Autism Spectrum Disorder – What We Know - Pediatric Grand Rounds-10-17-25-Meeting Recording

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Good morning, everyone. Just as a reminder, the CME code will be in the chat box.

All right.

It is my pleasure to introduce today's speaker, Doctor Mario Fierro. Dr. Fierro is a developmental and behavioral pediatrician and an assistant professor in the Department of Pediatrics at UT Health San Antonio. Originally from California, Dr. Fierro has spent the majority of his life in Texas.

He completed his undergraduate studies at Saint Mary's University before earning his medical degree from Harvard Medical School. He went on to complete his pediatric residency at Seattle Children's Hospital and his fellowship in developmental and behavioral Pediatrics at the Children's Hospital Colorado in Denver.

Doctor Fiero has called San Antonio home for more than 20 years. Throughout his career, he has remained deeply committed to empowering parents to advocate for their children with special needs. Today, he'll be speaking on a topic that's vital to all providers who care for children. Autism Spectrum Disorder, What we know.

Please join me in welcoming Dr. Mario Fiera and Abigail Sibigbe.

Fierro, Mario A 2:00

OK. Thank you, everyone. I'm Abby Sivignan. I'm a pediatric nurse practitioner working alongside Dr. Firo, and he was kind enough to let me get things started for you. So I'm going to, I'm going to start us out. Like they said, we're going to be talking about autism spectrum disorder. There's been stuff in the news lately that's brought up the opportunity for a lot of.

Conversations to happen about autism, especially in relation to what we know and what we don't know. So that's what we're going to talk about today. Some objectives to go over. We're going to be talking about the prevalence of autism, some screening tools that are commonly used we're going to talk about.

Diagnostic criteria, different treatment modalities, including alternative treatments.

We're going to talk about associated conditions and syndromes. And then, as I mentioned, we're going to go over some of the more recent controversial topics related to autism and and talk about what we do and don't know.

But first, just a broad overview of autism. So autism spectrum disorder is a heterogeneous neurodevelopmental disorder that's characterized by these three main areas. So challenges in social communication and interaction, repetitive behaviors and or interests, and then sensory processing differences. And Dr. Fear will go more into depth in this

But to first talk about prevalence of autism, the number that you'll most commonly hear quoted is one in 31 children in the United States under the age of eight have been diagnosed with autism. So this is based on CDC data that was published earlier this year looking at children.

In.

16 different sites across the states. So the inclusion criteria for these these kids was children that have had an extensive neurodevelopmental evaluation like the ones that we or other similar clinics offer, children that have had an academic diagnosis of autism so that they can receive accommodations within their school. It included children that have had.

The ICD 10 code for autism included anywhere in their note and then also just a examiner suspicion for autism. So kind of a a broad spectrum designed to just include any child that could potentially have autism into this ranking.

This was significant because in the same set of inclusion criteria and also published by the CDC 10 years prior, the rate was one in 69. So that that increase from one in 69 to one in 31 was significant. For Texas specifically, we're sitting at one in 68.

And this is based on Laredo and and Austin averages. So Laredo was actually at the very bottom and with one in one in 103 children and then it went all the way up to one in 19 seen in California. And I do also want to point out that within this data 26.7% of patients were shown to be.

Diagnosed with profound autism and Dr. Farah will again touch on this in a minute, but just wanted to make that differentiation between profound and what we typically call like a higher functioning form of autism, just because that has a significant impact on, you know, day-to-day life, patient safety, projection of their outcomes and.

In the future, that sort of thing. So not to say that a higher functioning diagnosis of autism is not as significant, but it's a very different thing to consider. And this graph kind of speaks to that. So you can see that profound and nonprofound autism have both been increasing over time.

But the rate of non profound autism diagnosis is going up much higher than than profound autism diagnosis. And I also want to compare US based data to worldwide data this this Italian study that included.

30 million different participants in 2022 showed that the US has a rate of one in 100 patients that have been diagnosed with autism. So that's different than the world global prevalence of one in 67, and it's definitely higher than the prevalence in Europe at one in 200. So comparing to a similar part of the world.

But with different inclusion criteria, it is different from the data that's been generated in the US. Inclusion criteria was a little bit stricter and so it really does just depend on what we're including.

And then I, you know, I want to also point out, you know, sample size varies. There's no breakdown within autism level in that study. And there have been multiple studies trying to point out, you know, what it is, what is it exactly that is accounting for the rate in increased cases and.

Some studies have come to the consensus that it's due to this changing diagnosis criteria and and a little bit of a laxer interpretation of the diagnostic criteria, which Doctor Fear is going to get into now. So thanks, Abby. That was great.

So we're trying to set the stage. I think the older physicians in the room can remember the old criteria of autism spectrum disorders being autism on one particular side and then the high functioning ones were described as Asperger's and kind of the individuals in the middle were pervasive developmental disorder.

And this was, and it's primarily used to let people know the differences in some individuals with socialization, communication, atypical behaviors. I mean, autism was first described in the 1940s, but because of the increase in prevalence.

The.

The the Psychiatric Association, when they did the DSM 5, made pretty broad changes where which was like we they got rid of pervasive developmental disorder and Asperger's. So anybody diagnosed before 2013 was considered.

Can still be grandfathered in and be called Asperger's or PDD, but now everything is a autism spectrum disorder and Level 3 being the more affected, level one being the mildest affected and what they ended up doing is they combined.

Socialization and communication into one criteria platform and then the repetitive or stereotypic behaviors because they used to call them atypical behaviors. One thing

that I want to just take a step back and say is I know that the title of this.
The presentation is what we know. Well, unfortunately, spoiler alert, we don't know what causes autism. So if you can click off now, I'm sorry. But what I want to talk about now is that I'm trying to demystify the diagnosis of autism moving forward because regardless if you're in primary care or in.
Specialty care, you're going to come across these individuals just because of the sheer frequency of the diagnosis more and more. One of the things that I want to remember about this particular slide is we didn't get the best guidance.
In describing what's a level 1, level 2 and Level 3, it talks about the amount of help you need for like daily daily living skills where Level 3 being very substantial, level 2 being substantial help.
And level 1 being moderate help or some help for daily living skills. The hard part is it helps us a lot better when the the individuals are teenagers and going into adulthood as far as figuring out maybe the perfect placement for them with their adaptive skills.

9:10
Yeah.

