U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

INTERAGENCY AUTISM COORDINATING COMMITTEE

FULL COMMITTEE MEETING

TUESDAY, JANUARY 12, 2016

The full Interagency Autism Coordinating Committee (IACC) convened in Bethesda, Maryland, at the National Institutes of Health (NIH), Building 31, C Wing, 6th Floor, 31 Center Drive, Conference Room 6, at 9:02 a.m., Bruce Cuthbert, Ph.D., *Chair,* presiding.

PARTICIPANTS:

BRUCE CUTHBERT, Ph.D., *Chair*, IACC, National Institute of Mental Health (NIMH)

SUSAN DANIELS, Ph.D., *Executive Secretary,* IACC, Office of Autism Research Coordination (OARC), NIMH

DAVID AMARAL, Ph.D., University of California (UC), Davis MIND Institute

JAMES BATTEY, M.D., Ph.D., National Institute on Deafness and Other Communications Disorders (NIDCD)

LINDA BIRNBAUM, Ph.D., D.A.B.T., A.T.S., National Institute of Environmental Health Sciences (NIEHS)

AARON BISHOP, M.S.S.W., Administration for Community Living (ACL)

DEBORAH CHRISTENSEN, Ph.D., Centers for Disease Control and Prevention (CDC) (representing Cynthia Moore, M.D.,Ph.D.)

SAMANTHA CRANE, J.D., Autistic Self-Advocacy Network (ASAN)

PARTICIPANTS (continued):

GERALDINE DAWSON, Ph.D., Duke University

RUTH ETZEL, M.D., Ph.D., Environmental Protection Agency (EPA)

TIFFANY FARCHIONE, M.D., U.S. Food and Drug Administration (FDA)

AMY GOODMAN, M.A., Autism Now Center

MELISSA HARRIS, Centers for Medicare and Medicaid Services (CMS)

SHANNON HAWORTH, M.A., Association of University Centers on Disabilities (AUCD)

ELISABETH KATO, M.D., M.R.P., Agency for Healthcare Research and Quality (AHRQ)

LAURA KAVANAUGH, M.P.P., Health Resources and Services Administration (HRSA)

WALTER KOROSHETZ, M.D., National Institute of Neurological Disorders and Stroke (NINDS)

DAVID MANDELL, Sc.D., University of Pennsylvania

BRIAN PARNELL, M.S.W., C.S.W, Utah Department of Human Services (attended by phone)

KEVIN PELPHREY, Ph.D., Yale University

EDLYN PENA, Ph.D., California Lutheran University

LOUIS REICHARDT, Ph.D., Simons Foundation Autism Research Initiative

ROBERT RING, Ph.D., Autism Speaks

JOHN ELDER ROBISON, College of William and Mary

ALISON TEPPER SINGER, M.B.A., Autism Science Foundation (ASF)

PARTICIPANTS (continued):

CATHERINE SPONG, M.D., Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

JULIE LOUNDS TAYLOR, Ph.D., Vanderbilt University

LARRY WEXLER, Ed.D., Department of Education

NICOLE WILLIAMS, Ph.D., Department of Defense (DoD) (attended by phone)

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PROCEEDINGS:

Operator: You may begin any time.

Dr. Bruce Cuthbert: And so we shall. Good morning, everyone. Welcome to the first meeting for 2016 of the IACC. Happy New Year to all of you.

This should be a very productive and engaging meeting. As you can see, we have a very full agenda today, and so I think we'll look forward to a lot of very good discussion and debate.

My name is Bruce Cuthbert. I'm the Acting Director of the National Institute of Mental Health and chair of this Committee. And I'm very pleased that we have several other people from other institutes and centers here as well to contribute to the discussions. I appreciate that very much.

So to go forward, as you can see, our first act of business is simply to get the roll called. So I will turn that over to the head of our Autism Office at NIMH, Dr. Susan Daniels, who has done the vast amount of the share of work in preparing for this meeting, and I want to express my gratitude and appreciation to her at the outset for all of her hard work in organizing this

meeting, as with all the activities of the IACC.

So, Susan, good morning.

Dr. Susan Daniels: Thank you, Bruce.

So I'd like to take a roll call to see who all is here. I'll start with folks on the phone. Is there anybody on the phone at this moment that we need to acknowledge?

Dr. Nicole Williams: [on telephone] Yeah, Nicole Williams with CDMRP.

Dr. Daniels: Hello, Nicole.

Dr. Williams: Hi.

Dr. Daniels: And I will come back to phone folks after we go through the list.

So, Bruce Cuthbert?

Dr. Cuthbert: Here.

Dr. Daniels: Jim Battey?

Dr. James Battey: Yes.

Dr. Daniels: Linda Birnbaum?

Dr. Linda Birnbaum: Here.

Dr. Daniels: Aaron Bishop or Jennifer Johnson?

Mr. Aaron Bishop: [Off-mike response.]

Dr. Daniels: Josie Briggs or Francis Collins? I don't think so.

[No response.]

Dr. Daniels: Ruth Etzel?

Dr. Ruth Etzel: Here.

Dr. Daniels: Hi. Welcome, Ruth, for your first meeting.

Tiffany Farchione?

[No response.]

Dr. Daniels: Melissa Harris?

[No response.]

Dr. Daniels: Elisabeth Kato?

Dr. Elisabeth Kato: Here.

Dr. Daniels: Hi. Laura Kavanagh?

Ms. Laura Kavanagh: Here.

Dr. Daniels: Walter Koroshetz, who will be next to me when he arrives.

Cynthia Moore -- or Daisy, yes?

Dr. Deborah Christensen: Daisy.

Dr. Daniels: Daisy Christensen. Welcome to your first meeting also.

Linda Smith?

[No response.]

Dr. Daniels: Cathy Spong?

Dr. Catherine Spong: Here.

Dr. Daniels: Welcome. Larry Wexler?

Dr. Larry Wexler: Here.

Dr. Daniels: And then we will go to our public members. David Amaral?

Dr. David Amaral: [Off-mike response.]

Dr. Daniels: Jim Ball is supposed to be joining by phone. Are you on, Jim?

[No response.]

Dr. Daniels: Yeah, he'll be on the phone.

Samantha Crane?

Ms. Samantha Crane: [Off-mike response.]

Dr. Daniels: Geri Dawson?

Dr. Geraldine Dawson: Here.

Dr. Daniels: Amy Goodman?

Ms. Amy Goodman: Here.

Dr. Daniels: Shannon Haworth?

Ms. Shannon Haworth: Here.

Dr. Daniels: David Mandell?

Dr. David Mandell: Here.

Dr. Daniels: Brian Parnell, are you on the phone?

[No response.]

Dr. Daniels: Kevin Pelphrey?

Dr. Kevin Pelphrey: Here.

Dr. Daniels: Edlyn Pena?

Dr. Edlyn Pena: Here.

Dr. Daniels: Louis Reichardt?

Dr. Louis Reichardt: Present.

Dr. Daniels: Rob Ring?

Dr. Robert Ring: Here.

Dr. Daniels: John Robison?

Mr. John Robison: [Off-mike response.]

Dr. Daniels: Alison Singer?

Ms. Alison Singer: Here.

Dr. Daniels: And Julie Taylor?

Dr. Julie Taylor: Here.

Dr. Daniels: And have I missed anyone off this list?

[No response.]

Dr. Daniels: All right. So the roll has been taken.

Dr. Cuthbert: Thank you.

Susan, do you have any other business? I think we need to approve the minutes from the last meeting.

Dr. Daniels: Yes. So if you turn your attention to the draft minutes that were distributed to the Committee, does anyone have any corrections or comments that need to be incorporated into these minutes before we can approve them?

[No response.]

Dr. Daniels: Hearing none, is there a motion on the floor to accept the minutes?

Dr. Battey: So moved.

Dr. Daniels: Second?

Ms. Kavanagh: Second.

Dr. Daniels: All in favor of approving the minutes?

[Show of hands.]

Dr. Daniels: Anyone opposed?

[No response.]

Dr. Daniels: And anyone abstaining?

[No response.]

Dr. Daniels: So the minutes are approved and will be posted to the IACC Web site as soon as possible after the meeting.

Thank you.

Dr. Cuthbert: Okay. Speaking of microphones on, when you use the microphones; be sure to remember to press the button. The red light will light up.

For those of you who have been in this room before, you know that there are only so many red lights that can be on before nobody can get through. So also please remember to turn the red light off after you've finished speaking so that others can use the microphone system.

Thanks.

So, thank you. Josh, if you want to move -- advance our slides, please? We have a quite a large number of science updates today. So we might as well jump right in and use that time to make sure that we can go through these and answer any questions that people have.

Okay. I think I have the slides here. Something -- there should be some slides about the actual -- you know, the PowerPoint with the updates themselves for people.

Maybe we're running through the agenda, yeah.

Dr. Daniels: Is there something there?

Dr. Cuthbert: Maybe it goes on through? Perhaps this is just a review of the agenda. Okay. I obviously haven't seen this slide set beforehand.

So we will have a presentation on the Autism Biomarkers Consortium. You can see we'll have a presentation by Dr. Anne Roux about transition-age youth on the autism spectrum, which is a very obviously important and timely topic that is receiving increasing attention as we continue to rapidly expand our ideas about autism from simply a disorder of young children to a lifespan disorder with its attendant needs, talking about

national-level outcomes.

Actually looks like we've gotten into Dr. Drexel's talk. So --

Female Speaker: Sorry about that. They're in the wrong order.

Dr. Cuthbert: Yeah, Dr. McPartland is here. So --

Dr. Daniels: We'll have to load them.

Dr. Cuthbert: So we'll have to get those loaded, which takes a while on this -- okay.

[Pause.]

Dr. Cuthbert: For those of you on the phone, we're just trying to see if we can get the slides up for the science updates or if we should move on to Dr. McPartland's presentation next.

[Pause.]

Dr. Cuthbert: So do you think we should just move on to Dr. McPartland's presentation?

[Pause.]

Dr. Cuthbert: Okay. So something happened in the electronic sphere to the science updates. So instead I will switch to a different presentation that I was going to give this afternoon --

[Laughter.]

Dr. Cuthbert: -- which is possibly appropriate

and I think will serve as a good introduction to the topic of the meeting. So this is a presentation scheduled for this afternoon on our Research Domain Criteria project at NIMH. This is essentially NIMH's version of Precision Medicine.

For those of you who are on the phone or looking at the agenda, this presentation was originally scheduled for 2:15 p.m., right after our public comments.

So you've heard a lot about the Precision Medicine Initiative at NIMH and the promise it holds for trying to treat the individual patient rather than large groups of patients for whom assessments and treatments may not be entirely appropriate for each individual. And so NIMH was ahead of the game with this. We actually started our Research Domain Criteria, or RDoC, project in early 2009 to develop ways to look towards Precision Medicine. And this has been supported, as you can see, by a large workgroup at NIMH.

Why are we doing RDoC? Why did we start this and so many years ago, relatively speaking? Well, the basic reason is that we're not changing the numbers in terms of prevalence, incidence, and treatment for any of our mental disorders. There

is an unremitting public health burden, and years lost to disability are very great and are not decreasing.

And when you see the changes in other areas of medicine like heart disease, leukemia, diabetes, and so forth, clearly, we need to shift how we approach our disorders and treat them.

And one of the fundamental problems for us is that the way we do diagnosis now with our current systems, the DSM and the ICD, have shown to be no longer really optimal for our contemporary research. We have diagnose really pretty much purely according to presenting symptoms and signs, and we now understand that this way of describing disorders does not identify specific disease entities, but rather that these disorders are very broad syndromes with many different components and pieces going on within them.

Also if you diagnose purely by symptoms, it's really difficult to do prevention because by the time symptoms appear, people are already having some illness, obviously some impairment, and a pathological process is already well advanced.

So our problem is, in summary, that the DSM and the ICD are sufficient for our current

clinical purposes, the way we diagnose and for the treatments that we have. But these same categories drive the entire research system -- getting research grants, getting published in journals, doing clinical trials, getting medicines approved by the FDA, and so forth.

And so this is a real problem for research because we can't really break out. I mean, there's no reason why we couldn't really use different ways of categorizing subjects in research except it's become such a strong, entrenched tradition to look at it this way that it's been difficult to get a research grant to examine the phenomenon in any different manner.

So just for autism spectrum, for instance, we know that we have the three traditional factors of social cognition and social behavior, communication impairments, and the repetitive interests and behaviors and activities, but Dr. London, in a recent review, noted that these factors actually correlate relatively weakly. For one given symptom, we only see 20 to 40 percent that have two symptoms.

And of course, by definition, the autism spectrum is a spectrum that is inherently very

heterogeneous. And people have been noting the problems with this for a long time.

Chris Gillberg started the ESSENCE project, that is Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations, to say that we should essentially have one large bucket of neurodevelopmental problems and really try to unpack that in different ways. And he talked about the need for alternative -- also Dr. London discussed the need for alternative diagnoses in ASD. Again, the same idea, developmental brain disorder.

Steve Hyman, the former Director of NIMH, noted in an interview in Spectrum News, that it makes sense to lump neurodevelopmental disorders for now to give researchers a chance to start over again, free of the bias created by unwarranted splits. And you can see that's been addressed with the DSM as well. For instance, the collapse of Asperger's syndrome into ASD as a single spectrum, which created a lot of debate.

And finally, in a recent article, Lai and the senior author Baron-Cohen noted that autism is not homogeneous and defining it using the umbrella term "ASD" risks whitewashing the evident

heterogeneity, which has a substantial impact for research into this condition. And yet, time after time, our research grants just look at autism versus typically developing controls, and it's really hard for us to address these individual differences.

So in a recent paper, Waterhouse and Gillberg commented that we need to take autism apart, as it were, with two major points. First -- actually, three.

First, to relinquish the belief that a single defining ASD brain dysfunction exists. That is that it is a single thing that we can define, which ignores individual variation.

Two, we need to reduce the noise caused by very difficult problems in relating brain activity to symptoms, and the suggestion that they have for overcoming this is to explore very narrowly partitioned subgroups. That is make better definitions of subgroups that where we might get some homogeny and start -- homogeneity and start to actually understand these differences.

And finally, to conduct analyses of the individual variation in brain measures. So, for instance, in a recent study, Campbell, et al.,

showed that there were three distinct genomic groups, as you see there -- disrupted neuron development, impaired nitric oxide signaling, and impaired skeletal development pathways. So these are really independent of simply saying there's a single ASD diagnosis.

So as we move towards the future, we really need to acknowledge the fact that in scientific research, a big part of our task is to be studying appropriate groups or dimensions so that we can understand the phenomenon. If we have picked the wrong way of grouping things, we have difficulties, and that's essentially what we found with ASD and, indeed, with all the DSM/ICD disorder categories.

But what do we do if our groups are not correct? Well, you know, then how do we proceed? What should we do? How do we make a decision?

So the way the literature is looking is that we need to shift from diagnostic approaches that are based purely on these broad syndromes to approaches that are based upon other ways of classifying subjects -- classifying by genetics, by specific behavioral patterns, by particular activity in the neural systems -- and looking at

very specific symptoms rather than just using the broad symptoms to say "and this gives us this disorder."

And importantly, we can't just classify one way and say, well, we're reducing it all to genetics or all to molecular cellular activity. An important task is to actually examine the relationships among all of these measures because only then can we really understand carefully the brain-behavior relationships.

And what is the right way? How should we then do this alternative thing? Well, frankly, we don't know. We have to start over. This is reminiscent of Einstein's old line, "If we knew what we were doing, we wouldn't call it research." And that's, unfortunately, the situation that we're faced with now.

