comfort level and potential implicit or internal biases they might have of patients with obesity.

And there are several validated tools that you can use. And you can actually—I think one of them, I can't remember which one is online—but you can actually run through them, and they can kind of help you identify any of those potential ones you might not be aware of. And so I do encourage you to take a look at those. See if there are some you might want to implement into your practice or with your staff as you start working with more patients with obesity or doing more obesity treatment.

So as we kind of summarized, the best way we can think to do this is first to acknowledge it, and then we also want to think about how

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we communicate. So one of the things that I also still have to correct myself on is how we talk about person-first language. So it is still very easy to slip into saying an obese child or an obese adult. What we really want to do—we wouldn't say someone is a cancerous child. We would say a child with cancer. And so we really want to think about how we use that person-first language and really identify it as a disease, because it can kind of help reframe kind of that conversation.

We want to model behavior we expect to see. So we want to be supportive and make them feel safe and secure in having those hard discussions, because they might not have had that experience with previous caregivers. We want to make sure we have a welcoming environment, everything from the size of the furniture and the blood pressure cuffs that you have access to in your clinics, up to kind of our own body language and how we interact with them.

And then we also want to make sure we continuously train not just ourselves but our staff, so that we can understand both our patients' perspectives on weight, but also obesity treatment and the changes that are occurring in the field. And then, if you are in general peds, please realize that we are always happy to help. And then you can try to enlist those resources of any obesity medicine specialist that might be in your area, or might also be able to help you as you look at kind of developing your own practice.

Okay, as Dr. Cuda talked about, it's an iceberg. And so a lot of what we also spend time working on are factors that are potentially beyond not just our control, but our patients' control. Those are socioeconomic. Remember, we live in an environment that really promotes ultra-processed food, marketing tactics which are geared towards children, including how brightly colored we make some of those ultra-processed foods.

If we live in rural or underserved areas, the cost of healthy food, access to it—what do you have in your stores? Is the convenience store really the only place that your family might be able to go? What community resources do I live in? Do I live in a community with robust walking paths and sports groups that are recreational? Or do I live in a community that might not have any of that? What's the school environment like? Am I in a wealthy district where my kids are exposed to fruits and vegetables every day, or am I in a district where 50% might be on free and reduced lunch, and there is a lot less choice in kind of what they might be served? What's the family like at home? How are parents modeling eating patterns? How do parents approach screen time?

Adverse childhood experiences, I think, is an emerging area we hear more about and how that shapes also the neurobiology of appetite control. And then the psychosocial considerations. So you know, is it Gladys, is that right? I can't remember—yes—talked about screening for depression, you know, screening for these other psychosocial things that can impact our patients' behavior, as well as development of obesity.

All right. I ask permission before starting a discussion on obesity management with patients and their caregivers. A for your green light, B for your red light. Okay, I'm good—some people are right.

All right, okay, so our first three big takeaway points. And yes, the first thing I would like everybody to take away is, especially when we are in clinic, the first thing we want to do to really address that bias and stigma is first ask permission to discuss it, especially if you're attached to a well-child check or if it's an ill visit and you have concerns about the weight. We really want to ask permission first, because it might not be what they are there to talk about.

And as we talked about, that person-first language and then language that patients and caregivers perceive as neutral. So we might want to frame it around not just addressing and calling it obesity or fat. We want to avoid those stigmatizing terms and maybe talk about excess weight gain or an increase in weight for our age, so a little bit more neutral. And we really want to try and avoid those really offensive words.

And when we discuss weight or BMI, we have to be prepared that there are a lot of strong emotional responses, even when we do this. And I always tell people, like, 90% of patients cry in my clinic. And so there's a tissue box, like, next to everyone, and that that's okay, because it can elicit a lot of strong feelings, whether it is a child or even from the parent, when we start talking about their weight.

But these conversations, while hard, can really facilitate then where we move to, which is discussion of effective treatment. And so how we think about those effective conversations, I really start it by making sure people realize it's not their fault and that there are many things layered against them, and that it is a chronic disease. And we're not just talking about weight; we're talking about an overall health pattern.

I like to discuss with them those factors that contribute, some of which they can control, such as how we approach our nutrition and activity, how we work on our stress cycles and our sleep, but some we can't control, like genetics or even some of those larger social demographic aspects.

