U.S. FOOD AND DRUG ADMINISTRATION
PUBLIC MEETING ON
PATIENT-FOCUSED DRUG DEVELOPMENT
FOR AUTISM

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FDA White Oak Campus
Great Room, Building 31
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CONTENTS

STAFF PRESENTATIONS:

PROCEEDINGS

DR. EGGERS: All right. I think we'll get started. We're waiting for a few people who are making their way in, but, but we'll get started so that we stay on time. We have a very full agenda of things to talk about today.

My name is Sara Eggers and I am at the Food and Drug Administration Center for Drug Evaluation and Research. You'll hear CDER a lot today. That's what that stands for. I'm in the Office of Strategic Programs and it is my great pleasure to be the facilitator of today's meeting.

It's wonderful to see you all here today, particularly the individuals with autism and the self, self-advocates and family members of individuals with autism. I want to welcome you to our Patient-Focused Drug Development Meeting on Autism.

Ellis Unger will provide some opening remarks in a few minutes, but first let me start by asking my colleagues sitting up here in the front to state their names and where you are from and the agency.

DR. UNGER: Good afternoon, everyone. My name is Ellis Unger and I'm the director of what's called Office of Drug Evaluation 1, and Office of Drug Evaluation 1 oversees the Division of Psychiatry Products.

DR. MATHIS: My name's Dr. Mitch Mathis. I'm the director of the Division of Psychiatry Products. So our division regulates the medications that are approved to treat psychiatric illness.

DR. FARCHIONE: I'm Tiffany Farchione. I am the Deputy Director of the Division of Psychiatry Products.

DR. TOURE: Juliette Toure, Senior Policy Advisor in the Psychiatry Products.

DR. DASHIELL-AJE: I’m Ebony Dashiell-Aje. I'm a reviewer with the Clinical Outcome Assessment Staff in the Office of New Drugs in the Center for Drug Evaluation and Research.

DR. LEE: I'm Kerry Jo Lee and I'm a Medical Officer within the Division of Gastroenterology and Inborn Errors Products.

DR. EGGERS: Great. Thank you.

DR. THOMPSON: Graham Thompson from the Office of Strategic Programs.

DR. VAIDYA: Pujita Vaidya from the Office of Strategic Programs.

DR. EGGERS: Okay. All right. We have a very full agenda today. So we're going to spend a few minutes first with some presentations by my colleagues at FDA to set the context, give an overview of patient-focused drug development of autism, of clinical trial endpoints, and why that's important to our discussion today. And then I'll come back up and give an overview of our discussion format so you know what to expect as we have our conversation today.

Our two main discussion topics are the health effects and the impacts of autism. And then topic two, focus on your experiences and perspectives on current approaches to managing autism. We have set a time aside for open public comment later this afternoon. While our primary discussion is focused dialogue with individuals with autism and their families, the open public comment gives anyone an opportunity to make a comment.

To participate in that you'll need to sign up.

It's first come, first serve. Sign up at the registration table. We'll close the registration at the end of the break or after we reach 15 commenters. The time allowed for each speaker will depend on the number of participants who sign up and it'll likely be around two minutes each.

Okay. As I mentioned, there's no kiosk today with food, but we do have the vending machines and we have coffee out in the front. I hear it's all, it's all caffeinated coffee. And if anyone does need food, please find one of our team members who can help you locate food in our cafeteria.

The restrooms are located in the back of this -- they're about as far away as you can be in the building. So they're at the far hallway in the back and then to the right. And you'll find those there.

We will take a break at about 3 o'clock, but we encourage you to get up at any point, to get up for any reason. Please feel free to do so.

We do have a quiet room that is located outside the hall and behind us here. So feel free to use that room at any time if you need to. And we'll ask you now to silence your phones.

The meeting is being transcribed and there will be a live webcast being recorded. So I do want to take the opportunity to thank the people who are, many people who are joining us through the web today. We will ask for your participation as well. So both the transcript and the webcast will be archived on our website.

And with that, are there any other logistic -- I think, I think those are all the key things I need to say now. So I will turn it over to Ellis to give some welcome remarks. Thank you.

DR. UNGER: Good afternoon, everyone. We're the Food and Drug Administration. We really should be able to find food. So I don’t quite understand that. But if you have trouble, you talk to Sara. And if you're transcribing this, so be it.

Okay. Again, good afternoon to everyone and welcome to this patient-focused drug development meeting on autism. And as I mentioned a minute ago, my name is Ellis Unger. I'm Director of the Office of Drug Evaluation 1 and Drug Evaluation 1 includes psychiatry, which regulates the treatment - excuse me - regulates drugs for the treatment of psychiatric conditions, and also drugs that might assist in managing autism.

And on behalf of my colleagues, I want to extend my appreciation for the individuals with autism and families who are here in the room, and also I know there are a number of people who will be on the webcast and I'd like to thank all of you for being a part of the meeting and sharing your experiences with us.

And we really look forward to sharing an opportunity to engage directly with you and we want to learn about aspects of autism that matter most to your child or to you, and the types of things that make an impact in your daily lives or to your child's daily life. And we want to learn about what's important to you when you think about potential treatments that could address some of the health effects of autism.

Dr. Tiffany Farchione is on my right from Division of Psychiatric - excuse me - Division of Psychiatry Products and she'll provide a bit more background on autism in a few minutes.

We understand that autism is complex and it affects individuals in different ways with different physical, emotional, and social impacts. And many individuals with autism require medical treatments to help manage certain aspects of their condition, and where medical treatments are concerned, it's our responsibility here at FDA to help develop new drugs that matter to people. That's what we do.

And I understand we have many people from industry here, academia, and other government partners joining us to listen. And some are here in the room today. Some are probably on, on the web. And I have a few messages I'd like to convey.

First, although we play a critical role in drug development at the FDA, you might be surprised to learn that we don’t actually do clinical trials at the FDA. A lot of people think we do. That's, that's a misnomer. Clinical research is a lot of hard work and we work with companies and researchers and patient communities to help design the drug trials to establish the drugs are effective and safe. We don’t actually do the trials here.

We approve drugs only when we have scientific evidence that they help patients feel better or function better. That's kind of the rule that we live by. And then once we make that determination, then we have to make a decision in terms of whether the benefits outweigh the risks.

But what we need to know from you is what you value in your daily lives. Basically what, what matters to you. What would, what would, what would give us a clue that you feel better or function better and how one might measure that in a drug study.

So we want to hear what people with autism and their families care about. We want to hear what individuals and families think about the benefits and risks of potential treatments to manage autism, and we want to hear how to develop better ways to measure how well a treatment addresses the aspects of autism that are important to people in the room. And then we look forward to incorporating what we learn through the meeting in, in terms of accelerating and facilitating drug development in this area.

So once again, we thank you for your

contributions to this meeting, and I think that having this type of dialogue that we expect to have today is extremely valuable for, for us and for others. And we're grateful to each of you for being here to share your personal stories. I know some of them are, could be difficult. We want to hear your experiences and perspectives.

And now I'll turn it over to Pujita Vaidya who will provide some background on the patient-focused drug development efforts in general. Thank you.

DR. VAIDYA: Thank you, Ellis. Hello, everyone. I'd like to thank you all for coming today to participate in our patient-focused drug development meeting. We're here today to hear from you, but before that I'd like to give a brief overview on the patient-focused drug development initiative that we started five years ago.

FDA recognizes that people living with a condition have a direct stake in the outcome of drug development, and they are experts in what it's like to live with the condition. People living with the condition are uniquely positioned to tell us about the benefits that would be most meaningful to, to them, the things that bother them the most and perspectives on overall condition. And this information can then inform the drug development and drug evaluation.

Through the patient-focused drug development initiative, FDA is developing a more systematic way of gathering patient perspective on their condition and treatment options. This input can help inform the collective understanding of the therapeutic context of drug development, which is important to our role, FDA's, as regulators and the role of developers and others throughout the drug development process.

As part of the patient-focused drug development drug initiative, FDA's convening 24 meetings in a 5 year, a 5 year period, each meeting focused on a specific condition or a group of conditions.

Here's a quick overview of the list of these specific meetings we have focused on in the past few years. In the five year timeframe you can see that we have tried to cover a broad range of conditions which include several rare diseases, conditions that are chronic, that are symptomatic or have loss of functioning, that might affect functioning, and affect different subgroups as well.

One of the main outputs of these patient-focused meetings is a report which is called The Voice of the Patient Report that captures the patient input faithfully and, and exactly in your own words, in the participant's own words. We take what we hear from you at these meetings, things that we hear from the webcast and through the written docket, and we summarize that and, hoping that we are able to capture this exactly the way that you have expressed it to us today here.

We see this as a useful reference tool for us as it can support FDA staff as they conduct benefit-risk assessments for products under review, or when advising drug sponsors on their drug development programs.

We also believe these meetings can have value to drug development more broadly by helping to identify areas of unmet need, such as aspects of, of patients' conditions that is not currently being addressed in current therapies. This input may also help developers as they identify or create tools used to measure the benefit of potential therapies.

And finally we have seen the potential in these patient-focused meetings to help raise awareness within the community as well. So I hope this gives you a brief and better understanding of our program.

Now I'd like to turn it over to Dr. Tiffany Farchione who will give a brief overview of the condition. Thank you.

DR. FARCHIONE: Thank you. Hello, everyone. And again, as everyone is saying, thank you guys for being here today. We wouldn't be able to do this without all of you who are, who are here in the room and the folks who are listening online.

So for me, I'm going to be talking just a little bit about the actual diagnosis of autism itself. So talking about what it is, who might be at risk for autism. What the clinical manifestations are. Give you a little bit of an idea of some of the demographics, the current treatment options, and some of the challenges in terms of drug development for autism spectrum disorder.

So what I'm going to focus on is just the, the current diagnostic criteria as I'm sure a lot of guys in the room know that criteria recently changed in the transition from DSM-IV to DSM-V. So I'm going to just focus on the current diagnostic criteria.

So in order to receive a diagnosis of autism spectrum disorder, an individual has to have persistent deficits in social communication and social interaction across multiple contexts. So this includes things like deficits in social reciprocity and nonverbal communication. So like trouble with eye contact or trouble interpreting body language. They also have trouble developing, maintaining, or understanding interpersonal relationships.

With regards to restrictive and repetitive patterns of, of behavior and interests, this would include things like stereotyped behaviors, insistence on sameness, restricted interests, and, and sometimes you get either hyper or hypo-reactivity to sensory input. So these are, I think about -- so by way of background, I'm a child psychiatrist.

So I think back to patients that I had where the parents would come in and complain that, you know, my, my son can't stand to have a tag on the back of his shirt and I have to cut all the tags out of his clothing because if it even touches him, he can't stand it. So that would be like hyperreactivity. That would be an example of hyperreactivity to sensory input.

So other things that are on the list of diagnostic criteria, you know, obviously the, the symptoms have to be present in early development. Most often, you know, usually this gets recognized in the second year of life. Although, you know, delays in diagnosis are not uncommon. The symptoms cause clinically significant impairment in functioning. Now this is kind of the criteria that cuts across all diagnoses in the DSM. If it doesn’t impair your functioning, then it doesn't get counted as a disorder in the book.

All right. And then there can't be a better explanation by something else, whether it's intellectual disability or some other global developmental delay. You know, if there's some other explanation, then you don’t call it autism.

So what are the risk factors for, for this? We don’t know what causes autism, what makes one person normal, and what makes another person one way. We don’t know why some people are more severally impacted and others are not. But in the grand scheme of things, it's very likely that there's multiple causes because there's probably multiple types of autism spectrum disorder. There could be environmental, biologic, genetic factors. All of these things are likely to play a role.

So for instance somebody who has a sibling on the spectrum is at higher risk of being on the spectrum themselves. So that speaks to the genetic factors. There are certain genetic or chromosomal conditions where autism is more common like Fragile X or tuberous sclerosis. And, you know, in terms of other biological factors, children born to older parents are at greater risk for having ASD. So those are just a few examples of things we know so far, but there is still a lot that we don’t know.

As far as, you know, if you have a person with autism sitting in the room in front of you, what is that -- how are you going to know? How are you going to recognize that? So I've got a long laundry list, two slides' worth of things that you might notice.

So in little kids, some of the first things that you might notice are that, you know, your child is not pointing to the things that he or she wants. They might not look at an object when another person points at it. Trouble relating to others. Trouble playing with other kids. Not making eye contact. Wanting to be alone. All of these things are part of the, the overall clinical picture.

So, and then a few other things. Not being interested in people or having trouble, having trouble pretending. There's, and then again, like I was saying earlier, some of the manifestations like repeating actions over and over again, or, you know, really restricted range of interests to where like, you know, you can't change the conversation from one topic to another because the person with autism is stuck on the one, the one topic.

So, you know, but when you look at this and you see that there's this broad range of things, it, it's sort of a preview for a couple slides from now when I talk about the difficulty in, in developing treatments, right, 'cause what do you target?

So just to let you know an idea of how common this is, I know that this is -- well, I mean the screens are really big. So I guess it's not as small as I thought it was going to be. But one of the things that has been an issue is that it seems as though the prevalence is increasing. You know, and there's always been this argument like is the prevalence actually increasing or are people recognizing it more? Are we, you know, what's going on?

Nobody really knows, but at least in the last, the last two surveillance periods it seems that things have stabilized. So the, the prevalence is still, you know, it's incidents, rather, is 1 in 68 children. So that is a lot of people with autism. And again, because it's a spectrum, you know, the, the level of impairment or the level of functioning will vary greatly across all of those individuals.

So what do we do about this? As of right now, there are no FDA-approved drugs to treat the core symptoms of autism. So, you know, the things, as far as the social communication issues or the repetitive behaviors and things like that, there's, there's nothing. We don’t have anything approved for, for those features.

What we do have are drugs that are approved for the treatment of irritability associated with autism. And, you know, it's still a piece of the picture that can be very impairing, but it's not, it's not the core of, of the condition.

So the mainstay of treatment at this point actually is, is behavioral therapy, things like applied behavior analysis, the Early Start Denver Model. There are a number of different approaches. We don’t regulate any of those. So, so I can't really speak too much further to that. Again, like the behavioral interventions are the main, the main treatment right now.

But there are a lot of challenges to, you know, developing a drug to treat an aspect of autism or autism writ large. One of the biggest ones is that we just, you know, the pathophysiology of, of autism is unknown. So this means that we don’t like, we don’t know what, you know. So like, for instance if you, if somebody says that you've had a heart attack. Like you know that there was a clot that went to one of those tiny vessels in your heart and it blocked it and then part of the heart died. So that's the pathophysiology of a, of a heart attack, right?

So we don’t know what the mechanism is behind autism. And so if you don’t know what the mechanism is, it's hard to figure out how you target that for treatment. Or for prevention even. And we don’t know. You know, there's probably lots of different causes for what leads to autism spectrum disorder.

We also don’t know what the best endpoints are for, for clinical trials. You know, there are a lot of different diagnostic rating scales. But if you are able to find a treatment that actually makes a change or improves something, we don’t know how sensitive those diagnostic scales are for measuring change. You know, we don’t, we don’t have, we don’t have good scales in order to say like, okay, we're going to look at this or we're going to look at that.

So you end up with sort of a piecemeal approach. Like, well, I'm going to look at social communication and there's this rating scale for social communication. There's this rating for repetitive behaviors. And we're, kind of cobble it together and see if we can come up with an endpoint.

And then on top of that, we're going to get like a global assessment to say, well, you know, sort of general idea are patients doing better. And a lot of that is difficult to translate into a clinical trial.

We also don’t know how long it takes before you see a meaningful change. So say for instance you find something that works, that really helps to, for instance, you know, decrease the number of repetitive behaviors and a person is now able to function better out in the world and have better social interaction, how long does it take before that happens?

You know, and if you don’t know how long it takes before you're going to see that happen, you don’t know how long your clinical trial needs to be. You don’t know at what point you need to assess the endpoint. You don’t know whether, you know, maybe there might be early signs that you could have an earlier endpoint in the trial. So it makes it very challenging.

And we also don’t know like is there a, a window where you can intervene and make a difference. So if there's a, a way to treat, to affect change in a child, is that going to have the same effect on an adult whose, you know, brain is fully developed and all of those things. We, these are things that we don’t know.

And the other big question is where along the spectrum, where along the spectrum do you actually need to intervene, you know, because you have one end of the spectrum where folks are severely impaired and, you know, have like totally nonverbal, intellectual impairments, unable to live on their own, will always require assistance.

On the other end of the spectrum you have folks who are very high functioning and, you know, hold down great jobs and can have a life and a family and all of these things. And then you have everything in between. So at what point along that line would you actually say, well, maybe we ought to do something about this? Like maybe we need a medication to treat that.

And that's part of what we're going to be talking about today because we're well aware that, you know, there are folks who are at this end of the spectrum where they're doing pretty well. They don’t need a drug, you know. They're doing all right. But folks at this end of the spectrum are going to need some help. So where along that line do we, do we interfere?

So just broad overview, the prevalence of autism spectrum disorder has been increasing in the United States even though it appears to have stabilized. Like I was saying, we don’t have any drugs approved at this point. But, you know, I think that speaks to the unmet medical need that we have here.

And there are a lot of challenges that I've just outlined and that we're hoping that, you know, through some of the feedback that we get from you guys today, maybe you can help answer some of those, those questions for us.

All right. And then up next is Ebony and she's going to talk a little bit more about the endpoint issue that I had previously mentioned.

