

**DR. LAURA CARPENTER:** Hey there. Thank you very much. So I'm Laura Carpenter. I'm a clinical psychologist and I'm here with my colleague, Dr. Jane Charles. Dr. Charles and I have no conflicts of interest to disclose. So during today's talk I'm going to focus on screening for autism in primary care and how to talk to parents about the screening results. And then Dr. Charles is going to focus on treating the common co-morbidities that occur with autism, both medical and psychiatric, and addressing behavioral problems.

So as most people probably know by now, we used to think about autism as having lots of fine gradations. So we talked about PDD-NOS and autism and CDD and Asperger's disorder. And about two years ago the DSM-5 came out and they collapsed all of these disorders into one umbrella called Autism Spectrum Disorder. So this is the diagnosis that's given now for all kids on the spectrum.

Autism Spectrum Disorder is comprised of two characteristics, social communication problems and restricted and repetitive behaviors. So we're just going to kind of briefly go through each of these.

The social communication problems that you see in autism include problems with social-emotional reciprocity. So this is basically the give and take of social interaction. So some children with autism spectrum disorders simply have no interest in initiating or responding to social interaction. These are the kids that don't respond to their name, they don't approach people when they need help, they sort of seem like they're in their own world. But there are also lots of kids on the spectrum who make unusual social initiations or unusual social responses. So these are the kids that come up to other people to interact with them, but they interact with them in unusual ways, like stroking the skin on your elbow or something.

People with autism spectrum disorders also have problems with nonverbal communication. So if you think about social interaction, so much of what we do in social interaction is nonverbal. If you think about, let's say, a six-month-old baby who doesn't have any language yet-- they don't understand what you're saying to them, they're not able to speak to you-- and yet a six-month-old baby is incredibly social and interactive. They're able to make eye contact with you, they're able to share warm back and forth expressions with you, you can tell when they're mad, you can tell when they're happy, you can tell when they're scared. And also they can read your emotional expressions. So babies can be very tuned in with sort of the emotional valence in the room. So people with autism spectrum disorders have trouble with the nonverbal aspects of communication. That can be eye contact, facial expressions, gestures.

And then finally, people with autism spectrum disorders have trouble developing and maintaining relationships. So most kids with autism have a really hard time making friends. Sometimes they're not interested in other kids. They might seem oblivious. But at other times they might be very interested in making friends with other kids, but they might violate social rules or say things that are unusual, and it makes it really hard for them to maintain relationships.

So in order to make a diagnosis of autism you have to have all three of these characteristics. You also have to have two out of four examples of restricted repetitive behaviors. So these can include things like repetitive speech, motor movements, and use of objects. So repetitive speech are things like echoing things that you've heard or saying the same thing over and over. Repetitive motor movements are things like hand flapping, finger flicking, rocking, spinning, bouncing, doing the same motor movement over and over. And then use of objects. You can see in this picture-- this is a child that's instead of playing functionally with their little cars they've just sort of lined them all up in a very particular order. So that would be sort of repetitive use of objects if the child just lined their cars up over and over, opened things over and over.

People with autism tend to have problems with change. They tend to be very rigid. Sometimes they display rituals. So for somebody with autism a simple change like buying new clothes or having a substitute teacher or having their mom change the way they do their hair can be incredibly distressing. And in people that have autism that are non-verbal, oftentimes it can seem like they're having meltdowns or behavior problems for no reason at all. And really the root of it is this resistance to change, and the people in their environment might not even recognize what that change is.

People with autism often have restricted interests. So an obsessive interest in something like Thomas the Train or an interest in something unusual that other people aren't as interested in, like vacuums or drainpipes. And finally, people with autism may have hyper or hypo-reactivity to sensory input. So if you think about your senses, your taste, vision, sight, hearing, proprioception, touch, some people with autism are hypersensitive. Like, they become extremely distressed by sounds that don't bother other people or lights that don't bother other people.

But we believe that some people with autism might also be under-sensitive, and so they may seek out sensory input. They might come and seek out certain textures to touch them over and over or drop things from the same distance to hear that same sound over and over, rewind the videotape over and over to hear a tiny little five second clip of sound. And so these are-- we call them sensory-seeking behaviors.

What I'm going to do now is play a little clip for you. This is a clip I pulled off of YouTube like 10 years ago. Very grateful to whoever this mom is for posting this, and I'm sure this little guy has grown up and is hopefully doing much better now. What I love about this clip is that it's maybe a 50 second clip, and based on it we can see so many examples of autism. And we'll talk about that in just a second.