I want to know what they think about their weight. If they're not really bothered by it, those conversations are not going to go nearly as far as if there's something personal to them that buys them into working on some of those changes. And I always like to kind of talk back

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or reflectively listen. So I'm going to take what they tell me and put that back in a different set of words so that they understand that they're heard. And kind of rephrases and allows that conversation to keep going.

And if there are some things where you see they're kind of startled, I'm going to ask them what words they might prefer when we talk about it. Some of my patients don't like to see at all what's on the scale, and I'm not going to make them look. That's a tool for me, not necessarily that my patient has to worry about. And so we might just use, you know, how that growth curve looks if I've stabilized their growth and talk about it in terms of that particular pattern. Or we might focus on non-scale victories when we come in and talk about what they've done.

And then I really want to think about how we think of trauma-informed care. And I think this is something I actually see a little bit more in my adult patients than always in my kids, but some of my adolescents have already been traumatized. And so we have to realize that not just having maybe had a poor experience with a clinician about their weight in the past can shape them, but also the other adverse childhood experiences and victimization they might have had related to their weight, or especially if you deal with some at-risk youth.

I've had a couple 19- or 20-year-olds who chose to have abnormal patterns as a protective mechanism against sexual abuse. And so you really want to make sure you screen for that, because there are other things that can come up that might shape their how their patterns and how they've approached their weight over time. And we really want to resist retraumatizing.

And so I really work to make sure at least my notes in the EHR use that non-stigmatizing language. And I'm going to try and review prior encounters or what might have been said in the chart, because now everyone knows your patients can access their full chart. So you really want to make sure you're also using that same reflection on potential biases and things as you put those documentations into the chart.

And so when we look again at that Smart Patients focus group, I think you can see these quotes that come from patients. The first kind of several boxes being those kind of negative ones, is that for some of these kids, it can be very traumatizing to them, from their own self-esteem. Really, some parents feel very strongly that weight should never be discussed with a child, as they might never forget that conversation.

And then I also like to highlight the bottom quote that also shows, you know, someone said a positive one, 'The surgeon was honest and compassionate and told me I had a chance to avoid adult health issues.' So how we frame that conversation can matter.

All right, so we're going to switch gears.

Dr. Cuda:
Am I on? Yeah, okay. We're going to case 2. This is Douglas. He's a 14-year-old boy. So Douglas has been your patient for 10 years, since he was 4. He was started on aripiprazole at the age of 12 for cognitive delay, behavioral aggression, anxiety, and depression, and it's been very effective.

His BMI increased over time, but when he first started aripiprazole, he had an inflection right then. He's increased from the 93rd to the 95th percentile in the last year. His family is concerned about his weight gain in the last 2 years. He's hungry all the time, but they don't necessarily want to stop the treatment, because they see that it's helping him, and they don't know what else to do.

His vitals: he's 5'8". He weighs 84 kilos. His BMI is 28 kg/m^2 and at the 96th percentile. His blood pressure is 115/68. And his A1c on first measurement was 5.6. Second result was 5.9. His heart rate is 88, and his oxygen saturation is normal at 99%.

Sorry? Oh okay, I don't know why it wasn't changed on the iPad.

Audience Member:
Yeah, that one didn't get changed from the slide.

Dr. Cuda:
Yeah. That's what it—we changed it because we didn't want to really talk about type 2 diabetes in this forum. If you all want to, we'll be happy to talk about it, but that's kind of like a whole talk. So we made it prediabetes, but we will talk about anything you want.

Okay, so this is how we talk to patients about treating them and whether we should treat them. So obesity is a chronic disease. We want to make sure that we're telling patients that, that there's no magic cure, that we're going to be taking care of their child for a long time with this problem. And what we're looking for is not necessarily to make them, you know, a normal body mass index, but to improve their health and quality of life, and to make sure their child has a good body image and self-esteem, and prevent future adverse health outcomes.

So chronic disease—there's different definitions of what obesity is as a chronic disease. You can read through them here. Basically, it's

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highly prevalent, and we have fat mass accumulation, and then there are consequences to it. Again, we're just emphasizing that if you have a child with obesity, you're likely to go on to become an adult with obesity.

This slide was from Sarah Hampl with the AAP 2023 practice guideline, and just showing the different stages of treating and how it is longitudinal, how we're always trying to bring patients in, keep them in treatment, seeing them multiple times. It is an intensive type of treatment, just like any other chronic disease.