DR. DASHIELL-AJE: Good afternoon, everyone. So today I'm going to take you on a brief journey down the road from patient-focused drug development public meetings to clinical study endpoints. Here's a general disclaimer, that the views that are expressed in this presentation are my own.

So you may be wondering how is the information from these PFDD meetings used? Where do we go from here and how do we take this valuable insight and create clinically relevant, patient-focused endpoints for clinical studies?

At the FDA we believe that PFDD meetings are very important. They provide the opportunity for individuals' and caregivers' voices to be heard. For instance in the case of today's meeting, individuals and caregivers can share their experiences with the health affects of autism in their own words, letting us know what symptoms and impacts are most important to them.

And drug companies want to know this perspective because it can give them ideas about what should be measured in their clinical studies. They can then select and develop questionnaires that measure these important concepts and engage with the FDA as they develop treatments.

The information from these meetings can also help support the FDA's review of clinical trial questionnaires to confirm that they adequately capture the individuals' and caregivers' perspectives on health outcomes.

While the PFDD meetings provide useful information, we strongly recommend that drug companies and researchers obtain additional input from individuals and caregivers through focus groups, one-on-one interviews, as well as engage experts and other physicians when they develop their questionnaires. And this will help confirm that the questionnaires include important and relevant content and that the questions and instructions are clear and understandable by those who will complete them.

Another advantage of these meetings is that they help us think about clinical study endpoints. So what's an endpoint? In the case of questionnaires, the study endpoint would be how the questionnaire score is going to be measured and analyzed in the clinical study.

For example, if individuals with autism or their caregivers are reporting that the most important treatment benefit is symptom improvement, then we would use that information to encourage the drug company to select or develop a symptom questionnaire that meets regulatory standards. The study endpoint could possibly be the change in the questionnaire score during the clinical study, which would measure the amount of symptom improvement.

I should note that many important things are discussed during these PFDD meetings; however, not everything will change with treatment and it would be difficult to interpret results if these concepts are measured within the clinical setting of drug approval.

So since we focus on efficacy and safety at the FDA, a concept like financial wellbeing, for example, may not be impacted by a treatment in a clinical trial setting even though it may be important to individuals and caregivers.

So we encourage drug companies to consider focusing on important concepts that are most likely to reflect the effects of treatment as their main key study endpoints. If financial wellbeing is measured, however, in a trial, we would suggest that it instead be designated as a supportive, exploratory endpoint.

At the FDA we have to uphold laws and regulations. And within these regulations, there are regulatory standards that require us to ensure that assessments like questionnaires generate responses that are well-defined and reliable and are not potentially false or misleading when described in labeling. To ensure this, we ask that drug companies gather input from individuals and caregivers through those one-on-one interviews and focus groups to develop the questionnaires.

We also ask them to perform the appropriate statistical testing to support questionnaire development. These methods help demonstrate that the questionnaires measure the right thing, in the right way, and that the score is accurate and reliable so that any positive score changes can be interpreted as symptom improvement due to the treatment.

Now we recommend that drug companies engage with the FDA early and often when they're developing questionnaires. So how does the FDA engage with drug companies? We currently have three pathways to provide advice to those interested in using questionnaires or what we call clinical outcome assessments in clinical studies.

The first pathway is within the context of an individual drug development program. Through this mechanism we encourage drug companies to begin discussions about their questionnaires as early as the pre-I&D phase to ensure that there's enough time for questionnaire development before their Phase 3 clinical studies.

The second pathway is within our drug development tool or DDT qualification program outside of the I&D pathway where we can work with questionnaire developers to create and qualify questionnaires that meet unmet public health needs and can be used publically across multiple drug development programs.

The third and final pathway is through the critical path innovation meeting process where a questionnaire developer or a drug company can discuss and receive general feedback from the FDA on a clinical outcome assessment in the early phase of development outside of the individual drug development program.

So I want to leave you with a few key takeaways. The first takeaway is that PFDD meetings are a starting point for developing patient-focused outcome measures and endpoints. The second is that outcomes of PFDD meetings will support and guide FDA risk-benefit assessments and drug reviews.

And lastly, individual and caregiver input ultimately helps determine what is measured to provide everything of treatment benefit, how best to measure concepts in a clinical study, and what a meaningful improvement is in treatment benefit.

So that concludes my presentation and I'll turn it back over to Dr. Eggers.

DR. EGGERS: Thank you to my colleagues for the background demonstrating the complexity of the condition in drug development for treatments. Now I'm the only thing that's standing between us and what we are really here for, which is dialogue with individuals and family members today. And to do that I want to give a few, a few opening, a few descriptions of what our meeting looks like today.

So as I mentioned at the start of the meeting, and I know some of you have come in after the opening, so I'm going to go through this again so we're all on the same page. We have two topics that we are looking to cover today. One is on the health effects and the daily impacts of autism, and the second is on the current approaches to treatments.

And for the first topic that we'll cover, we're really interested in looking about what are health effects that are most challenging for you or your child if you're the parent of a, of a child with autism. How do the health effects impact you or your child's daily life, and how are those experiences with times changing over time?

When we think about the current approaches for treatment, we're looking at what are you or your child currently doing to, to manage your autism. What are the goals for the treatment? How well are those treatments meeting your goals? And what would you consider to be a meaningful benefit of any treatment?

Understanding this allows us to understand better the things that Ebony and Tiffany were saying about the types of things that, that drugs and medical treatment should be targeting and the things we should be looking for in terms of improvement. And then what are the key things you think about when deciding whether to start or stop a new treatment?

This meeting is quite different from other public meetings that you may have attended. Our intent is really to foster open dialogue on personal experiences and perspectives on autism. So on each of these topics we're first going to kick off with a panel of individuals and family members and I would like to ask the, the people who are speaking on topic one, the panelists, to come up and take, and take a seat at this point.

So the purpose of the panel discussion and comments is really to set a good foundation to kick off our discussion by providing a brief snapshot of six different experiences with autism. And some of these individuals are also affiliated with support advocacy or research organizations. They've all prepared remarks and I thank you very much for the effort in putting forth.

And I also want to thank the effort, those of you who submitted comments and, and expressed interest in participating in panel. We weren't able to, to select everyone, but your comments sent to us are really important because they help us prepare for this meeting and they provide insight.

And if you submitted comments at any point to our inbox, to our e-mail, we suggest, we recommend that you submit those comments in their full form to our public docket, which is a website. And I'll get into that in a little bit.

Okay. So after each of the panel discussions, so after you give your remarks, then we'll move out and have a facilitated discussion with all of the individuals and family members in the room. And the purpose here is to build on what we heard from the panel members to get a sense from you what is generally similar and what may be different in your experiences and your perspectives from what you heard.

So I'll ask a number of follow-up questions and my colleagues from FDA will also ask any questions that you like. To do so we will have our team floating around with microphones to bring the microphone to you. So you don’t need to stand up at all. Just raise your hand if you have an answer to the question that's being asked.

We're going to ask that you state your first name, and just your first name is fine, before speaking. And for the sake of transparency, with also request that at the time of your first comment, that you disclose if you have an affiliation with an organization that has an interest and issues related to autism, or if your travel here today has been funded, or if you have significant financial interests in any autism drug development.

So as we move through the, this discussion, we're going to navigate through various perspectives.

There are three main perspectives that we'll hear today. We'll hear from parents who are caring for children. We'll hear from parents who are caring for adults. And we'll hear from self-advocates, the individuals with autism.

Each of you will have your own perspective and your own experiences. We're going to try to navigate through that fluidly. They'll be times when I ask a question specific to one of you, but we ask that each, when you speak, just to remind us or to give us a brief description of what category you're falling in, whether you're a parent of a young child, or a child, parent of an adult, or a self-advocate. Okay.

And to keep -- we ask as we, to make this discussion efficient, we'll be asking questions and please stay on the topic of that question that was asked and keep your response to a minute. We really want to make sure that we get to everyone who has something to contribute today.

If we don’t get -- if you don’t get to fully say what you want, that's what the docket -- and I'll get to that. You'll be able to provide us additional comments later. I'm going to try to, and the microphone, folks with the microphone, will try to keep and allow everyone to get a chance to speak.

A few other things. We have some polling questions. So if you've been wondering what those little discs are in front of you, they are our very fancy clickers. We will be asking questions from time to time. We're going to ask that individuals with autism and a family member, or a family member who is answering, thinking about a child or children with autism use the polling questions.

These are not a scientific survey at all. The, the purpose is to aid in our discussion to see what kinds of, of perspectives and experiences are, are shared by those in the room. So the in-person, you'll use these discs, the clickers. You'll know if your clicker -- you're going to see -- there's going to be a question and then an answer will be A, B, C, D, E. You click what's, what's most appropriate. Sometimes you only click one thing and sometimes you get to click more than one thing.

You should hear a little, or feel a little buzz if you, if it has captured your click. If it doesn't, raise your hand and we will come and help you. And on the web, we very much value your participation and these, the polling questions are a chance for you also to contribute as well. So the same polling questions are asked of you. And there you'll just answer in the, you know, with your mouse. If you have any problems, type in the comment box and someone will help you.

And if you're on the web, you can also add comments through the webcast. You can type your comments. Although they might not all be read today, they are captured. We will summarize them and they'll be included into our summary report.

And we will also try to go to the phones to give you another opportunity to contribute. And information about the phone will be made available through the webcast.

So I've been talking about the docket. It is a fancy federal term for a way to send comments to any regulatory agency though a website. So we call it the public docket. This docket will be open for two months following the meeting. So it will close on July 5th and any time you can send multiple comments if something else comes to mind. You can send in comments.

If you know there are people who couldn’t make it today, whether you signed up or that didn't sign up, or you know people who you think really have something important to contribute, encourage them to participate and send us comments through the docket. And if you thought of something today, it come to your mind, send it along.

You can visit these -- by the way, these slides will be posted on our website following the meeting. And so you'll be able to visit this link or you can go to www.regulations.gov and search on autism FDA. And there you will find it. There's a comment now button you can click. If you have any problems, e-mail us through the e-mail that you have received communications from us.

Okay. There are a couple other resources at FDA. Just want to point you to if your, if you become or are interested in topics related to FDA and drug development and drug review, if you're an individual and family, I would suggest your first stop is our FDA Office of Health and Constituent Affairs. They run the patient network and patient representative program. So you can contribute your voice that way.

And for advocacy and support in healthcare providers, a first stop for you might be CDER. That's the Drug Evaluation, Professional Affairs and Stakeholder Engagement or we call the PASE. They facility collaboration and communication between the FDA experts and stakeholders on issues and drug development review and safety.

And I also want to put a plug. On May 12th if you're interested in this topic, there's a workshop called Roadmap for Engaging with CDER. You can Google Roadmap and CDER and you should be able to find that right away. If you have any questions, again e-mail us. We're not, our office isn't running that meeting. It's, I believe PASE is, but we can definitely point you in the right direction.

So there are a few, a few rules we'd like to put out to make sure that our meeting is as effective, fair, and open as possible. And, and I'll start with encouraging all family members and individuals to contribute to the dialogue. Whether you have name tag or not, we don’t know if we have name tags for everyone. If you are a self-advocate or a family member, we want to hear from and we encourage you to contribute. Everyone else, we're asking you to stay in listening mode. There is that open public comment period for you to contribute if you would like to.

FDA is also here to listen. They'll ask some follow-up questions. You may have questions on your mind for FDA. We may not be able to address questions as much as we would like today, but if you do have a question, write it down on your evaluation form that you'll find or write it down on a slip of paper and send it to us. Or e-mail us and we will figure out a way to answer your question.

The discussion will focus on the two topics I mentioned, the autism health effects and the treatments, and there, what we will not focus on much today are the specific causes of autism or issues as much with regard to the healthcare system in general.

We'll be focusing as much as we can on what FDA, what's within our mandate and mission to think about.

It is imperative to understand that the views expressed today are personal opinions, and not only are they personal opinions, they're very personal, very sensitive topics that we'll be covering today. And it is a lot. We know it's a lot for you to come and speak today. And we, you can know that everyone in the room respects that. And if you're typing in on the web, the same. We have respect for everyone and everyone's perspective. We know that we have people who are wearing different hats and they have different experiences with autism. And so we just want to make sure that respect for one another is paramount.

Finally, let us know how the meeting went today at the end of the meeting. Evaluation forms are available at the registration table. They are very much important to us. Although we've conducted, I think, 22 of these meetings, we learn every single meeting how we can do better. And so we value your input.

With that, we are ready to get into some polling questions. So I'll ask those of you in the, in the room to get your clickers. We start with, we start with probably the easiest one we have, which is where do you live. So if you live within the Washington, DC metro area, we'll ask you to click A. And if you came from outside the DC area, we'll ask you to click B.

Any challenges with the clickers? Just raise your hand and we'll come to you. Okay. All right. Your, oh, up here. This is not, this is, this is a question, okay if you don’t get a chance to answer. So can we -- I'm getting some buzz that we might have some difficulties with the polling question. So maybe it's all of us that are having the problems. Okay.

You know what? I'm going to suggest that we will figure out, we will figure out the panel, the polling questions, or we won't, and we're going to move on right now just to hear -- why we're really here is to hear your stories. So we're going to go through. Sorry about all of the screens. We'll just go through and ask Nadine to start and say your comment. And then we'll move through the line with your comments. And then we'll, then we'll see where the polling went.

So when you comment, please push the red button. Bring that microphone as close of you as you can. The red button at the bottom. And when you're done, we'll move on to the next and you can click off your red comment. Yes? Nope, just press once. So we'll see how Nadine --

MS. MORRIS: Do I come up to the podium?

DR. EGGERS: No, you're going to stay there and give your comments.

MS. MORRIS: Good afternoon. My name is Nadine Morris and I'm here to share information about my life with autism. My daughter, Anna, was diagnosed with autism spectrum disorder two-and-a-half years ago when she was three.

Anna has a lot of classic signs of autism. One of the signs is being kept on daily routines. For instance, she has to have the same lunch every day. Two pieces of pumpkin bread, GoGo squeeZ's brand plain applesauce, and Danaable strawberry yogurt smoothie. If this or any normal activities change, she will have difficulties adjusting throughout the day.

Additionally, transitioning from one task to another can be difficult for her. It is not only necessary for me to give her adequate notice before we can change tasks, but how I actually communicate that notice to her is just as important.

For instance, before we leave the park, I have to ask her, Anna, how many minutes until it’s time to go. She responds to me with a time and then I respond that I'm setting an alarm for that many minutes. So when the alarm goes off, she's able to stop what she's doing and transition without any issues.

However, if I do not ask her to give me a time and instead just say to her we're leaving in five minutes, she's totally thrown off and I'm facing a major meltdown.

Socializing is another challenge for Anna. Although she has far exceeded the expectations for developing her expressive language skills, any random conversations can be similar to that of a toddler and usually lacks a common interest. She also tends to be socially awkward. She'll point at a person who she's talking to, jump up and down, and flap her hands, especially when she's overly excited.

The social aspect is one of my biggest fears as a parent. Will she be able to function in kindergarten and beyond? Will she be bullied for being, quote, unquote, different? And how will that affect her?

She also displays high levels of anxiety. She becomes obsessed with objects like a toy and cannot be without it. I have had to drive back home when she has forgotten it because I know that without it she will have a bad day.

She's also obsessed with events in her life like taking a bath or going somewhere. She has to constantly be reassured of when exactly that event is going to occur.

Additionally, she has difficulty staying asleep. She'll wake up multiple times a night, start making unpleasant, methodical noises, and then proceeds to rock back and forth and bang her head until I come and comfort her. The sleep deprivation was causing a lot of impulse, impulsive and negative comments. Or I'm sorry, behaviors. I apologize. Therefore, I started letting her sleep with me about a year ago.

The restless nights and negative behaviors have since stopped.

The rocking and banging of her head is also something she does to self-regulate her emotions. It gives her the sensory stimulation that she needs, which leads to another sign of autism, sensory processing disorder. Sensory processing disorder is a huge umbrella term for behaviors that are associated with senses.

For Anna it means she has a lot of fears. She used to be afraid of crowds, even to the point where the local pharmacist would actually bring my medications outside to my car because she couldn't even approach the store without screaming. But over the years I have worked relentlessly on this and she's grown accustomed to being in public places.

Additionally, she is frightened by the hand dryers and the flushing toilets in public restrooms. That makes it very difficult for her to be out in public for an extended period of time.

She also has a difficult time eating and trying new foods because she may not like the taste or the texture. But sensory processing disorder also makes her a very huggable person who loves to be tickled constantly.

Even with all the symptoms, autism has become our new normal. I have had to make changes in my approach with her, ensuring her a calm and patient environment. I reenforce good behavior and identify her triggers. But, and we have worked together over the years and both have made progress in adapting to both old and new situations and environments.

I was also fortunate enough to get her started in county's early (inaudible) services when she was two-and-a-half years old. These services and a group of amazing teachers have also done well in molding Amanda - my daughter's name is Anna - into the amazing child that she is today. Thank you.

DR. EGGERS: Thank you so much, Nadine. Before we move, Zoe, I just want to ask. The feedback that we hear up in front, this is -- we're in a new setup here. So we, we will be addressing that if we can. Can I, do you hear feedback in the back of the room? Okay. So my apologies to those of us in the front of the room about feedback.

So, so why don’t we -- we will next have Zoe. And Zoe --

MS. GROSS: Hi. Sorry about that. I thought we were taking a break to address the feedback. I might as well bring my headphones up. Thank you so much for having me on this panel. My name is Zoe Gross. I'm autistic and I'm a director of operations at Autistic Self Advocacy Network. We represent a community of autistic self-advocates with a broad range of disability experience. So people with and without intellectual disabilities, people who speak, and people who don’t, people who need daily support, and people who don’t.