Fierro, Mario A 9:12
Can you hear me? I heard somebody talk. But what ends up happening is that when they're sent to us and they're very young, if I overlay the age of the child, so if I'm seeing a 2 year old, well guess what? Even a neurotypical 2 year old needs help because they can't always get dressed by themselves or make themselves breakfast or that kind of stuff.
So I always like to tell parents is yes, I have to give them a level, but it can change as the child continues to improve with their behaviors and their communication skills.
Yeah.
So once again, the reason I'm going over the diagnostic criteria in detail is just to try to demystify it and let you guys know that it's OK. There's nothing magic about being a developmental pediatrician that we can we diagnose autism. We don't have like crystal ball in the back or like, you know, they are hands on them and we know if they're autistic or not.
What we try to do is with the criteria, seeing if an individual has deficits in these three areas because it's a two-part diagnosis. It's the communication issue, which is

socialization, reciprocity, non-verbal communication skills and relationships, and then the second part is.
More that atypical behaviors. So when we talk about having to have some issues of one of these three areas, it can be as simple as social reciprocity. You always have to, you always have to have the overlay of knowing what the age of the child is because. A baby, you know, won't have very good conversational skills, so it's very important to to to treat each one of them as as what is expected for the developmental age in a typical and then atypical, and also know that it's OK to have differences.

KD **Kailee Dougherty** 10:40
You know.


Fierro, Mario A 10:53
But it's when they cause difficulties in continued development and interaction with peers, with the parents, with the outside community. That's when we start thinking about, well, gosh, this child may or may not be on the spectrum. So officially, according to the DSM 5, you have to have an issue with these three areas.
Um.
So when we talk about, when we talk about social emotional reciprocity, one of the easiest ways to know is what we call joint attention. Joint attention is can I get a child or an individual to pay attention to what I want to pay attention to for a short period of time? If we're able to do that, then then at least we have a connection, even if it's just.
For a few seconds cuz if I don't have that type of connection then I can't get them to follow what I point because that's another that's the next step. First pay attention to what I'm wanting, then look at what I'm doing and follow me around and then we can work on imitation. A lot of times these kids will come in and they have a lot of attention for what they want to do, but when someone brings them a new toy or a new object.
Stuff like that they can they they are very aloof. They they point to the side because the ultimate goal is to continue to help a child improve their communication skills because 9 times out of 10 the behavior issues and problems that we see is usually from a lack of communication. So anything that we can do to help enhance that will help not only the the child but the the parents and the families.
One thing that I just wanted to mention is that our goal with non-verbal

communication would be to point for your needs and wants. And then of course some children learn how to do sign language, but hand over hand, that means grabbing someone and just taking them or putting their hand on the toy to make it work and stuff. That's not necessarily considered pointing. That just means like you're just an extension of.

Of the child and it's not, although it's a means of communication, it's still a very simplistic means, even behind pointing and gesturing. So a lot of times you'll see me write with a more higher level individual with autism about working on joint attention training, which is getting you to pay attention to the same object, even if it's just.

For a few seconds. And obviously if you have attentional issues or something like that, that can also contribute to make it a little bit harder to work on that. So when we talk about nonverbal communication skills, that's when we talk about eye contact. And you know, we all know that our moms could give us a look and they would. We knew we weren't supposed to talk or when we were supposed to be.

Behave. There's also like when I'm talking to a parent, I know when they roll their eyes, I'm like, oh, they're not paying attention to me. They don't like what I'm saying. So those things may come naturally for some, but they're acquired in some individuals and that's why sometimes they don't make a lot of eye contact because they don't get the same information from looking at someone in.

Face.

Social reciprocity is kind of an example of if I do something, you do something back. So more than just being the joint attention, if I mean pay attention to the same thing at the same time, but I do something and then you do something back. One example is like is in the picture is throwing the ball back and forth.

One of the things I'll tell dads or moms is that try to play ball with the child. Usually even when they're younger, if you play fetch, that's good. But if you can actually get them to kick the ball back and forth and stuff that engages them and then you can actually work on oh ball or kick or those sort of verbal cues, but non verbal cues.

Communication and social reciprocity in the form of a shared experience is key to continue to improve. But if they don't have that, then unfortunately, or if it's very limited, then it unfortunately falls into having difficulties in one of these areas where you have to have some degree of deficits.

Relationships. Well, that means engaging with others, engaging with peers. So a lot of these children come across as being aloof. A lot of people describe the some of the more severe cases as being in their own little world. When they're young, you know you're supposed to normally kind of parallel play with somebody.

Like play next to, but these kids totally prefer not to. So it's normal to not want to share your toys, but to have a meltdown every single time that it happens, that might be a little bit a little bit different and that might raise your your interest that wow. So if they don't want to share their toys, how are they doing with their communication? How are they doing with their eye contact? Those sort of things.

Some of the kids will actually want to play with kids. So you'll hear that they say, yeah, they play chase, they play tag, that kind of stuff. But then they don't maintain engagement. So as long as it's something physical, like jumping on the trampoline or running around, they can do that. But as far as like.

Shared experiences, it can be very difficult for some individuals and that's what we're talking about here. Shared imaginative play is a key to good outcomes because that's how we learn to socialize by our ability to communicate with others. So if I ask you a question, you ask me a question back, we're conversing.

Drop me off in China and I don't know Chinese. I'm not going to be the most social person in the world because I don't know what they're talking about. So I'll probably be a wallflower. But what I will do is I'll try to pay attention and if I'm really hungry, I'll probably do a sign for food and if I hear them and some individuals that are on autism spectrum just have difficulties doing that. It just doesn't come naturally. It can be taught, but it doesn't come naturally.

To them. And when I talk about facilitate socialization, sometimes you'll see that a lot in reports that you see is putting them in situations where they're around others in neurotypical peers. And the reason is we learn our social skills primarily experientially. Yes, our mother says don't chew with your mouth open and other things, but the.

Truth is that we learn most of it just by experientially. So if I say something that's a little bit awkward, well then the other kid won't want to talk to me and they'll move away. And so I learn through experience.

The other part, so you have to have.

An issue in all of these three areas for the official diagnosis of autism. Well, for the restrictive or stereotypic behaviors, you only have to have two of these four areas. So either stereotypic behaviors where you see the kids that, you know, do a lot of movements such as hand flapping or the lining up of toys.