Okay, the next red light/green light. I monitor weight-related complications or comorbidities in pediatric patients with obesity. All right, good job, guys.

So okay, different ways to evaluate. So these are just the evaluation that's recommended. Basically, if you're over 10 years of age, you should get some blood testing for sure. If you're younger and you're in the overweight range, it's optional. But we want to be doing, of course, the history, all the screening tests we've already discussed from the history and the physical exam. Blood pressure on everyone, fasting lipid panel, especially for the older kids, and then the fasting blood glucose, OGTT or A1c, and ALT, especially for the over-10.

A little bit different here way to look at it, but it's basically the same. The AAP, the OMA, everybody wants you to take a history, blood pressure, fasting lipid panel, and some screening tests.

Okay, these are some additional tests to consider. If the child is over 3, then you could consider a vitamin D level and iron studies. You can consider genetic testing for severe early-onset obesity, those less than 5 years of age. You can consider a sleep study or fasting serum insulin. And then some other testing, basically for inflammation, C-peptide, high-sensitivity CRP.

So these are the medications—we touched on a little bit—that can cause weight gain. All these different classes have medications in them that are associated with weight gain. And the idea is to find medications in the same class that cause less weight gain, or to use a mitigating medication if you can't do that.

These are the comorbidities that we should be treating concurrently. All of these can exist in, you know, different patients, but I think the more common would be dyslipidemia of obesity, of course, hypertension, and then prediabetes also, depending on the ethnic mix of your patient population, MASLD—I see a lot of it because I'm in South Texas—but I think those are the more common. Vitamin D deficiency also.

And then foundations of obesity management. So again, it's a chronic disease. You should consider the clinical presentation, not the age. A lot of times we get focused on, oh, you can only do this at that age and this at that age. But as we know, children don't care what age they are. Disease doesn't care what age they are. You have to treat the disease.

It needs to be early, comprehensive treatment. You don't have to do step therapy. You don't have to do, oh, we have to change your diet before we do this, or you have to correct your diet and your activity before we move on. You know, that's the way it was in 2007. So now we're a little bit further than that. We need to be doing it all at once, depending on what the patient wants, of course, and the family wants. But there's no reason to hold back.

Pediatric patients respond well to treatment, probably better than adults, and they deserve treatment. Okay? We shouldn't be just, you know, not addressing it. You should, if you can, confer with an obesity specialist. And I know they're not everywhere, but if you have access to that, that's awesome.

There are clinical trials in obesity, and we really strongly need to push for our pediatric patients to be in the clinical trials. It's really unfortunate when, you now, medications are out there, or specific treatments of any sort are out there, and we just can't use them, even though the same problems exist in our patients.

We need to educate at all levels of training, because a lot of people have had very little education on obesity. And then you should approach decision-making with shared decision-making with the family, just like other chronic disease.

Dr. Paisley:
All right, we are going to switch. Oh—

Audience Member:
If the kids don't have health insurance. Is there a basic panel?

Dr. Cuda:
Yeah. So there are a couple of panels out there that you can use. Some of them are free, so you don't have to bill insurance for it. It's a buccal swab or blood testing. We can talk to you about how to get those. I can't mention the names of them because of, you know, this is not that kind of talk, but they're very easy to get. They'll drop them by your office or even mail it directly to your patient if you want that

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option, and you get the results back online about 3 weeks. The problem is that there's a lot of testing, not a lot of treatment, but it's still worthwhile. That's a whole other talk.

Dr. Paisley:
That's a whole other talk. All right, so we're going to move on to our case 3, no one size fits all. We answer the call: how do we individualize obesity treatment plans?

So we're now going to move into Leslie. She's a 16-year-old who's been your patient since birth. She is currently taking lisdexamfetamine extended release 20 mg daily for ADHD, which she started at age 10. It has been effective, and she is achieving academically. She remains an active teen, participating in band, marching band, student council, yearbook, theater, and she's often at school from before 8 am and will stay until after 7 pm.

Her BMI was in the 80th percentile when she started high school, but it has steadily increased to 120th of the 95th percentile. As you can see in her vital signs on the right, her BMI is 34.7, which sits right at that 120th of the 95th percentile. A1c of 5.6 and a fasting blood glucose of 105. Menstrual history: she does currently have her periods every month and denies any current sexual activity. And her family history is significant for obesity and diabetes.