I want to say right off the bat that when I talk about self-advocacy, that isn't limited to people who work for nonprofits. A self-advocate is someone who has preferences and has access to any way to make those preferences known. And any discussion of the needs of autistic people needs to center self-advocates with all kinds of experiences.

I'm really glad that the FDA is interested in patient perspectives, but we must be careful not to treat autistic perspectives as interchangeable with the perspectives of our loved ones. In order to get a good range of autistic perspectives, we would need far more self-advocates participating than we have here today.

I want to make sure that we begin with a framework that prioritizes supporting autistic people and improving our quality of life. So we should talk about what quality of life looks like for autistic people and question any assumptions that we might be bringing to the table. For example, the number of times I made eye contact today is not a valid measurement of my quality of life, but it is a trait of autism that many interventions target.

We need to make sure that when we talk about problems we are talking about things that are problems for the autistic people who are experiencing the things. Not simply things that make us look different or that inconvenience others. The fact that something is a trait of autism doesn't mean it is a problem in someone's life.

A lot of people have tried to develop medical interventions that target repetitive behavior, for example, like flapping your hands or pacing. We might call this stimming. But stimming doesn't cause us problems. It often helps us focus and interact with the world around us.

So a medication or other treatment targeted at reducing stimming might make us appear more normal, but it wouldn't improve our lives. It might cause us new problems. We strongly discourage drug development that targets this type of behavior. Even if something is both a trait of autism and a problem in someone's life, that still doesn't necessarily mean that it is an appropriate target for medical intervention.

For example, some autistic people struggle with self-injury or aggression. These are serious problems in people lives. In some cases, self-injury or aggression can represent an attempt to communicate that something is wrong or can be a response to physical pain. If these needs are not evaluated, giving someone a medication to stop them from self-injuring may leave underlying needs unaddressed.

Autism is not an illness or a disease. It is a developmental disability. Even things like self-injury and aggression are often best handled with supports other than medication. It's also important to note that a lot of the really difficult medical or difficult, or disability experiences that autistic people have are not caused by autism, but by co-occurring conditions.

Some of these can include anxiety, depression, posttraumatic stress disorder, insomnia, connective tissue disorders, and seizures. We need more research into the interactions between autism and these disabilities and more research into whether best practices for treating conditions like anxiety and epilepsy are working for autistic people.

For example, autistic people are more likely to have seizures, and therefore more likely to be prescribed anticonvulsants, but autistic people are excluded from trials of anticonvulsants. We know that in some cases autistic people may react to medications differently.

So the lack of research and data on this is a big problem, but it's important when we talk about how best to improve autistic people's quality of life that we remember the things like seizures and insomnia are not caused by autism and would not be impacted by a medical intervention that targets what we think of as core autism features.

Thank you again for having me and I look forward very much to our discussion.

DR. EGGERS: Thank you very much, Zoe. For those of you that have been on the panel, if the feedback bothers you at any point, feel free to go back to the table and be part of the conversation then. And now I'll move to Sharrill, please.

MS. HEMRY: Hello. I have three offspring all diagnosed with autism, a daughter 24 years old, and two sons, 22 and 19. Each presents quite differently, but the greatest challenge is trying to achieve and maintain a healthy immune system.

For almost two decades they've done bloodwork about every six weeks to monitor their immune markers and whenever their immune systems have improved, they've likewise shown dramatic improvements in their ability to speak, focus, learn, and maintain self-control in public. They are much happier.

All three of my children have experienced issues with speech and communication, environment and food allergies, reduced blood flow in the brain as documented through NeuroSpec scans, reduced ability to fight infection due to low natural killer cells, inflammation as shown through chronically elevated eosinophils and ferritin levels, years of elevated Group A Streptococcus bacteria as measured via ASO testing, and reactivation of one or more human herpes viruses (HHV) as evidenced by highly elevated IgG antibodies.

I'm concerned about high human herpes virus, IgGs because this opportunistic virus family, which is in the same group of double-stranded DNA viruses as small pox and adenovirus has been associated with organ transplant rejection, cancers, multiple sclerosis, and many other illnesses.

My daughter's unique immune symptoms are best described by her diagnoses. As an infant she had issues with bilirubin, thrush, cradle cap, latching, and a large head due to fluid buildup outside her skull. She could, she could speak words clearly at six months, but quickly lost each new word, very likely due to a seizure disorder finally diagnosed years later.

As a toddler she could still speak some words, but her speaking voice became less and less clear and she demonstrated significant auditory processing issues. Both of these conditions may be connected to the middle ear drainage problem that we now know affects her hearing. She also began demonstrating some of the obsessive-compulsive behaviors which continue to plague her to varying degrees.

In recent years, her antinuclear antibodies have often been positive, indicating autoimmune issues. She's also been diagnosed with nodes on her thyroid, calcifications on a pelvic cyst, endometriosis, and a genetic mutation linked to susceptibility to multiple cancers. Her communication remains at a basic level.

My older son's unique immune symptoms are best described by numbers. At one-and-a-half he whined most of the time, yet had no discernible speech. At age two he understood everything said to him, yet lived in his own world. At each three-and-a-half he became glutenfree and for the first time in his life was able to tolerate being held or bathed.

At age four he went dairy free and also began an antiviral medicine, the latter because he had high HHV-6 IgGs and because his alpha interferon level, indicating his body was fighting a virus was 1,100, 100 times the normal level. The next day he slept through the night for just the second time in his life. At age four-and-a-half he stopped having diarrhea on a nearly daily basis after starting treatment with a now defunct immune modulator.

He spent eight years from ages 6 to 14 taking an antibiotic to reduce his Group A Streptococcus titers from a high of over 2,400, 12 times the normal level, down to 172. Only 30 days later his strep titer shot up tenfold to almost 1,800 due to his exposure to a person with strep and some inconsistent antibiotic administration.

Soon after that he became extremely violent toward property, himself, and others, a situation which continues when he's in poor immune health. Currently after eight-and-a-half more years of antibiotic treatment, his strep titers are down in the 400s, a thickened heart valve resulting from strep-related rheumatic fever has repaired itself, and he seems to have stopped his most violent behaviors. However, he remains mostly nonverbal and his ongoing immune issues have left him unavailable for learning.

My youngest son, (inaudible), symptoms are best described by his gains. After losing all speech at 11 months, he regained it at age two, right after going off dairy. He lost speech again a few months later but regained it once again at age two-and-a-half after starting an antiviral protocol to target his high HHV titers.

As a toddler he couldn't comprehend facial expressions or understand another person's mental perspective. But by elementary school after his immune health improved, he was able to use movies and conversation to develop these skills. Diagnosed with a visual tracking disorder that made reading a challenge, he just received his associate's degree with a B average and starts a four year college this fall.

Restriction on activities because of symptoms.

When one of two children's immune markers are bad, our family's focus is forced to center around dealing with that person's increase in aggression or disruptive behaviors. Our best days are family vacations where everyone is able to go. Our worst days are family vacations when my older son's too aggressive to go and gets left behind with a parent.

Conditioned symptoms that have changed over time. My two oldest children have always had little ability to communicate through speech or devices, as well as issues with self-control, but these problems have improved or deteriorated in near direct correlation to how well their immune systems are doing.

And our biggest worry about our children's condition. With their complicated health issues and minimum communication skills, I dread the day my oldest two children have to move to a group living environment. A healthy immune system is their vector to an engaged life, but I see no immune-modulating treatments on the horizon.

DR. EGGERS: Thank you very much, Sharrill. And now we have Tom.

MR. FRAZIER: Hi. Thanks for inviting me today. That's my son, Sean (ph). He's 13 now. I want to note that I am employee of Autism Speaks, but I'm really here today to give three perspectives, I hope, my own as a parent of Sean, and hopefully I can give some of his perspective. He is nonverbal, so it's not always clear what his perspective is. But hopefully I can give some of that.

And I'd also like to give you some of the responses that we received to the survey that was sent out from our family advisory committee in the Autism Speaks autism treatment network.

So my son struggles with communication all day, every day from the moment he wakes up to the moment he goes to bed. He's nonverbal and even expressing basic wants and needs is quite a challenge for him. He uses his speech-generating device and he carries it with him most of the day, but he's not very fluent with it, at least not yet. And he prefers to use other less effective means like tapping us or sometimes pushing us.

This causes a lot of problem in understanding him, as you can imagine, and it certainly causes a lot of problems in interacting with him. From his perspective, I have to believe this is incredibly frustrating for him. It's really hard for him to get across what his wants and needs are in any kind of efficient way.

I'm certain that at times he feels like we're not trying to understand him. And that, of course, is difficult for him and difficult for me, my wife, and his younger sister. It has led him over the course of his life to isolating himself more and engaging less in social interactions, both within the family and, of course, outside the family.

So communication is really our major struggle and it's his major struggle. On the survey our family advisory committee noted challenging behavior, communication, sleep difficulties, and of course co-occurring conditions like GI problem, seizures, etc., as being some of the biggest concerns that they face.

As a result of my son's autism and the cognitive intellectual difficulties that he has, he's not independent in most tasks, including basic daily living skills. He really needs a lot of prompting to engage in or complete tasks. And again, it seems to me that it's frustrating for him because he becomes very reliant on us and I think he would like to have more independence than he can achieve at this point.

Just as one example, he doesn't like to get helped in showering or bathing, but obviously these are pretty core things that need to get done every day, or almost every day. And so that can be quite a struggle and a fight between us.

On the survey questions parents from our advisory committee noted social interaction as being the most frequent activity listed where their children could not fully engage with their peers or with other important people they wanted to interact with.

And I wanted to just sort of end with noting that while my experience and our family's experience, my son's experience, and in the experience of the parents on our survey, was that the difficulties that I'm describing do improve over time, that they tend to remain significant, and on the worst days they cause significant distress.

For my son this often manifests as challenging behavior, sometimes kicking or pushing. He's 6' tall, so when he kicks, it's not trivial. He can feel very frustrated if he's not able to communicate or he's not being understand, as I mentioned. And I don’t think he wants to be physical. I don’t think he's interested in hurting anyone, but this sort of pattern in our family definitely leads to a loss of quality of life. It certainly affects his younger sister when she gets caught up in it.

Along with sleep difficulties and the challenging behavior and the communication difficulties, my son has a history of many of the problems that have been described, from GI to immune-related problems, and those also periodically affect his functioning and certainly his wellbeing.

On our parent survey it was noted that, and on the worst days some of the parents' children need constant supervision, which was extremely difficult for both them and their children with autism. And it really limits the child's feeling of independence or the adolescent. In some case, the adult's feeling of independence.

I would just finish by adding that my main worry as my son gets older is his ability to transition to a supported living environment and also to some kind of meaningful vocational placement. And on the survey that we sent out, the parents noted concerns about education, living, and vocation and work were really the major worries for parents. Thank you.

DR. EGGERS: Thank you, Tom. And now we'll have Sara.

MS. LUTERMAN: Hi. My name's Sara. Disclosure, I work for the Association of University Centers on Disabilities, or AUCD. While I will be referencing a webinar that I helped produce with them, the following comments are my own opinions and do not necessarily reflect the opinions of my employer.

So I'm an autistic adult and I would consider the most difficult issue I face with that to be a co-occurring condition. I struggle with depression, anxiety, and suicidal ideation. This is not uncommon for autistic people. Sixty-seven percent of adults with Asperger syndrome, which has now been folded into autism spectrum disorder, reported suicidal thoughts. And 35% reported having specific plans or attempting in one study from 2016 in Lancet Psychiatry.

In another study, 14% of autistic children under 16 talked about or attempted suicide compared to 0.5% of children in the general population. Additionally, autistic children who reported bullying where three times more likely to consider or attempt suicide than autistic children who did not report bullying. Sixty percent of the autistic children in the study reported the bullying and that was a study from the Journal Autism in 2012.

In the last year alone, three of my friends in the autistic community have attempted suicide. I myself attempted in 2014 after being fired from my first full-time job after two weeks for being a bad cultural fit. In retrospect, this most likely means I did something socially inappropriate without even realizing it.

I did some interviews with other autistic adults for a webinar I did with the Association of University Centers on Disabilities called Suicide

Screening and Prevention in the autism community, new developments and new perspectives for autism researches and professionals, and talked to them about some of the barriers faced in terms of getting treatment and care. You can find that archived on the -- you can find the archived webinar on the AUC website if you're interested.

I think that there needs to be more focused patient-centered research on autism and its relationship to anxiety and depression. Right now the majority of drug treatment is centered on reducing behaviors. What that means in practice is that drug treatment for autism is centered on making us more manageable for non-autistic caregivers.

This is the primary purpose of prescribing things like Haldol or Risperdal and other, and other heavy antipsychotics to children. It's essentially a chemical straightjacket. Instead, treatment should be focused on reducing our anxiety and depression and on increasing our quality of life so that, life as a whole.

This means that we would need to have better access to care. Getting a psychiatrist who understands both mental health and developmental disability issues is a struggle. Finding someone who's component in both and treats adult is basically impossible. In the event someone does treat both, they often don’t take insurance.

Anecdotally autistic people -- additionally, an additional issue that anecdotally autistic people seem to be more sensitive and respond atypically to many medications. So the lack of specialized knowledge and research is particularly damaging and unhelpful.

We also need a wholistic approach to improving our lives with focus on employment, education access, and anti-bullying efforts. While having more drug research is extremely important, I want to remind everyone that drugs alone won't, won't solve the problem because, but drugs should be included in a way that's consent-driven, research-oriented, and most of all, patient-centered.

We are autonomous people from our parents and often have different goals and needs than they do like any other children and parents. And that needs to be respected.

DR. EGGERS: Thank you very much, Sara. And finally we have Kiely.

DR. LAW. Hello. My name is Kiely Law. I like many of you in the room, I wear many hats in the autism community, both professionally and personally. By training I'm a physician and a researcher. I work with the Interactive Autism Network and SPARK for Autism. My everyday work is focused on engaging our community as key decision makers in autism research.

The reason I'm here today is that I am the mom of a young adult with autism and I wanted to share our family's story. My son, Isaac, now 24, was diagnosed with autism in 1996. He was three years old. I am not going to say much about the early years accept that they were rough.

I'm going to focus on how Isaac is doing as a young adult. Isaac is somewhere in the middle of the spectrum. He is fully verbal and at the age of 20 he was able to receive his high school diploma. He qualifies for residential and employment support services through the Maryland Developmental

Disabilities Administration. He lives in agency-provided housing with one housemate and part-time staff.

To date he has not been able to find a job that is a good fit for him. Isaac's biggest challenge today is related to his dual diagnosis of autism and bipolar disorder. He received the second diagnosis at age 15. He is not alone. We know from research that between 54 and 70% of people with autism also have one or more other mental health conditions.

During adolescence Isaac developed severe depression. He became withdrawn, sad, and fearful. At times he was afraid of sleeping by himself. He also had thoughts of wanting to hurt himself, his siblings, and me and his dad.

Isaac has also been extremely manic. He has run away from home. He has tried to flag down drivers in the middle of the road to take him to the airport and he has been picked up twice by the police.

He has been hospitalized two times in the last three years for problems related to his mood disorder. We have struggled to find mental health providers who are familiar with adults with autism and with mood disorders. We have struggled to find effective treatments.

At one point Isaac was on five different psychoactive medications at the same time. Now he is fairly stable on two. We have also tried many different types of supportive therapy. Ultimately art therapy has been the best fit for Isaac.

Another problem related to Isaac's autism, and now also his mood disorder, is the significant difficulties he has with falling and staying asleep. Sleep has always been a problem for Isaac, but I think now it's even a bigger problem because the poor sleep worsens his mood problems. The relationship between autism, mood disorders, and sleep disorders is complicated, and for our family it's an important topic to figure out.

Other challenges that are problematic for Isaac and that keep him from achieving his best include slow processing speed and poor working memory. He also has difficulties understanding social, social situations, and he has problems with sensory sensitivity. All of these challenges make employment and independent living very difficult for him.

I wanted to end by saying a few positive things. It's always hard being a mom up here and saying, talking about the problems. First, despite many challenges Isaac at times has been much easier to parent than his three siblings who are tweens and teens and who do not have autism. Isaac loves science fiction and space opera. He's taught me the terms multiverse and FTL, which means faster than light, in case you didn't know. Isaac can replay full movies in his head and he is the only person I know who has a favorite theoretical physicist.

And finally, I want to end by sharing some of Isaac's own words. I always ask his permission before I talk about him. And so when I told him I was speaking today, this is what he said. Mom, you know I disagree with you and the doctors about autism and bipolar. I do not like those labels. I am just a quirky, oddball kind of guy who likes to do things his own way.

DR. EGGERS: Thank you. Thank you so much, Kiely. I would like to ask a round of applause for those of you who have given comments. And I'm also going to invite you to go back to the tables because the feedback is less back there as you were saying. Take your ten cards with you if we have questions.

So while they're doing that, I just want to also touch upon one thing, which is the topics are sensitive that we're talking about today, and one of the topics that we have heard about and will talk about is suicide ideation. I just want to remind you to seek any help if you need it. The suicide prevention, the National Suicide Prevention Lifeline is, is there. We have the information. We'll put it up on the screen at the break and just wanted to put that out there.

Thank you. So I'm going to see if I can get this microphone to work. It might take me a second. All right. So we hope that we've identified a range of, of speakers that, that demonstrate the range of perspectives that we received from the comments and we hope reflect the range of experiences that, that you, that the individuals with autism and family members experience.