Or, you know, repeating the same thing over and over again. Or rigidity where they just they just can't. They have to have things the exact same way. And if it's not the exact same way, then then then they'd have a meltdown or it can't be done. It's OK to have a favorite blanket, but if you have to drive back home when you're on vacation because the kid won't sleep because he doesn't have his.

Favorite blanket. It's tough, but if it happens more than once, you know it's it's a problem because it affects their interaction with the outside world. And then all the kids don't like leaving the park if they're having a good time. But these are the kids that have a complete meltdown and they're throwing themselves on the ground and it doesn't just happen once, it happens over and over.

Again, even when you signpost and give a warning that change is going to occur, I like to tell the residents is when it comes to restricted areas of interest, I've probably learned more from my higher functioning autistic kids about dinosaurs that I care to know. But as time goes by, the areas of interest like trains and now it's all about.

About sort of video games that I learned more and more and more about, but they just perseverate. And you know it's a perseveration because you'll try to change the subject and for the higher functioning kids that can have conversations, they'll always come back to it and it's actually one of the driving forces in their minds.

And as far as sensory stimuli, they can either be hypersensitive or hyposensitive, and most of us are a combination of of both. But it's only when it causes a difficulty in interactions and developing relationships that it's an issue. For example, there's a lot of kids that are sensation seekers, so they'll crawl underneath the bed or behind the couch because they like that.

Tight pressure they like or they like to jump because they like that proprioceptive input or they'll look at the television upside down because that gives them a different perspective on things. But in a sensation seeker, those are the kids that like you turn on the vacuum or the blender and they have to cover their ears or if there's a certain.

Smells that it's just too strong. They'll they'll get upset. I had one kid that didn't like the color lime green and I happened to have a lime green tie. This is obviously before COVID and the kid retched and almost threw and and actually I I almost threw up because he was had such a visceral response.

To just the color, you know, so obviously that's a that's an extreme example, but sometimes when you talk about food issues and stuff, they don't want the food to touch each other or or they can only eat out of their blue, the blue plate.

Now it's OK for kids to like having certain things like drinking out of this shared certain color sippy cup and those sort of things. But when it comes that they can't adjust if there happens to be an emergency or a change to it, that's when you're like, OK, could that be in conjunction with the other areas of difficulty with communication or these restrictive patterns in other areas?

When we need to have two out of the the four areas, at least some impact, then yeah, I think the child may have an autism spectrum disorder.

One thing that this is slightest to remind me to tell everybody, and I know I probably mentioned it already, is that lining up toys, it's actually normal till about 18 months. You're supposed to line things up. It's a normal developmental progression. But when I have a 5 year old that lines up the the cars or the blocks and when I move them they have a hissy fit. Well that's a problem because that's not normal because it'll impact their ability.

To learn from the other kids, to play with the other children, and they're not really playing with them, they're adjusting and they're putting order in their life in a certain way. But when people muck with that, it causes them an issue. So the reason I added this slide is to we have to always lay the filter of what's proper normal development. milestones for a two year old versus a four year old or an eight-year-old that's coming in with the possibility of a question of an autism spectrum disorder.

Once again, you have to have one of these two areas of restricted interest or behaviors. So this is sometimes you see the kids that are that and you know repetitive movements, they had a hand flap or you know the most important thing is that the the last part of the of the diagnostic criteria.

Yet all three areas of the communication, two of the four areas when it comes to stereotypic behaviors, but it has to have happened early in life and it can't be explained by another condition.

Primarily. So for example, I have a young man who was severely anxious and they were so anxious they were kind of almost OCD. And we even gave him one of the tests we're going to talk about in the future. It's called the ADOS and he came back positive on the ADOS. But when I started treating his anxiety, he improved so much he was not doing the.

The being aloof, the wanting things only a certain way, the impairment with his social abilities and even his stereotypies, like his nervous habits, you know, continue to improve. Now, to this day, he doesn't have a diagnosis of autism. He's a little quirky and he has some attentional issues, but in life you're allowed to.

Be that way, as long as you continue to progress and make that progress, then there are other, like I said before, other diagnosis that could impact your ability to learn how to communicate the intellectual disability. Now it doesn't mean that it one can't happen at the same time as the other, but when it comes to children with an autism spectrum.

Disorder. I always have a hard time with when that we assess them for cognitive abilities, because if their communication is poor, they're not going to score very well on the test, even if it's a nonverbal test, because you're actually using verbal cues to have them do, you know, perform.

Once again, if I was, if I was given an IQ test in Chinese, since I don't know Chinese, I would come across as being cognitively delayed. And I hope I'm not, but who knows? Very slow.

So as primary care providers or even a subspecialist that the the concerning behaviors that make you think they may or may not have just kind of reviewing what we've talked about in in the previous slides is poor communication skills, not responding to your name, not making very good eye contact as they're getting older, lack of imaginative play. So all they do is.

Build. They're like, oh, they're the best builders, Doctor Vera. They can stack a block, blocks up to 20 high and they're five years old and that's all they do with their with their with their blocks. That's not very imaginative even. And if someone were to happen to knock them down, Oh my God, that's a big, big issue.

And once again lining things up, then the stereotypic behaviour such as like hand flapping, you'll see a lot of rocking. Sometimes they like to review like the watch a video, but they only like either the musical part of the movie or one certain aspect of the of the movie and they get really good with electronics and they'll just review, review, review, rewind, rewind, rewind and.

Sometimes they don't like their hands getting dirty or sticky where they kind of freak out and they they can't feed themselves or they do feed themselves, but they have their hands immediately cleaned. Or even if they get splashed with water, they have to be changed or else you know they can't continue with the day. Now individually 1 isolated incident of this.

It's probably within normal limits, but it's when it's chronically and it causes difficulties where the parents can't go to the restaurant because it's too loud and the kids are just covering their their ears, you know, because then it's it's an issue or a problem where we have to think about, yeah, they could be on the spectrum and the best.

Way that we have to sort of assess that is the the M chat. So that modified checklist for autism in toddlers, the AP has suggested that it be done at 18 and 24 month visits. It's very sensitive and very specific and as you guys know it's just 20 questions and any no in in questions other than two.

5 and 12 is considered a positive and 25 and 12 that's like have you ever thought your child is is is deaf? Do they have odd movements with their with their fingers or sensitivities? So it's it's really important that.