So let's talk a little bit about our algorithm for treatment. So kind of as we hinted, we do want to kind of follow chronic care principles, including kind of keeping people within that medical home, continue to use that family-centered approach that's non-stigmatizing, and then really recognizing that it is a complex disease with multiple factors. And so, as you can kind of see as we go through the charts, so the younger children, right now, what we generally have is, you know, stepping up to intensive behavioral and lifestyle interventions. But as we will briefly hint on, what we have today could rapidly change in a year. It's an ever-evolving field.

When you look at the foundation, no matter what approach you do, you really want to do it from a standpoint of motivational interviewing. So what works for your patient and family that you have with you? And then we do want to strongly consider roles of anti-obesity medications or even referral to a comprehensive metabolic or bariatric surgery program for appropriate patients.

Okay, so in case we need a refresher on motivational interviewing, I'm not going to spend too much time on this slide because I would prefer to go through the meat of this one, which is more of our medications. But the only way you get good at it is to practice. But this is kind of those key points as your refresher for the components of motivational interviewing.

All right. I use anti-obesity medications for pediatric patients with obesity. Let's see where we are. Okay. Well, my hope is by the end, some of you feel a little more comfortable with maybe initiation.

We also did not get this one fixed, but technically phentermine, according to the package insert, is actually FDA approved for 17 and above, but please check your state laws. So for example, I practice in a tri-state area. I have no such age stipulation in the state of Indiana, but I do in Kentucky, and I'm pretty sure there's maybe one in Ohio, because of where I live.

But what you can see is that currently many of our anti-obesity medications, including phentermine–topiramate, orlistat, liraglutide, semaglutide, are FDA approved currently for ages 12 and above. And then we do have one that is fairly rare, and the general pediatrician would probably not use it, but you might have some genetic obesity children, and that is called setmelanotide. It is specifically for syndromic and monogenic obesity due to Bardet-Biedl syndrome, POMC, leptin receptor, or PCSK1 deficiency. So this is that one we hinted on briefly with that genetic test. It has a mixed percent of weight loss that you might see with it, but it's very specific.

When we actually look at the older medications, there are some limited pediatric studies for plain phentermine. I think the piece that has people a lot of discomfort with it is that there's a significant amount of stigma around this drug from the fen-phen era. This is not fenfluramine. It is phentermine. It was fenfluramine that caused a lot of the cardiac issues.

So the mean percent weight loss in many of the studies that have been done is about 4%. It is technically only FDA indicated for short-term use at 12 weeks. But if you were to speak to many of us and our off-label use of things, if it works, I'm going to keep it going.

Same thing, phentermine–topiramate does not have a short-term indication. You can use it all as long as it's effective. It provides a combination of phentermine and then topiramate, so it induces additional appetite suppression and improves satiety, as well as can help alter kind of food taste and preference. Mean average weight loss is about 8% to 10%. But remember, phentermine is a stimulant, so we do not take it at nighttime because we want our kids to sleep.

Orlistat, you will still see, if you have a state that happens to cover certain anti-obesity medications, you might still have to see that you have to walk through orlistat. I actually don't think that the pediatric data for orlistat is very good, and the main side effect of it is diarrhea, which most children are not going to want to experience when they're in school. But it works by inhibiting fat absorption. And so you do have to be really cautious, if you do have to use it, of watching kind of fat-soluble vitamin stores.

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And then we have two current GLP-1s that are FDA indicated for 12 and above, liraglutide and semaglutide. The big difference is liraglutide is a once-daily injection that is titrated up weekly, and then semaglutide being our once-weekly. The other big benefit, semaglutide also has data in our adult patients that show reduction in major adverse cardiovascular events, as well as treatment for metabolic-associated steatohepatitis in our liver patients.

Okay. All right. So side effects, I kind of hinted at a little bit already, kind of based on the mechanism of action. And so for the two GLP-1s, the biggest thing you really have to talk with them about are GI side effects. About 10% of people, no matter what you do, they're just not going to tolerate it.

And the big one, especially for semaglutide, that's a little different, is pediatric patients actually signal higher on the increased risk of gallstones. Whether that's related to the rapid weight loss or from the medication, it is something you do want to caution and counsel patients about. Nutrition history becomes very important with those. I can mitigate many of those side effects by making sure people understand how to eat correctly on the medications, stay hydrated.