With a show of hands, did you hear one or more things that really resonated with you and your family's experience? Okay. All right. Then we've learned a lot already and we want to build on that now.

There's a couple things we won't touch upon as much in this first topic and that will be on the treatment approaches. We know that some of the panel speakers mentioned that, but we're going to focus on health effects and impacts on daily life first.

And so, and I also want to remind us that as we, we move through the discussion, we're going to try and navigate those various perspectives that we have as parents of younger children or children, parents of adults, and the self-advocates in the room.

We didn't get to, we didn't get to ask the polling question on this, but if everyone feels comfortable just to raise your hands, can I ask -- I'm going to ask if you, whether you fit into one of these, whether you wear one of those hats. So if you don't feel comfortable, don’t raise your hand.

But if you are a parent of a child under, under 21, or multiple children, can you raise your hand? Okay. Okay. If you're a parent of a child or children who are, say, older than 21, raise your hand. That's family member. I'm sorry, family member. I should -- yes, family members. And if you are a self-advocate, autistic individual, raise your hand. Okay. All right.

So we have, we have all three perspectives represented in the room. I can't move? Okay, I'm going to stand right here. All right. I move a lot. These are new microphones. We're going to go --

DR. VAIDYA: Don’t move your hands.

DR. EGGERS: Don't move my hand. Okay. All right. I can do this. Anyway, as you answer, try to let us know which of those hats you're wearing. Okay. So we're going to start with a polling question and these polling questions are never perfectly worded, but what we're trying to get is a sense of where you may find your experiences and perspectives. So as to answer this polling -- and we'll see if it works. I hope this works.

The polling question's trying to get at what health effects of autism are most challenging for you or your loved one if you're the, if you're the family member of a loved one. And you can choose up to three health effects. A is irritability or disruptive behaviors. B is cognitive impairment. C is social impairments. D, communication difficulties. E, repetitive behaviors. F, sleep issues. G, depression or anxiety. H, gastrointestinal symptoms. Or I, a health effect that's not up here.

Okay. I'm not seeing any responses going up. So you can just, don't worry about, don’t worry about answering the polling questions. I don't want to waste your times or your, or your thumbs to try to do that.

So what we will do is start with some that we've heard about and get your thoughts on them, and then we'll go to other, to other effects. So let's start with the first one, which would be irritability or disruptive behaviors. We heard, we heard some of that mentioned up above, but what we're looking now is, is for you to share, if that would have been one of your top concerns about autism in your life, the life of your child. Let's hear a little bit about why that is so.

DR. THOMPSON: Sara, we do have quite a number of responses on the webcast, if you want to go through those.

DR. EGGERS: Okay. Can we hear those responses?

DR. THOMPSON: So we had 60% of people responding irritability or disruptive behaviors, 40% on cognitive impairment, 55% on social impairment, 66% on communication difficulties, and roughly 30-35% for the rest of them.

DR. EGGERS: Okay. Okay. So, so then following up on the, on A here, irritability or disruptive behaviors. And we have Jeannie. And hold -- I guess we all need to hold the microphones really close.

MS. McGUIRE: Just focusing on irritability and disruptive behaviors, is that good?

DR. EGGERS: Awesome.

MS. McGUIRE: Just focusing on irritability, disruptive behavior, let's say irritability, that's really underscoring what we're, or underplaying what many parents are dealing with. Our children are suffering and nothing isolates them more in our society than physical aggression towards others. And also it's terrifying for a parent to see a child self-injurious, but these, we're talking physical -- really the irritability, you know, we can live with it.

But, you know, destructive, aggressive behaviors isolate them, cost a huge amount to society. We can't go out anywhere. I mean, hey, you're not invited over to the neighbor's barbeque.

Yeah. So I, you know, I effectively treated my daughter's aggression. I can talk about that later. But I talk to so many of my friends with children who are severely affected with autism, suffering, is how I like to differentiate. They're suffering with their autism and this is the biggest problem, is the aggression and self-injurious behavior and destruction, destruction of household items and stuff.

DR. EGGERS: Okay.

MS. McGUIRE: Thank you so much.

DR. EGGERS: Okay. So I saw head nods as Jeannie was saying that it's not irritability that we're, that's most concerning to us. It's the aggression and disruptive behaviors. Does that resonate with you? Okay, still head nods. So then with those terms in mind, anyone else want to follow up on what Jeannie has to say? Back there with Sara and Kit.

MS. LUTERMAN: Hi. I'm Sara and I'm an autistic self-advocate and I just want to say I think that the separation between irritability and disruptive behaviors and depression and anxiety is a little bit artificial. I think the irritable, irritability or disruptive behaviors are often just an expression of depression or anxiety, especially in people who might have more communication difficulties. It's all complicated.

DR. EGGERS: All right. Thank you very much, Sara. And Kit?

MS. MEAD: Hi, I'm Kit and I'm an autistic self-advocate. A lot of autistic adults have written about good ways to like -- like it's communication most of the time that they're trying to say something is wrong or there is a physical thing going on and don’t have, like they don’t know how to like, or they -- I don’t know. Sorry. Words. But a lot of autistic adults have written stuff about like how to work through that without like, kind of like, for example, there are things called self-injurious damage which like don’t, like -- I don’t know.

But there are a lot of ways to like redirect those instead of like going, oh, no, we must extinguish all stimming. Because stimming helps us self-regulate and I think that's about it. Like one of the resources is like there's a website called We Are Like My (sic) Child and it has an entire like page of like how to work through aggression, aggression and disruptive behaviors without like trying to like force the autistic person to act less autistic.

DR. EGGERS: Okay. Okay. Thank you. You know, I think we can wait 'til break and -- did you get it working? It's working. Do you want to do the polling question? Okay. Let's do the polling question then.

The health effects of autism that are most challenging to you or your loved one. And then we'll go through that list again. And to Jeannie's point, which was a good one that resonated, you would put aggression in that category as well.

Okay. So if you didn't, if you didn't have time to do all of your three, that's okay. It gives us a sense that we should have started with communication difficulties in our round of questioning here because that is what most of you in the room have indicated.

And, and about very similar for several other things with the exception of the repetitive behaviors. That's, that's not as concerning for many of you in the room here today.

You also have indicated a lot of other health effects. We heard about the co-occurring health effects mentioned. We might not get into those as much today, but we'll try to save time to get into other health effects.

So Kit made this point about the behavior means something else is challenging and you mentioned communication difficulties. So let's follow-up on that and hear a bit more about the, the impact that the communication difficulties have. And brief but specific examples would be very helpful. Anyone like to follow-up? Okay. We'll go with Sharrill.

MS. HEMRY: My older child that I spoke, my older son that I spoke of before, his sole way of communicating is to tap his chest once for no and twice for yes. And he can't use communication devices. He has them, just something won't let him. And when he feels better, he does start using words, but most of the time that's what we have.

DR. EGGERS: Okay. Thank you. Anyone else? We'll go --

MR. SPIELMAN: Hi. I'm Stuart Spielman. I'm with Autism Speaks and I'm the parent of a 22-year-old with autism. My son is not verbal and he has an intellectual disability. Communication is a continuing challenge. My wife and I often have to guess what, what Zack is trying to communicate.

One of the issues that comes up a lot is, is the everyday issue of the bathroom. Does Zack have to go to the bathroom or not? He signs when he has to go to the bathroom, but sometimes he signs, he uses the same sign to, to sort of go away from the situation. We don’t know if he really has to go to the bathroom or if he's bored, if he's at a restaurant and he's finished eating and my wife and I have not.

So obviously this is an important social behavior. We have, you know, we have to be mindful. We, we want to make sure that he doesn’t have an accident. So this is a continuing challenge.

DR. EGGERS: Okay. Thank you very much. Anyone else? Right back there.

MS. PING: I hope I can convey my story the way I want. Bear with me. So I have a ten-year-old daughter who's on the spectrum. He's not, she's not very severe; however, she's also, you know -- as you know, autism for girls, the ratio is lower than boys, but most girls tend to have more severe symptoms. But luckily she's, I think she stays somewhere in the middle of the spectrum.

So since she's in 5th grade now, we -- she got her diagnosis when she was three-and-a-half and I realized one problem years ago and I'm hoping that I can do my little part to broadcasting this. So one, one faith I had was I believe she can learn. She is smart in some ways. She was actually, you know, placed on the code called intellectual disability by the public school.

By the way, it's a long story. We moved because of her. I quit my industry job and moved to Maryland to join FDA because, you know, here I believe we have more resources for her. And my son, you know, also moved with us to come here to attend high school.

I always believed that she is educable and she, if she can overcome that, you know, speech-language hurtle, she can be taught for many things and I always believed in that. However, the assessment, the numerous assessments done by the school at the end of, think she is -- the best program that fits her need is what they call -- what was that -- learning, LFI, Learning for Independence.

To put in plain language, basically, you know, they pulled her off the diploma track and this is a certificated track. So basically, you know, they teach her basics of learning skills. And I was, you know, I disagreed with that.

So what happened was I put her in the private special educational school. When she entered, I'm sorry, 4th grade from 4th, 3rd going to 4th. And she was eight years old at that time. So I said no time to waste anymore. This child has to be placed in a small setting, two-to-one. That's what we got for her.

DR. EGGERS: We'll be talking more management approaches, but let me ask you a question. What is -- of her communication challenges -- and what's your, what's your name?

MS. PING: Oh, I'm sorry. Ping.

DR. EGGERS: Ping?

MS. PING: Yeah.

DR. EGGERS: Okay. What is the biggest difficulty with communication that you have with her on a day-to-day basis, say trying to help her in her daily, in her daily routines? Is there the most significant communication challenge that you can say?

MS. PING: You know, I don’t know how to describe it precisely, but it evolves over years. At the beginning was even the basics. But later on, you know, that's how I realized, you know, if you're patient -- for example, I spent six months teaching her the concept of wait.

DR. EGGERS: Wait.

MS. PING: Wait for your turn. And once that, once she got that, you know, everybody's life was changed. Because, you know, when a person doesn't understand what waiting, she needs it, she needs it now. You know, you know, she's screaming and the, you know, whining, but once she realizes, you know, she can wait and she can get what she wants, and that way she pleases everyone.

I think she, by now she's one of the most patient person that I have ever met. She can wait for me for a long time for certain things that she really wants.

DR. EGGERS: Okay. Thank you very much. That was, that was an excellent example. And as we all think about the ways that we can convey to our FDA colleagues specific ways that, that these effects impact daily life, that wait was a, was a great example.

Can we have, if any of the self-advocates are in, feel comfortable talking about communication challenges or difficulties from your perspective?

We'll take one comment and then we will move on to some other effects.

KELLY: Okay. I'll take a stab at this. Keep in mind this is just my perspective and not necessarily the perspective of my organization. I work for the Autistic Self-Advocacy Network. Okay. So I can have trouble formulating exactly what I want to say. It's like there's a gap between what I want to say and what actually comes out of my mouth.

Often what I end up saying is a sort of compromise between the block and, and what's actually, what's actually possible. I particularly, I'm an incredible writer, not so much greatest speaker, and I've struggled getting my words out in speech for most of my life. Most of the people who know me well know me online because there I can be my full self.

And I don’t know if there's any kind of drug that could even fix this. It doesn't seem like something that could be treated in the usual sense. But I've often, I've often thought about it and wondered if there was a cause or a source.

I just don’t think that a lot of the research into autism is going into what autistic people would actually want to know about their condition.

DR. EGGERS: All right. Well, thank you very much, Kelly. Before we move away from communication, anything on the FDA panel that you'd like to ask a question about? Ebony? And talk really close to the microphones. We all have to do it.

DR. DASHIELL-AJE: Really close. So with regard to the impact of communication difficulties, I want to hear separately from the caregivers, as well as individuals with autism. Is it the intensity or severity of these communication difficulties, the frequency or how often you experience these difficulties, or is it the context within which you experience these difficulties that has the most impact on your life?

DR. EGGERS: Is the question clear? We'll start with, we'll start with Nadine and then we'll go back there.

MS. MORRIS: Hopefully I'm answering this properly. With my daughter, she does not necessarily have a problem with receptive communication, which means when you talk about anything, she actually understands. It's the expressive parts. And then she gets overwhelmed and she doesn't know how to like actually say what she's trying to say, which is when she starts to try to stim and control her emotions.

If I'm able to actually kind of intervene and say to her what do you need from me or what can I help you with, and actually with my own communication, I can't talk anymore than this monotype. Even if I like lift my voice up a little bit, she actually feels that.

So I'll say, you know, what do you need. What can I do for you? And that's where she can sometimes barely get out in like broken, almost like broken English like I can't zip my coat. And that's like how she communicates.

But imagine at two years old or three years old when she was nonverbal, that was a scream and that was banging her head or biting herself. And that was her actually self-injuring herself.

So the communication has become much better because of that. But every single day we deal with this 'cause she understands things coming in, but it's the coming out part is where she's having the most difficulties.

DR. EGGERS: Okay. And a lot of head nods on that, yeah. Thanks, Nadine. We'll go back here.

DR. LEE: Hi. I'm Montessa Lee and I'm not necessarily a caregiver, but I'm here on an education perspective because I taught in an autism program in our district and now I'm a mentor teacher. So I mentor teachers in summer working with students diagnosed with autism.

So what we see on the outside, you know, so it might not necessarily be at home, but as far as communication difficulties is sometimes when they can't communicate what they want, it's manifested in behavior. And of course in a school if you're aggressive or even assault an adult at times, bite them or something like that, it's because they can't communicate what they want and that's, that's the manifestation, the behavior.

And that can be problematic or seem to be problematic. And until you know the student, sometimes we really get to know the student, know their behaviors as Nadine was saying, and we know what they're trying to express. And so as she said, the frequency, it also depends on where they are on the spectrum. I've had kids that were verbal, but they couldn't necessarily express what they wanted in words. Or before they acted on a behavior, they couldn't express how they got there.

You know, so that five point behavior rating scale that we get, our emotional scale, I'm about to blow my top, I'm angry. You know, so teaching them how to regulate that as well to communicate, hey, I need a break.

DR. EGGERS: Okay. Thank you very much. So can we do a show of hands of -- I'll come to you, Lynn. Can we do a show of hands to say -- now you can tell me if this question doesn't work. But a show of hands to say if you've thought about the communication challenges and the communication difficulties and all that comes because of it, the behavior and the frustration. Is it a day-to-day constant that bothers your child the most, or is it the real big, intense, really striking communication challenges that happen maybe once in a while or less often? Is it more a constant or are there times where it comes and then comes really strongly with the communication challenge and a behavior that bothers you? Okay. Let's go to Tom first and then we'll come to you, Lynn, for whatever you want to say.

MR. FRAZIER: I can be quick. It's frequency, intensity, and context for, for me. And I think, you know, it's really all of them and I think measurement, we're sort of talking about measurement and I'll put my science hat on for a second, and I'm a measurement person. So I think when we develop these instruments we need to take all of these things into account rather than having very basic severity scales.

DR. EGGERS: Okay. Thank you, Tom. And you got lots of head nods and even a few claps on that one, so. And now I'll go to Lynn, please.

MS. DURHAM: Yes, hi. So my name is Lynn Durham. I'm the sister of a person with autism and the mother of a child with autism. And I usually don’t disclose that, but as a child I was considered very high functioning on the spectrum. I no longer fit on the spectrum.

Actually your question about the communication and irritability or disruptive behaviors kind of questioned different perspectives. I just want to say English isn't my primary language. From my own perspective as a child, I always had the feeling that, and the frustration linked to the fact that I had a feeling I was communicating pretty easily, but I wasn't exactly saying or passing out what I wanted to say. And I always felt a little bit like it didn't fit quite right. And that really echoes what I think you were saying earlier.

And then when I look at my brother who's a 37-year-old with autism, actually for my brother and my son autism is a really dynamic condition, a little bit like hypertension or diabetes. They really have those ups and downs and good days and bad days, or rather good periods and bad periods.

And during good periods when their communication improves on measurable, in measurable ways, for example, mean length utterance of speech or latency in response, for example, because that's how I evaluate, you know, the quality and the difference in their communication between different periods. It's very different in my brother and in my son.

My brother is, I would say in the middle functioning range. He has -- I hate IQs, but he has an IQ of about 85. And when he's in an up period and he feels more at ease in communicating, his level of depression, measured level of depression goes down. So, and he's less disruptive.

In my son it's very strange and I do link his communication difficulties with difficulties -- I do link his behavior difficulties with difficulties in communicating. But when his communication level of function improves, he actually can get more anxious.

And so there's a big variance between patients and I think that the key thing to consider is that of course there are core impairments in autism, but, and those core impairments are present in all patients, but to be able to measure and that will take us probably to your next subject endpoints.

To be able to measure endpoints you have to consider patient individual endpoints with, with measurable endpoints within a patient individual context.

DR. EGGERS: Okay. Thank you. We'll go right here with Tom for one, and then we'll, we'll move on. We are going to stop at, at 3 o'clock for a break even if we aren't quite finished with topic one. And then we'll come back. Okay? So Tom?

TOM: Well, I think I just want to echo that. It may be slightly different circumstances. So our son is 30, minimally verbal, minimal expressive ability. What we've got this dynamic element that we, that we really struggle with.

If he's having a hard time and we think he's trying to communicate something -- or I guess what I should say, he's more apt to be communicative if he's presenting as less anxious. He's more apt to be less anxious if he's presenting as not stressed out by his environment.

You know, whether it's noise or whatever the case may be. And so it leaves us thinking, well, what is it that we need to treat here? Is it the communication issue? Is it the anxiety or is it the sensory overload? And it does, it varies. It ebbs and flows. So not making this any easier, I guess.