[VIDEO PLAYBACK]

[CHILD MOANING]

**SPEAKER 1:** Hey, buddy.

[CHILD SQUEALING]

Will you come here, please?

[CHILD MOANING]

Mason, you want crackers? You want crackers?

[CHILD MOANING]

Hey, hey, hey.

You want crackers? No cinnamon roll?

**DR. LAURA  
CARPENTER:**

OK. So what you can see with this cute little guy is you can see some examples of poor social reciprocity. So mom is calling his name and he's just simply not responding to her. In fact, he's acting like she's not even there. You see very poor nonverbal behavior. So he's not making any eye contact with people in the room and he's got this very flat facial expression. He's definitely enjoying what he's doing, but he's not sharing that enjoyment. So you think about other kids that might spin in circles and get dizzy and then they look at their mom with this bright, silly facial expression, like, "look what I did." But this little guy is not doing any of that.

And then in terms of his difficulty with relationships, you can see that he's really enjoying his play completely on his own. He has no interest in drawing other people into it, into pulling mom in to do some spinning with him. And you can also see some real nice examples of restricted repetitive behaviors. So in terms of the repetitive behaviors, you see him repetitively spinning in circles. He's got tons of toys in that room and no interest in them, just interested in spinning. He's making these real unusual sounds over and over, making the same intonation.

And then-- it's a little hard to see some things on this. For some reason the video didn't turn out quite as good on the main screen as on my computer, but he's doing some very subtle hand posturing which also can be associated with autism.

I didn't see any rituals or special interest, but another thing that might have been hard to see on the main screen is that, as he spun in circles he was looking at things out of the corner of his eye, which I think is a visual sensory-seeking behavior. So obviously we would never make a diagnosis of autism based on a 40-second video, but I think this really gives you a good idea of what classic autism looks like.

Unfortunately if all kids were this easy to diagnose, we wouldn't need screening and assessment procedures. So let me talk now about screening, because not all kids with autism have that severe of symptoms.

So, as most of you know by now, the AP recommends that babies be screened at the 9, 18, and 30-month visits for general developmental screening. And if you don't do a 30-month visit then you want to do it at the 24-month visit. But they also recommend that autism be specifically looked for at both the 18 and 24-month visits. You can screen a little bit earlier if you have concerns or if there's risk factors present, like the child has an older sibling with autism, but definitely you want to screen at both of those visits.

It's really important that the screening be repeated. So if the baby passes the screen at the 18-month visit, it's still important to go ahead and re-screen at the 24-month visit, and that dramatically increases the sensitivity of our screening process.

We know that kids with autism who get intensive early behavioral intervention-- we're talking 25 to 40 hours a week of intervention beginning hopefully very early in life-- can have dramatic gains. And many of those children can actually be placed onto a normal developmental trajectory after three years of treatment. And that's why we want to pick autism up as early as possible. In South Carolina we've had problems where, if kids don't receive a diagnosis by age three there can be lots of barriers to getting services after age 3. So it's just another reason why we don't just want to watch and wait and see how things go, because it can create barriers in getting services.

This screening does take time, although I hope you'll see by the end of this presentation that it can be incredibly quick in most cases. But what's good to know is that you can get reimbursed for the time you spend screening. So the code 96110 is developmental screening tests completed by parents, and you can report 96110 multiple times in a single encounter.

So if you have-- let's say you did three screening measures-- one by mom, one by dad, and one by teacher-- you can either bill that as three units of 96110 or you can do a 96110 and then two 96110s with the 59 modifier, which denotes just a distinct procedure on the same day. And then if you spend a lot of time addressing the abnormal screen, then you can go ahead and do an additional ENM code to bill for your time for that as well.

The screening instrument that Dr. Charles and I advocate for use with young children is called the M-CHAT. We love the M-CHAT because it's very well-normed, it's super quick, super easy, and most importantly it's free. So you can just go to [M-CHAT.org](http://M-CHAT.org) and download it. It literally takes less than five minutes for the parent to complete and less than five minutes to score. You can give it to kids anywhere between 16 and 30 months of age.

Just real briefly, this is the 20 items on M-CHAT-R. Some of you might be familiar with the original M-CHAT. There's been some improvement since the original M-CHAT. The M-CHAT-R came out in the last couple of years. But basically all yes and no questions. You know, does your child understand when you tell him or her to do something?