There are big contraindications for those two drugs. The main one is medullary thyroid carcinoma. So if you have a patient who has a family history of multiple endocrine neoplasia type 2 or of medullary thyroid carcinoma, these drugs are contraindicated.

Okay. All right. Super exciting. We do have emerging, age 6. As you'll see, these drugs are currently under investigation for younger and younger, and they do have great promise. And so right before liraglutide, which has technically actually gone generic, SCALE Kids did get published. And SCALE Kids was looking at liraglutide for children with obesity ages 6 to 12 years, titrated up to a maximum tolerated dose of 3.0 mg. They could not have type 1 diabetes, and they were designed to not have a secondary cause of obesity.

As you can see from the graph, when you look at BMI change, remember the body weight percentile change, kids are still growing, so you're not going to see such a profound body weight change because they are still supposed to grow. You really want to look at the BMI percentile type changing in those curves, because that's what we measure when we define it. It's a little different from the static, no longer having linear growth that we see in our adults. So I think that's a key thing when you're counseling or discussing or thinking about medications, is what metric are you really looking at.

And what you can see when compared to placebo, children treated with liraglutide in the 6 to 12 age group were able to see a 5.8% change in BMI versus a BMI gain of 1.6% in placebo. And then again, when you look at the body weight change, patients treated with the placebo arm, which was lifestyle intervention only, had about a 10% weight gain versus only 1.6% in the pediatric patients. And as you can see below, adverse events generally still remains pretty well tolerated. Again, most of them are going to be GI-related.

Okay, we are still actually recruiting, and we don't have a slide quite up that are ones that are currently undergoing but closed. But you can see there are more coming in the future. We have a couple much more specific investigational ones, like what are on the top three and then, orforglipron, which is one people might hear about or patients might bring up, it's an oral GLP-1 molecule that's a small molecule in current research trials, and they are already running adolescent trials that they're currently recruiting for.

Tirzepatide SURMOUNT Adolescents is still currently recruiting and running, and that is ongoing for adolescents with obesity and weight-related comorbidities. And then semaglutide is still looking and doing STEP TEENS weight maintenance, so kind of mirroring the STEP 4 trial, I believe, I think it's STEP 4 or STEP 5 of the adult trial, where we looked at weight maintenance. So how effective are these long term.

So it's a very exciting time with more data to come on how we use medications.

So agents we use off label. So right as I really think that the pediatric pharmacotherapy talk, if anyone was here all day, right? We're peds. Like, most of what we do is off label, because no one likes to really study children, and obesity is no different. And so we do have patients who will take multiple things off label. So FDA approved for type 2 diabetes and used off label for obesity—well, and FDA approved in adults—so tirzepatide is approved for ages 18 and above. But yes, you could potentially have a family if they're willing to pay cash or some magical unicorn insurance plan that might let you cover it in an appropriately selected patient. Give it a shot.

Metformin, widely used for type 2 diabetes, approved age 10 and above. Many of us will typically use it in younger kids or to mitigate medication-induced weight gain. Some people actually will also use SGLT-2s, which is the empagliflozin. I can't say the trade name, but that's the generic. It is FDA approved for type 2 diabetes in children 10 and above.

Exenatide, dulaglutide—these are other adult GLP-1s that are a little oral, who also have approval for diabetes in children. And then we already talked about liraglutide. And then, interestingly, semaglutide is FDA approved in adults for type 2 diabetes, but not pediatrics, but we do have that FDA approval for pediatrics as a weight management one for 12 and above.

Other ones that we use, let's not forget about some of our really good, like, comorbid type ones. So topiramate is actually FDA approved

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in pediatrics for seizure management ages 2 years and above. Remember that fancy one that's 1/2 of that drug that is the phentermine–topiramate combo. So many of us might use this off label in either younger kids or again, if people can't afford the combination drug, we might split it out and use it separately.

Lisdexamfetamine has a little bit more appetite suppression than maybe some of the other ADHD medications. And so it's one where people can tolerate that arm, I might want to use that one a little bit more, or if there's binge eating disorder concerns.

And then honestly, bupropion used 18 and above for depression, but is also widely used off label in pediatrics for management of ADHD. But it's 1/2 of an adult drug, right? So bupropion–naltrexone is an adult drug for obesity, of which bupropion is one of those active ingredients that does have some support for use in some of our pediatric patients.