DR. EGGERS: Okay. All right. So you're raising important challenges. Before we go on to break, let's go with one that received a lower number of responses in the room, repetitive behaviors. Let's get some perspectives, for those of you that -- maybe, can we have someone who identified repetitive behaviors to describe it? Describe that impact on life? Okay. We'll go here with Kiely.

DR. LAW: Yes. I want to say that Isaac has repetitive behaviors. He paces. And for other people that aren't familiar with it, I guess they could be annoyed by it. But as a mom it doesn't both me. And when I ask him about it, it doesn't bother him.

DR. EGGERS: Okay. Okay. Any other thoughts on this?

MS. LUTERMAN: So I, I have some repetitive behaviors. Some of them are ones I've had for my whole life. Some are acquired from weird psyche medication side effects. I would say it's not a difficulty in my life honestly. I mean it's a little weird. It gets weird looks. But like just explaining it to people, if they're good people, usually they'll be really understanding. And if they're not, then I probably don’t want to spend that much time with them anyway.

DR. EGGERS: Okay. So show of hands. We got a lot of nods in the room. Show of hands if, if this perspective you think it, if that's your perspective or you think that's protective of your child and you? Okay. So resonating theme. So then we won't -- yes, Tiffany, please.

DR. FARCHIONE: So I would -- okay. Okay. I would just point out that that's actually something that is very enlightening for me sitting on this side of the table because we get a lot of folks who come in and say, oh, well, you know, we're going to use this endpoint and we're going to measure restrictive repetitive behaviors and, you know, try to treat that.

But looking at all of you and I see all these shaking heads saying that, you know, this isn't really something that we care about. So that's, that's very, 'cause we don’t want to, to develop treatments for things that don’t matter. And if it doesn't matter to you, or it's really something that's more of a problem for other people, maybe that's not the best thing to go after.

DR. EGGERS: We'll see if we're getting any web comments on the topic of this. And if you're on the web, please chime in as well about, about repetitive behavior. Before, before we go to the break then, because of this is there any follow-up questions you want on, on the repetitive behavior? No. Some, we had one more person.

Well, let's let the gentleman in the green shirt go first. And then we'll have Lynn and then we'll go for a break.

MICHAEL: Okay. Quick comment. I am on the autism spectrum. I don’t have a lot of repetitive behaviors at this point, but I have had things that were -- I don’t know. I felt like somewhat compulsive physical motions and stuff. And I don’t think that the behaviors were necessarily a problem, but I would point out that sometimes there were things that I've done due to underlying physical discomfort and a sort of physical restlessness that is actually an unpleasant phenomena.

So I wanted to just point out that the behavior may not be a problem, but sometimes what's driving it may not be the greatest thing to be dealing with. And it could, should be assessed as a possible treatment target.

DR. EGGERS: Okay. So the underlying whatever is leading to the, the behavior, the repetitive behavior is something that is worthwhile to, to, to explore further. Okay. Great. We'll go with Lynn and then we'll take a break for ten minutes.

MR. DURHAM: I'm sorry. I didn't want to speak that much, but there really was something I wanted to say about repetitive behaviors. From my multiple experience, it's not really the repetitive behaviors that have been a problem. It's more the restricted interests.

In the sense that in my brother, for instance, he won't leave, and the rigidity. He won't leave a -- he won't go any further than 20 miles away from his house. And my son is, his interests are so restrictive that when, we can't stay at the house for, on weekends for more than a half an hour because he starts getting anxious because he doesn't know what to do and he doesn't know how to occupy himself.

And so even if it's raining, snowing, anything, we have to go out and take him to sports activities because he doesn't -- I don't really have the term to define this because it's really a feeling. But he doesn't really know what to do with his own skin. And so we just have to go out and, you know, offer him constant activity and occupation.

So it's not the repetitive behavior. It's the restricted interests and rigidity.

DR. EGGERS: Okay. Would anyone, those of you that had the I, other health effects, would you have put what Lynn just described, was that in your I? Show of hands, please? No. So there are other things besides that. Okay. Let's take a break for ten minutes and we'll come back at about 3:12 and get started again.

Again, the restrooms are back there. We'll get started. We'll see if there's any follow-up on here, and if we haven't fixed the feedback issues, I think we'll do the topic two panel comments from the tables because I think that's easier. So anyway, everyone come back to your seats in ten minutes. Thanks.

Okay. So we are going to get, we're going to get started again with, with another polling question. We're going to wrap up topic one. And then about, about health impacts and impacts on daily life. And then we'll shortly move into topic two and have our panelists. This is a new setup. See, we learn new things. After even 22 meetings there's always something new we learn.

So while you're sitting here while we wait for the rest of everyone to get back into the room, here's the question you can think about. It, it, these are the broader issues related to autism, broader than the specific health effects. But what aspects of your or your loved one's daily life are most negatively affected by autism?

And again, we'll, we'll ask you to choose up to three, three things. So we'll give you a few minutes just to think about this question. Okay.

Well, let's let it go for a while. I'll give you a few more minutes to think about it. And if you're just joining in the, in the room, we have a question about the, the aspects of, of daily life that are most negatively affected.

As you think of this, what's most negatively effected and matters the most to you or your child? So it's just another polling question. Does anyone need a clicker or having trouble with their clickers? Now if you're on the web, welcome back. And we encourage you to ask the polling question as, answer the polling question as well. Okay. Another minute.

Okay. Let's, let's go to the results. Okay. So the ability to participate or perform daily activities such as work, school, sports, etc., and the impact on relationships with family and friends. Are, have the most attention here in the room. And followed by ability to care for self or family. And then, and then a range of other things. On the web?

DR. THOMPSON: On the web we had 65% on ability to perform daily activities, 47% for ability to care for self, 18% for safety of self, 47% impacts on relations with friends and family, 56 on stigma and social discrimination, and 21 for emotional impacts and burden of medical care.

DR. EGGERS: Okay. So we'll just spend a few minutes on this as, as a way to wrap up our discussion on the, on the daily impacts of, of autism. And there are a couple that, that I think we haven't heard as much, as much about.

So let's start with the, the risks to safety of self or others. For someone who identified that, can you elaborate or provide a bit more detail into that? Okay. Go ahead, Stuart.

MR. SPIELMAN: Hi. I can, I'm going to bring this up and, and it is connected to some other things. And in my son's instance at the core I believe is his intellectual disability. My son has when he was younger walked into traffic not mindful of, of cars and, you know, behaving in a way that'd make me as, as his father very worried.

My daily routine begins about 5:30 in the morning when I wake up, shortly after I get my son up. And I have to prepare him for the day. And every aspect of his, his routine is kind of a mirror of mine. I wake up in the morning. I go to the bathroom. I have to help him in the bathroom. I shave. I have to help him shave. I shower. I give him a bath.

And I think regarding the safety point, every, every concern I would have about my personal safety, I have to think about his safety. If I am a certain distance from cars, I have to extend myself and think where is he in relation to me.

One of the major issues for many people on the spectrum is risk of, of life or injury from causes like drowning, from being in traffic, hit by cars, and, and, Kiely can certainly talk to this because there are some studies on this. But this is one of the constant worries of, of parents, that you will turn around and your child will not be near you and you'll be going to the police and saying to the police there is a missing young man and they will, and you will be crazy.

Just one more thing. I did get a call once from my wife on the safety issue and my circumstances, we've been very fortunate. We haven't had a crisis, a terrible crisis. But I did get a call from my wife.

She said no one knows where Zack is. Somehow school's been out and no one knows where he is. And I remember those moments vividly walking to the Metro and being terrified, absolutely terrified, and telling myself every minute that passes is one minute more when I'm less likely to see my son.

Now fortunately he somehow got on the wrong bus, which I will say he actually went where he was supposed to go, but the buses lined up in a different order. So he did exactly what he should have done. Everybody else did the wrong thing. But for a young man who can't speak, has an intellectual disability, 20 degree weather is a life hazard.

And had he gotten off the bus - and had the bus driver not at some point realized that there was this young man who he didn't know - had my son gotten off the bus, the story could have gone much, much worse.

DR. EGGERS: I think this illustrates the point about the individuality and the range of severity in disability. Makes us think about these questions in a different light. With that, can I ask were there any self-advocates who identified risk of safety in the top in outcome? Okay. Okay. All right. Then we'll move on here to -- say your name. Joshua?

JOSH: Hello. My name is Josh and I have a 19-year-old son with high functioning autism. So I want to echo first a couple things other people said. First of all, the individuality of people with autism. So Stuart's son and my son both have autism and are around the same age. They're very different and their issues are very different.

My son's issue has always been his, the comorbid mood disorder he has with his autism. And we feel like that his mental health issues are much more impactful of him in things like repetitive behaviors and things like that. So, you know, he's been on medication for, for mood.

And the challenge we had is he, there were two other siblings in the home and he was, that he had extremely violent homicidal ideation. It was more, his rage was always directed to other people, particularly his younger siblings.

So when he was nine we had to make a difficult decision to move him into a residential placement, which we think now it was a hard decision, but it was the right decision for him and for his siblings.

But, you know, I think that the, the effect, the impact on relations with friends and family, it's always been difficult for him and his siblings to have a relationship because the relationship was severed at an earlier age. And that's been something we've worked on over time.

But I did want to say that my wife and I are very proud of our son right now that he's, he's taking classes at Montgomery College in radio broadcasting, which is his interest. And, you know, we're very proud that he's been able to do that. So although there's ongoing challenges, you know, we're very proud of, you know, some, some of the things he's been able to accomplish.

DR. EGGERS: Thanks a lot, Josh. Okay. Anything, any questions from the FDA panel? Juliette?

DR. TOURE: Yes. Hi. I wanted to --

DR. EGGERS: Bring it really close to you.

DR. TOURE: Okay. Is this better? Okay.

First, you know, thank you for bringing up the topic of, you know, the suicidal ideation. I think, I think it's a very important topic. Actually it's a very timely topic for us. We're looking into developing some guidance for developing drugs in this particular area and trying to better understand, you know, self-injurious behavior and ideation and behavior. Yeah. And suicidal behavior.

You know, so I think the needs of this community is unique and I'd like to better understand. So, you know, I think there's self-injurious behavior and I wonder if it's related to intellectual disability and putting yourself in danger or, you know, more because of the comorbid -- yes, go ahead. I think you wanted to speak, Sara?

DR. EGGERS: We can go back to Sara?

MS. LUTERMAN: I'm sorry. I didn't mean to interrupt. I can wait. Oh. I guess I just wanted to draw a distinction between self-injurious behavior and self-harm. I guess from an internal perspective, they're really different.

I have relatively normal IQ and I do have self-injurious behaviors. And they're not motivated by the same things, if that makes any sense. Like, like it's not -- I'm usually not actually trying to hurt myself. Like that's not my intention at the time. That's not what I'm trying to do. It just sort of happens. I know that sounds really weird, but --

DR. TOURE: Actually, no. I don’t think it sounds weird and I think that's what we're better trying to understand. You know, when we're looking at endpoints, should we not be as concerned about self-injurious behavior in that context versus ones that lead to ideation and, you know, worst of all, attempts?

MS. LUTERMAN: Oh. I mean I think they're both big problems. I'm just not sure about -- like I don’t think that cause is the same, usually.

DR. TOURE: And you alluded to, you know, the, to comorbid conditions. And so I was wondering, you know, when those are treated more effectively, does that help with some of the suicidal thoughts and behaviors, or does it worsen it because some of the antidepressants actually, you know, increase suicidal risks?

MS. LUTERMAN: So I've been taking different psychiatric medications since high school. I found that when my medication is working and I'm feeling less depressed and anxious, I'm more functional overall. It's a lot easier to leave the house. It's a lot easier to do things like go to school or hold down a job.

It's absolutely -- depression and anxiety are absolutely quality of life issues and I think that improving them helps improve most of the difficulties associated because you're just, you don’t feel terrible. I don’t know. It's, it's, it's, yeah.

DR. EGGERS: Sara, thank you for sharing those thoughts. Juliette, do you have anymore or someone else? Zoe, please.

MS. GROSS: So a couple things about self-injury and then compulsive self-injurious behaviors. If someone is self-injuring, especially if they have limited communication, it's important to look into whether it is they're reacting to something or trying to communicate that something is wrong. They may even be experiencing a medical condition such as an ear infection, or chronic pain, or migraines.

And if someone isn't able to express that, then, like this is an anxiety thing for me or I'm having migraines and reacting to that. If you can give them a medication that stops the self-injury, but you don’t know why it happened, the underlying cause may still be causing problems in their lives.

So we see self-injury in people with a wide variety of disability expressions and we've heard from our members, they've expressed concerns that they weren't evaluated for underlying issues at times when they could really have used treatment for something like migraines, or for anxiety, or a co-occurring psyche disability that was related to their self-injury.

Anecdotally I find that a lot of autistic people also experience unwanted or compulsive body-focused behaviors such as picking their skin or pulling hair. And for a lot of us these things can cause problems and we may welcome more treatment options, but it's important that although these are, or would be caused by repetitive behaviors, we don’t experience them the same way as we experience things like hand flapping, or pacing, or something like that.

I mean speaking only for myself and the people I've spoken to about this, but in general those sort of unwanted compulsive body-focused behaviors are a different experience. And I think that underlines the point that we need to talk about how we experience autistic traits rather than how they appear to others if we want to effectively look at what needs treatment options and what is and isn't a problem.

DR. EGGERS: Okay. All right. Zoe, we'll be moving into the, into the treatments. I think you're making a nice segue. If you weren't able to fully hear what Zoe was talking about was - let me see - the importance of really addressing the co-occurring condition and figuring out what the, the challenge is and the difference. I just want to make sure that everyone hears this. The difference between the unwanted or harmful repetitive behaviors versus the ones that are less, that are harmless.

We do want to keep moving on. There is so much that we haven't yet talked about. And so I'm going to ask a favor of those of you in the room and on the web. There were some big issues that have come up and we didn't cover them all in their entirety, like the intellectual disabilities or the suicide and self-harming behaviors, or the, what, how it really impacts daily life and what's most concerning to you in terms of the impact.

So please if you have a chance and feel comfortable doing so, write out a narrative to us and send it in through the public docket. It is really important to us to get those. As I said earlier, the comment summaries that we got in that you took the time to send us, some of you took the time to send us, have been so important.

We don’t get to use those in our report unless they get sent to our public, to our public record. So please do so and continue to send and get others in, in your networks, other self-advocates, other, other family members to submit those comments.

With that we can, we might be able to address some of these issues in our topic two discussion, but I think we should move to hearing from three people who will kick off a discussion that's now more focused on treatments and treatment approaches. Brittany, Brittany Reiger wasn't able to attend today so that we have Kit Mead, Susan, and Tom who will go and share, will share different, different experiences and perspectives.

And let's see how this works, just as do it from with the tables with the microphone as close as possible. And if anyone has a problem, you can't hear or anything, let, let us know and we'll see what we can do.

So sorry to start with you, Kit, in this novel way, but can we, can we start with Kit?

MS. MEAD: Okay. I'm Kit Mead. I'm an autistic self-advocate. I have co-occurring mental health disabilities and I'm being tested for the connective tissue stuff called Ehlers-Danlos syndrome, which is not -- hold on. Right now I work for the Maryland Coalition for Inclusive Education, but I'm here in my own capacity and my comments are my own.

I would like to start off by saying that autism, which I have, as I just said, is a complex neural type variation and disability. It may be more difficulty to predict what kind of drugs could even address our concerns, and many of my issues and concern can also be addressed through accommodations and supports rather than drug-related treatments.

In a general sense, drug development for autism is currently like risky because we don’t really know how -- there's not a lot of research into how autistic people react to certain medications and there is a lot of anecdotally evidence the says like we have a higher sensitivity or other atypical reactions to a lot of meds.

It could also take like the process of finding any drugs to like do anything could, taking an inordinate amount of time and resources that could be better spent on quality of life research and supports. And I think we touched on this in topic one a bit, but existing drugs like some of the antipsychotics that are currently used to treat like parts, like certain traits or whatever, that are approved for irritability in autism, quote, they often have sedative or dangerous side effects, especially used long term.

Like I'm on an antipsychotic. It's called Abilify and I would like to get off of it because I don’t feel like it is helpful and it's an antipsychotic that might have serious health risks staying on it long term. Like generally speaking they think it doesn't cause permanent movement disorders, but they're not like sure. And it also causes stuff like, weird other stuff like akathisia which is like -- I'll get into that a little later.

These drugs are often also used to suppress autistic traits, and when I say that, I mean they take away a lot of the things that help us cope. Like many forms of stimming, which is what a lot of -- I discussed what stimming is. It's what a lot of other autistics, myself included, called self-stimulatory behavior, and it often uses behavior modifications to do so.

Therapies intended to suppress autistic traits hurt autistic people. The mainstay of these therapies, applied behavioral analysis, only has any effectiveness, if any, before the age of six and we grow up past the age of six. Surprisingly enough, apparently.

And these therapies are more likely to use aversives, which are like things like sensory and physical punishment, and even contingent electric shock.

So the -- moving on to the kinds of things I would look for in any sort of treatment that would -- I would look for things that improve my quality of life and that teach me skills that are considered useful for any person to have rather than therapies focused on suppressing autistic traits.

I would want one or want therapies respectful of autonomy and ones that refrain from using aversives, which as I said, include the use of seclusion, physical and sensory punishment, and contingent electric shock. I would also avoid anything marketed as a treatment that is unsafe. There are a lot of quack cures out on the market that the FDA has actually said are unsafe.