Just to understand how the test is done, because if it's a low score between 3:00 and 7:00, one of the things that we suggest is that you go back and ask the questions yourself, because I know a lot of places the MA or someone will administer the M chat and that's that's fine, but we just want to make sure the parents understand it. But if the score is greater than 8, that that's automatically at high risk of having an options.

Spectrum disorder and the medium risk obviously if if you ask the questions and they're still having the you know positive scores and then of course we're concerned that they could have an autism spectrum disorder. One of the things that is is gets alluded is because it's such a heterogeneous.

Condition. You have some individuals that are go to college and they're probably CEO's of corporations and do do extremely well. Then you have the other extreme. We have kids that don't talk. All they do is, you know, bang their head against the ground and hand flap. So it's a very it's it's such a.

Huge diversity. We just want to make sure that there's a way that we can kind of screen what that is and to make hopefully providers, either the family practice people, the pediatricians or the physician extenders, the nurse practitioners comfortable with the fact that if there's someone that is on the severe side and we're comfortable.

Enough that they meet the criteria, it's OK to diagnose it to continue to move the ball forward. Now, if there's someone that's more iffy and you're like, well, I'm not really 100% sure, well, then of course I think that's when the specialists can come into play and kind of help tease that out.

It's OK. So this is just an example of the of the of the of the M chat pretty pretty quick. They can do it in in the in the, you know, waiting room.

So that we have like we're concerned that a child has it. We know that with the criteria are we're like, yeah, they have a the official diagnostic standardized tests are unfortunately, according to the Cochrane group, when they did a men analysis, there's only there's only three of them, but there's other tests out there. There's the killom autism, the gars.

Scale, but the gold standard is the ADAS. It has very good sensitivity and pretty good specificity. It takes about 40 to 60 minutes to administer, depending on what module you do and how cooperative the individual is to be assessed and tested.
But it gives you a good standard score. The the test that I tend to use in my clinic is the the Childhood Autism Rating Scale. It's a little bit faster to administer. It doesn't have as many, it doesn't have any semi structured, you know, interactions, but it does follow all the DSM 5 criteria and when they come to see me, there's a.
The sensitivity, well, they're already concerned about it. So it's the specificity is like do they or do they not have autism when they come and see us. The reason I put this HF in in parentheses is that there's two childhood autism rating scales. There's one for for the what I call the the toddlers, maybe early school age kids and then there's the school age kids because the high.
Functioning ones. This one deals more with like, do they understand social pragmatics? Do they understand idioms? They know how to read the room, those sort of stuff. And even though the same similar type of questions, it just kind of shifts it over to individuals that have what they consider according to the way they ask us to administer it is higher IQ's.
Greater than 8085 I think the ADI is it has lost favor and it was just a a questionnaire type of interview but it just has really poor sensitivity. So this one has kind of been lost to use as much.
And what? Why do you have to have a formal standardized test? The reason is to allow different therapies, for example, for Medicaid to pay for a type of therapy called applied behavior analysis. You have to have a standardized test. Now there's no magic in. I had the residents tell me, well, Doctor, can I administer the childhood autism brain scale? I'm like, yes.
Me.
You're a pediatrician. You can definitely do that. The nice thing about the cars is that it's a questionnaire, but it gives you a range of the different examples of the answers that you can actually say, OK, well that seems like the child belongs here or there. So I think it's to help individuals deciding.
You know how to score a child, but this is just if you need a standardized test, these are not.
In in addition to like so a lot of like for example a lot of the ABA places will actually do the ADAS testing and then they send the ADAS test results back to the pediatrician or the the family practitioner or the nurse practitioner to do the official

diagnosis of a medical diagnosis of autism so they can move move forward and get the.

Therapy that they want, they want to administer it to the child.

So once once a child is officially diagnosed with autism, I want you to know that there's a lot of comorbidities that we see and you know our our psychiatry friends and counseling and our teachers in the schools are definitely aware of of this. So associated symptoms is.

Of individuals with an autism spectrum disorder, 70% of them have some sort of sleep issue, either problems falling asleep, maintaining sleep, falling asleep during class. So that's a huge number and that's why a lot of practitioners have difficulties with having to get medications or.

Try to start sleep hygiene routines, but it's hard if a child's noncommunicative to do something. For our neurology friends, they'll be happy to know that about 10% of them have a seizure disorder. Feeding disturbances happen in about 70% of these kids, and that can be either picky eating.

Problem chewing, different difficulties with texture. And I want you to know that a lot of times kids get referred for, you know, oral motor therapy or feeding therapy and those sort of things, but they don't usually tend to have a discrete dysphasia. It's more like a textural issue or problem.

But a lot of times the parents really focus on this, and it's obviously very important. But the truth for me personally is if a child isn't able to communicate and they only eat Ritz crackers and drink water, but they're growing well on the growth curve, then let's focus on communication. Because like I said before, 9 times out of 10, the behavior issues happen when they're frustrated and.

Can communicate. It doesn't mean that we're not going to continue to work on this, but the emphasis needs to be on nonverbal, what they call functional communication. About anywhere from 1/4 to 1/3 will have also have a diagnosis of ADHD. We see anxiety in some of the kids, depression. Obviously in the older kids, they can actually tell you how they feel.

And and and the more higher functioning individuals, GI issues such as constipation are seen about 20% and that sometimes goes hand in hand with the feeding disorder depending on what they like to eat. This is just to remind you guys again that cognitive issues and cognitive delay are found in about 1/4 of the kids. Obviously if you keep doing IQ test on the lower functioning children that obviously it's this is continuing to be higher just because they don't have the communication skills. But the the things that you guys will see either if you're a hospitalist or subspecialist or you know the primary care provider is this aggressiveness.

So aggressive behaviors, and that's considered throwing things, lashing out, pushing people away, spitting, kicking, those kind of things. It's seen about in half of the children with an autism spectrum disorder, especially the caregivers. And look, all kids get frustrated when the parent tells them no or ask them to do something.

But because a lot of these kids don't know how to communicate, even though the ones that can answer questions and stuff, they get frustrated because they're not getting their point across, then unfortunately they physically will lash out. In small print over here, it's 30% of non caregivers. So that's like if you're afraid that they're just going to, you know, attack someone when you're walking down the HEB aisle and stuff like that.