Real briefly, the scoring is pretty straightforward. If the child gets a score of 0, 1, or 2, then that's a pass. They're fine. They're done. And if they get a score of 8 or greater, then that's an automatic fail and they need to be referred for assessment and early intervention. That should be about 90% of the cases, should fall into one of those two categories, either a very clear pass or a very clear fail. Only about 10% of the time in primary care are you going to see a score between 3 and 7, and in that case you're going to administer the M-CHAT-R followup, which I'm going to talk about in just a second. And then if they still have a score of 2 or greater after that time, then you treat it as a screen fail.

You can do the M-CHAT-R followup on paper, but I think it's a lot easier to do on the computer, and you can do it right on the website. So basically what they're going to do is they're going to take each item that the child failed, and they have a very brief followup interview. So let's say the child failed, does Joe like climbing on things? Parent answer is no, then you just say, please give me an example of something that he or she enjoys climbing on. Does she enjoy climbing on stairs, chairs, furniture, playground equipment? If they say yes to any of those, then it's a pass. If they say no, then it's a fail.

Once you've reached two failed items you can stop, because that's a screen fail. But many times when you go through these in an interview with the parents then you find out that a potential screen fail is actually a pass and you can avoid unnecessary referrals and unnecessary stress for the family.

So the followup interview itself literally takes less than 10 minutes, because you really only have to get through a few items in most cases to figure out if it's a screen pass or a screen fail. And again, this is only even 10% of the cases that you're administering it to, so it should go pretty quickly.

So any high-risk child should be referred on, and I'll talk about those referrals in just a second. But this is a child who gets 8 or more on that initial M-CHAT or 2 or more on the followup interview. And just a reminder that we need to be particularly vigilant about our baby siblings who have older siblings with autism spectrum disorder. They have a 15 to 20 time greater risk of also having an ASD diagnosis. So in our clinic we're really careful about monitoring those baby sibs. We ask parents to bring them with them to their appointments, and we hope that also with the pediatrician's office that they're getting real close monitoring.

There are also a few genetic disorders that are closely linked to autism, including Fragile X and tuberous sclerosis, so if you have a child with those diagnoses you want to monitor them carefully as well.

OK. So after a baby has had a high risk screen, there's two things that you want to do. One is refer them for a diagnostic evaluation for autism, and two is to concurrently refer them for early intervention. So you don't want to send them for a six month waiting list, or longer in some places, and have them not get any intervention during that time. They can still be getting early intervention even before the diagnosis. Of course you want to rule out any other potential medical causes, like hearing impairment.

In our state the three developmental evaluation centers are located at Greenville Hospital System, USC School of Medicine, and MUSC. There are also some licensed private practitioners who do autism diagnoses as well.

So when you're talking to a parent about a failed screen you want to focus more on the behaviors and the milestones rather than the diagnosis. So you might say something like, I notice Conner is behind in some of his milestones and, like you mentioned, he's showing some unusual motor movements. When we see these kinds of behaviors we want to get more information so that we can rule out broader developmental concerns like autism. What are your thoughts about seeing the folks at developmental pediatrics for a more in-depth evaluation? So you're getting the parent on your team and you're treating them as a stakeholder in their child's care.

You want to talk to them about what they know about autism. So say, have you ever considered that Joe might have an autism spectrum disorder? And then say, what comes to mind when you think about autism? There are many people out there who have an incredibly skewed perception of what autism is, so they think only of incredibly low-functioning, impaired people, they think only of *Rain Man*, and it's important to help them understand that autism is truly a spectrum and that many kids on the autism spectrum are incredibly bright but have these social problems and repetitive behaviors.

It's incredibly important in this journey-- you know, autism is just one part of your care of this family, and you need to keep them on your team. So make sure that you're valuing their input and citing them while you speak. So you could say, I'm seeing some of the behaviors you were concerned about like Connor not listening and clapping a lot, but I also see a lot of strengths, like he seems to really enjoy being with you and his siblings, and I love how affectionate he is. So you're relaying back to them what they said to you, but then you're also bringing your own observations.

It's helpful to prepare the parent for the diagnostic evaluation process, and so I just want to tell you a little bit about what you should expect from your referral. A good diagnostician should do a very thorough record review, so it's important that the parent bring all their records or send them in prior to the evaluation.

Autism is a developmental disorder. So if you have a nine-year-old that's not making eye contact and is flat and doesn't have any friends, that can look a lot like autism, but if you don't understand the developmental history you might miss something like depression or prodromal schizophrenia.

A good diagnostician should take the time to do a very comprehensive parent interview, which means that the child's going to need something to entertain themselves during that time. A good diagnostician should do direct testing with the child, not just listen to what the parent says and make a diagnosis. What we use in our clinic is called the ADOS, the Autism Diagnostic Observation Schedule. It takes about an hour and parents can expect to be in the room with their child if they're younger or nonverbal.