So here's one example, for instance, of a recent paper taking an approach to defining by something other than the autism spectrum diagnosis based on signs and symptoms. These authors actually classified people according to the genomics, to the genetic patterns, and said let's take people with a certain genetic pattern, a set of abnormalities in the genome -- whether or not

they're diagnosed with ADHD, intellectual disability, and so forth, autism -- and see what we get there to understand how those specific abnormalities play out in phenotypes.

Another example is given by a researcher named Damien Fair at the Oregon Science Health Services University, who is typically most often an ADHD researcher but is doing an RDoC-themed grant looking at the relationships between ADHD and autism spectrum disorder to understand brain and behavior patterns in this combined group.

So how does RDoC fit in? So given that we don't know what we're doing, how does RDoC approach this problem? Well, some people have thought there's a lot of miscommunication about RDoC, for those of you who have heard of it, that RDoC actually is a new classification system and we're saying, "Well, we think we have it right this time. So here is this new system to test." That's just not true.

Rather, the way we think about RDoC is that it's a very focused research initiative moving toward a new classification system. It's an experimental system not in the sense that we've developed a system and we're going to experiment

with it, but rather we're experimenting in how we could classify and say, "Does this work? Does that work?" What -- how could we classify subjects to find out interesting things that move us forward?

So the idea we had to start with this is that let's not try to define disorders, but rather to look at specific functions. We all know, as we saw in the introduction, for instance, that in ASD we see specific functions that are impaired -- social functioning, social cognition, theory of mind, repetitive motor behaviors, language developments, and so forth.

So let's think about all these different dimensional constructs -- that is, ways of understanding data and ideas about what the functions are -- that relate to both behavior and to brain systems that actually implement these behaviors that cut across current diagnoses, and start with those constructs and understand how brain activity relates to behavior in these specific functions.

So the idea is that we -- by doing so, we can get a deeper understanding of these psychological and biological systems that are related to mental illness. And hopefully, that will lead us to new

biomarkers and biosignatures, and we're going to hear about that topic soon from Dr. McPartland.

In turn, those will, hopefully, lead us to more homogeneous groupings for psychopathology and pathophysiology research, as in the narrow groupings that have been recommended by Waterhouse and Gillberg.

And finally, in turn, those can lead us to new intervention development processes that are much more specific than we have now. So rather than saying we're doing a clinical trial of ASD versus controls, we may be doing a clinical trial for something very specific, but that we hope will have a better chance of finding a significant -- highly significant result that has a better chance of treatment.

So, overall, this slide shows the RDoC framework, and you can see that there are essentially four dimensions the way we've laid this out. First of all, clearly, we think of all of our mental disorders these days as neurodevelopmental disorder, and clearly, autism is one of the most notable of these.

The second factor is that we have to look at the effects of environment, starting at

conception. So this includes things that happen in utero, as well as developmental things that happen throughout the lifespan.

Third, if you look on the left over there, it says domains. We've actually specified five major domains of functioning. Negative valence, that means brain systems that have evolved to react to aversive situations like fear, threat, and loss.

Positive valence, working towards rewards and learning about rewards and good things.

Cognitive systems. Systems for social processes. And arousal and modulatory systems like sleep, circadian rhythms, and so forth.

So just to look at those last two things -- excuse me. I should go back and then say if you look at those blue columns in the center, you can see we, as I've mentioned before, examine all of these constructs across a number of different measurement systems.

Circuits, brain circuits are sort of in the middle of how we think about it, and we include all the things that are components of circuits -- genes, molecules, and cells. And then look at things that are, if you will, the output -- the brain circuit activity, physiological measures

like heart rate or cortisol, actual behavior, and various kinds of self-reports or questionnaires either by a patient, by parents, by providers, and so forth.

So this is the overall RDoC matrix showing those systems again and the so-called units of analysis for how we measure all of our constructs. And you can see this lists some of the problems that we see in autism, like communication problems and social functioning impairments, in the appropriate domains.

And it doesn't actually show symptoms because an important part of the idea is that we're not trying to define disorders here and say what is a disorder versus what is healthy. Rather, we increasingly recognize that our disorders are continuous in the population. They go from completely normal-range functioning and sort of shade continuously into varying degrees of impairment. And so that's part of the basis for the system is to understand how things change from being completely neurotypical to being very minor disruptions that we wouldn't even think of a disorder and gradually, as the impairment gets more severe, moves into something everyone would

consider to be a pathology.

And I should note that this is just a guideline for research. It's not a system set in concrete, and in fact, it's intended to be dynamic and always something that's under construction. For instance, when we originally conceived the system, we were really thinking mostly in terms of traditional mental disorders and completely omitted the really important aspect of motor behavior, which clearly is very relevant for autism, as well as other disorders.

And so we've from -- almost from the time that we completed the original formulations, we've been working on getting a motor dimension included, and you can see a recent article by Bernard and Mittal about this in Psychological Medicine.

So as we put all this information together, one of the things we realize, especially looking from the genetic side, is that geneticists and other people who look at the entire spectrum of mental disorders increasingly realize that our diseases, again, are not separate, distinct diseases, but rather are syndromes that overlap with each other a lot.

And this is a little hard to see in this room

on this slide, but I'll see if the pointer -- no, the pointer doesn't work either. So I'll just describe this.

If you look at the top, you can see those two sort of reciprocal banners, and one in orange and one in red. And the orangy one says a gradient of neurodevelopmental pathology. And under that -- this is a British slide -- it lists an ordering of disorders according to more severe to less severe early neurodevelopmental pathology.

So the first is mental retardation, which we would call intellectual disability. Thank you. The next is autism spectrum disorders. ADHD is next but is not shown in this slide, then schizophrenia, schizoaffective disorder, and bipolar and unipolar mood disorders.

And the point here, as you can see from the color spectrum at the top, is not that these are just a ranking of individual different diseases, but actually, there's really just this entire gradient or range of pathology and the disorders really are just subparts of that. They're just a particular range along this, but the disorders shade continuously from one end to the other, and so you can see these broad domains of pathology

like cognitive impairment, negative symptoms that we think of in schizophrenia, social problems, withdrawal, difficulty relating to people.

Positive symptoms, delusions and hallucinations and so forth. Broad domains that overlap what we have thought of as traditional disease entities.

And you might ask, well, why does this matter for autism? Well, part of the challenge we face, but also the opportunity in unraveling this whole area of mental disorders, is that if we really understood why those overlaps happen and what is happening with genetic risk architectures, neurodevelopmental patterns and how they interact with the environment, that that would help us unravel the whole thing and, in turn, really give us a lot of information about how we can approach any one part of this overall spectrum, such as autism, with which we are most concerned here.

So here's a good example of this genetic overlap between neurotypical subjects and autism spectrum disorder. This is a paper just coming out by Elise Robinson's group at Massachusetts General. This is from the Simons Simplex Collection of a large sample of children from

families both with autism spectrum disorder and their neurotypical siblings, at least clinically unaffected siblings.

You can see on the right are the siblings, who have higher scores overall as a distribution on the Vineland, and the autism spectrum children, who have lower scores. But there is this considerable area of overlap between these distributions in the center there.

And if you look over on the right graph, you can see the corresponding genetic loadings for these subjects, and on the Y-axis that shows the amount of genetic loading from the genomics analysis both for the kids diagnosed on the autism spectrum and then for their clinically unaffected siblings.

And you can see in this zone of overlap there, where the distributions overlap, the patterns that as you get higher scores on the Vineland, that's obviously a functional capability adaptation score, the more the genetic loading goes down. And in that zone of overlap, the slopes are almost completely identical, which suggests again that as you go from children we would think of as completely normal and typical and shade into the

autism spectrum, there's no sharp demarcation between normal children and clinically affected children. There is this continuous range.

And so, again, the challenge, but the opportunity for us is to say if we understood this dimension and understood how that increasing loading transmit to someone who finally seems to be clinically affected versus people who seem typical, that would really give us some insights into, well, what is it that's the tipping point that causes some people with a fair amount of genetic loading to be clinically unaffected and others to have severe clinical problems? And that's a real opportunity for us in thinking about things in a very different way.

So that's just a brief summary of the project. It's very complex, and I've only touched really on some high points here. But just to tell you what we are doing next in the way of advancing this project, one of the major tasks is to, in fact, develop paradigms, tasks, and instruments to measure these different constructs.

Obviously, we need common data elements so that we can relate studies to each other. If you are going to take this precision medicine

approach, where you are looking at dimensions or very small groups of subjects, clearly you have to have a large database to combine things to have huge samples in which you can then seek these particular small and perhaps rare subgroups. So you have to have common data elements to relate these things.

We have, for some years now, had the appropriate database in which to do this, the NDAR, our National Database for Autism Research. And that's been so successful that we now have other NIMH databases, one, in fact, for our RDoC project, another for clinical trials. Together, these are called the NIMH Data Archives, or NDA.

So, obviously, all of these things lead to data mining. And giving this presentation first, I'll note one study coming out of NDAR in the science highlights whenever we get to them.

We've also wanted to talk with regulatory agencies. Good morning, Tiffany. It's nice to see you. We've had very collegial discussions with FDA about how we think about these new ways of understanding our disorders and treating them, and that's clearly going to be a long-term process to move forward, both recognizing the scientific

opportunities, but also the risks and the need to safeguard public health and proceed with all due caution and circumspection.

So, overall, the goal here is to just simply ask the question how do we best parse and understand the heterogeneity in the autism spectrum so that we can develop better treatment and preventive interventions for each individual who falls anywhere along this spectrum and essentially to develop precision medicine approaches for ASD?

So that's, in essence, the project, and I think we could take a few minutes for discussion or questions if there are any? You'll hear me -- I'm glad to have the chance to introduce this first because you will hear me talking about this a lot as we go along because as the original architect of the actual design of the RDoC project, I will admit I get frustrated at times with our approaches that simply treat all the people with any of these disorders as one lump compared to controls, and that gives us a little information. But I get frustrated because we need to move ahead with these disorders, and I think this is one way to give us information to do it.

Dr. Dawson: Well, thank you, and I think that the RDoC approach is highly innovative and very likely to result in some very important scientific breakthroughs and different ways of understanding mental disorders.

My question is how is RDoC thinking about the important ways in which the different domains cluster together and are informative because they do so?

So if you think about something like Rett syndrome, and you have stereotype behaviors, regression, and respiratory problems, right? If you sort of took those and treated them as a separate thing and just looked at respiratory problems, let's say, you know, you may not discover that, you know, there's a specific genetic mutation that explains why those things would fall together.

Or another simple example would be in autism or in language development in general, recently it's been discovered that the social and affective aspect of interaction really is critical for the development of language perception.

So I just wonder how parsing these sort of different domains into their individual pieces

might actually interfere with our ability to understand kind of new insights about developmental etiology or biological etiology because things actually cluster together in unusual ways?

Dr. Cuthbert: Thank you. I'm glad you asked that question, and it's a good question.

From the inception, we've recognized the need to combine these elements, and so we have always encouraged researchers to combine units of analysis where appropriate. I would say, you know, again, people typically have not emphasized any one of these elements as such. They've always gone toward, you know, just the disorder.

For instance, in depression, people talk simply about, "Well, you're diagnosed with major depression," and assume it's the same thing, where we actually have subcomponents of stress, disrupted reward systems, disrupted cognition, and so forth. But clearly, those might be related.

So I think when you're talking about something like your second example of the relationship of social-communication, theory of mind to the development of language, that's something that I think would make an excellent RDoC research

project, in fact, because that would be important, and we would recognize the importance of each of those functions, how they interact, and the importance of measurement, you know, quantitative measurements and developing tasks for those things.

I think another good example is another recent paper from the Joel Nigg-Damien Fair group at Oregon looking at ADHD. And of course, again, that overlaps with autism a lot. They were interested in looking at ADHD from a temperamental point of view and looked at parent reports of child temperament and how those related to ADHD.

And in doing an analysis of the temperament reports, they really found that it clustered into three broad categories within the ADHD spectrum. One group had relatively mild ADHD and essentially normal temperament. The other two groups both had very high scores on a lack of cognitive control, you know, ADHD measures. But one group was very high on surgency, positive affect, you know, outgoingness, dominance, and so forth.

The other group that had an equally high ADHD and attention score were children who had very negative temperaments and, you know, oppositional,

crying, upset, emotional, and so forth. And so this suggested if you combine the attention measures and what we think of as the classic ADHD symptoms with temperament, you're going to get a much better understanding of the overall patterning here, and you can deconstruct that and really understand each individual subgroup of children.

So I think that's what we're trying to do is not to say you can only study one at a time, but in fact, the groupings may be informative. But it's just that if we have a better basis for understanding each individual difference, we can have a better basis to start combining them and making sense of that.

Mr. Robison: In the autism community here, we talk about the definition in the DSM. But of course, most other disease and difference in disorder are characterized in ICD, and ICD is the primary thing elsewhere in the world.

So the WHO had recognized the same deficiency in basing research on just those descriptions, and they have the ICF, with the proposition that we would research an inability to climb stairs, and it would relate to heart disease and it would

relate to muscular problems and what have you.

How do you see the Research Domain Criteria concept of yours as being similar or different, and how do you see that relating in broader international medical communication with the WHO's ICF effort?

Dr. Cuthbert: Thank you. That's a very good question.

First, as your example illustrates, the WHO has taken a sort of practical clinical utility approach to their functional measurements, you know, climbing stairs. What we've tried to do is to outline a system that can relate all of the different ways that we measure mental disorders, including genetics, circuit activity, and so forth. And of course, those aren't so proximal to things like climbing stairs.

Ultimately, you could get there, but there are a lot of other things that would affect that sort of practical need. So what we're trying to do is to get a system that can better relate all these different ways we have of measuring things with our new technologies and put them together.

So that's why we've based our functioning on -- every construct you saw, though, every one of

those dimensions had to meet two criteria to be listed. One, we had to have evidence there is a very specific function, like fear, theory of mind, behavior, working memory, and so forth. And two, we had to be able to specify evidence in the literature for a reasonably specific brain circuit or system that plays a major role in implementing that function so we can tie them fairly tightly together.

It doesn't mean that the brain system is 100 percent responsible, but it has a very major share in doing that.

For instance, David Amaral, before he became well known as an autism researcher, was one of the leaders in doing research on the amygdala and its role in fear. So we think of fear as a very specific function, and the amygdala has a very predominant role in orchestrating and organizing the brain responses in fearful situations. So that's what we're trying to do.

We do have very close relationships with WHO. I've been the liaison to their revisions of their ICD for the upcoming ICD-11 since I came back to NIMH in 2010, and so we get along very well because this kind of approach, given that it

involves sort of universals in brain systems and behavior, anybody all over the world has working memory and fear and so forth. So in the long term, it's a way to get beyond some of our cultural formulations of disorders and move towards things that are in common, and then we actually can facilitate how those things may be modified and moderated in a different culture, how you moderate -- you know, how fear behavior is expressed, how people communicate socially, and the importance of family and so forth.

So we actually have a lot of interesting discussions. And the folks at the WHO are actually thinking about using RDoC as a way to organize their new research diagnostic criteria that they're thinking about for ICD-11.

Mr. Robison: Would it be fair to say then that -- would it be fair to say that RDoC is a neurological foundation for the practical things in ICF?

Dr. Cuthbert: I wouldn't go that far because, again, the ICF is not really organized around these very specific brain systems. And you know, problems with climbing stairs is a sort of practical, everyday thing that can have a lot of

different sources to it, you know, various sorts of muscle dystonias, injuries, and so forth.

So it's not -- it's not a neurological foundation in that sense. It's kind of -- I mean, it could -- it would relate to that, but it wouldn't be that specific to what the ICF is doing. But that's not to denigrate the importance of the ICF, for sure.