Okay, so this slide's a little busy, but it comes from the reference down there from *Obesity Pillars*, but kind of gives you a thought as you're going to think about tailoring a medication plan. So you kind of have two approaches.

You could think of what we have on the left side, which is medication considerations for an obesity-driven comorbidity. So if I'm trying to think about what I'm trying to prevent, or maybe what somebody already has, I want to think about, can I optimize what we already have? Or from a coverage standpoint, can I get something covered that can also promote weight loss? MASLD, I hope, is coming for pediatrics, but it is approved. You shake your head at me—oh yes, well, hopefully someday.

But when we look at some of those, you know, we use a lot of metformin. If we're talking about binge eating and emotional eating, lisdexamfetamine and topiramate. And then, as already talked about, kind of depression is bupropion.

And then the other thing which we don't really have time to go into but as a whole topic in and of itself, is thinking about the phenotype of what someone's pattern is, or what we call—there's a really good paper that coined it—but we have, like, hungry brain. So the brain is hungry all the time. I want to eat large portions. Hungry gut. So these kids want to eat pretty quickly. They just never feel full. They sneak food between meals. Emotional or hedonic eating. So eating out of a pleasure-driven response or from a dopamine reward. And then kind of slow burn, so that low metabolism.

And so you could sometimes try, and as you work with more families, you get more familiar with what we mean when we talk about those phenotypes. And so then you could actually take and think about targeted pharmacotherapy like we've previously talked about, and putting it into one of those actual approved obesity medications. Although, remember, bupropion–naltrexone is off label for pediatrics, but is approved for adults. And this work comes from some of the adult literature.

You also want to manage patient expectations. Okay. They are not magic bullets. Very effective miracle drugs, but they are not a magic bullet. They are a tool to help them. And so the job of a medication is to stabilize first the disease process. I want them to normalize their growth curve. I'm not going to feel real happy if they stop crossing percentiles up as my first goal.

I'm going to focus on non-weight-related targets. Did I improve our physical capacity to do exercise? What are my metabolic labs looking like? Am I making improvements outside of what a scale might be doing?

And then what am I doing body composition-wise? So some body composition scales do have algorithms that allow you to use bioimpedance down into pediatrics. And am I able to make a change? So I used this a lot in a previous clinic, because they always had the football player, and the football coach wants them to be their big linebacker, but, you know, we've got prediabetes. And so that ability to help them see, I'm making the kid stable. I'm helping them lose body fat, and maybe I'm even adding on the muscle mass. So we are going to be quicker and we're going to be stronger, but we may not see the scale change as fast, but we're improving through those other metrics.

And because it's a chronic disease, we really have to remind people, this is not a short-term fix. If I start a medication tool, and this is what it takes to help you, it's with you for a long time. It doesn't go away, and it may be there for the rest of their life. We don't fully know.

Success is measured in managing the disease, not curing it. And association, if I stop the medication, I'm generally going to return back to that set point that the body wants, whether that's from an elevated increase in my body fat, or bringing us back to a set point that we have previously tried to fight against.

Okay, all pediatric patients with obesity should be referred to an obesity medicine specialist. Oh, good, yes. I hope you feel better as general pediatricians in being able to kind of manage and take care of these kiddos.

So when do you want us to refer? Well, if you have access to intensive health behavioral and lifestyle treatment, so if you're by a bigger academic center or a center that has that and you have a younger kid, this could be an option to refer. This is a very difficult thing to do in routine primary pediatrics. It still remains the core.

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However, please remember that many pediatric healthcare providers and what you might find in your local community—and so I've generally practiced in a rural setting. I have never had an intensive health behavioral lifestyle treatment program. It's not feasible for my patients and what we have. But I can work with my communities. And so I can find those champions, physical therapists or trainers that might work with kids, mental health professionals to help with me with the counseling, ways in my community, handouts to provide to connect them to resources.

And then you have those of us that are trained as obesity specialists. We're happy to take your complicated ones. So if you don't feel comfortable layering things, or you've tried and you're stuck and you don't know what to do, that's a great spot to then think about referring to us, or kind of trying to coordinate with what you might have in your state or region.