Some clinics vary when they give feedback to the parents. Dr. Charles and I in our clinic try to give parents feedback the same day whenever possible, but there are some clinics that wait two weeks in order to collect more information and formulate the case and then they do feedback. So you might want to just give the parents a heads up to ask about that in advance so that they're not disappointed.

And then at the end the parents should get a comprehensive report, and you as a referring provider should also get a comprehensive report about the results of the evaluation. It's helpful to let families know that the school is going to be doing a different evaluation process than the medical diagnosis. A school classification of autism has different criteria than a medical diagnosis of autism. So they're going to have to do their own testing, and they may come to a different conclusion than the medical professionals.

I stuck this site up here for those who are able to pause. These are just some resources in our state. You know, for kids up to 36 months of age you want to refer to our BabyNet program, and then above 36 months of age you want to refer to Child Find, which is the school district programs. The Department of Disabilities and Special Needs Autism Division in South Carolina provides services for children diagnosed with autism. And we currently have a waiver program to pay for therapeutic services for autism. This is sort of in flux right now as we are interpreting new Medicaid guidelines in our state. And then finally kids on the spectrum often qualify for supplemental Medicaid, which can help pay for a lot of the therapies that the child needs. And that's called TEFRA in our state.

So I'm going to now introduce you to Dr. Jane Charles, who is a developmental pediatrician specializing in autism.

[CHATTER]

**DR. JANE**

Does this look right? OK. Well, thank you so much for having the two of us here to talk today with you all about autism spectrum disorders. And my part of the show is on managing behaviors which are very common in children with autism spectrum disorders.

**CHARLES:**

I've nothing to disclose. I will be discussing some off-label use of drugs, but I will mention them when I do.

OK. So this is what we're going to kind of cover today. We're going to talk about the different symptoms associated with autism, core symptoms versus associated symptoms, co-morbidities and dual diagnosis. and what that means. Different approaches to treatment of disruptive behavior through behavior assessment, through putting a positive behavior intervention plan in place, and then what the role-- finally the role of medication. I'm going to talk a little bit about medication use and using a symptom approach, how to use specific medications and management of sleep disorders.

So Dr. Carpenter went over the DSM-5, the new core symptoms which are really just two, social communication-- So the two on the top and the bottom of that triangle-- and then repetitive behaviors in interest. And then I stuck the other one up there that is part of a core behavior but certainly has a lot of influence on children with autism on their overall behavior, the sensory integration issues on the side there.

OK. So associated symptoms-- and it's compared to the core symptoms of autism, which we use to diagnose autism-- associated symptoms are the other symptoms that kind come along with autism. And I call them the symptoms that interfere with living and learning. They're the things that disrupt class activities, they're the kinds of behaviors that keep you from going to the Wal-Mart or going out to restaurants. We know that at this point there's no real drug therapy for the core symptoms of autism, but we can use medications and behavioral intervention and therapies to work on these associated symptoms to improve overall functioning in the community and at school.

Oops. Forward. Sorry.

So these are some-- it's kind of small print, but these are some associated features that we found through a surveillance project that MUSC's been working on called the ADAM Project. It's an autism surveillance project. And in red, I just picked out a few. These are-- we found these in kids with autism who were 4, 8, and 15.

So you can see the first one, aggression, you can see almost over half the kids-- except an 8-year-old-- have issues with aggression. Look down under hyperactivity and see well over half, almost 100% for the 15-year-olds, have problems with attention and impulsivity. Interestingly, under the DSM-4 a diagnosis of ADHD cannot be called alongside a diagnosis of autism spectrum disorder. Now with the new DSM-5 you can have a co-morbid ADHD diagnosis.

Down on the bottom, again, another associate feature that would really interfere with your living and learning are temper tantrums. And you can see over half the kids indeed have temper tantrums.

So I want to talk about this so-called "dual diagnosis" and co-morbid psychiatric disorders. So the prevalence is estimated that well over a third of all the people with intellectual disability and autism also have a psychiatric disorder co-morbid. So this is obviously much higher than in persons who do not have a developmental disability.

One thing that you kind of come across sometimes is a term called diagnostic overshadowing. And that's when a behavior or a symptom is blamed on the child's autism instead of being an individual or a separate kind of diagnosis. So, let's see. Here's a couple of articles that looked at the prevalence of co-morbid psychiatric disorders. Simonoff found one. 70% of any, at least one disorder, and 41% of the sample with two or more. Frequently social anxiety, ADHD.