So thank you for those questions, and I'll probably -- we may have occasion to touch on RDoC again in our discussions. But for now, I think we should move along, and we're not too far behind. So given our technical glitches that put us a little behind, I think we can move forward.

So now I'd like to move on to one of the important presentations of the morning. We're pleased to have Dr. Jamie McPartland with us, who is the Director of the Yale Developmental Disabilities Clinic and a professor of child psychiatry and psychology at Yale.

This is a new project that we at NIMH are very much involved with and are very excited, and this regards the Autism Biomarkers Consortium for Clinical Trials. And actually, this dovetails very nicely with the idea of RDoC because it's looking

at ways that we can look at specific biomarkers that we could use in clinical trials.

And Dr. McPartland, we will look forward to your presentation.

Dr. James McPartland: Thank you so much. Thank you for inviting me here.

It's really a pleasure to have the chance to talk to you about the project. I'm very excited about it, and it's a privilege to talk to this group about it.

So as Dr. Cuthbert mentioned, we're really just getting started, and so what I'm going to be talking to you about today is -- is the study design and our progress to date. So really a broad overview.

And I'll begin with the scientific context. So I think that all of this information is exceedingly familiar to most of you. We know that autism is a complex disorder. It's a developmental disorder. We really have much to learn about its etiology.

Diagnostically, we look at two different domains: social-communication and then repetitive behaviors and sensory behaviors. But even given those diagnostic criteria, there's a tremendous

amount of heterogeneity. So we see a wide range.

The symptom profile, as an example, in DSM-4, I mean, there were 12 symptoms, and you could have 6 to get a diagnosis of autism. So there's a tremendous variability in clinical manifestation, tremendous variability in language, and wide variability in cognitive ability.

So the idea with ABC-CT, is the acronym by which I'll refer to the study, is really to hone in on an area of commonality in this diversity, and that's social-communicative function. So it's a very -- a very wide-ranging group of behaviors that characterize autism, but to end up on the spectrum, all children have social-communicative difficulties.

This is a topic that has been very well and very thoroughly studied. Many of the seminal studies were carried out by people in this room. We have evidence for potential biomarkers of social-communication that can be useful diagnostically in terms of stratifying children who are more likely to benefit from treatments, in terms of measuring response to treatments.

I think the problem with where we stand in this field is evident in Dr. Cuthbert's

discussion, is that we really don't know some of the sources of variability in these results. So I say they're reputed biomarkers because we have evidence, but no study has replicated perfectly, and we don't know some of the differences for those lack of replications, whether it's related to language or whether it's related to IQ or other factors.

And so the idea here is to do a study that will resolve some of those uncertainties. The idea is that the ABC-CT will do a few things. One, it will be a large study. So I'll go over the sample, but it's 200 children with autism. These children are exceptionally well characterized, and procedures throughout the consortium are very, very, very highly standardized.

And so the idea is that we'll be in a position in this kind of study by reexamining some of the kinds of biomarkers that have been tested before to really deeply understand their potential utility.

And I should say you may have noticed the title of the project is the Autism Biomarkers Consortium for Clinical Trials, but there's no clinical trial. The idea is really to run it like

a clinical trial, and so -- and this is something that's become very evident to me as we've begun carrying out this work. One of, I think, the most important parts of the project is not just to create this toolset of biomarkers, but to build an infrastructure that's optimized for clinical trials, and I'll talk more about that as we go forward.

The study design, it's a multisite, naturalistic study. And by "naturalistic," I mean that we're not administering any intervention. We're examining change over time as it occurs by other events that we can't control in these children's life.

It's a multisite study. The design is -- there's an administrative core, which is based at Yale, interwoven tightly with Yale's CTSA, the Yale Center for Clinical Investigation. There are five collaborating implementation sites. The primary role of the sites is to -- is to bring in the families, maintain relationships, and collect the data.

The five sites are Duke, headed by your very own Dr. Dawson; UCLA, headed by Shafali Jeste; University of Washington, headed by Raphe Bernier;

Boston Children's Hospital, headed by Chuck Nelson; and Yale, which I co-direct the site with Kasia Chawarska.

There is a Data Coordinating Core, and the Data Coordinating Core serves two roles. The Data Coordinating Core is a joint effort between the Yale Center for Clinical Investigation, leaning most heavily on the Yale Center for Analytical Sciences and also Prometheus research.

The Data Coordinating Core builds -- build a data management infrastructure to ensure that data is collected, quality controlled equivalently at all sites, to move data between the nodes of the study, and to maintain it securely. The other role of the Data Coordinating Core relates to its -- this study's conduct as a clinical trial. And so the Data Coordinating Core also monitors adherence to regulatory policies.

So the DCC has site monitors that are visiting sites to do trainings and also are visiting sites throughout the course of the study to ensure that they're sticking to our protocol.

There's a Data Acquisition and Analysis Core, which is a virtual core. So it was not realistic for us to assemble expertise with the technologies

involved in one place, and so this is a virtual core. Its director is Sara Webb at Seattle Children's Research Institute. The co-director is Fred Shic at Yale. Together, they have really ideal expertise in EEG and eye tracking, which are really the foci of this study.

There is also aspects of the DAAC that are handled at Duke, at Yale, at Boston Children's, and all analyses are done by Catherine Sugar's group at SIStat at UCLA. So the Data Acquisition and Analysis Core, the role in the project, is really to handle the data from start to finish, and this is another way in which this trial -- this project is run like a clinical trial.

So the data is collected at the sites with the portals created by the Data Coordinating Core. It's brought to the DAAC, where it is processed, where the dependent variables are derived, and where all of the analyses are done. So really there is a firewalling of the site investigators from the analyses in this way.

The cohort is 4- to 11-year-old children with autism spectrum disorder, 200, and typically developing children, 75. The IQ range in the study is 50 to 150.

The study design is that before we begin data collection in earnest, we're conducting a feasibility study of 50 children. So this is 25 children on the spectrum and 25 typically developing children, collected equivalently across sites.

And the idea of the feasibility study is, one, to make sure that the infrastructure that we've built works, to test it. Two, to get data about how viable the battery we've planned is in terms of fatigue, burden, and the individual measures. And then, three, to the extent that we're able given this limited sample, to get a sense of which biomarkers are performing the best.

So once we were -- we are in the feasibility study now. At the end of the feasibility study, we'll move into the main study. The study design is across three time points -- a baseline visit, a visit at 6 weeks, and a visit at 24 weeks -- so that we're able to look at both stability in the short term and potential change in the longer term.

The biomarker battery that we're using really, as I said, is focused on social-communicative function -- not exclusively, but primarily. The

different methods that we're using to collect data. First, we're using eye tracking. I have next to it, EU-AIMS.

So I'm sure many of you are familiar with the EU-AIMS project, headed by Declan Murphy, which is a project being run throughout Europe with similar goals, a more expansive scientific scope. But we have worked together with Declan and his team to incorporate some of the same measures. So that in addition to having a large sample here, we'll be able to relate it to an even larger sample in the European study.

So eye tracking. EEG, both oscillatory and event-related measures. And again, we're working with EU-AIMS to synergize and harmonize measures.

And then lab-based measures. And so, when I say "lab-based measures," this is a bit of jargon that we've created for this study. By lab-based measures, we mean ways of quantifying behavior that are as objective as possible, that take out things like clinician rating or subjective codings. And I'll give you examples of that when I tell you the paradigms that we're using.

So in addition to these three domains of potential biomarkers, we're also using the state

of the science, right, which is the clinical and caregiver-administered measures that are used in most studies to date.

We're also drawing blood in this study. There is not a scientific aim involved in our study for genetic analyses. But part of the idea is that by creating this really deeply characterized phenotypic dataset, we can then add blood, and this will be a tool that can be used in many ways down the line.

I want to review the governance. This is the organizational chart for the study, and so there's a lot to look at. But I don't think it's all relevant. What I want to direct your attention to are just a few things.

So there is, in addition to the scope and kind of style of the project, one of the things I think that's unique about it is its governance. And so this is a public-private partnership, and so the administration -- whoops, the administration of the ABC-CT is carried out by a Steering Committee that includes scientists from the consortium, but then also project scientists from NIH, representing NIMH, NICHD, and NINDS.

This Steering Committee is chaired by myself

and Dr. Wagner, who is also the program officer for the study. And we also -- we have evolved, and we have on the Steering Committee Dr. Linda Brady, who is from the Biomarkers Consortium. And that's the other piece of governance.

So decisions are made jointly between the Steering Committee and the between the Biomarkers Consortium Project Team. I don't know, many of you are probably familiar with it. The Foundation for the NIH has a Biomarkers Consortium. We are the first autism project of the Biomarkers Consortium.

We presented to their Executive Committee and were accepted as one of their projects. There is a designated project team overseeing our study in collaboration with the Steering Committee.

The advantage of this is that we bring in additional expertise and, specifically, expertise from industry and from the FDA. So that should we have excellent results, we can move forward with biomarker qualification with the FDA. And so there is a complex governance in this study, but I think it's actually a strength of the study because we're bringing together expertise from NIH, from academia, and from industry.

We also have an External Advisory Board that

serves in a consultative capacity. Alison Singer and John Elder Robison are also members on our External Advisory Board, and they are available to consult with us. They are composed of people who have -- who have led networks or major autism research centers or conducted similar research.

And so really, together, we have, I think, an outstanding set of experts contributing to our governance.

The sample design is really the gold standard. So Autism Diagnostic Observation Schedule, ADI, and DSM-5. I mentioned the IQ range. We thought a lot, very carefully about whether we would include children on medication or not. We determined that it was not likely to have a reliable and generalizable study if we excluded children on medication. So we're including children on medication as long as they've been stable for 8 weeks upon entering into the study.

We have a number of exclusionary factors. Really, the idea being to exclude children for whom the correlations that we're interested in examining in the study might be attributable to other causes.

Our typically developing children, similar.

We're ruling out any typically developing children who are elevated with psychiatric factors on the Child and Adolescent Symptom Inventory.

So the goals of the study are -- there is really three aims. The first is to compare these biomarkers with the conventional measures that have been used historically. So clinician and caregiver measures, and we relate these all to a clinical status that we're determining independently through CGI. We're interested in seeing how the biomarkers associate with clinical status at each time point and then also over time.

The second aim is to evaluate the biomarkers in terms of a set of psychometric factors that we've designed with our analytic core, and they include feasibility of implementation, really whether we can get children to complete them, whether that in itself is doable.

Construct validity. Meaning that if we have an experiment designed to manipulate a certain aspect of cognition, it seems to do so.

Test reliability, consistency, and stability. So, really, are these measures reliable in a person over time?

Discriminant validity. Do they discriminate

between children with autism and typically developing children?

Convergent validity. Do we see convergence among different measures addressing the same constructs, irrespective of the data modality?

Sensitivity to change. If children get better or worse over the course of the study, do we see corresponding change in the biomarker?

And then also adequate variability within and between groups. Are the biomarkers -- do we get a sufficient diversity of measurement, not floor effects or ceiling effects, so that we can actually examine them?

And the third aim is actually to draw the blood and to upload it to NDAR so we can create a community resource.

I want to review the individual paradigms that we'll be doing. So in terms of EEG, we'll be doing resting state EEG. During the -- during EEG recording, we show nonsocial abstract movies on screen. We'll derive a number of different dependent variables that will let us look at connectivity and coherence across the brain hemispheric asymmetry. And then we can use more sophisticated measures that have been dealt with

in Chuck Nelson's lab with multiscale entropy.

In addition to being a first order or potential biomarker, resting state EEG will also be critical for us in terms of a comparison for some of the event-related measures that we'll derive in our other experiments. I won't belabor all of the background evidence for the measures, but you'll see on each slide there is a bullet that describes. All of the batteries, all of the experiments that we've selected are ones that in prior research have been shown to either discriminate autism from typical development or, more importantly for this study, to correlate with some aspect of social-communication.

And so the idea here is really -- in many studies, the idea is you want to do something that no one has done before, right? Innovation. And what we were looking for here is really to take -- not to create new things, but to take the most promising biomarkers that have been studied previously and do a more thorough study of them.

We're also -- one of the few tasks that we're doing that isn't a direct measure of social-communication is looking at visual evoked potentials to checkerboards that reverse phase.

This is an index of low-level visual processing, lets us look at the functional integrity of the visual pathway, which is something that is intrinsically interesting to us.

But again, given that many of our tasks involve visual perception for more complicated social processes, this gives us a baseline to make sure that there's not low-level sensory differences between the groups.

Our next study is response to biological motion. This is something that's been well studied in autism. Kevin Pelphrey has done important work in this area. We're showing children point light displays depicting biological motion or scrambled motion, and we'll be looking both at ERPs and oscillatory activity elicited by these stimuli.

Our face processing task is one that we've harmonized with EU-AIMS. I think that this is -- the relationship with EU-AIMS has really been, I think, an outstanding example of collaboration at a large scale. EU-AIMS is about to begin their second round of data collection. They had a face processing task in their first round. One of the stipulations of the RFA was for us to include it.

In our discussions with them, we had some

ideas about how it could be improved. And so they have actually changed their paradigm so that we'll both be using a different, new and improved paradigm. But I think it's just a great example of the kind of compromises that these groups have been willing to make so we can do a better -- better set of studies overall. And so this face is upright and inverted and compares it to houses.

We're looking at emotional faces, specifically neutral versus fearful expressions. This is -- these are not the stimuli that we're using. We're using NimStim.

Dynamic stimuli, we're using social scenes. This is also one that's being used in EU-AIMS. Children see videos of a caregiver talking to them or singing nursery rhymes, and this is alternated with videos of colorful, action-oriented videos that are nonsocial in nature. And so, again, we'll be looking at oscillatory activity elicited by these paradigms.

In terms of the eye tracking experiments that we're using, we are also looking at preferential attention to biological versus scrambled motion. This is a paradigm that's partially overlapping with EU-AIMS. We have some stimuli in common, but

we have a greater range of stimuli.

We are using the spontaneous social orienting task, affectionately referred to as "the sandwich lady." This is a woman who speaks to the viewer and makes bids for shared gaze and also makes bids for joint attention. So she talks to the child, and she'll also make reference to some of the objects on screen to see if a child follows her joint attention bid.

This is an interesting paradigm that was developed by Kasia Chawarska's group that actually is one of the few measures that has been shown to provide information about stratification by developmental trajectory.

The activity monitoring task was developed by Fred Shic's group, and this is a task in which children watch videos with two people performing an activity together and describing what they're doing. Fred has found that there's differences between children with autism and typically developing children, whether they attend to the task or distracters in the background.

And this is -- I haven't mentioned this. This study and several of the other paradigms -- the resting, the biological motion -- are studies that

have -- are paradigms that have already successfully been employed at studies spanning some of these sites. So four of our sites are involved in an ACE network. Two of the sites are involved in a separate clinical trial. And so the group has some experience collecting measures in concordance, and this is one of the examples.

And interactive social task is a more novel one. This is a task developed by Bob Schultz's group in Philadelphia. This is very similar to the activity monitoring task, but there are children, partners, and the activities are a little more unstructured and complex.

We're using Dr. Klin and Dr. Jones' naturalistic scenes. These are scenes taken from movies like "Welcome to the Dollhouse" and "The Sandlot." The videos are parsed into different regions of interest -- people, background, eyes, mouths -- and will examine differential attention between children with autism and typically developing children to these regions and see how they also correlate with social performance.

We're including a pupillary light reflex task. Again, a nonsocial task that is overlapping with EU-AIMS. Very straightforward paradigm in which

there are black and white flashed on screen, and we examine the rapidity with which pupil dilation responds.