That could happen about 30% of the time. Obviously happens more with children that have more deficits in their communication skills. Self injurious behaviors. That's like biting their thumb, head banging. I have some kids that bite their lips, picking at your.

Skin.

When you have a bug bite or a scab to the point where it bleeds again, those are self injurious behaviors and they happen in about 40%. And as far as what do we do about these? Well, a lot of times we will work with behaviors like try to redirect or try to get them to communicate different needs to have find a filler with the redirection. But unfortunately some of them need medications to kind of help at least get us over the hump.

Different things that are risk factors for autism spectrum disorders and I'm trying to hurry up. It used to be that 4/4 out of every child diagnosed with with autism was a male. Now it's about 3 1/2 and I think that just says the prevalence rates have gone up. We're diagnosing more girls with with an autism spectrum disorder.

Being born premature increases your your possibility of being diagnosed. Obviously the more premature you are, the more likely that you are to have an autism spectrum disorder. If you have one sibling with an autism spectrum disorder, there's almost a 20% chance you're going to have a second one. And what I like about this this this particular study is that they actually adjusted for the fact that once you have one child with autism.

It seems to be very decreases fertility rates afterwards, so parents sometimes don't want to have a second child after they have one with autism. If you already have two siblings with autism, there's a 50% chance they'll have a third one with autism, and that's just important to be aware. So other risk factors for a diagnosis of autism spectrum disorders are it is.

Seen in certain genetic disorders. Um.

So in trisomy 21, about 10 to 15% of them will have a diagnosis of autism spectrum disorders. And you'll know that because the phenotype for those kids obviously is that they're social and they like to engage with others and stuff like that. You'll know when these kids don't want to communicate and they're perseverative.

It's almost like they're they're angry, which is kind of the opposite of what we usually see with kids with trisomy 21, then assorted other genetic disorders, neurofibromatosis, about 1/4 of them. Fragile X, a third of them will have a diagnosis of autism spectrum disorder.

Corneal de Lange, Smith Lem Liopitz. The interesting one is that, remember I said that we don't know what causes autism. And this proves my point because like tuber sclerosis, we don't know where they're going to get the tubers, but 3/4 of them end up having a diagnosis of autism spectrum disorder. So obviously there's something. That predisposes them to having an autism spectrum disorder. Even gosh, 75% is even more than like seizures in these TS kids. We're at 75%.

Talking about genetics, just in general, when they did a huge genetics, you know, study meta-analysis about when you send a whole exome, about 5 to 20% will come back. For me it's more like 10 to 15%, but up to 20% will come back abnormal. But as you guys know in your clinics.

It's of unknown clinical significance and that's what the whole idiopathic means because it's so heterogeneous. It's not one deletion or one duplication or mitochondrial issue or that kind of stuff. So they're still trying to gather more information and that's why the AAP still.

Wants us to do genetic testing on the children that are diagnosed with an autism spectrum disorder because we're building up the bank. Because when it's all said and done, I think everything's going to be a multifactorial, but there are going to be certain conditions that probably predispose you to having a diagnosis of autism.

The only reason I threw in this is for you guys, if you come across it, it's pronounced missing and it's a conglomerate where it's a huge database with different genetic, uploading genetic information so that hopefully they're a little bit better at mining the different differences in children that have children adults that have an autism spectrum.

Disorder.

Kids with congenital heart issues for our pediatric cardiologists out there, and for anyone that takes care of kids with congenital heart issues, just know that it increases your chance of having an autism spectrum disorder by twice as much. So that's pretty significant.

Well, in that same study, they found that almost half of the kids had some degree of a neurodevelopmental disorder, either learning difficulties, language delays, ADHD, autism. So just to keep in the back of your mind that we're that it's very.

Just because the the the cardiologists do such a fantastic job, it doesn't mean the child doesn't have continued issues, especially when they get to school age and just just to be aware of that. There was an interesting study and the reason I only mentioned this about ion transport channels deficiency is because that's where they found an overlay in the genes that children that had autism and the children.

Have the congenital heart defects. It has to do with embryogenesis. And the interesting thing about this is that kids with congenital heart have a very similar phenotype to some of our premature infants with their delays in executive functioning, attentional issues and a higher chance of having a diagnosis of an autism spectrum disorder. So obviously at the same time as your heart's being put.

Together, so is your, so is your brain. So I think that there's a lot of interesting studies to be done.

So what do we do if the child already has a diagnosis of autism? I'm here to say that it's OK to refer for therapies. We know that if children that have autism, 60% of them had some degree of ABA therapy, and I'll go into details in a second. 85% had some speech therapy, occupational therapy in about half of these kids and behavioral therapy, which is.

Obviously not as intense as ABA therapy, but hopefully focused on helping train the patient and the parents on how to work on a specific issue. The biggest problem is.

That I am 100% proponent that if a child has a diagnosis to refer for therapies because that'll help everybody, the whole community, be it school, being the parents, be it the grandparents, learn how to work with with with the child. But long term studies have not shown that this is a.

That that has long term benefits, kind of like ECI. The only, the only one of all these therapies that has shown sort of long term improvement in benefits is ABA therapy. And even with ABA therapy when they did a big meta-analysis, it's very intensive. It's, you know, when Lovaas first, you know.

Wrote about it. It's 40 hours a week, so it's a full time job. So in this net analysis it was 20 to 40 hours per week and they saw moderate improvement in adaptive, so like daily living skills and in cognitive abilities. But it was that that moderate improvement was about 1/2 a standard deviation score, so it's about 7 points.
If you like to talk standard deviations and scores on testing, so it has shown long term effects in that it does help improve things. That doesn't mean that I don't want children to be referred to for speech occupational.
Therapy, I think it's important, I think that, but just know that as far as internal with autism, as far as helping with their with their long term issues and problems, it's been very hard to to tease out significant improvements when you look at at the population in general.
One of the other treatments that you see, the FDA is only approved 3 meds for children that with autism spectrum disorders. So we don't know what causes autism. Please understand that these three medications help treat symptoms. So an SSRI fluoxetine tends to be used for kids that are persevered or they have like a lot of anxiety that studies.
Have not been 100% effective in saying that it makes a significant difference in anxiety, but it is one of the indications for for the use of fluoxetine. Same thing with risperidone and abelify. We use those for kids that have problems with.
Aggression or mood lability, obviously. And a lot of times I have to do whatever we can to help these children go to school, work with their therapist, or just even engage with their caregivers at home, since, as you guys saw before, there's a lot of.
Frustration in behaviors with aggression seen in these children. Now the other uses of medications are kind of off label there to treat the impulsivity or the anxiety or even the sleep issues, because I know that when I don't sleep well, I'm a little irritable the next day, so I can just imagine someone has chronic sleep issues. Well, they're going to be a little bit more ornery when it's time.
To get ready, especially if they don't like changes in the routine.
Now, alternative therapies and treatments. Please understand this is not an exhaustive list. There's way more than than this. But of individuals that have an autism spectrum disorder, 90% of them have tried these in their lifetime, at least one one of these in in their lifetime. This is a meta-analysis by.
Gosling and it found no significant improvement.
In the core symptoms of of autism. So we know like melatonin can help with sleep initiation and those sort of things. But as far as helping with with with with the core

symptoms of the communication and the stereotypies, those kind of things that has not been been able to be demonstrated.