In another study in the Interactive Autism Network, which is a huge database that parents can input data information about their children, found out looking at over 35,000 kids with autism spectrum disorder that at least 30% had had at least one and 14% had at least two. The most common were ADHD, anxiety, and depression. And we see this clinically, certainly, in our patient group. The two top are ADHD and anxiety.

OK. So how do we treat disruptive behaviors? So the first thing you want to do if the kid comes into your clinic and the parent says, there has been a change in behavior. So you want to identify that. And before going ahead and kind of blaming the autism or the developmental disability for that behavior, you want to rule out a medical issue.

And so you do number one. I'm going to go over all of these listed. You do a good review of systems. You want to evaluate the environment for any sensory issues that might be annoying and causing anxiety. You want to evaluate the environment to make sure that there are visual supports, which are the way that children with autism are best taught, best learn.

You want to make sure that the behavior, if the behavior is very disruptive, that the teacher-- if this is in the classroom-- does a functional behavioral assessment and does a behavior intervention plan. We want to see if the kid can communicate. If it's a nonverbal kid, does he have any kinds of alternative types of technology to communicate? And then at the very end we want to talk about medication and make sure that the behavior is not due to side effects. So I'll go over these.

OK. So definitely get a medical evaluation to rule out any source of discomfort. You want to stay on top of chronic issues like allergies. Like in the springtime we want to make sure that they have their Nasonex and any kind of anti-histamine. We want to make sure if they have a history of constipation, which is very common, that they're using their stool softeners and that the parent hasn't stopped just because the kid was getting better.

Reflux is kind of hard to figure out if the kid is nonverbal. Sometimes we even put a kid on Zantac or another type of PPI just if we suspect reflux. We want to make sure that they're getting dental care periodically. And it's tough to find dental care for adults with autism spectrum disorder, and especially if they have behavioral issues. A lot of times they have to be taken to the OR just to have their teeth cleaned. If it's a teenage girl we want to consider whether we're having kind of a PMS-type situation and often we'll put them on oral contraceptives or depoprovera. And also you want to find out if they're having any sleep issues, because if you're not sleeping at night you're not going to behave well the next day.

So I want to talk a bit about visual supports, and I'm going to have several slides because I think this is a very, very important part of managing a kid's behavior. I believe that visual supports are more powerful than drugs. They really are. They are easy to use. You can use them with all types of cognitive levels and ASD severity. And they're very simple. It's a very low-tech-- you can make them high-tech, but it's indeed a very low-tech kind of approach to managing behaviors.



We have to remember that people with autism and intellectual disability have communication problems. They have social communication problems, but they have problems also understanding what is going on in their world and problems of expressing what is going on inside them. So they may be nonverbal. They also have difficulty processing directions. They've kind of language processing. They have difficulty with facial expressions, part of their social communication issues. They don't pick up on environmental cues, they don't pick up on when someone looks irritated at them. They don't understand different tones of voice. They also have a very poor auditory memory. So when you tell them something and give them instructions, they may not remember. It just kind of may go right through. They may not comprehend and so they don't really remember it.

So we know that since they don't remember things, we step in and use visuals, because they're visual learners and their visual memory and comprehension are definitely a strength. If you think about it, pictures and words are permanent-- pictures and written words. But vocalizations just appear. So it comes out of your mouth and goes in their head, and then it's gone. But if you have something that's on a picture or a schedule then that's something that they can see and they can hold and remember it. Also environmental noises like the buzzing and humming of fluorescent lights, children talking, don't interfere with pictures because they're just there.

So a visual can show what a kid should be doing, what is expected of them in a certain situation. I'll give some examples. It shows when things will happen and why things are going to happen. It also helps to generalize social kinds of rules. So children with autism, they learn how to behave in one exact situation are not going to remember, are not going to know to behave the same way in another situation. So you've got to teach them how to behave in each situation.

It's also children with autism are very rule-oriented, and if they can learn certain rules for how to behave in a certain situation then it's easier for them to do that than getting in the situation and kind of getting stressed out and anxious about when they're trying to figure out what they're supposed to be doing.

So there's some different types of visuals. There's visual schedules. And these are very low-tech. It identifies what the kid is going to be doing during the day. And it's very good in case there's a change in routine. So they can know ahead of time that they're going to go, for example, that they need to go to the dentist. They can have on their visual schedule that they go to school, eat lunch, play, mom picks them up. And then generally, for example, they might get on the bus, but today on their schedule it'll say, "mom picks you up to go to the dentist."