The gap overlap task is another task overlapping with EU-AIMS. This is the task where stimuli appear on screen. There are multiple stimuli that appear, and it examines the child's ability to shift from one that's on screen to another when there is overlap or when there's not an overlap. It's a measure of attention shifting and disengagement.

And then the last eye tracking paradigm, again from EU-AIMS, is attention to social versus nonsocial stimuli. So an array of images appears on screen, and children -- and we examine children's preference to look at one type of stimuli or the other.

Our lab-based measures, there are a few, and these are certainly the most novel, least well studied measures that we've included in our design. So the first task is a video tracking task. This uses a Noldus EthoVision camera. So this is a camera that is placed at the center of the ceiling of a room, and it automatically records what's going on in the room. It captures

anything red.

So we have the child wear a red shirt, and then we get an objective quantification of how the child moves about and behaves during the assessment. This is during a free play assessment. We also collect it during the ADOS.

And the idea, and you can see this from examples, this was done in -- these are from a study done by Ira Cohen, who's serving as a consultant on our study, is we can look at differences in social proximity seeking, which associates with social-communicative ability.

So you can see at left, the typically developing child is more likely to stay in the vicinity of the parent, and the child with autism is more likely to roam about the room.

The second lab-based measure that we're doing is the Language Environmental Analysis, or the LENA. This is an automated data recorder that a child wears in their shirt. So you can see my daughter is modeling, and you can see they both have a pouch at front that has the LENA recorder in there.

So it picks up all the sound that happens in the child's environment. There is a proprietary

software algorithm that analyzes the data stream and outputs the conversational turns, the number of vocalizations produced by the child and by adults in the environment.

We're using it in two ways. We're collecting data during our lab visits, throughout the entirety of our lab visits, and then we're also sending the data recorders home with the children. And this is something in some of Geri's clinical trials that has been associated with social-communicative function.

We're using more conventional measures to the kind of stimulus booklet-based measures used by neuropsychological and psychological testing. Two measures, the NEPSY and the Kaufman Assessment Battery for Children, which are looking at emotion, facial emotion recognition and facial identity recognition.

In addition, we're doing the gamut of clinician/caregiver assessments that have been used historically in contexts like this. So the Autism Diagnostic Observational and the ADI for diagnosis, the Vineland to look at adaptive function. Cognition, we're measuring with differential ability scales.

We're using the Clinical Global Impression scale. I think a nice example of one of the ways in which we're trying to do things as rigorously as possible is Lin Sikich, who is the PI of the ACE SOARS Network, has developed a novel reliability system for this study, and so we're ensuring that all of the clinicians throughout the study are completing CGIs in the same way. So she's just really helped us kind of take reliability up a level.

And then we're using -- I won't go through the whole list, but we're using a range of caregiver report measures that are really designed specifically to look at aspects of social-communication. We also thought, given the plan to use this system in clinical trials, to look at factors related to parent experience and family quality of life.

And we're, of course, very closely quantifying intervention history and medications received over the course of the study because we're going to really -- one of our goals will be to analyze retrospectively if there is change in children. And hopefully, all the children in the study will improve. We can analyze how specific styles of

treatment may relate to our biomarkers.

The biospecimens that we're drawing, we've evolved since -- since we were funded. The original plan was for us to draw tubes to send to the NIMH repository. We've had a series of very productive discussions with Wendy Chung at the Simons Foundation. We've now developed a partnership with their new SPARK project, and we're going to be drawing an additional tube to send to SPARK.

And that will also provide the families that enroll in our study with the opportunity to benefit from the genetic feedback that's being carried out in the SPARK project.

So the planned interim and final data analyses, and this is work that's being overseen by Catherine Sugar. Catherine Sugar is an analyst on the FAST AS project. She's really one of a kind. It's been a privilege to work with her because of her deep statistical understanding, but her also conceptual understanding of clinical matters as they relate to autism.

And so we want to examine these biomarkers in terms of the battery of performance metrics that I've described previously. We want to see the

relationship among them and their sensitivity to correspond with clinical status over time. And we want to see, to the extent the children change over the course of 6 months, whether we can see these changes in our biomarkers. We think this will be especially important for intervention trials down the line.

So some of these can be -- can be studied with very straightforward analytic methods. Catherine also has planned ways to help us learn more than might be at the surface. So we'll be using cluster analysis to try to define where there are homogenous subgroups in this group, and then also approaches like multidimensional scaling to try to see if there are composites of these biomarkers that might provide information that aren't evident in any one biomarker.

The idea, we see the project as a very early-stage biomarker validation effort. In many ways, this is a really important step backwards. So many of us in our labs are already using many of these markers in clinical trials, but we don't know some things. We don't know their stability over time. We don't know their stability within a person.

And so really, we're going to create a

foundation in this study that is necessary for the way that we're planning to use -- we as a field are planning to use biomarkers in clinical trials. We want to understand the technical and biological variability of these kinds of measures in this age range of children, and we want to compare them to the kinds of investigator-administered measures that are the status quo.

The other thing that we think will be a very important outcome of this study is to create a public data resource. And so we're really working closely with NDAR and via Prometheus to upload all of the data that we're collecting. So the EEG, the eye tracking, our lab-based measures, all of the clinical measures that are already in NDAR, and then to integrate these with the blood samples. So there will be -- there will be a great toolset for future genomic analyses.

This is where we stand so far. So what has happened so far, we've had a meeting with our External Advisory Board, a virtual meeting. We've had the protocol reviewed and taken their input. We had an in-person meeting in August to bring together both the Steering Committee and the Biomarkers Consortium Project Team to discuss the

protocol and to finalize it.

Really, this has been a -- it's been a very active process of discussion. There are many considerations. As an example, you can see we've gone with an IQ range of 50 to 150. And this is a really important decision.

One of the things we struggled with, as Dr. Cuthbert said earlier, there are benefits to having a really tightly constrained sample, but you also lose then the ability to understand some sources of variance. And so a lot of thinking has gone into how to finalize this design.

We -- our Data Acquisition and Analysis Core has finalized all of the experimental paradigms. Our clinical team has finalized all of the clinical protocols and developed reliability standards. Our DAAC has established ends for hardware configuration and verified that all the hardware is identical and working consistently across sites.

And I didn't say enough about this. But that is also I think one of the strengths of this study. If you look at something like the EU-AIMS, which is a vitally important project, there are -- there's still a tremendous amount of hardware

heterogeneity in that study. So there's different eye trackers, different EEG systems being used throughout.

And so one of the things that we thought was really critical here is to make everything identical. So to the monitors being used in the study, to the number of pixels that a dot in a point light display fills out, all these things are consistent from site to site, which I think will be helpful in understanding any variability that we see.

We've had an in-person -- in October, we had all of the study investigators come to Yale for an in-person training. We've also had the Data Coordinating Core go to each site to do specific trainings. The DAAC has visited each site, both to confirm hardware setup, to perform hardware setup, and then also to do onsite trainings of data collection staff.

And then we've also finalized all of the electronic case report forms and developed the data management infrastructure as well as the large file systems for moving around the video, EEG, and eye tracking files.

We're underway. The feasibility study started

enrollment on December 8th. Our goal is to complete the feasibility study within 3 months. To do so, feasibility analyses will be collected on a rolling basis as data is collected.

When we have the data and when we have the analyses, we will then present the data to the Biomarkers Consortium Executive Committee and as well as the BCPT and the Steering Committee, and then we'll make determinations about whether any modifications to the battery should be made before we move on to the complete study.

The idea for the complete study is a 3-year data collection period, with finalization of analyses and publication in Year 4. And I should -- I'll clarify when I say 200 subjects and 75 subjects, it's -- we've really tried to plan for the study so those are the actual numbers that we end up with.

So we're bringing -- it's tremendous throughput. So those 275 children will translate into 3,070 full-day visits over the course of those 3 years. So it's an ambitious study. We have made a tremendous amount of progress already, and we're very excited about it.

So those are the things that I wanted to

convey to you, and I'm happy to discuss or to answer any questions that you might have. But thank you for your time.

Dr. Cuthbert: Thank you very much. That is a fascinating project, and you've described it very clearly. So thank you.

So it looks like we have questions, comments.

Dr. McPartland: Sure. Dr. Reichardt?

Dr. Reichardt: I just wanted to ask you a couple of questions. I mean, one is which of these measurements do you have evidence they're stable in kids from 4 to 11? I mean, you have a tremendous IQ range and, obviously, a tremendous age range. And anybody who's had children knows that 4-year-olds are very different from 11-year-olds in many ways.

Dr. McPartland: Well, I think -- yeah, it's a great question. And to an extent, that's the point of the study is to pinpoint those kind of things.

So if you take something like the N170, like an index of face perception. So it's very well studied. It's there from 6 months to adulthood. So it's stable in that sense. From 4 to 11, changes happen. Its latency decreases between the ages of 4 to 11, and there have been studies in typical

development of it over time.

But this is what we really don't know that we need to know is how stable are these measures in these kids? Because these are -- these are measures that are already being used in clinical trials without that kind of background knowledge.

Dr. Reichardt: So I guess the second question is what are you -- what use are you making of the blood besides genetics? And obviously, I was curious why I didn't hear inclusion of auditory brain stem responses, for example.

Dr. McPartland: So two questions. So the blood, so part -- the genetic analyses were not part of the RFA. It was something that we're very excited about, but that we weren't funded to do. So I think that a number of the investigators are -- for example, Raphe Bernier is an active Simons investigator. So I think as the blood is processed, we'll probably dip back in and be some of the first ones to analyze it, but they aren't part of the scientific aims.

The auditory paradigm. So when we've -- when we began, we had two auditory paradigms. We really struggled. We think that auditory is something that is relevant certainly to autism. We -- in our

estimation, there was much weaker evidence for auditory paradigms as biomarkers specifically with EEG.

And so the length of time any given auditory paradigm took, it lost the cost-benefit analysis, and they were eliminated from the paradigm, from the battery.

Dr. Birnbaum: So thank you very much. That was very important for us to all know about.

I'd like to suggest that, given that you're taking blood samples, it might also be nice if you were to take urine samples, both from the children and parents, and it would be very nice to know what kind of environmental exposures are going on.

We've just established the CHEAR program, which is a program that any NIH-funded investigators who have samples from pregnancy through childhood, have samples can have -- potentially have analyzed for a whole range of analytes or even agnostic measurements in their biological specimens. And it would be very nice to know both in the children and the parents what exposures are ongoing in those kids.

Dr. McPartland: That's a great idea. I mean, one of the things that we struggle with, because

there are so many things that would be exciting to include, is how much more can we reasonably ask people to do. But that's something that's very low impact. So I'll bring that to the Steering Committee.

Thank you.

Dr. Birnbaum: We can have agnostic measurements, measure thousands of things in 100 microliters of serum.

Dr. McPartland: That's a great idea. It's one that we hadn't discussed yet. Yes?

Ms. Crane: So just with respect to the exclusion of people who have sensory disabilities or epilepsy and many other sort of confounding factors, is there a future plan to start including that population at some point, given that people who have both epilepsy and autism spectrum disorder, it's a pretty big population.

Dr. McPartland: Mm-hmm.

Ms. Crane: And I think it might be worth studying in the context of all of these other markers.

Dr. McPartland: So two things. One, to clarify, people with sensory difficulties are not excluded from the study. I abbreviated it on the

slide, but it's really it's only if there was a sensory or motor difficulty that would prevent them from completing study measures. You know, for example, they couldn't see the screen or they couldn't sit in a chair.

And with epilepsy, it's a really -- it's a problem with EEG is that if there's an atypical electrical activity in the brain, it renders our measures too noisy. And so at this stage, we've planned it this way. But it's something that we could look at down the line.

Dr. Cuthbert: Yeah, I think just before we go on to the next question, that's very important because we have to remember that this is not, again, a clinical trial or a study to understand this pathophysiology of the group, per se. It's rather to establish the reliability and validity of these biomarkers. And once we have that, we could then, in fact, proceed to look at those things and try to accommodate noise and so forth, but at least have validated clinical measures for these other groups and comorbidities.

Yes?

Dr. Wexler: Thank you for the presentation.

Are any of the subjects siblings?

Dr. McPartland: None of the typically developing -- a sibling with autism is an exclusionary criteria for a typical control. But we could have siblings who both have an autism spectrum disorder in the study.

So we're not studying "unaffected siblings," but we could be studying siblings who both have autism spectrum disorder. Or we could be studying siblings who are typically developing who don't have anyone related to them with autism.

Dr. Birnbaum: I have one more question related to what you're looking at in some ways is relatively similar to what's being done in the CHARGE or the MARBLES studies being done with the MIND Institute in UC-Davis, where they have been looking at biomarkers. They've been comparing children on various places of the spectrum, with typically developing as well as developmentally delayed children who have come up with a lot of potential biomarkers.

So I assume that there is some communication going on and opportunities to talk at least and potentially even enrich each other's programs?

Dr. McPartland: We haven't planned the study in collaboration with those two specific studies,

but many of the investigators are involved in other clinical trials. And so they fit into it.

And then we've also -- anything that's been -- any potential biomarker using EEG and eye tracking or lab-based measure was considered for inclusion.

Dr. Cuthbert: I had one other question. Are there any issues with receptive language skills in the children that would make it difficult for them to understand the instructions or, you know, do the tasks? Does that become an issue for, you know, especially --

Dr. McPartland: Sure. So the receptive language of the children is always a challenge, and for that reason, we really designed the entire battery to -- so we figured our most challenging child, given our inclusion criteria, could be a 4-year-old with a 50 IQ. And so we really designed the battery so that a 4-year-old with a 50 IQ should be able to get through all of the measures.

That's our vision. That's also part of the reason why we have the feasibility study. And so, at the end of the feasibility study, we'll revisit and see if there are certain measures that just aren't working for certain children. But that's the idea. We wanted it to be a battery that does

not require a high level of receptive language.

Dr. Cuthbert: Thank you. Any other questions or comments?

[No response.]

Dr. Cuthbert: Okay. Dr. McPartland, again, thank you very much.

This is a very significant study, and again, I want to emphasize the point that you made at the outset, that you're going towards very quantitative measures of all of these functions. And so they will be very sensitive to change with those that survive the validation and will really be a big advance in our ability to do clinical trials.

And some day, we could hope that some of these, especially those that have more feasibility for actual clinical use, could find their way into clinics for actual clinical use going on from the clinical trials. And you know, a couple of years ago, there was a paper by Tom Insel, Shitij Kapur in London, and others on the topic of, you know, why don't we have any clinical tests for mental disorders and what could we do about it?

And I think that we're a long ways away, but studies like this could be the first steps. And

once we have the measures that are useful in clinical trials, then we can go on to think about these things as useful, productive adjuncts to our standard clinical measurements as we now diagnose by symptoms.

So this is really a very laudatory effort. Thank you.

Dr. McPartland: I agree. Thank you.

Yeah, four of the five site directors are also clinic directors. So that's very much our hope.

Thanks.

Dr. Cuthbert: Okay. Now we move on from this topic to something of equal relevance in a very different domain, looking at national-level outcomes of transition-age youth on the autism spectrum.

This is clearly a very important topic, has been receiving increasing attention lately as a really very significant gap area in our autism services and how we set up people on the spectrum to have a productive life throughout their lifespan. So we're pleased to have with us Dr. Anne Roux, who is a research scientist in the Life Course Outcomes Research Programs at Drexel University.

Dr. Roux, welcome.

Ms. Anne Roux: Thank you very much.

I'm really honored to be here today presenting on behalf of Dr. Paul Shattuck, who is the director of our Life Course Outcomes Research Program at the A.J. Drexel Autism Institute. And I'm going to talk to you today a little bit about what we do at the institute because it's a fairly new entity, and then I'm going to share the results of a report with you that you have, I believe, in the bottom of your materials.