And so I hope that you all have gotten some good, valuable information. You can kind of see our main takeaway points. So if we think about what we talked about with our cases, thinking about stigma and bias, thinking about how we want to screen for comorbidities in our patients, and then hopefully starting to get some comfort, or at least some understanding, with how to integrate treatment into the chronic disease model, just like we would asthma and other conditions we treat.

And please remember, pediatric obesity can be very effectively treated, and is incredibly rewarding when you get those wonderful cases.

All right, now go through our post-test questions, because we got to see how you did compared to before. I should read the whole thing. If you want to read the slide, do I need to read the slide for the virtual though?

Dr. Cuda:
No, I think you read it before.

Dr. Paisley:
Okay, so we want to give you a minute to kind of take a look, and then we will go over the answers. Let me give a few seconds for the virtual folks to have a chance.

Dr. Paisley:
All right, so now you get an answer. So D would be the least stigmatizing question. Oh, oh, we actually get to see how people did. Okay. Everybody did really good, both pre and post, yay. Okay, so yes, so you can kind of see everybody did really well on this one. I'm not going to belabor this one.

Okay, how did we do on test question 2? So kind of, this is our best step in care based on current guideline recommendations. Who remembers our 8-year-old? So I'm going to give a few minutes for you all to answer and for our virtual to kind of have a chance to weigh in, and we'll see how everybody did.

Dr. Paisley:
Okay, some good improvement. Yeah, okay, so good. All right, so our correct answer is going to be B. So remember, this is an 8-year-old, so most of our medications would not quite be approved in this age group. And so what we would really want to focus on in this child who has an elevated BMI would be to think about evaluation for potential comorbid conditions in our younger patients.

Okay, all right. Number 3, very important. Going forward, how confident are you all in your ability to apply guideline recommendations for obesity screening and comorbidity assessment in your pediatric patients?

Dr. Paisley:
All right. I like it, so we're getting a little more confident. I like that. Look at that improvement we had in some very confident. That makes me excited. Okay. Why did this come back?

Do you plan to make any changes in your clinical practice based on what you learned today? A is yes, B is no, C is uncertain. All right, come on my yeses.

Dr. Paisley:
Oh, well, okay, I guess we're not going to see how people answered to that one. So I'm just going to keep going, because the slide moved forward.

So going forward, how confident are you in your ability to develop evidence-based individual treatment plans for pediatric patients? A, not at all; B, somewhat; C, neutral; D, somewhat; E, very. Hopefully we didn't confuse you all too much. I promise it gets easier the more you do it.

Dr. Paisley:

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Okay, I like that. Look at that, we're getting a little bit more confident. I like those numbers, good.

Okay, and if you would like to please put in your iPad and take a moment to enter one big key takeaway that you're going to integrate into your practice, based on what we learned today and the slides, maybe.

Dr. Paisley:
So it did it fast? Did it take it away from you? Oh, it did. Okay. I'm sorry. I thought it would stay on the question so you guys could enter it. See, we didn't go over this in our dry run. So I apologize.

Dr. Cuda:
Do we have time to take questions?

Dr. Paisley:
I have 5 minutes. I think we have 5 minutes left. I tried.

Dr. Cuda:
Well, somebody has to bring the mic around.

Dr. Paisley:
Okay.

Female:
I am wondering about starting medication on patients who admit to purposefully throwing up if they want medication.

Dr. Cuda:
So you mean obesity medication?

Female:
Yeah.

Dr. Cuda:
Well, no, I don't think that's a good patient to start. I think that those patients need to be seen by, you know, an eating disorder clinic, or at least a therapist who's familiar with eating disorders.

Female:
Okay.

Dr. Cuda:
Yeah, no matter what their weight is, at that point, if they are inducing vomiting or taking, you know, laxatives or something like that, that has to be addressed first. After that's addressed, then maybe down the road.

Female:
And then I was wondering about a resource you might have to look for an obesity specialist in our state.

Dr. Cuda:
ABOM, the American Board of Obesity Medicine. So if you go on there, you'll see everybody that's taken and passed the exam. It's only physicians, unfortunately. So there are, of course, some nurse practitioners that have a certain certification, so they're out there too, but they're not on that particular database. But generally, those might possibly work with an obesity medicine specialist.

Dr. Paisley:
They might, yeah. And some of your adult ones. So like in my group, I will see kids all the way down, but like my two partners are actually family practice trained, and so they will see 12 and above. So even if they're not peds only, remember, a lot of physicians who are family practice and ABOM might have some comfort level. And so you can always try to reach out to those as well, because they might be comfortable for at least your adolescents.