So I don’t want any support or treatment that tries to fix or cure me. I want one that respects my and others' right to make choices even if we need support to make the choice. I also look at side effects, that it's going to improve my quality of life or provide me with the useful skills, and if it's an individualized approach rather than a one-size-fits-all method.

My main goal for any kind of supports in therapies is to maximize my ability to live in the community, the place of my choosing. While I currently do with some stuff like, you know, my mom helped me set up bill pay and makes all my phone calls because I literally just can't really call people.

I still wish I had more support at times to make it easier. I also feel like if I could better handle sensory issues, that would be like, you know, cool. But I worry about something behind marketed as really generalized so much as to be dangerous, and I would rather something that doesn't utterly remove or suppress these traits so much as provides support and accommodations to better work with the traits rather than against.

For example, these head phones designed to control what kinds of sounds you hear around you. These are great for autistic people who have sensory issues with noise, but they're also pretty expressive, or I think they are anyway. And a lot of us can't afford them.

And lastly, I wanted to mention a few kinds of supports and quality of life research that I think would help us autistic people as a community. More direct support for people to live independently in the community. Supported decision making that's an alternative to conservatorship or guardianship. This means that a person with a disability chooses a person who will act as his supporter.

The supporter can provide information about a potential choice and the disabled person makes the final decision. And the disabled person actually makes the choice and it's their choice, not I decided that I want this for my relative. So that's their choice now. Occupational therapy intended to help improve motor planning and skills and help with sensory issues, peer training, supported employment, and adaptive and assistive technology for things such as communication or sensory needs.

That's all I have right, for my comments.

Thank you.

DR. EGGERS: Thank you very much, Kit. Thank you. And on the note of the sensory issues, again, our sincere apologies about the echo that you hear. There's nothing we can do about it today. So we will have to bear with it. Again, there's a, there's a quiet room behind, outside the hall and behind the hall if you need to take, if you need just a bit of quiet time. So with that, let's go to Susan.

MS. PANNELL: Hi. My name's Susan Pannell. Our son, Ben, who is almost ten, was diagnosed with moderate autism at the age of three. The most significant symptoms has impacted our life was his difficulty sleeping, staying asleep, and very intense behavioral problems, intense hyperactivity, elopement, and difficulty in attending to any activity were our top three behavioral issues.

Thankfully a lot has changed in the last seven years and our life is very different. I'm happy to say Ben is doing great. He's in a general education classroom with nice supports. He sleeps at night and walks calmly beside me. He's grinned and developed, but several therapies have significantly improved his autistic symptoms.

In their preschool years personal therapies, OT, PT, and speech helped our son make gains, but pairing them with high dose folinic acid, probiotics, and the Mito cocktail have greatly increased therapy gains. Because Ben was so sensitive to food dyes and he wasn't able to swallow pills, we had a lot of our meds compounded into a liquid form. We tried crushing pills, but the taste was so bad he couldn't swallow, couldn't swallow it.

From the age five to eight we continued most therapies, but we got to reduce them to once a week. Ben's current treatment regimen treats the most significant symptoms of his autism. The Mito cocktail, a group of supplements, helps our son's body push key nutrients in his brain and helps build strong muscle mass. Folinic acid improve language and communication skills, as well as processing speed. Methyl B12 shots are, fueled Ben's brain and work with the folinic acid to support methylation and reduce oxidative stress.

When we started the B12 shots, Ben's language exploded, especially with WH questions, and his sleep dramatically improved. Crawdie, which is something he loves, helps with his motor planning and his gross motor skills. Speech therapy has increased his expressive language and continues to develop advanced social skills. Auditory processing therapy helps with regulating his sensory systems and helps him to talk in a normal tone.

We think Ben's current treatments have worked extremely well, but his executive function skills and self-regulation skills are just not that of his typical peers. One pharmaceutical drug treating attention issues could only be used for four days because Ben got so overstimulated, starting rolling on the floor. They called us and said don’t give it to him anymore, please.

But we tried another drug for irritability, but after three months his irritability got worse. We just haven't had a lot of success with a lot of those treatments.

The downsides to our current treatments is that Ben does have to take a handful of pills several times a day, and if he doesn't, he does regress. So he gets tired of taking the pills and getting shots every four days. And it does break my heart when he sometimes chokes 'cause the pills are so large that he has to take, 'cause they aren't child-sized pills.

So the out-of-pocket costs that we've paid for therapies are super high. We spend about 20 hours a week in therapy and about $20,000 a year devoted to his treatments. The ideal treatment plans for autism should be covered by our health insurance and it would be easy to administer, affordable, and with few or no side effects. Ben doesn’t tolerate artificial dyes and we can eliminate them when we use our compounding pharmacy. So I'm concerned about future access to those therapies.

And also know that all therapies don’t fit to every child. So having them in a liquid form that children can take is super important as well. I would love to see more research on these safe and effective treatments, and then also speed up the regulatory pathway for drug review.

So our son has a PTEN gene mutation, which affects his MTOR pathway. So we know that there's an immune-suppressant drug showing progress in treating this pathway in mice. So for us enrolling in a study with a strong immunosuppressant with serious risks is something we're not ready to do until the research has been done and they've had success. So we don’t want to do anything that could cause long term harm for him.

So it's been an honor to be with you and I hope you have a great day. And I thank you for listening to our story.

DR. EGGERS: Thank you, Susan. And I don’t know if you noticed, that Ben's picture is up and has been up. And finally we will move to Tom to share your story. Hold the mic real --

MR. HUBBARD: Real -- this good? Okay. On behalf of my wife, Christine, and our son, Ned, I want to thank the patient-focused drug development program for this opportunity today.

Our son, Ned, will be 30 years old next month. He's autistic and minimally verbal with limited expressive communication ability. Ned has sensory reactions that can be extreme at times and appear without a readily apparent antecedent. Ned's sensory issues either cause or exacerbate frequent overactivity, agitation, anxiety, sleeplessness, and self-injurious behaviors. This is him by the way in a happy moment hanging out in Dunkin' Donuts on Saturday.

When Ned is highly agitated or in apparent pain, it can be very difficult to pinpoint a cause. The cause may be internal, such as from constipation, allergies, or a headache. The cause may be an external trigger such as noise, high pitched sounds, brighter flashing lights, or even high humidity.

At any given moment any given cause of Ned's distress may be something intrinsic to his autism or wholly unrelated to autism. Ned has limited ability to give us a clue. Despite all this, Ned has continued to make progress. One small step at a time he has shown increasing ability to communicate verbally.

Over time he has started to seek out ways in which to self-manage his anxiety and distress. I base this statement completely on my observations and those of my wife, our family, and Ned's residential and day habilitation staff. I wish I could offer you something more scientific.

I will also add that contrary to the popular image of persons with autism, Ned is socially oriented and enjoys the company of other people. His one primary interest, and it is a restricted interest, is singing. And as he gets older and older, as he gets older, he gets better and better at it. He's also been known to make a joke or two; although, again, you might have to be a close family member or a caregiver to know it.

We began working with a psychopharmacologist when Ned was five years old because of what were at the time uncontrollable episodes of crying, laughing, and extreme overactivity that resulted in days and weeks at a time when neither Ned nor anybody else in the family could sleep.

Over the next ten years of Ned's life, a series of medications seemed to be moderately effective in helping Ned with these sleep and anxiety problems. However, at the age of 15 Ned experienced several months of deep crisis characterized by sleeplessness, extreme activity, and aggressions that posed a serious risk to his safety and that of others.

On two occasions Zoloft was prescribed, but discontinued almost immediately when an apparent paradoxical reaction set in. At another point a prescription of Klonopin also resulted in an almost immediate reaction of increased aggression. A prescription for Depakote was tried, but then abandoned when we concluded that Ned cannot tolerate the laboratory blood draws necessary to monitor him properly.

A prescription for Seroquel seemed effective for several months, but was accompanied by very significant weight gain. Ultimately we worked with Ned's providers on a very carefully administered medication holiday that also helped reduce his weight.

Since that time, now about ten years, Ned has been on a core regimen that includes Ativan and Inderal prescribed for agitation and anxiety, and trazodone for sleep. The one recent addition to this regimen is Keppra to prevent seizure.

Five months ago Ned suffered a grand mal seizure for the first time; although, at many points in his life he has exhibited small signs of what we as parents suspected might be seizure-like activity. Obtaining either an awake or asleep EEG on Ned has been impossible given his sensory defensiveness.

None of Ned's medications eliminate agitation and anxiety, nor have they led to sustained, stable patterns of sleep. Observation data kept by Ned's group home and day program staff suggest that the medication regimen has helped to reduce the overall incidents of self-injurious behaviors and aggressions and have helped Ned to get four, four or more hours of sleep on most nights, but have not eliminated the issues.

How much of this degree of stability that the medications have, that we think can be attributed to the medication can actually be attributed to them as opposed to good daily management by Ned's caregivers, or because Ned is simply growing out of some of these behaviors, are open questions.

So in conclusion, we've never expected miracles from medication therapy for Ned and we do not expect them now. To this day our first resort in times of crisis with him are physical activity, a good walk, and handing Ned some worry beads or some cards he can use for tactile stimulation.

His daily safety and wellbeing depends above all on carrying, astute, caregiver staff who know, who know when to give Ned his space and when to intervene more directly. However, Ned and people like him clearly have significant unmet medical needs.

Despite the many challenges to drug development in neurology, patient-focused drug development to meet these needs is crucial. In fact, my hope is that the rigor which the FDA and the patient-focused drug development process can bring to the field will shape interventions for minimally verbal people with autism, not only in medication therapy, but in education services in home and community-based services, and in-built environments as well.

We need to translate the daily experience and daily observations of autistic persons, their families, and their caregivers into actionable scientific insights through new evaluation tools, outcome measures and endpoints, and standards of care whether or not this leads to successful drug development in the short term. I look forward to the patient-focused drug development process bringing a new rigor to the entire field of services for autism, for person with autisms in the years ahead.

DR. EGGERS: Thank you very much, Tom. Can we have a round of applause for, for the three of you? Again, all wearing different hats. Self-advocate, a parent of a, of a younger child, and a parent of an adult child, and also spanning the range of experiences and perspectives on, on the need for pharmaceutical and other treatments in your own personal situations.

We hope that we have reflected a range and I'll ask for a show of hands. Did you hear any part of your experience or perspectives or frustrations in the three that were mentioned, that were raised today? Okay. Okay. Good. Then again, we learned a lot through those comments, but now we would like to build. And I understand we get to go a little bit longer. We get to go to about 4:40. Okay. Great.

So we have, again, our discussion will focus on now approaches to managing the health effects of autism. And we want to start just by getting a sense of what, what, what you or your child is doing to help manage the effects of autism. And so we have another polling question for you in the room and for you on the web. Have you or your loved one ever used any of the following to help reduce the symptoms of autism? And here you can check all that apply.

So A, if it's prescription medications of any sort that you would say I'm doing that to target some effects of autism or a closely-related, co-occurring condition. B, psychotherapy and behavioral therapy. C, speech therapy. D, physical therapy. E, occupational therapy. F, diet modifications. And let's put in here diet modifications or supplements as well. G, some other therapy not mentioned. Or H, never used therapies.

Okay. It's not surprising. There's a complex system of, of approaches to, to, to managing the health effects of autism and we've heard that already. Let's just see. Occupational therapy being the most prevalent here in the room. But, but several of them highly, highly prevalent here in the room with the physical therapy being the least prevalent. On the web?

DR. THOMPSON: On the web it's slightly different. The highest is speech therapy at 77%, followed by occupational therapy at 61, and then physical therapy and diet modifications at 54% each.

DR. EGGERS: Okay. Okay. Yes, go ahead, Tiffany.

DR. FARCHIONE: So, you know, for option of A --

DR. EGGERS: Real close.

DR. FARCHIONE: For option A, you know, we've got anticonvulsants, psychiatric medication. Everything kind of all glommed in together. And, you know, so in our division we obviously regulate the psychiatric drug products, so things for anxiety or depression. And, and sleep drugs are under our purview too.

So I guess I'm wondering, you know, how, what portion of that 71% is, is going to come to us versus what's going to go to like neurology projects with seizures. So --

DR. EGGERS: How about we do it this way? Let's, let's, let's -- yeah. So, so do you have a group of -- can you categorize them into, say, three different groups? And we can get a show of hands. Yeah, so you give, you give the groups -- so group one would be what kind of --

DR. FARCHIONE: So I, so I would think like mood and anxiety treatment, sleep, and then other just for a starting point, I guess.

DR. EGGERS: So can we have a show of hands of how many of -- oh, go ahead. Zoe you want to clarify something for us? Hang on. The microphone's coming.

MS. GROSS: Yeah, I'm having a problem with responding in this way to this question because we're not discussing symptoms of autism at this point. We're discussing co-occurring conditions. And they're common co-occurring conditions. But we're discussing some different things.

DR. FARCHIONE: Yeah, but I'll tell you why I'm asking. Because, you know, a lot of, a lot of what I've heard, not just, not just here, but just in general is that folks on the spectrum tend to react differently to medications than folks who are neurotypical. And that, I think it may be worthwhile to consider whether, whether in designing trials we need to look at not just, you know, treatment of depression, but how about treatment of depression in autism?

MS. GROSS: Oh, absolutely. I think that would be really helpful. Just in terms of answering this question, I find it difficult to do because it says have you used the following to reduce symptoms of autism and it's, it's a tricky issue --

DR. EGGERS: So we --

MS. GROSS: -- make sure that that's what we're talking about.

DR. EGGERS: Can we, can we try an approach where, where we -- I want you to think about the drug that has, that comes, that is most salient in your thinking about either being really helpful or surprised you in some way that it was not helpful or very harmful for you or your child. And talk about your experience. Again, we're not focusing on any particular treatment, but that way we can hear what, what treatments are on your mind as either being really helpful or in what way -- let's say helpful in, in providing benefit that -- oh, and Tom -- okay. Yeah. And tell us in what way that was helpful.

So let's start with, with any that come to mind that have been really helpful and why that has been helpful for you. So we'll start here. Oh, okay. Well, we'll start with, and then we'll go to Jeannie. We'll start with Monica.

MONICA: Hi. I'm, I'm Monica and actually I'm a parent of a child with autism, and I also represent an organization, the SYNGAP Foundation. Our, our, our kiddos, 94% of our kiddos have epilepsy and, you know, we've seen a trend on -- if you catch those seizures, we've seen a lot of decrease in several different medications. Of course it depends on what type of seizure they're having.

So we have had some success in treating seizures, and also sleep.

DR. EGGERS: Thank you. Then we'll go to Jeannie and then --

MS. McGUIRE: I just --

DR. EGGERS: Hold it real close.

MS. McGUIRE: Okay. I used a dietary supplement that was an anti-inflammatory. It's no longer on the market, called Anatabloc. When I was filing for the compassionate use expanded access deal, I didn't know do I go to the division for neurology products or do I go to the division for psychiatric products. When I really carefully tracked it, and it's been four years now, and it's an anti-inflammatory. It's not a psychiatric drug.

So, and it also, I just want to respond, is that I do believe in the Greenspan philosophy that all behavior is communication. Okay? But when I saw an anti-inflammatory stop and make my child a loving child once again, well, there was something more going on than just frustration. But again, I just know that this, this has been very successful and I don’t know which, which camp does it go in, neurology or psychiatric drugs.

DR. EGGERS: Okay. So other -- so we'll go with Lynn and then --

MS. DURHAM: Yeah. I think that this was a very relevant point to discuss. What I wanted to say is that I thought it was very interesting that you mentioned prescription medications only as CNS drugs because I have the feeling that maybe that's not the primary entry point to develop effective medication or personalized medication for people with ASD.

What I mean by this is that we said that we needed to develop individualized endpoints. You also need to regard the development of treatments in an individualized matter, meaning that for right now we're phenotyping or sub-classing individuals with autism based on behavior and determining, you know, adequate or perspective drugs while looking at these behaviors.

And I think that behavioral observation does not offer an optimal or a sole insight into the molecular etiology of autism. And I think that to develop drugs that could have an effect in subpopulations of autism, you need to pay more attention to clinical sets of signs and symptoms, non, non-behavioral clinical sets of signs and systems because that's going to offer you easier insight into molecular dysregulations because dysregulations in autism, like in a lot of diseases, are ubiquitous. And so things that are expressed in the brain and that have a genetic origin also express themselves on a general, ubiquitously on a general body level.

And so kids who have gastrointestinal disorders, while gastrointestinal disorders and gastroenterology can offer insight into potential targets in ASD - and I think that even though for 80% of autism we don’t have the gene, they're idiopathic - these sets of clinical signs and symptoms can offer a lot of insight into a personalized approach to developing good therapies.

DR. EGGERS: Great. Thank you, Lynn. So we've heard, we've heard about the immunomodulators from someone in topic from -- yes. Sharrill on topic one. The other, the other -- oh, just slipped my mind. The, the broader beyond psychiatric medications and we heard that in the comments that you sent in. Can we have a show of hands if you, if you have a strong perspective on, on the need to, to look broader than psychiatric medicines?

Can we just -- we won't get into very much, but can we have a show of hands? Okay. Okay. So, but I think we want a little bit of feedback on some of the psychiatric medications. Go ahead, Tiffany.

DR. FARCHIONE: I mean I think that what's, what's important is, you know, we've, we've heard about comorbid conditions and how those can influence the expression of the symptoms of, of autism and how that can, you know. There's like a downstream or a cascade of, of effects. So, but then we've also heard that, you know -- I mean in somebody who isn't able to communicate something as simple as pain, can, you know, also kick off that cascade.