And then I'm going to talk to you a little bit about a report that we are working on right now that will be coming out this year.

The work that I'm going to talk to you about today was funded by a grant from HRSA, a Healthcare Transitions Research Network grant, for which we're very grateful because it's allowed us to go in new directions and has helped us to start to lay the foundation for moving towards systems transformation, we hope.

So the A.J. Drexel Autism Institute has several missions. It is one of the first, if not the first, research institute in the country that is dedicated to using a public health approach to

studying autism. And we have three main programs at the institute.

Dr. Craig Newschaffer runs the Modifiable Risk Factors Program, which seeks to identify and reduce, to eliminate avoidable causes of autism. Dr. Diana Robins, who will be speaking with us later today, is in charge of the Early Detection and Intervention Program. And the Life Course Outcomes Program is run by Dr. Paul Shattuck, and what we focus on is promoting the highest quality of life possible for adults on the autism spectrum.

This is a number that I would suspect many of you have seen before. This comes from our work. About 50,000 to 70,000 children with autism turn 18 every year and enter the adult service system, which translates into about a half million children becoming adults every year. So a very sizable population.

Improvements in identification since the 1990s have caused this explosive growth in this population, yet we know shockingly little about what happens to people as they age into adulthood. We know even less about how their lives unfold over time.

At our institute, we use a life course perspective in our Life Course Outcomes Research Program, and I want to talk to you a little bit about what that means.

So on the day that youth turn 18 and they enter the adult service system, their skills and their abilities are not notably different than they were the day before. But their relationships to others, to organizations, to society, to societal institutions are fundamentally different.

And this is what we call a life course perspective. We focus on how these turning points and transitions affect people, their relationship to other people, to institutions, and to social context. These are things that give our lives texture and meaning because we not just bundles of skills to be modified. What is really important is the quality of life aspect.

So our current understanding of how young adults with autism are faring is not unlike a Model T. In the early 1900s, people drove Model Ts without dashboards or controls. They had few indicators of how fast they were going or where they had come from, and they had no navigation.

We also have precious little data to help us

understand and monitor the outcomes of adults with autism. Our evidence base is replete with small case studies and small N interventions. According to the 2013 report from this Committee, between 2008 and 2012, Federal and private funders in the U.S. spent about $1.5 billion in autism research, but we know really little about what these expenditures buy us in terms of outcomes long term.

So in our field, we often hear people talking about moving the needle on outcomes, and our team is really working to build the gauges to help our societal dashboard so that we can literally understand whether we are moving the needle across time.

So we're a fairly new research program, and one of the first things that we set out to do is to catalogue across outcome domains what do we currently know, how can we describe how young adults with autism are faring? So in April of 2015, we published the first in a series of National Autism Indicators Reports, and this one focused on the transition to young adulthood.

There's a back story to understand here. This report grew out of federally funded research, with

a strong emphasis on scientific rigor. So the slides that I'm presenting to you today I purposefully put in there because they came from our report, and I want you to see how we presented our scientific information. I'm not going to go into a lot today about methods unless you have questions about that.

But I want you to understand that the funding that we received from the National Science Foundation, the Institute of Educational Science, from an R01, and from many other sources has allowed us to produce the type of information I'm showing you today.

So we published over 20 scientific articles over 5 years, primarily using NLTS-2 data, which I will speak to you about in a moment. And every time that we have published a scientific article, we've had an outpouring from the community of people who are asking questions, who are wanting copies, who want to take the reports, the articles with them to their IEP meetings. People are just very hungry for this type of information.

And we know anecdotally that the type of information that we have produced about young adults has affected things like the CARES Act and

the focus that that act had on transition. So this is -- we feel has been really important work, and we were really fortunate to receive funding recently that has allowed us to take the scientific information and translate it and disseminate it into information that we feel like we have evidence that people are starting to actually use.

So a couple things I want you to keep in mind about this report. The first thing is that we purposefully involved adults with autism in everything ranging from the conceptualization of this report all the way through graphic design. And when I say "involved," I mean more than one person and in a very meaningful way of a lot of dialogue that was very influential.

We produced the report in a way that is freely available, understandable science. And there are parallel fact sheets for every chapter that can be used for advocacy efforts. And we used any and all available national data about emerging adults with autism.

So the data for our study primarily came from the National Longitudinal Transition Survey, which is a national survey that was initiated in 2000 to

capture the experiences of youth who received special education during high school and then follow them forward over time. We did not conduct the NLTS-2. Our role was secondary data analysis. It was a study that was commissioned by the U.S. Department of Education.

The NLTS-2 is currently our best source of information in this country about how young adults with autism are faring. I believe there were about 600 adults still enrolled in the study at the time of data collection that I'm going to talk to you about today, when youth were 21 to 25 years old.

But the NLTS-2 does not provide a complete range of information that we need. So, for example, data about health and mental health in particular is lacking. So we also looked at the 2011 Survey of Pathways to Diagnosis and Services, which was a follow-up survey to the 2009-2010 National Survey of Children with Special Healthcare Needs. So the NIMH commissioned Pathways as a follow-up study to that.

We focused on the transition years primarily because they're the last point at which we have good national-level data collection, but also because it's the last point in people's lives at

which services are mandated. So we can get a really good baseline on what people did have as they entered young adulthood.

So this report and our work as a whole covers a variety of outcome domains, and the gears in this graphic represent our philosophy that outcomes are interconnected, and they have synergistic effects. You see many studies that only focus on employment or only focus on residential. But we feel that all of these things work together and that it's important to have a comprehensive approach to thinking about intervention and services.

Where we live and our ability to navigate in our communities affects where we work, and workplaces affect opportunities for social connections, which affect our mental well-being and generate more opportunities for community involvement. So the sum total of all of the parts really contributes to our quality of life.

So we first wanted to know what the demographics of youth were at the time that they were entering into adulthood, what was their range of abilities and challenges? And overall, the demographics of participants in the NLTS-2 who

received special education in the category of autism were typical of demographics of other autism studies conducted in the United States. So primarily, white males with a skew toward people from households that had higher incomes.

Functioning levels varied widely. Many could understand common signs and tell time during this young adult period. Half or fewer could count change and use the phone with little or no trouble.

We also looked at conversational skills. About 80 percent of youth with autism were able to understand what people say to them with little or no trouble, and about three-fourths were able to communicate by some means, not necessarily by speech. However, over half had great difficulty with conversational skills.

And when you break down the distribution and you look only at people who were able to answer the survey questions for themselves, you still find that about one-quarter reported great difficulty with conversation in particular.

So we repeatedly hear from families who tell us that they feel as if they have fallen off a cliff after their youth leaves high school.

They're without help, and often the young person is at home doing nothing, as Julie Taylor's article title aptly describes.

So we wanted to know whether this perception was true in the NLTS-2 data. We first looked at transition planning and services. So despite Federal requirements, transition planning does not always happen as specified, and previous researchers have found that approximately 4 in 10 special education students do not have plans that meet Federal timelines or contain measurable goals.

Data from the NLTS-2 indicates that about 58 percent of youth on the autism spectrum receive transition planning by the required age. So, again, a pretty large gap in who is not getting adequate transition planning, and this is really only asking do you have a plan? It's not asking about the quality of the plan or looking at components that may or may not have truly affected outcomes.

When we look at what youth who were able to answer the survey for themselves thought, about one-third said that they wanted to be more involved in their transition planning.

So parents report a dramatic decline in availability of services after leaving high school, and there are several reasons why this phenomenon is of interest to us. First, a life course perspective and developmental theories posit that this period from the late teens to the early twenties is a pivotal period of development. So it sets a stage.

If you have an accumulation of advantage and positive outcomes, that tends to accrue more positive outcomes. And on the other hand, a negative transition can set a student up for a cycle of accumulating disadvantage and poor outcomes over their lifespan.

Second, we know, and as has been discussed today, youth with autism are especially vulnerable during this period because of their difficulties with communication, with social interaction, with a greater reliance on others for assistance, and a high prevalence of comorbid mental and health, physical health problems.

So data from the NLTS-2 do confirm that having services during high school does not necessarily translate into having services during early adulthood. When we look at which services youth

received during high school, you can see that about half of youth received case management, speech-language therapy, social work, a personal assistant and/or occupational therapy. And we're really just looking to see do they even have one service?

And then we look at which services that they have as they enter young adulthood, and we find that only about one-third of people then have these same services during early adulthood. And in fact, every single services that they received during high school decreased in frequency in early adulthood, with speech-language services showing the largest drop-off.

And I want to note, too, that about 20 percent of the sample in the NLTS-2 are nonverbal people. So that statistic in particular concerns me greatly.

So particularly given the services cliff effect, we wanted to know what happens to people after they leave high school. And IDEA defines three purposes of special education. It is to prepare people for further education, for employment, and for independent living. So these are the three outcomes that we tend to focus on

primarily, and I'm going to share some outcomes data with you now.

I don't think any of this is probably particularly earth-shattering to either adults with autism or to people who are raising people with autism. We hear repeatedly that people are having trouble. The importance of this information is that it's the first time we've actually had numbers to go with it, and those are the types of things that obviously influence policymaking and program development.

So let me back up. So people in the U.S. who continue their education beyond high school can expect to earn more, to be healthier, and to have longer lives. And about 75 percent of youth in the general population will go on to have some type of postsecondary education after they leave high school.

But we find that only about one-third of young adults with autism attend any type of postsecondary education. And of those who do attend college, we repeatedly find that the majority of them attend a 2-year college either solely or as a stepping stone to a 4-year program.

Another interesting phenomenon is that while

all youth with autism in the NLTS-2 received special education services for their autism, about one-third of people who go on to postsecondary education do not identify and feel as if they have a disability. And this is important because when you go to seek services in the postsecondary setting, you have to acknowledge your disability and disclose that. So we find that interesting that a lot of people feel that they do not any longer have a disability.

Of students who do choose to disclose their disability, about 42 percent will receive some type of help or accommodations or services at the postsecondary institution.

So also in the United States, about 99 percent of the general population between 21 to 25 years of age will have a job at some point between those early adult years. And obviously, employment provides an important link to financial independence, to benefits, to social relationships.

Employment is also the primary transition goal of students in special education, as they prepare to leave high school. And the majority of parents we find in this dataset also believe that their

student will go on to work in these early adult years. So there's a very high level of parent expectations here.

So when we look at employment, we define that as work for pay outside the home that does not include volunteer jobs. And we find that about 58 percent of young adults with autism ever worked outside the home for pay even once during those -- the period between high school and the early twenties.

About 20 percent will work full time, and most people will work for wages that are far below their peers with other types of disabilities. The job rate tends to be lowest right after high school. And another interesting finding is that -- and this is something that has been found in previous research as well. Some hints about the importance of paid employment during high school.

So if we look at the graph on the right, you can see that if you had work during high school for pay specifically, about 90 percent of those people go on to work at some point during early adulthood, compared to those who did not work for pay. Far fewer of them actually go on.

And I will also note that despite the poor

employment outcomes that we see, 53 percent of these young adults never received vocational or life skills services after high school. So our next report will look specifically at this, looking at vocational rehabilitation services and what exactly people are or are not receiving.

And on a positive note as well, I want to note that, you know, while these numbers are rather sobering, about 20 percent of people who would fall into a category of having more significant impairment are still finding employment. So it's not anything across the board. You know, we know that even people who are "higher functioning" also have difficulty maintaining a job over time, too.

About 24 percent of young adults on the autism spectrum are socially isolated. And we define this that they have never been invited to social activities with friends, they have never seen friends, and they have never talked with friends on the phone over a 12-month period.

Similarly, approximately one in three adults on the autism spectrum will have no community participation, and we define that as not having any volunteer or community service outside the home. They never took lessons or classes outside

of school after they left high school and never participated in community activities after high school over -- again, over a 12-month period.

And we find that with both social isolation and community participation, these numbers don't tend to improve over time. They remain about the same between high school and the early twenties.

One other interesting side note. We have some preliminary evidence that indicates that extracurricular activities of any type seems to have a positive effect on outcomes, independent of controlling for other covariates.

So we also think about outcomes in terms of a bigger picture of connection and disconnection. Disconnected youth are a group of youth who are trapped nationally and internationally and are often the subject of interventions. These are youth who exit high school, but do not ever have employment, college, or vocational/technical schools or any other type of postsecondary education.

And we find that in this autism group, about 4 in 10 were completely disconnected from both work and continued education opportunities after high school. This does improve some over time. Sixty-

six percent are disconnected in the early years after leaving high school, in the first 2 years. About 42 percent, though, are still disconnected 4 years after being out of high school.

When we look at the autism group compared to groups of other students with disabilities, we find that this group seems to have a unique period of what we call floundering, where they're in and out of employment and school and seem to have a lot of difficulty achieving stability.

This slide I think is what is most important emerging from our work. So of these 1 -- of the 4 in 10 youth who are disconnected from work and from school, about 1 in 4 of them will have no access to services at all since leaving high school.

And when we think about what would be realistic to expect, we don't think that every single adult with autism is going to require services and accommodations, but when we stop to think about people who are disconnected from employment and education and then also have no services, those people who are what we call "doubly disconnected" are a particularly concerning group to us.

Both skills of people and their household income, the households that they come from, are key factors in whether these young adults go on to be connected to employment and continued education. So this graph shows the marginal estimates of the rate of disconnection since high school, and we use the highest and lowest quartiles of skills and of household income to examine what happens to people.

So you can see that about 80 percent of those with the lowest skills and the lowest household income were disconnected after high school compared to only 3 percent of those who had the highest skills and were from homes with the highest household incomes. And that is true after adjusting for many covariates again.

So across outcomes, we look for patterns of distribution, and we have found that those with autism tend to fare worse compared to their peers with disabilities who share some of the same characteristics of autism.

And this holds true of rates of employment, where you can see the autism group is faring much worse than their peers; rates of independent living. Their rates of social isolation are also

far higher. And overall, we find that the rate of disconnection is about four to five times higher for the autism group than for those with speech-language impairment, with emotional disturbance, and learning disability.

So while over one-third of those on the autism spectrum are experiencing disconnection, very few of those with speech-language impairment, with LD, or with ED are experiencing this type of disconnection. And we don't know why this happens. We don't know if there's something different about the transition process for this group, or if it's related to services that they are or not receiving. That's an important question for us to be able to answer.

So this concludes the main findings from our report, but I have some other lessons that I think are important that I want to share with you.

So the part of this report received a lot of attention that has far outweighed the attention to our scientific articles. You can see from this list that following this report within the first few months, we received invitation for a Congressional Autism Caucus briefing, a consultation with the U.S. Government

Accountability Office, who are working on a report on transition.

Our Director Paul Shattuck did an NPR On Point interview and an interview on The Diane Rehm Show. We had seven additional media interviews, four invitations for national conference presentations, and this was one of the top news events for our university.

Last week, one of the presidential campaigns came out with an autism proposal, and the transition section of that proposal in particular, that information appears to have been taken from this report. So that's a huge return on investment. And I think that, you know, this tells us a lot about the hunger for this type of information, but also that it's so important that we focus on funding not just for the scientific portion of what we do, but also that we're also looking at taking it to the next step and doing actual dissemination hand-in-hand with people who are affected by our research.

So what I shared with you today from our indicators report is really just the tip of the iceberg of what we're doing in terms of dissemination. We're aiming to become like the

Census Bureau for autism statistics on transition-age youth and young adults with autism.