It also can have a kid show what work they have to do before they can do a preferred kind of activity as well. And they know that they can see it on the schedule, so they know it's coming. And so they will be more likely to get the work done if they can see what they can do next that they like. So here's just a very simple morning schedule about going to school.

And so you wake up, get dressed, take your medicine, and get ready to brush your teeth, and get your backpack, and get on the bus. So if there was something different, instead of waiting for the bus, if they decided that today that the kid was going to come see me in my office instead of wait for the bus, they might have a picture of me actually or a picture of our clinic. And I have a number of patients who do that.

I had a patient recently that was-- mom picked him up to come to the office and he was-- he comes to the University a lot. He has a lot of medical issues. And so he was crying because he wasn't-- even though she told him he was coming to see me, he still cried. So she pulled up this ancient picture of me from the directory at MUSC taken about 25 years ago and showed it to him, and he immediately stopped crying. Because he knows when he comes to see me nothing-- I don't do anything to hurt him. No shots or anything. So that was-- how powerful that was, and her telling him that she's coming to see Dr. Charles was not effective.

OK. So another very powerful tool are our Social Stories that are kind of like Berenstain Bears books. They're very concrete. It explains and tells a kid how to do things and what is expected, especially in new or unfamiliar situations and all.

So remember the Berenstain Bears? So you read these stories many, many times. And even in children who are pretty severely affected cognitively who do it over and over again-- these stories are written from the child's perspective. If you do it over and over again then it's pretty effective. We recommend these all the time.

OK. So another thing you need to do when a patient comes in and has just disruptive behavior, you want to do a good review of systems, remember. You want to make sure that there's nothing medical that's bothering them. You want to make sure their visual supports are in place and that the kid has a way to communicate.

Well, the school also has a responsibility to do. With the child's behaviors interfering with the learning, the school is required by that IDEA Act to do a functional behavioral assessment. And that's if you think back to your old college days when you took psychology, a functional assessment is when you look at a child's behaviors, you do the A, the antecedent, you look at the behavior and figure out what preceded it, the antecedent, and what were the consequences of their behavior. And after that is done-- it's usually done by observations hopefully by a qualified psychologist or other-- the next part is to create a positive behavior intervention plan and to try to get the behaviors under control.

OK. So again, let me just review. We have core symptoms, we have associated symptoms which interfere with living and learning. If the kid comes to your office because he's being disruptive you want to make sure that they've done a good review of systems. You want to make sure that they have visual supports in place, that someone's done a functional assessment, and there's a behavior intervention plan in place.

So if you had the behavior plan and there are still some problems, then it's actually much easier to kind of figure out what's going on. So when the parents come in and they say, oh, everything's terrible, nothing's happening, he's been sent home from school every day-- and it's hard to kind of define what terrible is, so I usually have them tell me what are the top three behaviors that are interfering with living and learning. So one might be hitting, one might be being hyperactive, and not sleeping or something like that.

So these are the kind of symptoms that often they will come and talk to you about. ADHD, anxiety, aggression, impulse control problems. So OCD stuff, so getting stuck. Maybe they have such a rigid routine about how they get ready for school in the morning that they sometimes get stuck in their routine and they can't move on. Mood issues, sleep problems, tics. Tics are very common in children with autism, very common in children with developmental disabilities. Self-injurious behavior, so like head-banging or biting, and property destruction. And a lot of these you can kind of clump together.

So I'm going to go over the different meds you can use. If you want to look at inattention, hyperactivity, and impulse control-- so the typical ADHD combined-type symptoms, your first choice I would go with are stimulants. Even though stimulants are not quite as effective in people with ASD and developmental disabilities than typical ADHD, just plain old vanilla ADHD, but it's always worthwhile to try.

So often hyperactivities-- they're not so great for just the focusing issue, but hyperactivity impulsive behaviors. Also you're at higher risk of having side effects if you have autism and ADHD from the stimulants, so you definitely want to start with a very low dose and go slow, titrate very slowly until you get the expected effects or desired effects or side effects.

The alpha-agonists-- we use those a lot of times, especially in young children with autism who have significant hyperactivity and impulsivity and maybe dangerous behaviors like climbing up and jumping off the roof or something, trying to jump out the windows. Stimulants are less well-- are not well-tolerated in very young children with autism, so sometimes we go with the alpha-agonists first and give that a try first to help with being impulsive. So you got guanfacine and clonidine are the two alpha-agonists, and the long-acting forms of those are intuniv for guanfacine and kapvay for clonidine.