So, and actually the reason why I was sort of pushing for, for GI to be here, and I was really surprised on the previous poll to see that the GI symptoms were so low on, on the list. Because I had heard a number of times from folks who would say, you know, when my, my child or my loved one was, you know, having meltdowns or getting aggressive or whatever, you know, eventually we took him to a gastroenterologist and realized that they had all of these issues with constipation or, you know, some other GI thing. And I would always hear stories about GI problems, GI problems, GI problems and dietary interventions and everything.

So I was like, okay, let's get GI on the, on the panel. But, you know, so it's not just the psychiatric medications. It's anything that might help to, you know, nip that cascade in the bud.

DR. EGGERS: Are there any follow up, anything you want to know specifically about any of the psychiatric medications or anything psychiatric? Yeah, sure. So we'll go here.

DON: What I want to say is that my son has what used to be called classic Asperger's and, and I know that term's not used anymore, but last year he developed just severe anxiety and, and to the point where my, my wife and I were panicked and did everything we could think of to do.

You know, I was always one of these guys, my son's not doing medication, right? And guess what? We got him on, on Paxil and it, it made a huge difference. And the doctor said, you know, this is probably not going to work. We're going to have to go through a whole bunch of different, different iterations and drug combinations.

I'm telling you, it changed his entire life. And I know that for a fact because he stopped doing it 'cause we stopped checking on him, right? And he would take his pill at night and all the sudden his teacher called and said he was upset at school again, crying. And, and, and we asked him. We said, you know, what's, what's wrong. Have you been taking your pills? Oh, maybe I haven't.

So, so from then on we started watching him pretty closely and it's made a huge difference. It really has. So, Don.

DR. EGGERS: Thanks, Don. We got a lot of hands raised. So let's keep going on this. Let's go there with Kiely.

DR. LAW: Okay. So I will just briefly. Isaac currently takes two medications, lithium, and Abilify, and he hates both of them; however, he hates being in the hospital more. And so that's the balance. You know for the lithium he does feel like it sort of takes away a little bit of his creativity and I know that other people with mood disorders have, have said the same thing.

For me as his mom, you know, I worry about the fact that it has a very narrow therapeutic window and when you have someone who can dip down into the depression with suicidal ideations, that's, that's concerning that, you know, he could take just a little bit more and it would be very harmful to him. The blood draw is, you know, he's willing to accept those, but it's a challenge.

And then the Abilify, you know, he's on a very small dose of that and it, it does seem to help him. But at the same time, his triglycerides are now horrible. So now we're getting into those chronic, you know, dietary adult diseases. You know, is he going to not end up with, you know, heart disease and things like that related to the triglycerides.

DR. EGGERS: Thank you, Kylie. And I think Leah, and then we'll go here to Michael.

MS. HELVERING: I just wanted to follow up what Tiffany was touching on because I agree completely with where you were heading in your thought process about the core deficit of communication and also I think social deficits combined lead to a very heightened anxiety. And I've been trying to keep track of how many times I'm hearing the word anxiety around the room. I think it's a universal understanding that it's a huge problem.

And not only does it inhibit the effectiveness of like behavioral therapies and speech theory and occupational therapy, when you're anxious you can't respond to those effective behaviors. But it also contributes to the core deficit because it comes out in a decline in speech. So when my child is not anxious he will operate at a certain baseline of communication disorder. By definition he'll have a certain, just level of impairment. But when he's anxious it will decline. When he's on an SSRI, it will improve.

So same thing happens in the social situation. He has a certain level, a baseline of social deficit that can be improved with education and different things, but when he's anxious, he will decline in his ability to interact socially, so.

DR. EGGERS: Thank you, Leah.

MS. HELVERING: I think the role of anxiety is important.

DR. EGGERS: And it -- Leah, Leah. And now we'll go to Michael.

MICHAEL: So, okay. So I'm, this is a slightly challenging topic here, but when you're talking about using it to treat symptoms of autism or things like that, there's something really challenging about it, the way this whole issue is framed for me as someone, you know, coming to deal with things related to potential pharmacology mostly probably here.

And that is is that when you're talking about symptoms of autism, autism is really a set of symptoms in the way it's defined. So you're talking about either those symptoms or the symptoms of those symptoms, but really in one way, or that's one way you can think about it. But the other way is really all the things that define autism are symptoms of a neurodevelopmental difference.

And so there's a distinction between what the symptom of, of a certain set of symptoms that, that were one set of symptoms at the neurodevelopmental difference made and the actual neurodevelopmental condition underlying that, which has basically for everyone I think, it's pretty well shown that one way or another there's a huge amount of symptoms that any given person has universally pretty much that doesn't -- and they're not all the same for everyone. It doesn't just fit neatly into this diagnostic criteria.

So one of the problems that comes as a, as a consumer working with trying to treat the difficulties that I have as a person on the autism spectrum, is that you strip, it's like stripping layers of an onion. So you've got to a point where you can find a way of living with some sort of sense of cognitive difference in a way that doesn't produce a symptom that's any longer identified as being on the autism spectrum necessarily.

But that doesn't mean that the cognitive difference is suddenly disappeared and it doesn't mean that there aren't other symptoms of it. So, you know, there's, there's a sort of frustrating quality to that. So recently, for example, I've used lisinopril, for example, to deal with issues of high blood pressure.

Well, that high blood pressure probably was a symptom of a symptom of being on the autism spectrum.

I'm not sure that the underlying neurodevelopmental disorder did or didn't impact it. I'm not sure exactly how the, the, the problem formed. But, but as anxiety increased and, you know, other things, you got this sort of byproduct. And as I take a medication for that, I have to look at how it's interacting with my ability to focus, function, and work through everyday life. And it impacts my disorder even if it's not, you know, so precisely related. So that, that's a real challenge.

The other thing is as a different perspective, I've also tried taking some medications that were designed for attention deficit disorder. Now I fit criteria for attention deficit disorder, but they don’t express exactly in the way that they usually do for people with ADHD. They express as basically autism spectrum symptoms that happen to lead to these sorts of things appearing pretty differently.

So, and then if I take -- let's say I take methylphenidate, in this case Concerta, and, hoping that maybe I'll be able to focus better and work more in everyday life. Well, it makes me more awake and it will make it so that I can focus on certain things better.

But what's noticeable about that process is that I'm, I have, I can't control -- I found I can't control a lot what I'm focusing on. And that's one issue that I've had being on the autism spectrum. It's related to the restricted interest criteria, I think.

So when I take that, basically that means what I found is that now if I do take the methylphenidate, then I can focus even better on what I'm good at focusing on already. And that's not a bad thing, but it's also, it's also treating one aspect of an attention symptom and not another.

So I just want to sort of throw out the idea that I think we have to get at these things in more nuanced ways and see how these things are actually expressing and look at it from, you know, biological, to genotype, to different sort, to intermediate phenotypes, to the condition, to the sort of downstream consequences of it and actually start like separating them out and giving us as people on the autism spectrum tools to look at those things for ourselves in ways that might, might be different from how outsiders would look at it.

DR. EGGERS: Okay. Thank you very much, Michael. We'll take a few more comments, and on the web if you want to type in any comments on this thought and the thread that we've been talking about. But we'll go back here with, with Kit.

MS. MEAD: So hi. I assume, assuming I didn't get lost somewhere in like all the people talking. We're still on the psychiatric medications, right? Okay. Good. I'm on several and what I want to say is that like I think it's, the side effects are like extremely serious for like -- hold on.

Like Abilify gave me akathisias, which is like an uncontrollable, like it makes me want to like move all the time, but it's not like wanting to stim. It's like very different. It feels like, it's kind of like restless leg syndrome, but like everywhere and dialed up to 11. And some of my friends even ended up in like the ER after being on it because they ended up like, they needed to move so much that they moved, like they ran themselves into exhaustion and they're not, they're not autistic. But they were on it for other reasons and it did that to them.

But I feel like people aren't told about all the stuff that comes with drugs a lot because people want something that will solve all the problems. And if it has side effects like, that might deter people from using the thing. I'm not sure if I'm making a whole lot of sense.

DR. EGGERS: Oh, you absolutely are making sense. And Kit, you're, you're bringing up something that we're going to be moving into about how you think about benefits versus the risks of, of the drugs.

MS. MEAD: And I think that medication like all other treatment should be a choice. If a person has any -- like all people have some form of communication and you should like, and everyone one has a right to have support to make their own decisions.

DR. EGGERS: Thank you, Kit. We'll take one more back here.

HELENE: Hello. Thank you first of all for having this public meeting. Otherwise, I wouldn't be here. I have a nephew. He's about 20 -- he's 26 right now and he's very nonverbal. Every once in a while we might be able to get a sentence or so out of him, you know, out of the day somewhere to somebody who, very close to him.

But my concern right now in hearing what the self-advocates are saying, especially has been really important in terms of being able to have medication that deals with the nuances of the things, like the attention deficit and what the young lady was saying in terms of the side effects.

My nephew actually is in the process of going through major physical therapy and occupational therapy right now because of a very adverse side effect to a psychiatric medication. And he basically went through the state of paralysis. And in addition to the paralysis, severe pain was occurring. But because of his nonverbal ability, wasn't quite articulating it the best, pretty much at all because the pain made him even more nonverbal and he just sort of went within. And it wasn't until the paralysis actually occurred that we were aware of what this adverse reaction was.

So is, I want to just support the young lady who was just speaking about, the knowledge about the side effects are really, really crucial because even the slightest side effect, adverse side effect can affect not just that person's ability to deal with his or her autism, but also how that person is safe. How the family is adjusting to his wellbeing and his care and how he's able to self-care as well.

So I just want to, like I said, advocate more knowledge and focus being --

DR. EGGERS: And what was your name? What's your name?

HELENE: Oh, I'm sorry. My name is Helene Fischer (ph).

DR. EGGERS: Helene, thank you, Helene. Are we getting anything on the web?

DR. THOMPSON: Not as much about psychiatric medication.

DR. EGGERS: Or any summary?

DR. THOMPSON: Regarding sort of behavioral challenges such as anxiety and aggression, several commenters have linked them to lack of sleep and sensory overestimation. And for lack of sleep a variety of sort of treatment options people have tried including prescription medication, but also things like medication or relaxation or music therapy or things like that.

Similarly for senior overstimulation, trying to get systems at either school or in public places where they have, you know, headphones or other sorts of methods to control noise and lights and things like that.

DR. EGGERS: Okay. Thank, Graham. All right. So we need to move on, but I have a few show-of-hands questions if you feel comfortable raising your hands. We don’t get to probe into the non-drug therapies. We did hear about various things throughout the discussion.

But a couple questions. How many feel here in the room today - and on the web please comment on this as well - feel that you as a self-advocate or your child, if you're a, if you're a family member, is managing their health as best as you can expect today?

So they're managing, managing autism and life as, as good as you could hope or expect, or as you would want.

Okay. So, let's try -- what? Yes. That you, that it's, that it's optimal -- whatever you're doing, however you're managing your symptoms, that it's optimal for you today. If not optimal, as much as you could hope for, as much as you can expect. Show of hands? Okay. Great. Okay. Give us one second, Kit, and we'll come to you with the microphone.

MS. MEAD: Sorry. I thought I had -- I got mixed up and thought I was talking. Sorry.

DR. EGGERS: That's okay. So can I ask the flip question? Then how many of you feel that your autism or your child's autism is not well-managed or getting progressively worse? Okay. So there's a middle. Okay. Yep. So, okay. Okay. You want to explain the thinking?

DON: So as I was saying earlier, some of the things that, that treatments that my son has had have been very positive. There's a lot more I wish I could do. And so in the middle.

DR. EGGERS: Okay. How many of you -- was it

-- Don. How many of you share Don's perspective, said much better than my two questions? Okay. All right. Then another -- bear with me for one more show-of-hands question. How many of you feel that in your situation or your child's situation, that medical treatments for some aspect of, of autism are, are necessary? So medical, medical treatments. Any kind of medical treatments, yeah.

Okay. I'm going to ask the flip side. How many of you feel that in your situation or in your child's situation that medical treatments are currently not, not necessary? That you can you manage, manage autism without needing medical treatments. Okay. Okay.

We did get some comments in indicating that some, that some of you thought that you didn't need medicines at this point, that you're doing, that what, how you are living and managing and other therapies you're taking meant that you didn't need any kind of medications? Okay. So a few people in the room feel that way.

But most of you raised your hand to say that medication, some sort of medication is, is necessary for you or your child in the current situation. Okay. Go ahead.

MS. LUTERMAN: I find that question really confusing because I do take medication, but it's for anxiety and depression and suicidal ideation, and that's not the same thing as autism.

DR. EGGERS: Okay.

MS. LUTERMAN: Like, so I, I mean when it comes to the question about what's optimal, I discussed during, when I was speaking on the panel, difficulty finding a psychiatrist who's competent in multiple, in, in DD and in psyche stuff. But, yeah. I just, I just don’t, -- the question doesn't make sense to me because I don’t feel like my autism gets better or worse. It's just a fact. But my anxiety does get better or worse.

DR. EGGERS: And that is an excellent point. Okay. We'll take one comment there to follow up on this.

MS. GROSS: I was just going to say I agree with Sara. I think that a lot of us are having that reaction, that we don’t know how to answer this question, 'cause like for me, I take medications and I need them, but they're, I don’t, I wouldn't describe them as medications that I take for autism or treatments of autism.

DR. EGGERS: Okay. One more. Kit? Yeah. Wait. We'll let Tiffany ask a question.

DR. FARCHIONE: Yeah, just, just a quick follow-up. So even though you take medications for things other than the autism, if, if those things are not under good control, do your symptoms of autism flare up? So, I mean, I guess I'm wondering like do you see them -- even though it's not a direct treatment of autism, do you see it as being related?

MS. MEAD: I would say that like I wouldn't directly correlate them mostly because like the question was kind of confusing, but I'm trying to answer it anyway. So like basically if I feel better mental health wise, then like that means I just feel better generally. It doesn't mean that like my autistic traits are suddenly like better or worse.

And sometimes my autistic traits can like do -- like when I hand flap, that makes me really happy and it also helps with like a bunch of other stuff. I don’t know if I'm making sense. I don’t know how to correlate it.

DR. EGGERS: Okay. Well, I think we, I think we have heard a very clear point made, that it is difficult to talk about medical therapies in, in the same way that we might for other conditions. And so do you have -- okay. And so Kit and, and Sara and Zoe and the parents here in the room have all made this same point, that it's not going to, it's not cut and dry. I think that's what we'll, that's what we'll take from here.

So to move on, we, we -- let's try -- can we try another polling question and see how you react to this one? And first of all, raise your hand if you want to answer this polling question 'cause we have other we could go to. This might be -- we don’t have to take a polling question on this if there's, or talk a lot about it if, if you think that this would be a hard question to answer. Do you think you can answer this question? Okay. We're getting head nods. So let's do it.

When, when considering treatment options, which of the following benefits would you or your loved one consider to be the most important? What you're looking for in a treatment would address the following, the following aspects: A, reduced irritability or disruptive behaviors. And let's put in, Jeannie, I think, made the point earlier about aggression in that category. B, reduced cognitive impairment. C, reduced social impairment. D, reduced communication difficulties. E, reduced repetitive behaviors. F, reduced sleep issues. G, reduced depression or anxiety. And H, reduced gastrointestinal symptoms. Or some other would be I.

I can tell you while you're doing this, we learn so much from just asking the questions to see how you resound to the questions. It is, it is so helpful even if it's not getting exactly the answers that we thought we might get when we first started. So, so this is a, this is a good thing. Okay. Okay.

So we have a mix with bringing back, tieing back to our discussion on the health effects that were the most challenging. The, you know, if you could reduce communication difficulties, reduce depression and anxiety, that goes with what we've been hearing about. Reduce social impairments. Reduced irritability with much less on reduce repetitive behaviors.

So I think we have -- I think it's, it's reenforcing the input that you've already provided. I'll see is -- are there any questions that you have about, about this? Okay. Okay. Let's get a few, just a few comments. Just very brief. In a few words, what were some of the other things that you'd want benefits out of a treatment? So a few things. Well go, we'll go to Kit and then Michael, and then if there's anyone.

MS. MEAD: So I want a treatment that works with me and like not against my autistic traits, but rather with them and I would benefit. What I would want that I would -- sorry. Hold on. This question isn't like as ideal as it could be for me because a lot of my problems come from the fact that like society is not like -- society is discriminatory against autistic people.

And some of my other problems come from like not having, like supports that I need instead of like, like -- I don’t want something that like is going to say, oh, well, we must fix the autism because that is clearly the only problem ever. Like I'm not going to like -- I don’t want that. So I've put other.

DR. EGGERS: Thank you, Kit. Before we go to Michael, if, if we could take one or two callers on the phone very briefly. If you want to call in about -- we'll ask if you've been following on the web and you want to call in about something about looking for what you want to get out of medical treatment that hasn't been mentioned yet. So if you have a unique perspective on that, we could tee up the phone for that. Okay. Michael, yes.

MICHAEL: So, so for me, I mean I first of all, I echo Kit's perspective to some extent, but I also have a different feeling. And that is what I would want to treat really would depend on the totality of the effect of the treatment. So I, I have neurodevelopmental differences and some of them have given me things in life that I'm very, very happy about. And some of them have given me some very challenging things too.