But things that we we hear about all the time is the gluten casein free diets. And I usually tell parents if you want to try it, since we don't know what causes it, I'm not here to tell the parents that they can't do something, but it has to be done in a way that does not cause problems with the child. So I say if if you're going to try this.

The whole family has to do it and you do it for a month or two and then you have to reintroduce the gluten casein just to see if it if it really makes a difference. I know that you guys will read this and be like really stem cells. 2 weeks ago I had a parent that went this summer to Tijuana, Mexico and got stem cells. It was just for the use that are anyone that's curious. It was 3200 for.

4 rounds of stem cells for the child. The dad swears that it's improved. The child to me looks exactly the same. It hasn't made any significant improvements, but that's an N of one. But if you go online, there's a lot of people that sell because they sell the benefits. Chelation therapy. I mean, it's being done here in.

In the United States, either with oral chelating agents or just things that they can sprinkle in the bathtub and those sort of things, MERT magnetic resonance therapy is another thing that you hear out there. Hyperbaric chamber has been proposed. Unfortunately, none of these have shown us any significant improvements. As a matter of fact, when it comes to chelation.

Therapy. The only associated like death from alternative therapy was once I think with a child that was given IV chelation therapy. Now as far as the whole supplements, people that round with me like the residents and stuff know that sometimes also just nutritional supplements and vitamins.

I know that, and it's primarily to see if it makes a difference, it might be beneficial. I know that 20% of it might be a placebo effect. I usually suggest maybe like omega-3 fatty acids or vitamin B12 and acetylcysteine. Maybe we can try that.

Because I'm trying to forge a relationship with the family. So in case we ever have to get to a point where we have to use the medications that they're at least comfortable and they've tried everything. The problem is that we're dealing with, we have them, the parents and families, for a short period of time and they're reading or their neighbor or their.

Sister is telling them this and that and how that this child was cured when they they gave them extra carnitine or they did the oxytocin or whatever. So it's really, it's really important to just be aware that things are out there and I'm a big believer and you catch more flies with honey. So I will work with families as long as they don't do anything that can be detrimental.

44:15
Oh.


Fierro, Mario A 44:20
An example of this is there's a family and there's actually a practitioner in the area that recommends like camel's milk for treatment of autism and and I explained and they're telling me about all the antibodies that the camel milk had and how it cures it and that kind of stuff. And and I explained to them that the only way that you can have camel's milk antibodies is if it's unpassable.
Pasteurized. And that's not probably the best milk that I want, you know, children to get, because I have no idea where these camels are milked or how you do that. But so I so I told them, like, I don't recommend it, but if that's something you're going to do, you have to do it in a step by fashion and you have to be very careful.
So just want you to know and this is actually here in San Antonio, there's there's proponents of this and you can go to clinics and I think it's like 15 to 20 bucks a pint of camel's milk in case anybody out there is interested else they'll send it to you on dry ice.
Um.
Yet so alternative therapies. One of the things that's been in the news a lot lately is the question about leucovorin. So leucovorin is not necessarily methylfolate. It's a reduced substrate of the folic acid that is given in prenatal vitamins.
What happened is the research for this has been around for a long time. For 2020 years, the research about this folate receptor alpha antibody in children with autism, it's like 10 years old, so I don't want you to think that it was just yesterday. The reason why it's being brought up now is because it's being talked about more and more in social media.
The thing about, you know, a prenatal vitamin when they did the frat testing, because that's what you'll hear a lot of parents say, oh, we do frat testing like it. It's still in the research phase. It's not standard of care to do frat testing on anyone or anything. And it was only seen in about 65% of the kids that had the an autism spectrum disorder, which is pretty high, but it's still.
You know, 65%, it was in all of them, but they've done studies like well how do we

get around having these receptors, auto antibodies to get the folate into the into the system. Well, so they said leukovorin since that gets, you know, methylated in the GI tract and if you give a large enough dose you can bypass some of the.

Feedback loops. They did a couple of different studies that I just wanted to mention. They're small, 47 kids, but 2 milligrams per kilo with a Max of 50 milligrams in a double-blind placebo control study that was for four months. It actually improved communication in 2/3 of them by parent report, which is pretty impressive.

More than the placebo effect and it was double-blind controlled. So please understand they gave it to him and then they didn't give it to him. So it's really understand understand that it's I think it's it's real at least in the in the parents observation of it. And remember communication is the key to all these behavioral issues so it can't cause any.

Well, I I think that that is something to to think about. Another study was with 84 patients. They also gave them 2 milligrams per kilo of the of the the govorin and it decreased their CAR scores, which is the childhood autism rating scale by greater than six points and they were treated for about two years.

With with the leukoborin. So it's just for you to to to understand that it's relatively safe you know in all the studies that I've read you know we give it to pre you know as a prenatal vitamin to to parents to mothers expecting mothers. So it's really I think that it's something to think about. I know that the AAP and the the has not has definitely said you know.

It's still in the experimental phase and that kind of stuff. But when I have patients that are going to Mexico to get stem cells or getting chelation therapy up the road in Austin, or they come in with a headband with the magnetics, magnets on them, I'm actually.

I have to be honest with you guys. I've probably started leucovorin on maybe 30 kids so far. None of them have had any negative side effects, even at the higher doses, and a few of them have shown more vocalizations and maybe talking a little bit more, but they're only starting to come back because I see the kids about every six to eight months.

And I only started this maybe like at the end of March maybe and I do it on a on a case by case basis just because I'm still learning about it.