And again, I call these-- the alpha-agonists-- I call them the fight or flight drugs. So when they get revved up they want to hit somebody or throw something or do something dangerous, then it kind of takes the edge off. It basically just kind of takes the edge off.

So atomoxetine or Strattera is another ADHD medication. We don't find that to be particularly effective. It takes about eight weeks to see some results, and generally I don't know that we use it too much in our clinic. But it's out there.

OK. So next we're going to look at anxiety, see how we can clump some of this stuff. Anxiety, obsessive compulsive behaviors, and perseverative or repetitive behaviors.

OK. So these all kind of overlap together. And I think anxiety is kind of the basis, the core, really the root of the issue. And you should go ahead and treat them with SSRI antidepressants like you would in a kid without ASD. Truthfully, there are not many studies that show that that works. However, generally it is worthwhile trying, and I certainly have a number of-- clinically we do see parents who say that it's working.

And one big issue using SSRIs is that one of the side effects is activation. So to avoid that-- it's kind of a jitteriness-- we want to start with a really low dose and titrate very slowly. And you'll see activation more frequently in kids with lower cognitive levels, and it's often difficult-- it takes weeks to reach an effective dose, but it's worthwhile to try especially if nothing else has worked.

It's also a pretty benign drug. It's usually worth trying for targeting anxiety and getting stuck in routines. OK. Let's talk about disruptive behaviors. So these include tantrums, meltdowns, aggression, throwing things, property destruction, self-injurious behaviors, and elopement.

So elopement is running away, and it's very common in people with autism. In fact, it now has its own diagnostic code. If you type it into Epic it'll pop up. And it used to say wandering ectopic beat, but now it says wandering for-- it's also called wandering. From our data with our surveillance project here at South Carolina we found a rate of self-injurious behavior up to 40%, aggression 40% to 60%, and again being oppositional and obnoxious and argumentative up to 60%. So it's very-- it's common. It's out there.

OK. So again, using meds like in the ADHD. We'd like to go-- for violent behaviors or aggressive behaviors, try to go with an alpha-agonists first, the clonidine or guanfacine, mostly because the side effect profile is much more benign than the side effect profiles for neuroleptics or anti-convulsants and all. Side effects for alpha-agonists are usually sleepiness or you could get some dizziness and sometimes, rarely, you can have nightmares too.

If you do the alpha-agonists first and it helps to take the edge off but then things get worse, neuroleptics are the next kind of line to go. Abilify or aripiprazole and risperidone have both been approved for children with autism spectrum disorder age six and up. And these target agitation and aggression.

The side effect profile is kind of lousy though. We have significant issues with weight gain and such, then the risk of diabetes. So we have to check frequently lipids, we want to check hemoglobin A1c. It's always good to get a thyroid if you're checking levels because if there's thyroid issues it's something you can fix. Then your routine chemistries. We can also have concerns with movement issues, tics, and parkinsonian-type movements.

OK. So we're going to talk a little bit about how to do meds. You know, it's one thing just to say, try this, try this. One thing you want to do is don't keep-- every time the kid comes in if something is not working, the behavior is changing, don't keep changing meds one right after the other. Try to keep as hard-- if things aren't going well, if the kid's about to be kicked out of school, you may have to tell the school that, you know, we're working on these meds and I'm not going to change the dose 15 times so that you all can get some kind of result. You want to-- now, if the kid is having significant side effects or if it's not at all working then we may want to switch, but just don't keep changing just because the drug didn't seem to work at the time.

Risk and benefits must be clear, of course. You want to start low and go slow. That's kind of the mantra. One thing you need to remember, too, that you have to find out whether the kid can actually swallow a pill or not. Some of these medications are extended release and you have to swallow them whole. You cannot break them up. Especially the long-acting alpha-agonists intuniv and kapvay. We frequently see kids trying to bite those, and it just is not going to work. And one of the stimulants, concerta, also has to be swallowed whole and you cannot break that up.

When you talk to parents about meds you want to include-- you want to talk about adverse effects. You want to talk about what expected effects are. You want to tell them, this is what we're looking for, this is not what we're looking for. The most important thing, too, is to monitor the effectiveness as well as the side effects.

We give pre and post-behavioral checklists to parents and teachers every time we make a med change or a dose change, especially we have small behavior checklists that are available online, the Childhood Attention Profile. It's called a CAP. It's a one-page check-off sheet and we give those to parents every time we make a med change, or the teachers, and the teachers can just fax them right in and we can score them. Very easy.