And the Web site that we launched this fall fulfills that purpose of our dissemination efforts. We have a new national autism data center that's committed to producing fact sheets and infographics and blogs. Any way that we can push out our scientific information that will actually foster uptake by people who make decisions or people who can reach the people who make decisions, that's what we're aiming to do.

Our following on social media increased to 10,000 followers over just a few months. So if that's any indication of what people want to know about this adult period.

So looking ahead, we see the following needs emerging from our research. First is the ability to identify interventions, innovations, and progress is hampered by studies that include very few individuals and typically do not represent the diversity of the population of those with autism.

So it was nice to hear this morning the reference to micro groups within large cohorts. That's something that we see a particular need for, to break down this information so that we're

not looking at autism as a whole population of adults, but we're able to factor out the role of comorbidities, impairments.

That's something that we have difficulty getting at in our datasets. We don't have good measures of how people are doing so we have to create measures for that, which tend to be kind of crude. So we need a lot more ability to break down people by these micro groups.

Second, while funds are spent to collect national-level data, such as the NLTS-2, there is comparatively sparse funding available to analyze this data and to disseminate the findings to those who need to understand the results. And we think that this is critical, and I think that the outcomes of this report in particular, the national attention it's received is a good testimony to the importance of that if we're to really affect people's lives with better policy and programs.

Third, of the national-level surveys that are routinely conducted in this nation, such as the study of adolescent health, and national-level databases, such as the Medicaid database, very few are linked. And if they were linked, it would

allow us to examine additional aspects of how autism is affecting people's lives without adding tremendous cost to the research.

So systematic planned data collection in this country seems to be light-years behind what you might find in the Scandinavian nations, for example. And this ability to link databases is something that's of high interest to us.

Further, our efforts to collect qualitative data about adults falls light-years behind what we're seeing emerge in the U.K. So this is another area that we feel would yield us really important information.

And then, finally, just as the Framingham Heart Study yielded revolutionary longitudinal information about factors underlying heart disease, we feel that this nation is really in desperate need of studies that will allow us to follow transition-age youth over time, allowing us to see what happens beyond just these first few years of adulthood and what happens as people age over time. But then also allowing us to look at what school-age experiences actually influence later outcomes.

So, finally, a peek ahead. As I said, this

will be an annual report series that we'll be issuing, and the 2016 report will use Rehabilitation Services Administration data to help us understand the experiences of people with autism in the vocational rehabilitation system. And I want to share just a few preliminary insights about that.

So this is an extremely large database, and in the Federal fiscal year 2014 data, so when you look at cases of people that closed in the year 2014, there are about 18,000 people with autism in that database who had some type of interaction with the VR system. This number seems to increase every year, and if you look, there's about a doubling of people in the VR system with autism over a 5-year period.

So just a few preliminary numbers. Of the 2014 cases, 68 percent of them received services. So, conversely, nearly one-third applied for some help through the VR system, but then did not receive any services over the period of time that they were in there.

For those who did not receive services, almost half were said to have refused services, and 21 percent were said to be not locatable or findable

by the VR agency. Of those with ASD who did receive services, 60 percent exited with an employment outcome, and that is actually pretty similar to the overall people in the VR database for that year. The autism group seems to exit with roughly the same rate of employment, at least for this particular year.

And finally, age seems to have an important effect for the autism group in particular. So when we look at employment across different age groups, for adolescents under the age of 18, about 54 percent exit with employment, and that increases as people age so that when people are age 30 or older, about 63 percent are then exiting with employment.

So there are just many, many questions that we would like to be able to answer with the VR database, many of which we will probably not be able to answer. The rules change, obviously, from secondary school to postsecondary, and while identification of services are mandated for people who qualify for special education during school, States do not have to serve all of those with disabilities in adulthood.

So some States are on an order of selection,

meaning that they are only serving those with the most severe needs due to funding in their State. So this means for us that we do not know the total population of people who are in need of VR services compared to how many people are actually applying and receiving them. So this is a really important question for us to be able to answer in terms of allocation of funding.

Some of the other questions that we would like to be able to answer are the reasons that families do not apply for VR help. We suspect that there are quite a few people that are not even making it to the VR system. The reasons that they are not receiving services, we have some glimpses at that in the VR dataset, but we have a lot of questions that we would like to know directly from people with autism because all of the information in that database is reported by VR agencies but do not come from people with autism directly.

We want to know what works or does not work about VR for this group. We want to know about job placement satisfaction and match, how people move in and out of VR over time, and whether they experience changes in need for public benefits as a result of receiving VR services.

The RSA data can only tell us so much, just like the NLTS-2 and other large surveys. We have no follow-up information to explore people's experiences in VR at an in-depth level. But this is exactly the type of information we need, both quantitative and qualitative data, to help us understand what is working about VR for some people and what is causing services to fall apart for others.

So this concludes my presentation, but I would be happy to take questions.

Dr. Cuthbert: Okay. Thank you very much for that very informative presentation. I appreciate it.

Did you have -- Alison?

Ms. Roux: Alison?

Ms. Singer: So this is incredibly disturbing and concerning analysis, but I noticed that the data were collected beginning in the year 2000. And that was really the dark ages of autism.

At that time, NAR and CAN were just about 3 years old. Autism Speaks had not yet been founded. The Simons Foundation had not yet started its work. There was very little -- nobody talked about autism. There was no awareness, really nothing.

By the time the data collection ended in 2009, there was more money going into research, but at that time, we were still very much focused on young children.

So in the intervening period, do you think that the systems and services that we have put in place for adults would lead to some improvement in these numbers? Again, because they're extremely concerning.

Ms. Roux: Yeah, it's such a good question. I think I was curious about the same thing and looked to see what the average age of diagnosis was of the people that are in the sample, and it is under the age of 3. So they were not, as a whole, diagnosed terribly late.

But I would agree that, you know, what has happened in terms of policy and, for example, insurance mandates in States we would hope has had some impact on people and impact on outcomes. Unfortunately, we just -- we don't know.

We're frustrated. Honestly, we have the NLTS 2012 was collected just several years ago, and it's 2016 now, and we still don't have that data. It hasn't been released yet publicly for analysis. So that type of information delivered in a timely

manner is really critical to our ability to answer questions like yours.

Dr. Amaral: So thank you, Anne. That was really an enjoyable and comprehensive presentation, and it really highlights to me the value of having these extensive databases that can be mined.

And it also brings up a concern that I have that I hope this Committee might be able to start to approach, and that is -- and it's something that you mentioned as well -- the linking of databases. And I think it's an issue that it's not only Government databases, but it's linking private databases and Government databases and developing sort of a national initiative to get all the data that's going into autism research.

So other than the comment that I hope we can come back to this issue at some point in time and see whether there are ways to develop a more comprehensive strategy to do that. But if we really are going to investigate the life course of individuals with autism not only from the vocational or outcomes aspect, but also from the biological aspect and what biological predictors are there of outcome, we're going to have to link

all these databases.

It's not only NDAR, but it's the SPARK study. It's all the other things that are going on. So --

Ms. Roux: It would seemingly provide a wealth of information. We're -- you know, we're interested this year in looking at the VR database in combination with the Social Security Administration database to answer some further questions.

It will only take us so far, but I think it's not a question of can it be done with linkage, as you're suggesting, it is really a matter of planned systematic intervention on how we collect data really because we only are fortunate enough to have this NLTS-2 information because the autism group is able to be disaggregated. But we have so many other databases that ask important questions we'd like to be able to answer, particularly about health and mental health, but there -- just there are so few people with autism noted in those databases that they don't yield fruitful results for us.

Dr. Cuthbert: So before we go to the next question. So what you're implying is not linking databases would be useful, but only get us so far.

It's really going forward that we need to be more planful about what gets included in all the surveys and so forth.

Ms. Roux: And I think a good example of that in the NLTS-2 is our ability to answer questions about psychiatric comorbidities. ADHD is measured, but beyond that, we have very few indicators other than medications that people are taking. And so that's really important that we're thinking about the types of questions that are being asked.

Impairment severity is another thing that we really need to know more about in order to understand these type of broad results so that we can paint a finer picture.

Dr. Cuthbert: Yep, thank you.

Dr. Wexler: Thank you, Anne. And thank you for your presentation.

The National Longitudinal Transition Study, as well as NLTS-2 were both done in my shop. So I do have some familiarity with this, and I would like to, first of all, make an offer that the original project officer still works for me, and I'm quite confident she'd be happy to interact with your institute to help you with some of the nuances of these data.

NLTS 2012 is being conducted by the Institute of Educational Sciences. You don't have the data yet because there has been -- it has been very daunting to establish the baseline because there is 20,000-something subjects, families, teachers, and a lot of folks. And the world has really changed in that you don't have telephones anymore. People have cell phones, and tracking people has become exceptionally challenging, as well as incredibly expensive. And that's a whole other issue.

I would suggest some cautions, though, when these data are presented and just a couple of -- and again, we're happy to work with you on this. First of all, as Alison pointed out, the world was exceptionally different in 20 -- the year 2000, 2001. And more than likely, part of these data reflect that the population of kids with autism were much more significantly involved than what will be in NLTS 2012.

That's just by the nature of who was being identified at the time, and I think it's worth noting that as you look at that particular group's outcomes and generalize it to all young youth with autism.

Another area that I think is worth considering is services under IDEA are completely different than services under VR, and the fact that a lot of people who exit IDEA don't get the same services as fully expected. You know, the whole purpose of related services -- and when we speak of speech-language is probably the best example. But the purposes of related services under IDEA is to support a kid benefiting from their special education.

So if they're no longer getting special education, it's there is a disconnect there. I think it's important to note that when those types of numbers are presented because it's a bit of a doom and gloom, and it’s apples and oranges. And I think it's important.

Lastly, you did mention we have a -- the PROMISE grants, which is a $250 million, 12,000 subject randomized control trial of transition-aged youth that the baseline is just -- we've just about identified. The deadline for the 12,000 -- this is kids and then families -- is April.

And we're up to about 80 to 85 percent of the baseline has been identified, and we're confident that we'll be able to disaggregate by disability

in that study. And that's something you might want to touch base with my office on because that should be a very rich database as it's -- as we move forward in terms of interventions. And it's five States and then a consortium of sort of the Utah/Wyoming/Montana -- large, sparsely populated States that form the consortium.

So we are more than happy to collaborate with your shop on any of these data.

Ms. Roux: Thank you for the clarifications, and I will speak to you about the forthcoming dataset.

Dr. Cuthbert: Okay. I think we have some more questions. Let's try to fit these in. We're a little bit over our time, but it's important to discuss this very timely area. So go ahead.

Dr. Taylor: Hi, Anne.

Ms. Roux: Hi.

Dr. Taylor: I'll be quick. I think we almost certainly will see changes in rates of employment and going to college in the most recent data collection. But I think what we will probably not see are changes in instability.

A lot of our interventions and a lot of our services are really designed at helping people

with autism get jobs or go to college. But we really know very, very little about how to help them be successful in those positions and giving them the right supports once they go.

And I think that's a really important point that we should make sure we're always keeping mind. Getting the job, you know, and getting into the postsecondary program is really half the battle, or maybe even less than half the battle. But giving people the skills and the supports to be successful once they get there is just as important.

Ms. Roux: Yeah, being able to look at sequences of what is successful for people over time, where they start and where they end up, I think that would be critical as well.

Dr. Cuthbert: Let's just go down the table -- one, two, three -- and then we'll stop there.

Dr. Peña: Hi, Anne. Thank you for your presentation.

I really appreciated the data that we sorely need in terms of adults with autism, and I am -- I applaud you for including people on the autism spectrum in terms of conceptualizing your research design.

The one thing I wanted to just note that I didn't see too much of here, but I saw it in the report was that it seems that there are inequitable outcomes or inequitable opportunities based on race, based on income, household income, and based on parent education, meaning that there is definitely a gap there between, for example, white and black participants or high-income, low-income participants.

Which, to me, signals that if there is a low-income person with autism who grows up in that household, that will be perpetuated later in their adulthood. So I'm wondering if your institute has discussed looking into anything related to these opportunity gaps or inequitable outcomes?

Ms. Roux: Just substantiating what you just spoke of. So the graph that I showed with marginal estimates that show differences by not only people's skill levels, but also by their household income speaks directly to what you're talking about. But that type of social injustice or inequities are very close to our hearts really and what we're doing.

Because there are a few people in this room who have examined those type of issues with

younger children, but we don't have a lot of data about older people specifically because some of the studies that are out there are not well characterized. So we published a paper in 2012 on services for adults with autism, and we looked specifically to see in samples of published studies was race and household income, social-economic position, was that even characterized?

And in most of the studies, it was not. So it's difficult for us to draw valid conclusions there. But, yes, it's a great concern.

Dr. Cuthbert: Thank you. Geri?

Dr. Dawson: Just briefly, so I just wanted to respond actually to a point that Larry made. You were, I think, Larry, talking about the shift in terms of the epidemiology of autism to be less impaired in terms of intellectual disability over time.

But what was really interesting to me, in Marsha Mailick Seltzer's work where she's been following people longitudinally and looking at what happens after leaving, exiting high school, is that it was actually the individuals without intellectual disability that were struggling the most, right? Because there are many more services

in place for people with intellectual disabilities and places to go to, and we -- traditionally, we have helped people with intellectual disabilities.

People without intellectual disabilities with autism, that's a very new group, and so they were less likely to be engaged in the community, less likely to be employed, less likely to be interacting socially. So it's not the total explanation.

The only other thing I wanted to add is that, you know, I think that at this time, it's time to move from these incredibly detailed and helpful descriptive reports -- which I'm very, very impressed with this report -- to developing, you know, developmental models of positive outcomes, right? Dynamic developmental models of how do we promote positive outcomes.

And I do think that that will depend on longitudinal studies where we begin to identify key ingredients for success, successful long-term outcomes. So I'm really excited to start to see more models around optimal success in the future.

Ms. Roux: Thank you.

Dr. Cuthbert: Okay. Last question, I think, Samantha, you had it?

Ms. Crane: So I'm really excited about this data, and I especially appreciate that it's going across such a variety of domains. And one of the things that I would ask if you'd consider in the future is whether you can find -- and I know that it's kind of difficult to find data on this -- but data on guardianship status and decision-making arrangements.

It's an issue that's becoming more and more relevant and that is becoming inextricably tied to all of these other issues, such as, for example, when people are getting transition planning from their secondary education institution, they often are like either counseled into guardianship or counseled away from guardianship. And that can affect the rest of transition planning.

So I was just wondering if that's on the radar?

Ms. Roux: So that information is not in the databases we've used so far. However, there is some ability, I think, to get at that maybe in the National Core Indicators dataset. So that's something that we will be looking at.

And I think those decision-making variables that you mentioned are probably possibly even more

important as well about what types of choices people are actually having in their lives, self-direction.

Dr. Cuthbert: Okay, thank you.

Two very interesting presentations this morning and very different domains of examining the needs in these populations, but interestingly, both have the commonality that they are about measurement. We heard from Jamie McPartland how important it is to go back and develop systematic quantitative measurements of biomarkers for clinical trials. And we heard from Anne Roux. At the start, she said, you know, people talk about moving the needle. What we're trying to do is develop better gauges.

So in both case, the needs for measurement are paramount here. Even though we might think that's not something we want to worry about, it's actually essential to document how we're doing across all areas of work on the autism spectrum.

So with that, let's take a break. Let's try to convene at 25 after. That'll give us a little over 10 minutes. That's about 10 minutes late, but I think we can accommodate that between the time for our Committee business and the lunch. Thanks.

[Whereupon, the Committee members took a brief break starting at 11:12 a.m. and reconvening at 11:35 a.m.]

Dr. Cuthbert: Okay. I think it's time. We can reconvene. We're ready for an important part of the program.