So the controversies, well, I guess, I guess if you go on social media, Lukovorin is is is controversial as far as like who gives it or doesn't get it. And like it's not that the pharmaceutical companies are trying to keep it away from the families and this and that. It's just that just that we're just still learning more information about it.

One of the big ones is the the whole Tylenol issue and this was the study, the nurses health study to in the Boston, the Boston study were the ones that came up and saying that your odds ratio so 1.4 times likely to have an autism diagnosis if you chronically used Tylenol which is.

More than four times a week or more of Tylenol. The problem is that even though they had 116,000 participants, it was not large enough to be able to tease out why these individuals were using the acetaminophen. Did they have autoimmune issues? Did they have a fever? Did they have, you know?

What was the, what was the reason? So please understand that, yeah, they saw an association, but they didn't find a causation, A cause for the for the autism spectrum disorder. And one of the things we're not hearing is that in that same study 1.7 odds ratio for having ADHD. So obviously Tylenol causes.

Autism, ADHD and a bunch of other things in pregnancy. Well, that's not 100% true. Actually, there's a there was a recent study in in JAMA out of Sweden that had 2.5 million participants following the following the mothers and when they used sibling control.

Studies, the odds ratio was one, so they didn't find any difference in women that took acetaminophen versus as far as diagnosing both either autism or ADHD. So I'm comfortable that I don't think that the tunnel causes an autism. Now I would much rather that a pregnant mom.

Treat her fever so she doesn't have a premature infant. Maybe stay away from ibuprofen. So I still think that if there are circumstances, then I think a child the the mom should use Tylol.

One of the things I wanted to touch base on is these predatory journals, because one thing that I haven't mentioned and it's my absolute last slide is, guess what? Vaccines don't cause autism. And it's been talked about and done studies on them, in my personal opinion, ad nauseam. And I think that maybe our resource.

Need to be channeled in other directions because once I have a once you have a family or an individual that believes that vaccines cause autism, even with data and stuff like that, it's hard to change their minds. And just doing another study to show it is not unfortunately doesn't change people's minds.

So just for you to be aware, these predatory journals, so like RFK, actually Junior, during his Senate confirmation committee, quoted this journal, The Science, Public Health Policy and the Law, about how autism is caused. There's association between vaccines and autism.

But the guy who this journal was printed by an anti anti-vaccine activist and it's not peer-reviewed. It's one of those and you see if you see the New England Journal, there's 15,000 other journals out there that you pay and you can and it facilitates, you know, dissemination of, you know, weak or unvetted information. And unfortunately parents will come in and they'll bring you an article.

Show it to you and they'll be like, I don't want Michelle to have this or one thing that blew up our phones is like frat testing. We want testing for frat or we want all our kids to be on Luka Warren. And I'm like, when I see you in person, we'll talk about it and we'll discuss if that's an option or something that we may or right now wanna try. So the only reason I bring this up is just for you guys.

Be aware that when someone comes in and says, well, it's been published, stuff like that. There's a lot of journals out there that are misleading and they can be misleading. Like instead of being the New England Journal of Medicine, it'll be the New England Journal. It's like they're deceptive in some of the.

Titles and those sort of things. And and parents aren't as sophisticated in reading journal articles and stuff to understand the difference between what's a peer-reviewed journal and what's not. And sometimes if it's in, if it's published or if it's in print, they believe it and they think that that's the law.

Or it's real. One of the hardest things of treating children with an autism spectrum disorder is because we don't know what causes autism. And unfortunately I've said that like 10 times this visit. It is that a lot of there's going to be a lot of opinions. I like to tell some of my closest friends that like if I would have invented a snake oil that that cures autism.

I think I would have already retired or at least bought a small island in the Caribbean. But the Hippocratic Oath says that I tried to do no harm. So it's very important for me to be like as honest with the families as possible and understand that, you know, different families are at different points in their journey with children that have an autism spectrum disorder and that children are different.

We have some kids that are more severe and some kids that are that are less. Wow, that was a lot of a lot of a lot of me talking. The the references are at the end of my on my on my talk. If you if you wanted to Fact Check me, are there any questions out there?

Escaname, Elia 53:40

So, Doctor Fira, thank you so much for your wonderful talk and for the clear explanations and double examples. I think your insights are fundamental and really valuable. So I'll open up the floor to questions. Feel.


Fierro, Mario A 53:40
So Doctor, thank you so much for your wonderful talk and for the pure explanations and the whole examples. I think your insights are fundamental and really valuable. So I I'll open up the floor to questions.


Escaname, Elia 53:55
For those who want to drop it in the chat, I'll be monitoring.


Fierro, Mario A 53:55
For those who want to drop it in the chat, I'll be monitoring. I've had one of the questions for Doctor Gross from Doctor Gross is have I had I've probably I've been doing this for 22 years. I probably have had a handful of kids that had the diagnosis of autism that improved to the point where.
I don't think that they meet the criteria to have that classification, but I've seen improvement. I have very few kids that haven't improved at all, but a handful of kids that I feel no, they don't need a diagnosis. I did have a dad asked me the other day. He's like.
So when does he lose the diagnosis of autism? And I told him, because he's a pretty high functioning kid, difficulty making friends, that kind of stuff. And I told him, hey, when he can get out of a speeding ticket by talking his way out of it, we'll have that conversation. Maybe I'll drop the diagnosis. He's like, oh.
OK. So, so yeah, I have seen it, but it's very few and far between and then it makes you wonder, you know what what that was happening. There's another question as far as like this insurance cover with Luca Warren. You know what some insurances do. And so I've been, I've been writing it for everybody, but what I what I end up since I've only done it like I said 30 times.
I tell the parents that if if the if the insurance charges them more than like $40, then you can actually get something similar, similar MTHF online. You know we can do go go about it a different way, but I at least try to go through getting it, getting it through the insurance companies.
And for the most part, they've actually been paying for it, and they don't require like

they're not requiring any tests. Um, vitamin A.

The literature, the literature for for for for vitamin A and vitamin D for example, it's it's it's very it's it's iffy. It's it's not they're not really good studies there. There's theories about how it how it can help with some of the children I think.

That.

If it's done in low doses, I'm like, if you really believe in it, you can try it. But there's not. I don't put all my eggs in one basket. I think that the where you get your bang for your buck is working with individuals and trying to figure out the best way to help someone learn to communicate if it means using an automatic communication device.