OK. So if the teacher calls or the mom says, the teacher called me and said these meds are not working. Did he get his meds today? Which is pretty obnoxious. You want to make sure first off that the kid's actually getting the medication, and are they getting an adequate dose. You know, if he's only biting something that shouldn't be crushed, then obviously he's not getting an appropriate dose.

Sometimes you want to re-evaluate what your targeted symptoms are, and make sure that your medications are specially designed for the particular target, particular symptom that you're trying to work on.

Sometimes when people are overwhelmed, I think, with a lot of different symptoms and a lot of things that parents are overwhelmed. Sometimes it's hard to get them to knock down and define exactly what we're looking at. You want to make sure that the behavior interventions are in place, they have visual supports.

Sometimes you see where teachers will be doing behavior intervention or have a good visual set up, a good visual schedule and Social Stories, and things get better, and then it gets worse. And then you find out that since he was doing so well at school they took away the visual supports. And I see that happen not infrequently. So it's kind of like-- well, are you going to take insulin away from a diabetic just because his blood sugars are really good for a while? So it's kind of the same thing.

You want to see-- if the med doesn't work, is he having side effects? And you also just want to try to have patience and make sure that you have a long enough trial. So for anti-psychotics you want it up to about two months. SSRIs up to about two months. And you tell the parents that we're not going to see effects for that long, at least for complete, maximum effects.

If you have just a partial trial-- I mean, a partial response, you want to just try to extend the trial out maybe another four weeks or so.

OK. Again, with the meds not working. So you have no response at all. You want to taper that off and try something else in the same family. If you have a partial response you might add another med, an adjunctive med. For example, if you have alpha-agonists for some aggression and destructive behaviors and you're getting some help, then a year later things are getting worse and the kid's approaching puberty when things are going to get worse, we might add an anti-psychotic to that.

If you have them on an anti-psychotic for agitation and aggression and things get worse, you might want to add a mood stabilizer. And this, which is usually one of the anti-convulsants, Depakote or Tegretol, however, that's getting a little tough. And frequently I bring in a psychiatrist to help me with that part.

If the kid is really anxious and agitated and really gets stuck on stuff with obsessive compulsive kinds of symptoms, you might want to add an anti-psychotic to help with the agitation. The SSRI would help with the repetitive stuff, but the anti-psychotic helps with agitation.

If the kid's on a stimulant and needs some additional support, you might want to add an alpha-agonist, like a guanfacine or clonidine. And often for people in South Carolina here, the department of disabilities and special needs has a psychiatrist who is available for consultation for kids who are clients of DDSN, and you can refer them through the county disabilities board service coordinator. The service coordinator is now called a case manager.

And I often, if I have a kid come in, the first time I see him and he looks like he's going to be really tough, I'll go ahead and get a referral in to Dr. Raley because it takes a couple of months to get in. He's very supportive and gives you lots of good ideas on how to manage kids as well.

And I think-- oh, sleep issues. Again, a big reason why kids might be acting out during the daytime is because they're not sleeping at night. Very common in people with autism and developmental disabilities. Because if you think about it, if your brain is different during the day it's going to be different at night. So you have behavior problems in the day, you may have sleep problems. It's really kind of random why some kids have sleep problems, some kids don't. Seems like age, severity of autism symptoms, doesn't really make any difference. They're probably not going to grow out of it.

There's a very good book called *Sleep Better!* By a guy named Mark Durand. It goes over basic sleep hygiene, and then it has chapters on difficulty initiating sleep, and another chapter on difficulty maintaining sleep, and the two together. And it's very good. It's very step-by-step kind of how to take care of things.

If you go to evaluate that, you really want to make sure before you start using sleep meds, again do your really good review system. Look at pain. Are they in, like, dental pain, for example, or indigestion when he lays down? Seizure. Are they having seizures at night? Are they anxious? Do they have TV in the room? Are they playing with their tablet all night? Keep a sleep diary. That's very helpful for the physician to know what time they go to bed, what's your sleep hygiene routine is. There's some parent questionnaires that have to do with sleep as well that are available online.

For medications we often go with melatonin first. If we make sure the sleep hygiene is all in good shape you can have immediate release and extended release. Sometimes, if kid is on a medication that's already somewhat sedating we'll give him a little bit higher dose at night. So clonidine and guanfacine are often we do that.

There are a couple of old antidepressants, mirtazapine or remeron and trazodone are used for sleep because of their side effects. Mirtazapine has issue though because it makes you hungry. And so we see weight gain on that. You can also use benzodiazepines, but we pretty much try not to go that route in children because there's a higher risk of being activated.

And, of course, every time you use meds or intervene do lots and lots of follow up. And that's it.