And so I don’t necessarily know in all cases where the biology will separate between the two and what kind of tradeoffs. If, if something simply gives me the flexibility to, to interact in the world as if I was a person who didn't have the neurodevelopmental difference, but also gave me the flexibility to interact in the world in the, and think and process things in the way that I do now, or have all the positive features, I, I would probably sign up for that very quickly.

But, but there's this, there's this sort of dialogue that goes with the fact that some of the reasons that I probably have some of the positive features I do as a person may well exist because of the differences in how my brain's configured over time and stuff.

So I, I just, just sort of throwing out the fact that I'm not averse to treating autism in terms of the diagnostic features of it. I might be averse to becoming typical.

DR. EGGERS: Okay. Okay. Apologies. (Music playing.) Again, have I said before we're in a very new room configuration? So, so our apologies. So with that, let's just all take a moment. We have, we have five more minutes left, okay? So we're not going to do anymore scenario questions.

I just want to see the FDA panel, you've been listening. Do you have any other burning questions that you want to, to ask? And it's okay if you don’t. We have taken in a lot. Can I -- we'll go to Sharrill and then I want, if you haven't spoken yet and there's something really key on your mind and you'd like to, raise your hand, raise your hand high and we will come to you for any final thoughts on, on ideal treatments, what you want out of a treatment, a medical treatment. But we'll go to Sharrill first.

MS. HEMRY: A medical textbook changing -- a medical textbook changing study at the University of Virginia recently identified that the brain is directly connected to the peripheral immune system by previously unknown lymphatic vessels and that these vessels may play a major role in every neurological condition that turns out to have an immune component.

Additionally, multiple studies starting with the 2005 Johns Hopkins brain autopsy study have provided evidence that there's a chronic neuro-inflammatory process in regions of the autistic brain caused by perpetually activated astrocytes and microglia which police the brain for pathogens, as well as proinflammatory cytokine profiles in the brain and cerebral spinal fluid.

With such evidence of inflammation and immune issues associated with autistic brains, we need to be more focused on developing drugs to help the immune system starting with immune modulators to stabilize and balance the immune system. Having an autism diagnosis should not be an excuse for a serious disease process to go untreated, ultimately compromising quality of life for many.

DR. EGGERS: Thank you, Sharrill. Is there anyone on the phone? Okay. So we have one person on the phone and I, I have to say it's good to follow protocol. Operator, can we have the next caller?

OPERATOR: Yes. Her name is Brenda Cosi (ph). Brenda, your line is open.

DR. EGGERS: Hi, Brenda. Brenda, are you there?

OPERATOR: Brenda, is your line muted?

MS. COSI: Yes. Thank you. I would like medical treatment for what I've termed the foggy brain for my son who's 12 in July, diagnosed at the age of 3.

DR. EGGERS: Okay.

MS. COSI: He's had an MRI and they say there's nothing worrisome about that. I don’t know the medical term for it, but he definitely has what we call foggy brain and it takes him to maybe 11 o'clock to come out of it. And that is impacting his school days. Thank you.

DR. EGGERS: Thank you very much, Brenda. Okay. So we have -- then let's go here for -- we have a few final comments. Thank you. And I forgot your -- you pronounced it for me, but I, I forgot.

MR. SURIO: Hi. My name is Suraksha Attila Surio and I was recently diagnosed with autism spectrum disorder. So I have --- I was late diagnosed. And my concern is like for people who, you know, are late diagnosed or if there's like some kind of complications, many people usually have to wait four months to a year to get help and that can be kind of challenging for someone who's like, you know, waiting and waiting and waiting to get help. And it can be stressful and it can cause anxiety.

Another issue of mine is that, what is being done for people who have autism spectrum disorder that, you know, I'm high functioning, but, you know. Another issue is what is being done for people who are in the workforce and stuff like that. Because not many employers understand and then sometimes like they could be terminated or something wrongfully. And that, that is my concern.

DR. EGGERS: Thank you so much for raising two important points that we didn't actually get into much today. So I thank you for that. So with that, I think we will close -- no, no, we're not closing the -- no, no, not wrap up yet. No, no, no. According to the agenda, we're going to move into the open public comment session. And so, but the facilitated portion of the meeting has come to an end and on behalf of my team, I want to give you a sincere thanks from the, from the position with the hat of the facilitator. This has been a truly insightful meeting and we'll let, we'll let Mitch sum up. But it really has been.

And the fact, even just how you reacted to questions is extremely insightful. It helps us communicate and have dialogue better with you. So a round of applause for, for all of you in the room. And we thank you for contributing on the web as well. And with that, Meghana will do the open public comment. Thank you.

MS. CHALASANI: Thank you, Sara. Okay. Let's see if -- can you guys hear me? Oh, there we go. Okay. So we're now moving on to the open public comment session and for those of you that are not aware, the purpose of this session is to allow an opportunity for those who have not had a chance to speak on issues that are not necessarily related to our two main discussion topics. This is also an opportunity for participants who are not individuals with autism or family members to comment as well.

Please keep in mind that we will not be responding to your comments, but they will be transcribed and be part of the public record. Since we would like this to be a transparent process, we highly encourage you to note any financial interest that you that are related to your comment. If you do not have such interest, you may state that for the record as well. If you prefer not to provide this information, you may still provide your comments.

We have collected sign-up before the meeting and during the break. We have eight participants signed up and about 12 minutes for this session. So please be respectful and stick to the two minute time limit. I will be keeping track of time. So if you approach that two minutes, I will be asking you to wrap up.

So I'm going to quickly run through the order of the speakers and I really apologize if I mispronounce your name. We have Jeannie McGuire, Sharrill Hemry, Fatima Dufois (ph), Suraksha Attila Surio, Joan Fallon, Sharon Walter, Leah Helvering, and Stuart Spielman.

So first could we please get a mic to Jeannie McGuire, please?

MS. McGUIRE: Thank you for this opportunity to meet with you and to express our concerns. We sincerely hope we will be heard.

DR. EGGERS: Pick the mic up real close.

MS. McGUIRE: Can you guys, can you guys hear me? I think I've said enough before about my daughter and her severe problems. But what I want to address here is that -- is that close enough? Okay. Okay. Is, you know, what, what is the FDA, your limitations in the sense of we can talk about, you know, medications and treatments, but the end of the day it's the funding.

And what I've confronted in the situation with this dietary supplement for my daughter is that pharmaceutical companies don't want to fund things that they can't get a nice, tight patent for that will last a long time. So if the remedy that's safe and effective just happens to be a simple, naturally-occurring phytochemical, or maybe methyl B12 or something like that, well, there's no money out there to do the clinical studies to get to the I&D and the and NDA.

We got a problem and I don’t know if you guys can answer that, but we've got a problem. I know you have the best interests, you know, at heart, but we all have to work on this together to help, you know, our kids or ourselves to find safe, effective treatments because what we've got right now in this nation is not acceptable.

And I want to say we put a man on the moon. We could do better than Risperdal and Abilify. Thank you.

MS. CHALASANI: Thank you, Jeannie. Now we'll have Sharrill.

MS. HEMRY: I'm just a parent. I'm Sharrill Hemry. I've spoken a few times today of my three children and their constant battel to achieve and maintain neuroimmune health. In the past many well-meaning medical practitioners often couldn’t see past my child's autism diagnosis to test for possible underlying diseases and issues with seizures, strep, viruses, food allergies, and middle ear drainage, went undiagnosed for years.

Eventually we found a doctor in the state of

California who ordered the right tests and we've seen improvements, but the available drug choices remain too limited.

I mentioned before that we desperately need multiple immune-modulators to be made available, but each needs to have extensive pre-and post-trial testing of every participant to identify which blood and other markers are shared by those on whom the drug was a success.

We need antiviral drugs able to target antibodies for the entire human herpes virus family. These trials should be designed to guide physicians through every possible side effect and what to do in response, hopefully minimizing the number of patients taken off the drug because a side effect was mistaken for a reaction.

An antiviral drug I'd hoped would now be available failed its trial for this reason. And we need every drug to be made available in a form which not only contains none of the eight allergens, but also contains no dyes, no flavorings, no grains in any form such as rice starch, and no dairy in any form such as lactose, allowing people with autism or their caregivers to be certain that any reaction is to the drug, not an additive.

Many people with immune issues, not just those who also have autism, would benefit from the above recommendations. And I'm happy to further discuss this with anybody at the end of the meeting. Thank you.

MS. CHALASANI: Thank you, Sharrill. Next we have Fatima. She still here? Fatima Dufois? No. Okay. Next we have Suraksha Attila Surio.

MR. SURIO: Hi again. This is Suraksha Attila Surio and my comments and concerns are towards people who, you know, like I said earlier, about like employment and stuff like that. From what I've, from what I've experienced recently is that it can be challenging when you're trying to communicate to your employer about what's going on and stuff like that 'cause sometimes they're, they're not going to understand or anything like that. And then there's going to be more challenges.

Because for me the issue was trying to find someone, you know, trying to communicate with someone that would understand my needs. And then half the time I would be nervous and half the time would be like apprehensive thinking that they're going to like go out to get me or something like that.

And another issue is just being on a waiting list or waiting for care for people who have autism spectrum disorder, and it's important that they don’t have to wait, you know, four months to a year and get the care that they need immediately.

And like for me, I've been waiting since January or February, and, you know, like, you know, next week I'll be able to see someone. But it shouldn't take that long for someone to get care that they need because, you know, in that timeframe they could like, you know, something bad could happen or, you know, they could, you know, they could end up, you know, in the hospital or something, God forbid.

But on a personal standpoint, it's important for people to understand and I think there needs to be more advocacy and that other people who don’t know so that education about this, and there's like goes to the general public and there isn't a stigma towards this.

Same thing with the depression because I've had personal people that I've known tell me that depression is a choice or something like that. It's not, you know.

It's like a mental disorder with autism spectrum disorder and it's important to understand that everybody has their needs and it's important to find those needs are met. Thank you. And if anyone asks me more questions more about it, feel free to.

MS. CHALASANI: Thank you. Thank you. Next we have Joan Fallon.

MS. FALLON: Thank you. I'm the CEO of a biotech company called Curemark and we've been working on an enzyme drug for autism since 2005. Our drug has been granted fast-track status by the Agency and we currently have a rolling NDA. And I just want to publically thank the Agency and Dr. Mathis in psychiatry and all his team, and the GI division for all your guidance throughout this process. It's been very helpful to us.

And I'm also very grateful to have the opportunity to be here with all of you and to hear from caregivers and parents and advocates, and self-advocates, about your journeys and your needs and your perspectives. And thank you to the Agency for allowing me to be here today. Thank you.

MS. CHALASANI: Thank you, Joan. Next we have Sharon Walter.

MS. WALTER: Thank you so much for hosting this fantastic event.

DR. EGGERS: Louder, please. Even closer to you.

MS. WALTER: Thank you for hosting this fantastic event today. I am the mother of an eight-year-old girl with nonverbal, very low functioning, what I call medical autism. She has a lot of medical issues including seizures, a lot of GI pain undiagnosed, a lot of sleep issues.

I also work in industry. I work conducting clinical research for a pharmaceutical company in the setting of oncology. And what strikes me in that role, and it's not related to autism, but it strikes me that we have a number of agents in our pipeline, in our portfolio that I think would be really effective potentially in treating children like my own who actually has been tested and found to have a lot of autoimmune markers and immune dysfunction.

And so I don’t know if there's anything that you all can do, but I want to put it in your heads to think about ways to potentially encourage my colleagues in pharma to really develop those drugs for children and adults with autism that have the sort of medical forms of, of this disorder. So thank you.

MS. CHALASANI: Thank you, Sharon. Next we have Leah.

MS. HELVERING: Hi. My name is Leah Helvering. I'm here as a parent of a child who's 20, largely nonverbal. He was one of those regressive kids that developed normally and then lost all his language. I do work in the pharmaceutical industry as well, not in the field of autism and neuropsychiatric diseases at all. But for full disclosure, I don’t benefit from anything here today.

But I want to thank you for diving in the deep end of the pool with us to imagine that FDA would choose an autism spectrum disorder as 1 of the 24 of the many disease you could have selected. Thank you. This was a huge blessing to me as a parent. Thank you. I'm very grateful that FDA is investing their time and their energy to help develop new drugs.

I appreciate very much the complexity of drug development and the absolute necessity for sensitive clinical endpoints to find that are modulatable to treat autism and the core symptoms, or the associated symptoms such as anxiety. So I applaud you for what you're doing and I'm looking forward to how we will see fruition come over time. It will take time.

There were just a couple of things that I wanted to respond to that you teed up at the beginning, and one is where in the spectrum do you treat. When do you intervene in the spectrum? And I think that's a difficult -- I found it is difficult just to say my child is low, mid, or high because it depends which core symptom you're talking about.

Is he a low in the communication or high in communication? You've seen some examples of brilliant communicators here today that, patients that are here that are able to speak for themselves. My child, very poor communicator. So seeing baseline move for each child is going to be so critical with endpoints.

So I think I want, it would be wonderful to see whatever endpoints we come up with that you think of those in terms of change from baseline for that patient. And patient segmentation is going to be absolutely crucial too for some of these endpoints.

I already spoke to the fact that anxiety can increase symptoms, the core symptoms, and can impair the ability of other treatments to hit the core symptoms. While you may be high on the communication spectrum, if your anxiety declines, you might not see that change. But for my child it's dramatic. If his anxiety is low, he's able to communicate. So those would be good endpoints as well.

Sensory issues would be novel endpoints, but I think you've heard too that there's a lot of different -- hypo, hyper, you brought it up yourself at the beginning of symptomatology. These endpoints would be very valuable to monitor and be novel.

MS. CHALASANI: Thank you, Leah. I'm just going to have to ask you to wrap up. I don’t know if you have any closing -- oh, okay. Perfect timing. Last we have Stuart. Right up here.

MR. SPIELMAN: I'll be brief. Thank you for doing this. This has been very valuable to me as a parent and I'm speaking now from, from that role and I'm, I'm sure that other people in the room would share my sentiment.

There are many of us in the room. There are many of us who are participating in this group through the web. And then there are others who are not participating. People like my son. The challenge you have, and I think the challenge all of us have in the autism community, is to be mindful of all these differences and come up with solutions, strategies, product that help, help everyone.

And I'm always mindful of the split I have as a professional, someone who works for Autism Speaks, and as a parent. I'm always mindful that when I come home at night, when I take that Metro train home, I'm coming home to a nonverbal young man with an intellectual disability and needs my help in the most basic, basic ways.

I respect your, your engagement with, with us on these issues and, you know, and I'm aware that these are enormous challenges. But, but you are responding not just to a medical issue, but you're responding to our lives and for that I thank you very much.

MS. CHALASANI: Thank you, Stuart. And so with that, I'd like to call Dr. Mitch Mathis for closing remarks.

DR. MATHIS: Thank you. Here's someone's watch. So thank you. This won't, won't take very long. I actually had some prepared remarks and decided that I wouldn't use those today.

This is very different than what we usually do in the division of psychiatry products at FDA. It's - can you hear it? It's -- sorry, it's kind of short. It's, it's very personal and -- am I here? Yeah. It's very personal and that's not what we usually do. What we do is very clinical and very, I think, by design not personal, to find, to find the answer scientifically is something safe and is it effective.

And I think a big part of what safe and effective is, is, is what matters to people who have the disorder, people who are going to take the medication. And so I learned a few things. I saw Tiffany was taking just scads of notes, but I have, I have a few things here I'd like to just mention.

First of all, stimming, stimming, which is, which is what a lot of sponsors would like to measure as an endpoint because it's so obvious and so easy to count, and you can show that it's getting better by decreasing. May not be making things better at all. It might be taking away one of the coping mechanisms that people use to make themselves better. So that's not likely a good part of an endpoint.

So, and people with autism are people, so they of course get all kinds of other medical and psychiatric problems like all people do. And then if anxiety or depression is there, that's got to be sorted out and treated as part of making this better.

So we'll pay attention to that. We, we knew that, of course, but now, now we'll never forget that. So, so thank you for that.

Communication was a big deal just from the surveys, and endpoints that look at communication with regard to autism should be considered. They're obviously a big deal to the community.

Problems with sleep in autism look like they're a big deal and big enough that we should look at those together.

And I have -- here's one. Irritability was perhaps not the best term for the approval of the few drugs we have to treat symptoms of autism. It sounds bigger than irritability and even in the label we called it irritability, but we said it was destruction of property and, and harming self, etc. It's bigger than irritability and it's almost insulting, I think, to call it irritability. It's, it's bigger than that. So we'll call it what it is next time we get a chance with a medication.

I think, and what matters most are the, the social and occupational function of people with autism. That's what got the highest score, at least. People want to be able to be normal. They want to function normally socially and occupationally.

And second biggest thing was with relationships, to have normal relationships.

So thank you. I won't take any longer, but I do appreciate you being here. I know you have other things to do. Thanks for taking the time to spend with us. It's been a very valuable experience for me and I know for my crew as well. And we'll take what you gave us today and we'll be better regulators because of it. And I think better stewards of the public health and at least for myself, a better physician.

So I appreciate it. Thanks very much. And good night.

DR. EGGERS: So I'll just follow up. It's Sara over here. Evaluation forms, please fill them out. Leave the clickers on the table and, and safe travels home and around the Beltway.

(Meeting concluded at 5:01 p.m.)

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I, Natalia Thomas, the officer before whom the foregoing proceeding was taken, do hereby certify that the proceedings were recorded by me and thereafter reduced to typewriting under my direction; that said proceedings are a true and accurate record to the best of my knowledge, skills, and ability; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this was taken; and, further, that I am not a relative or employee of any counsel or attorney employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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5/13/17

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