Learning how to use signs, being in a in a school, a school program, specialized school program versus ABA. One of the things that I did not mention is that ABA therapy, although it's the one modality that's been shown to show improvement and like I said, adaptive and cognitive skills, it's not meant for everybody because it's very intense and some kids.

Don't do well in it because it is like I call it the ultimate tough love approach. Like if you don't do what they're expecting you to do, then you don't get what you want. Now there is there is one subset and I didn't want to go into into the weeds, but it's called naturalistic ABA therapy, which you might have heard that early downer model is usually is one of them.

It's a little bit different and they they kind of follow the child around and use whatever they're doing as a means to try to work on their communication skills, be it either joint attention, pointing, nonverbal communication, answering, you know, labeling things or the most important thing for me is can they answer yes or no questions or can they answer questions?

Once you can get them to that point, well then obviously I can get information back and forth where they at least can convey things more fluidly with with us. And do all kids get to that point? No. But that's the ultimate goal to to to help their communication skills so they don't get frustrated and you have less of the behavior issues and problems.

So no, I do not do a FRAT testing because even it's funny, if you actually read the studies of the kids that had the auto antibodies that were positive, they did have a slight, they said they had a little bit better improvement. I think instead of like 66% improvement, they only had like a 70% improvement.

And I actually called some labs around and they it's not, it's not a regular lab that gets done. So I think that it's still in the research stage, but it's not, it's not precluding me for trying it with certain families to see if it makes a difference, especially if we've tried a lot of other things before and you know they're very hesitant about wanting to move on to to medication.

Or they've already tried a lot of different things and they just did one more thing. I'm like, I'm not here to impede things. I want to be an asset to these families, you know, moving forward.

So must must must must ABA clinics. I'm sorry, the question is the is there a Medicaid coverage or after the age of 12 for ABA therapy? Most clinics actually don't offer ABA therapy after the age of 12 and it's because the the studies.

Where I don't know if you you remember the analysis was done from like to six years of age. It was roughly roughly done and there are some studies that show that after about the age of 10 or 11 that you don't get a lot of significant improvements in the communication and cognitive skills by doing the therapy if they've been in a.

Now if they're de Novo, I had a kid, a sad case. I think it was a nine year old that showed up and he'd never been diagnosed with autism and and he doesn't have any language, that kind of stuff. And so I'm I'm trying to get him into ABA as soon as possible because his joint attention is atrocious and his behavior is only getting worse because he's starting to get bigger and stronger.

And poor mom can't can't handle him. So to answer your question is it's hard to get any teenager into ABA therapy. Now I can usually get them into behavior therapy, which is not as intense as ABA therapy, and I can get insurance to pay for that.

What was the next one? There's a lot of good, there's there's a lot of. The question was as far as the use of AI or different machines or or technology to help with the diagnosis of autism. I think that they can definitely be a benefit and and a lot of people purport that they can.

More accurate than sometimes even seeing somebody. The problem is autism is such a wide variety and such a spectrum that I think that it does a very good job with the kids that are lower functioning, but that has harder time with the higher functioning children. There are some kids that you've probably come across.

I call them waiting room diagnosis. You can diagnose them before they even come into your room because they're hand flapping and they're going ta ta ta ta. They don't make any eye contact and they only have one thing that they, you know, flap in front of their face. Well, the machines have been really good at that because they focus on like different, different.

Software uses different, different, different avenues of doing it, but as far as like making connections, eye contact, that kind of stuff. There was an interesting study out of I think of San Diego where they had a they showed 18 month olds of.
They had siblings that had autism, so they're trying to figure out if the other child was going to have autism, and they showed them pictures of faces and then pictures of geometric figures. And the kids that ended up having autism were the ones that spent more time looking at the geometric figures than necessarily the faces, which tells you that they just have that difficulty with.
Picking up the little nuances of facial features. So All in all, I think that in the end, I think we all have to think about what how AI is going to change the way that we practice moving forward, regardless of what our specialty is or what we decide to do. But I think that there always will be a need for for for you know.
Providers to be a liaison or to be able to explain things to parents in a different way than maybe some of these software tests can do. Yeah, that's a the question was like, do you see a trend of older teens and young adults being diagnosed? Yeah, I do. And I think it's because.
Because I don't know, I think there's a subset. I know that Abby did a great job of talking about the prevalence of of of autism, but but one of the things that that's hard to do is the rates of diagnosing cognitive delay and mental retardation have gone down as the rates of diagnosing autism. So it was almost like it was.
More cool or PC to have a diagnosis of autism than necessarily being a child that has a cognitive delays and cognitive issues. Now when it comes to the older kids, a lot of kids, when they're feeling different, stuff like that, there's so much information in social media and stuff. I have teenagers coming to me saying I think I'm autistic and I'm like.
Well, I don't really think you're autistic, but we can, you know, we can do some tests and we do some author reasoning. We do some idioms, that kind of stuff to kind of figure out like do they really know how to read the room, those sort of things. But yes, we have seen to, to answer your question, yes, there are more.
Teens and adults being diagnosed with with autism that which increases the prevalence. Although the the the studies that the CDC study stuff like that though that was the the one to 31 ratio is age of 8.
Now I think that we've seen that not going, not being in in, you know, socialized due to like the COVID outbreak and that size of where kids, you know, were were homeschooled or they were, you know, not not having a lot of interactions. I did see

a significant, I did see some.
Difficulties with expressive language delays with some children coming out of COVID and stuff. But the truth is that my rates of diagnosing autism hasn't necessarily increased or decreased since the COVID pandemic. But I do think it definitely played a role because some children didn't get as much of a chance to interact with peers.
To even learn social mores, I had one interesting case where I had a child that the mother had autism and everybody swore that the child had autism. But as soon as we put the child in a Mothers Day app program and then later in preschool, she perked up and she was typical. She was just picking up all her.
Imprinting skills, language skills and social skills from her mother, who was on the spectrum.
Any other questions? I know, I'm sorry, it's past 8:30. I apologize. I tried to talk fast.
Thank you for the opportunity.


Escaname, Elia 1:04:14
Thank you so much, Doctor Fierro.


Fierro, Mario A 1:04:14
Thank you so much, Dr. Fierro.
Have a good day.

Calderon, Delia stopped transcription