[Pause.]

Dr. Cuthbert: Okay. If everybody can gather back at the table, we're ready to get going again.

So I'm going to turn this segment of the agenda over to Susan Daniels. As you can see, this is about IACC Committee business, which sounds a bit administrative, but actually, it involves some very important tasks that we have ahead of us as a group about the strategic plan and so forth.

So, Susan, I'll turn this to you.

Dr. Daniels: Well, thanks, everyone, for great presentations this morning and great discussion. It was a good way to start out our day.

I'm going to take you through the IACC Committee business items. I'm going to review a little bit of information and then mostly get into the items that we need to discuss for today.

So the last time we met, I talked to you about the major IACC responsibilities under the Autism

CARES Act, and they include developing and annually updating a strategic plan for autism spectrum disorder, developing and annually updating a summary of advances in ASD research, monitoring Federal activities with respect to ASD, and making recommendations to the HHS Secretary regarding research or public participation in decisions regarding ASD.

And last time we talked about our immediate "to do" list, which involved two projects. One is to develop two volumes of the IACC Summary of Advances in ASD Research, one that will cover 2014 and one that will cover 2015. And we decided to do that as two different volumes at the last meeting.

And then the other "to do" item is develop an update of the IACC Strategic Plan, and this would be the 2016 update that will cover progress that was made in 2014 and '15. And actually, as we are working on it this spring, if there are new updates in the literature from 2016 that are published at that time, we can also include those so it'll be the most up-to-date possible.

So first I want to talk to you about the summary of advances update, just give you a very brief update on this. I sent out to the Committee

the first stage of the process for developing the summary of advances.

So OARC will be providing and the Committee will be nominating peer-reviewed research publications, and so I distributed lists of possible publications that could be selected by Committee members or nominated by Committee members. And you are all welcome to nominate other articles that you know of that you feel would be worthy of inclusion in this publication.

So you'll be returning to me a list of your top 10 picks for 2014 and your top 10 picks for 2015. And our office will be compiling that into a ballot or a final list from which you will actually choose and select the final 20 publications per year. So if you can get that back to me by January 22nd, that would be much appreciated, and it's in your inbox.

And then the next parts of the process will be after the Committee has selected those 20 advances for each year, in each of the seven areas of the strategic plan, OARC will write or we'll have a contractor write the short lay-friendly summaries of the selected articles and then publish the booklet. And we'll have two booklets, and we

expect the final documents to be completed this year.

I would like to say that we'd like to complete them by April. I'm not sure if that's going to be possible since we're doing two volumes and also working on the strategic plan at the same time. But certainly by July's meeting, we should have both of those volumes available for you.

And I'll give you an update in April as to what the status is on that project. So any questions about that from the Committee?

[No response.]

Dr. Daniels: I think you have pretty, you know, lengthy instructions in my email about how to do that, and so on. I just wanted the public to also be aware we're working on this, and we'll get those publications out as soon as possible.

So the next order of business is for us to talk about the IACC Strategic Plan update. We had a discussion about this last time, and I think it was, you know, our first, initial discussion, and so we want to talk about this a little bit more and really finalize our plans for the strategic plan update so that we can start that process.

So to review with you the Autism CARES Act and

what it says about the IACC Strategic Plan, the CARES Act continues to require the IACC to prepare an annual update of the strategic plan. It requires that the strategic plan continue to address research, but also include, as practicable, services and supports for individuals with ASD and their families, as well as recommendations to ensure that Federal ASD research and services activities are not unnecessarily duplicative.

So the exact language is in that next bullet. The IACC shall "develop a strategic plan for the conduct of and support for autism spectrum disorder research, including, as practicable, for services and supports." And so we talked about the interpretation of that and what we would do next.

It also says in the language that the strategic plan "shall include proposed budgetary requirements and recommendations to ensure that autism spectrum disorder research and services and support activities, to the extent practicable, of the Department of Health and Human Services and Federal departments and agencies are not unnecessarily duplicative."

And the new law requires that now the

strategic plan will be submitted to both Congress and the President. So the requirement to submit to the President is new.

So that's what we are mandated to do, and so I thought it might be helpful to just review with you the structure of the current IACC Strategic Plan and then talk about what we might do for the update. So the current strategic plan is framed around seven consumer-based questions, and I think many of you are quite familiar with this.

Question 1, which is about diagnosis and screening, "When should I be concerned?"

Question 2, "How can I understand what is happening?" about the basic underlying biology of autism.

Question 3, "What caused this to happen, and can it be prevented?" Which is about risk factors, both genetic and environmental.

Question 4, "Which treatments and interventions will help?" I think that's quite self-explanatory.

Question 5, "Where can I turn for services?" About services all the way from childhood through adulthood.

And Question 6 that really focuses on lifespan

issues, "What does the future hold?" particularly for adults.

And Question 7, "What other infrastructure and surveillance needs must be met?" And this question pertains to data sources and workforce-related issues, as well as some other kind of general cross-cutting issues that affect the entire field.

So that structure, I think, has been quite successful over the last several years, and I'm guessing that probably you'll want to keep it. Or if you modify it, it would be very slightly as it's quite comprehensive and covers the field well.

Each question has -- and this is, in terms of the strategic plan, we've had several different versions of the strategic plan and strategic plan updates. I've kind of compiled some of the parts, and they've changed names over the years.

So just to review what's in the strategic plan, each question has an aspirational goal that describes the long-term goals for the field or that specific subfield and outcomes for individuals on the spectrum that are hoped for.

Each question also has an introduction, and earlier on, we used to call that section "What do

we know, and what do we need?" But then we, I think, simplified it down to introduction. And it provides background on the field and what are the needs from the community and the research field pertaining to that question.

The next section of some of our progress reports has been what progress has been made toward achieving the strategic plan objectives, and this was usually a short summary of that, and more detail about that is contained in portfolio analysis reports.

Progress in the field, which would be a section that describes recent research advances that may have impacted the field and may impact the future directions that the Committee would recommend.

Progress that's been made toward the aspirational goals. So assessing all of the above. You know, has there been any change in terms of being able to meet that aspirational goal? How have we moved forward?

And research objectives. And if there are any new research objectives that are added, plus whatever research objectives were already there. And this was, of course, the IACC Strategic Plan

for research.

So on the 2016 strategic plan update, we talked about how we would be able to meet the requirements of the new law. As you saw, the strategic plan update now is supposed to include some information pertaining to services and supports.

And we talked a little bit about two possible interpretations of that. One would be that the current strategic plan could just be expanded to include more about services and supports, both research and delivery. Or you could continue to have a research strategic plan and another document that's separate that talks about services and supports.

So first I'm going to talk about option one, which would be having a 2016 strategic plan update that now encompasses both research and services. So this is a straw man, and I'm just putting it up here for you to consider and then, of course, interested in your feedback and ideas about how we can further shape this.

In the strategic plan update for 2016, we could continue to have each of the seven questions, but we would have them address both

research and services issues related to each of those questions. For example, in the screening and diagnosis area, the chapter then would have information about the research that's going on in that area, as well as services needs and services activities related to that area.

The aspirational goal would continue to describe long-term goals for the field and outcomes, and I think that that would probably -- it encompasses both the research and services kinds of activities, although it's usually a short statement, and so it doesn't go into a lot of detail.

We could have the introduction area, which would be covering the "What do we know, and what do we need?" That provides background on the field, but that also addresses both the research and the services areas and what are the things that we've learned about those areas, and what do we need in those areas.

We could continue to have a section that is progress toward the strategic plan objectives, and it would be a summary of the progress that's been made. And you could base that information on reports that are available, as well as outside

experts, if you wanted to bring in outside experts to help inform you of recent progress that's been made.

If we had a section that's generally on progress in the field, we could split it into two to three sections -- one that would be covering advances that have been made in research, one that's talking about new innovations in services, and possibly one that's about changes in policy. And I know that the services and policy areas are quite linked, and so that could all be in one, or it could be separate. So that's something to think about.

Then a summary that describes the progress toward the aspirational goal, kind of mirroring what we've done in the past. And future directions, which would address remaining gaps and issues related to ensuring the translation of research to services and benefits, and the feedback from the services experience that would be able to enhance research.

And I know that some of you last time mentioned the importance of that pipeline from research to services and then for services to go back to informing research. And so maybe that

section could kind of bring all of that information together.

And for the final section would be the new research objectives. So in 2016, there could be potentially, if it's all one plan, both research and services objectives for each of the seven areas. And if you were to do this, you might consider renaming the strategic plan just the IACC Strategic Plan for ASD and take out specifically research and services. It would make it shorter and be more comprehensive.

So that would be option one. For option two, I'm not being as detailed because I don't know what this would entail. But if you decided to keep it separate, you could keep the current research strategic plan the way it is and just develop a new set of research objectives following a similar format to the 2013 update, and then you could develop a separate document related to services. And I guess that structure is kind of an open question as to how that could be structured.

So those are two options that we have on the table. I don't know if we want to stop to discuss this here or if I should continue on with I have some thoughts about how we might shape objectives,

regardless of whether we take option one or option two.

Mr. Robison: I'd like to offer a third option.

Dr. Daniels: Okay.

Mr. Robison: Okay. So with all due respect to this effort, plus the cynicism for which I am known, it would probably be fair to say that the most important people who read this plan of ours read the first four or five pages, and that's about it. And I think those first pages should contain an overarching statement of our goal for autism from the Federal Government.

And it's very -- I don't -- I'm careful not to say that I would speak for any autism community as an amorphous thing. But for this one thing, I think I can safely say that I speak for the broad autism community in saying that the one thing we are united about is the terrible state of delivered benefit.

Now we talk about services, but services, when we write a report like that, sounds like we have in one corner, we have medical researchers, and then in another corner, we have service people -- therapists in the field, counselors, what have you. And I don't -- and I think that that

misstates what we need.

I think that what we need is to stress that recognizing that these different Government agencies have pools of money that are devoted to certain things, like NIH researching medical treatment, CDC in their causative research, HRSA in delivering services. We would like to see a greater focus across all Federal Government departments towards the delivery of tangible benefit.

So by that we would mean that within NIH, we would want more of the research budget allocated towards testing therapies that can possibly contribute to make the lives of those service providers out there better. Within, say, HRSA, we would like to see the delivery not just of services as a general thing, but newly developed services, which we have close to being at hand in work we've already funded so that we can solve problems that are not presently being solved with that money.

I think we want to make a really clear statement to all of the Federal agencies that we want a focusing on behalf of the community towards tangible benefit for our population. That's not a

statement of opposition to doing basic research, but it's a recognition that we have a really, really major problem, and every one of our Government agencies that we speak to has a responsibility to help in that.

And what I would ask is do all of you, as my fellow Committee members here, do you agree with me that we need to speak powerfully for the need to deliver tangible benefit? And if so, that should be the introduction to our document so that if no -- if the person who picks that document up doesn't read anything else, he reads that statement that we need service.

And I would volunteer to lead the effort to write that as my contribution to the plan this year. So --

Dr. Daniels: Well, I hear what you say, and I don't actually think that what you're talking about is an option three. I think that -- that's something that could fit into either one of these things.

I think in the last strategic plan update, in fact, you helped draft the introduction and conclusion, and I remember that we wrote a significant --

Mr. Robison: Tom Insel and I talked about that then.

Dr. Daniels: Right. And --

Mr. Robison: And this is just a stronger statement.

Dr. Daniels: Sure. So we talked about tangible benefit, and I think that's what I was kind of going for when I talked about ensuring the translation of research to service and benefits. I was thinking exactly of what you were talking about. And so, you know, I think that that's certainly something that could be worked into either of these, but I don't think it really changes what --

Mr. Robison: Well, what we want to do is we want to make clear that we are not proposing, for example, to take the autism budget away from NIH and give it to HRSA or something like that. We're proposing to use each agency's budgets within the context of what they do to focus on the overarching goal.

And I don't think we said that in as full or complete a way last year, even though we talked about it.

Dr. Daniels: Maybe. Although with

recommendations from the IACC, the IACC really doesn't -- you know, if you make a recommendation for a budget to be used a certain way, it really won't do much because the agencies still have the authority to use their budget the way they need to.

But they -- they clearly listen to what is in the strategic plan, and so I think if you create something in the document, in the introduction or the conclusion or throughout the chapters, talking about the kinds of tangible benefits that are of interest and so forth, I think that would speak to those agencies, and they would be able to use that. I think statements just directing funding probably wouldn't be helpful.

Mr. Robison: Well, yeah, I know that we can't direct funding, but we can certainly advise it. Of course, that's why I'm cynical. We can say we like it, but will we get it? I mean, all we can do is state it clearly and in an articulate way.

Dr. Cuthbert: So I think we have a couple more comments that may help this discussion. Yeah?

Dr. Reichardt: I would just say that while I agree with the need for services, I would think any introduction should include the promise for

future advances in the field. The Congress, which I assume is the most important people you're talking about, need assurance that the past funds have been well spent, which I think they have been, and that there are novel technologies, novel approaches, drugs on the horizon and so on that make this an area worth investing in.

And so while I can accept what you said as part of this statement, I don't really think it should be all the statement because I don't think it's the only goal.

The second thing I'll just say, and I'm probably the minority here, the questions don't make a lot of sense to me, frankly, the way they were put. But --

Dr. Cuthbert: Okay, thank you. Samantha?

Ms. Crane: So I wanted to agree that having a connection between research and direct tangible benefit is very important to us, to me, too. And I think to many other people in this room.

One of the things, just sort of bringing it back around to the options on the table, is I feel that it makes more sense to discuss research and services at the same time with respect to each individual topic, and maybe we'll scrap those

topics or maybe we'll, you know, keep the original topics. But I like the idea of a format where for each topic, we discuss research and services at the same time so that someone who's reading the report will -- will not have to keep flipping back and forth, right?

So that, you know, if they read all about the research and then they start a new section that's all about services, then, you know, they're going to have to keep flipping back to see what does the research on this topic say instead of having it be fresh in their mind. So I like the idea of formatting it in a way that the research and services don't get discussed separately. They get discussed together.

And that we also acknowledge that some research is about services. So there is not a clear delineation necessarily even between those two categories.

Dr. Cuthbert: Thank you. Very good points, and we'll follow up on that, but David, you wanted to come in?

Dr. Amaral: Well, so I was reading about this discussion in the last session, which I unfortunately missed. And I think I agree with

both perspectives, and so I think what's important is that we strike a balance that's appropriate.

And so I like the idea of having research and services in the same document because at least it's my impression most of the scientists who are doing autism research are dedicated to ultimately providing better services, better -- decreased disability. And so that's a strong motivating influence, and I think that should continue in the future.

I agree with Louis, though, that if there's too much of an emphasis on services, which I don't dispute we should be emphasizing services and we should be pointing out areas where service is available that are not being provided. But I think it's important to point out that we're still largely in the dark ages about what are the causes for these disorders, and there's a huge amount of research that needs to go in for future generations as well.

And one of the things that I think we hope we want to convince Congress is, is if they invest wisely in basic research, we might actually be able to decrease disability in the future. So you know, I don't want to speak on one side or the

other of this, but I think it's important to have actually a very good balance, emphasizing that both research and services are important.

The bottom line is that, you know, it's a zero sum game in a sense, and I want to ensure that, you know, we don't rob Peter to pay Paul or whatever, as you were saying as well. So however the document comes out, I think it should be emphasizing the benefits of both research and services.

Dr. Cuthbert: Yeah, Geri?

Dr. Dawson: So, you know, one of the things that John said was an emphasis on tangible benefit, and I like that term because it really doesn't say research versus services, right?