Audience Member:
Yeah, just real quick. Do you know, is compounded semaglutide still available?

Dr. Cuda:
Yes.

Male:
And can you explain a little bit how that process works?

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Dr. Cuda:
So what happens is that compounding pharmacies, which are, you know, a thing in the United States, they've been active for a long time. Mostly I was using them for derm-type stuff, right? Well, when the GLP-1s hit the market, it's very lucrative. They're buying the peptides from mostly Turkey, China, and India, and then they're imported into this country, and they combine them with B6 or B12, and they resell them. And it's very lucrative. A lot of people have made a lot of money. They're not FDA approved, though. So the compounding pharmacies go through an inspection process, which is mostly like, is their hood working, and la, la, la, la, right? They inspect the pharmacy, but they don't necessarily test for the peptide. Like, it's the source of the peptide is the problem. So that's why they're not FDA approved.

Male:
So those drugs coming in from foreign countries, who is actually purchasing them?

Dr. Paisley:
So they are—okay, and I could give a whole like 15-minute spiel on this. There is a documented way that Novo and Lilly both make their product, and this goes back into understanding molecular biology, and they make it in a very specific way. The active pharmaceutical ingredient in a compounded medication has no FDA oversight in the manufacturing process. So for all you know, that's a peptide. Some backdoor lab in China or India is taking the amino acids and smashing them together in a test tube, and you can get fragments that can create quite a bit of immunogenicity, or creating antibodies against not just semaglutide, but your own native GLP-1 that you make.

Male:
Yeah, but what I'm confused about are these major pharmaceutical pharmacies that are buying them?

Dr. Cuda:
No, they're people making them with hoods in these other countries and selling them.

Male:
Yeah, but I mean, a legitimate pharmacist, a compounding pharmacist, has to get their hands on it. So how are these compounding pharmacists, how are they getting these illegal drugs going?

Dr. Cuda:
Compounding pharmacies are used to using things off label. I mean, almost everything that they do.

Male:
Yeah, but what I'm getting at, what is their starting material? Where are they getting it from?

Dr. Cuda:
They're getting the peptides from China, India.

Male:
And so there's no middleman? They're ordering it themselves?

Dr. Cuda:
Yeah, correct. Delivered, yeah.

Dr. Paisley:
Just like you could go online and order, for research purposes only, a compound. I can order retatrutide, which is an adult one coming, online, and it'll say for research purposes only, but I can order the peptide, yeah.

Male:
And they release this to the public with no prescriptions, I take it?

Dr. Cuda:
No, you can—well, sometimes some of them do. Some of them will do it from the compounding pharmacy, but most of them, they'll take a prescription from some kind of healthcare provider. But, like, I honestly was desperate for one patient. She has hypothalamic obesity, terrible, just a terrible case. And the only thing I could try to get for her was a compounded drug, because she's on Medicaid. Right? And I gave up because I could not tell what dose it was. It's just it's all different. It's like the wild, wild west out there.

Male:
Okay, thank you for that.

Dr. Paisley:

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Yeah. While she finds someone real quick, let me pull up one from our online ones. So we did have a couple of questions on oral semaglutide in a 12-year-old with needle phobia. So that one would not be FDA approved quite yet. I think for that particular patient, you could certainly try and get it off label. But oral semaglutide is still currently under investigation in phase 3 trials for an adult.

Dr. Cuda:
So semaglutide, which is oral form and it's for adults with obesity, some people try to use it for younger, you know, off label again. It's not very effective.

Dr. Paisley:
No, okay, okay. All right, so I think for sake of time—oh, let's see more online questions. Okay.

Dr. Cuda:
We're being instructed to take online questions.

Dr. Paisley:
Okay, so I don't know how you feel about this one. So metabolic changes with antipsychotics, calorie dependent, and for a sedated child, the parent must be feeding them. Do you have dietitians on a team to teach how many calories and how to limit their intake?

Dr. Cuda:
So personally, I don't use calories as a way of teaching, of modifying a diet. We do dietary recommendations, and I don't think that the metabolic changes are necessarily calorie dependent. They may be dependent on the particular macro composition of the diet, but not necessarily calories. We don't do calorie counting.

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