So as you know, when we listen to the public comments soon, a lot of people are interested in causes. You know, a lot of people are interested in understanding the underlying biology. We have people come and present their theory about what, you know, what causes autism, what is autism.

So I do think that, you know -- but I do think the idea of focusing on tangible benefit, right? That any project that is done should theoretically be linked, you know, in some way to ultimately

having benefit for human society and in this case individuals with autism and their families.

Ms. Haworth: I just wanted to say I agree more with option one. There seems to be this big divide between families and self-advocates and researchers. And I'm not a researcher. I am a family member.

But I also appreciate the importance of research, and I think we should have an inclusive document for families and self-advocates to find answers that they need for services and supports, which is really, really needed. As reading the public comments, we are able to determine that.

And also a document that's for researchers as well and for them to understand the state of research and also research to practice. So I would really like to see one document in addressing both.

Dr. Cuthbert: It sounds like we're hearing an emerging consensus that this should be one document. Is that -- do I see nodding heads? Do we need to discuss that further? I think we can say we've decided that. Okay.

I don't think we need a motion on it. So that's one point --

Dr. Daniels: Okay. So that's helpful.

Dr. Cuthbert: -- yeah, that we've made. Good.

Dr. Daniels: All right. So then I will skip ahead to some other questions. I'm getting into some nitty-gritty here because I want to start planning the meetings for actually doing this, and so having more specifics on this will help us in determining what kinds of meetings are needed.

Dr. Cuthbert: Can I just make one more comment?

Dr. Daniels: Sure.

Dr. Cuthbert: Excuse me. Sorry. I just want to make one more comment regarding Mr. Robison's comment. I think your points are very well taken. I think any research or any research or services agency would like to think that it's trying to do activities that would produce tangible benefit. And I'm sure no one would say, "Well, we're doing stuff, but we don't think it will have any tangible benefit. We're just doing it to do it."

So I think what's important is that integral to the actual and organic to the strategic plan itself will be for us -- I'm not saying we shouldn't have your statement. I think it's very important to have that as the clarion call of what

we're about in the introduction.

But I think it just makes the point all the more salient that as we work on the specific elements in the strategic plan, we include in that plan those elements that we think from this group will provide the greatest tangible benefit across the span from very fundamental genetic and molecular services research all the way out to provision of services in the community.

So I think that's what you're saying is not only do we need that statement. We need to think about it really hard when we make the plan. What will produce those things in each area that we're recommending? So --

Mr. Robison: I would never want people to think that by my words I have implied that research is being just conducted down blind alleys. I think, rather, what I would want to say is that we are essentially playing two games here.

We are playing a short-term game where we're saying how are we going to -- how are we going to teach people be the best they can be, recognizing that this is how we are? There's a big population of us alive today. And then in the long-term game, we're saying do we know how we might take away the

foundational causes of the most serious forms of disability for some generation yet to come?

And certainly those are both valuable lines of inquiry, but they're really very different from each other, and I'm -- I'm calling for a rebalancing, recognizing that almost the entire focus when we started this was the long-term game. And I think we need to pay much more attention to the short-term goal.

But absolutely, I think that the researchers are all strongly motivated to help the community. It's just a question of that.

Dr. Cuthbert: Thank you. That's a helpful clarification, and I think that dynamic is, you know, we are underfunded in both areas. So, you know, but so the necessity of coping with that situation is something that we'll just have to think about really hard as we go along.

Thank you.

Dr. Daniels: Good. And I -- before I launch into this, I'd like to take up what Louis brought up in terms of the strategic plan overall structure of the seven questions because that would make a big difference in how we structure things going forward.

Within the Committee, do you feel like you would like to keep the current seven question structure or try to come up with something different? Because if we're coming up with something different, that's going to require more meetings and discussion probably to do it, unless we can do it right here at the table.

Dr. Kato: Can you take us back to those seven questions so we can see them?

Dr. Daniels: Sure. Mm-hmm. So in terms of some other strategic plans, I gave you a few examples of some other strategic plans around here that might be, you know, somewhat similar. Most of them don't have seven sections. Most of them have maybe four, and so we have more already. And so I wouldn't recommend going beyond seven, really.

If you wanted to collapse some of these things down into kind of broader categories, you could do that. But I'd like to hear your ideas and thoughts. Geri?

Dr. Dawson: So one question is if we did restructure this in some way, and you know, I actually -- in looking back, I can propose some ways I might want to change it. But how would it affect the ongoing portfolio analyses and the

other kinds of analyses that we've done where we've looked at progress in each one of these areas and tried to look at that over time?

I mean, I think that we should caution against, you know, oh, it aesthetically feels better, but it really doesn't allow us to do these wonderful longitudinal analyses about funding levels and output in each of these domains.

Dr. Daniels: Right. And so that's an important question. If we change the seven question structure, that certainly would change the ability to compare new data that were collected if we -- for example, it would be the 2016 dataset. If we are collecting on a completely different set of questions or areas, then we would just be starting over and going forward with that, and it would only be up through 2015 that would be analyzed on this structure.

Dr. Dawson: You might want to explain what these matches are that -- so would you explain for people who are new what the analyses are that we've done historically --

Dr. Daniels: Sure.

Dr. Dawson: -- that would be impacted?

Dr. Daniels: Yeah. So I haven't had a chance

yet to present these things, and I have one full-length analysis that will be on the table in April for you to look at. It's more detail on data that were provided back in 2013 to the Committee, and you used it for the last strategic plan update.

But we collect data from all of the funders, from all of the Federal funders, as well as the major private funders that the IACC has helped us identify. And this is research funding data -- so basically, research grants, projects, contracts -- and analyze it according to the strategic plan, according to each of these seven questions. And actually, as crazy as it might sound, according to 78 objectives as well.

And that's been, you know, quite an effort over the past few years. And so we've been -- we have a dataset now that goes back to 2009 that we've been comparing, and I have the newest set, the 2013 data has been collected, and I'll be providing you with information about that as you're doing the strategic plan update. Unfortunately, 2014 and '15, I have not -- we haven't finished collecting the data for. And that would be the last group that would be analyzed based on this format.

But all of that has been comparable. So if we change the structure, you're right. We wouldn't be able to compare then to the past, to things that happened before 2016 as easily.

So, Kevin?

Dr. Pelphrey: I appreciate the concern over maintaining the longitudinal characteristics so that we can compare to the past. But I think what bothers me, now that you've mentioned it, about the questions is it seems to reify what we were trying to move away from by talking about having one document that integrates issues of services and research. The seven questions seem to support this dissociation of services versus research.

And so we could always -- as you mentioned, it would be more difficult to do the prior analyses, but we could always analyze the data from the point of view of those questions and collect data. But I think in terms of providing a document that's maximally forward looking and prescriptive for the field, I think that some other organization could be helpful.

Dr. Daniels: So when I was explaining the straw man for option one, what I had in mind was -- for example, for Question 1, right now the

current strategic plan just talks about research, about screening and diagnosis -- that the question would have a section about the research pertaining to that, as well as the services pertaining to that topic.

Questions 2 and 3 might be a little bit difficult to -- well, actually not. We -- there are some possibilities of things that you could bring up in terms of service-related issues related to basic biology of autism and risk factors.

With Question 4, certainly with interventions and treatments we have research, but there are also services that need to be delivered in those areas.

Five could be a catch-all for a lot of different services, but maybe also on research on services.

Dr. Pelphrey: The research on access to care, things like that.

Dr. Daniels: Right. Question 6 on lifespan issues could also involve research on lifespan issues and services to help people that are dealing with lifespan issues.

And Question 7 is kind of a more cross-cutting

issue of infrastructure and surveillance. But there is a section on workforce in there, and right now it's only about the research workforce, but it could be expanded to talk about the services workforce.

So that was what I had in mind. So this structure, I think, still could serve a unified strategic plan. I just wanted to, you know, re-explain that in case it wasn't clear.

John?

Mr. Robison: Susan, you -- we have a new IACC here, where half the membership is new. And for those who are new to this, OARC put a great deal of effort into constructing this system to report on the advances and remaining challenges in the existing set of questions, and I strongly support what Geri just said.

I think that, given that our newly formed Committee is in its first year, it would be most appropriate for us to build upon what we already have. Because building on this, the Committee members who are new are going to gain a knowledge of the plan that we have today by rewriting it and updating it, and informed by that knowledge, I suggest that the Committee will be properly able

to decide if we want to throw it all, write a wholly new formatted plan next year.

And I also would like to point out that we are under criticism because we're already behind schedule. And if we don't carry on with what we have, we're not going to produce a strategic plan until the end of the year, and we're going to be looking at having to do an update 3 months later. So I'd like to cast a vote for carrying what we have for the first year of service of our new Committee.

Dr. Daniels: Larry?

Dr. Wexler: Thank you, John. And I don't disagree with changing the structure. I think it's served us fairly well at this point, but I would advocate for a possible addition to it without necessarily changing it.

You know, on my calendar this week is a GAO entry conference on the transition of kids with autism from IDEA to whatever comes next. And it's predictable that there will be a great deal of discussion on collaboration between OSERS and VR and RSA, and beyond that.

But you know, as a committee, you know, we're the coordinating committee, and I would never go

in the direction of, being a Federal employee myself, of looking at recommending specific research that needs to be done. There's a lot of legal implications for that and, you know, I don't need to go through them.

However, I think that this Committee could serve a great purpose by creating a new dimension, of creating an environment of collaboration not only across agencies governmental, but nongovernmental agencies. And to me, coordination in a sense could serve a collaborative. We could serve the public very well by increasing collaboration.

I think Anne did a terrific presentation this morning, and I think the perfect example was the discussion that followed about intersecting datasets, and I think that that's just one area of intersection. I mean, you know, where genomic and molecular intersect with intervention and service provision, it's, you know, there is some intersection.

And there's, I think, some possible opportunities at collaborating across all of this, or at least exploring it, in order to see how we can help each other and help this and help this

field. So that's not a consumer-focused -- I mean, ultimately, it is. But it's not a consumer-focused question.

But I think as a committee, this group needs to really be looking at how are we coordinating? How are we supporting each other? There are datasets that people don't even know about that would help each other.

And so some type of -- you know, you treasure what you measure. If it's a question or it's something that we put down, then we'll look at it.

Dr. Daniels: Actually, so the original Committee noticed that gap, and so that's why they created Question 7. So linkage of datasets, databases, data sources, other kinds of infrastructure are all part of Question 7. And it was -- I would have to say it was a little bit tricky coming up with the consumer-based question to cover this. But the Committee realized it was an important gap, and so that does fit within the current structure.

Dr. Wexler: I think it -- I would recommend that it be highlighted rather than lost in the verbiage is all I'm saying.

Dr. Daniels: I think that if you wanted to

change the names of any of these while keeping mostly the same content, that wouldn't disrupt data collection at all. And so we could consider that if -- yeah, infrastructure and surveillance is not a very exciting title.

Dr. Dawson: Yeah, I really second what you're saying, Larry, and having been, you know, somewhat involved in some of the GAO activities, shall we say, you know, people really are looking at this Committee as having this coordinating effect, right? That that is a major outcome of what's supposed to happen.

And so, I mean, one idea would be to add to Question 7 what other coordinating infrastructure and surveillance. Because I think infrastructure and surveillance don't quite capture this idea of coordinating or collaborative, and then that would automatically require people to really articulate, you know, where do we stand, where are the gaps, what could be done to improve coordination and collaboration?

And I think that would be super helpful in responding to some of the questions that we get about the activities of the Committee.

Dr. Daniels: What can be done to improve

coordination and collaboration? That could be a possible title. So something to think about. If we do have a working group in that area, we could have them or have the entire Committee think about other names, if that's something that would be helpful.

I know that we're a little bit over time. However, there are some pretty important questions that I need to have answered. So should we continue, or should I try to do it in the afternoon?

Dr. Cuthbert: Can people delay the hunger pangs for a few more minutes and address some of these questions?

Dr. Daniels: All right. I'll try to press on quickly here so that we don't shorten lunch too much.

So in terms of the objectives for the new strategic plan, so most of the current 78 strategic plan objectives were dated to 2011. They came up between 2009 and 2011, and most of them have either been accomplished or are well underway.

And so this is a question for you. Is it time for a new or revised set of objectives? And I

think that we discussed this a little bit last time, but I kind of wanted to confirm. And would we want to have research and services objectives?

So could I just get a few comments on that from the group? John?

Mr. Robison: I think the fact that we have accomplished or have substantial progress on almost all of our 78 objectives, which were chosen with our collective best wisdom and edited with that, and yet we have the perceived striking failure by the public, I think that that speaks -- I think that speaks to both our need to communicate the critical importance of what we've done with those 78 objects because we've done a lot of good stuff.

But I also think that we need a new set of objectives to make really clear to people what exactly we mean about delivering these tangible benefits. I think that definitely calls for a new set. But we've got to recognize the great value of this foundation.

Dr. Daniels: Anyone else want to comment on that? So I think this is a -- it's a great opportunity for this. Over the past few years, I know the Committee has been kind of itching to be

able to work on objectives, and so this Committee could get that opportunity to try to revise.

You don't have to throw away all the old objectives. If you like some of them, you could revise them a little bit. Some of them that you think have served their purpose, maybe we could set aside and create new ones.

Another important question is do we have an overall goal of how many objectives we would want in the overall strategic plan? Because our strategic plan has 78 objectives. I would say that the average strategic plan that I've seen across, you know, a number of different committees usually has more along the lines of 20 or so.

And so do we want, as a committee, to decide ahead of time that we want to target a certain number per question or, you know, I know it's sometimes difficult if you put in a lot of work to come up with 25 objectives per question and then try to whittle it down and get rid of things. It's hard to do. So I just wanted to throw that out there and see what your thoughts are.

Mr. Robison: Why don't we just think of the objectives like the 78 are going to grade school, and now we're going to have fewer in high school.

And when we do this again in 5 years, maybe we'll have 10.

Dr. Daniels: That would be a great idea. I think that there is an opportunity to move these objectives -- the next bullet is about the format -- to make them less specific and a little bit more general. So you could capture more.

Because sometimes our previous objectives, I really -- personally, I really liked how they were so clear in that, you know, some of these other strategic plans have objectives that are a whole paragraph, and that's really tough when you're trying to categorize things and do analysis. If you have something that's clearly stated in one or two sentences, it's a little bit easier to deal with. But sometimes they got so specific that there were studies that really met the spirit of what they were talking about but didn't meet the letter.

And so if we could bring up that level a little bit in terms of having something broad enough that we're not missing completely relevant studies that should be counted in that area, that would really help our office in terms of the analysis. And I think for all of you in terms of

when you get those results and look at what's being done, that you get the right dataset.

And so that's something I wanted to bring up and see what you think about that.

Dr. Reichardt: I just wanted to say I think you should appoint a small subcommittee to look at the objectives. I mean, 78. None of us -- I've read the reports, but none of us really remember what they are, and so you need some group to come up with, hopefully, a shorter list of recommendations --

Dr. Daniels: Well, that would be the job of the different working groups. I mean, I haven't gotten to that yet, but we would do that.

Dr. Reichardt: But I do think, you know, the shorter the better. I mean in general.

Dr. Daniels: It's a little bit clearer I think for Congress and the public reading it, you know? Just getting through reading 78 objectives takes a while and gets confusing. And so it sounds like you're all in agreement that maybe we would try to go for fewer than what we had before, maybe John's suggestion of whittling down.

So do we -- this is an example of a current strategic plan objective. Develop with existing

tools at least one efficient diagnostic instrument -- briefer, less time intensive -- that is valid in diverse populations for use in large-scale studies.

And so you can just see that it's quite specific. So we would just be trying to come up a level from that, one or two levels.

Do we still need to designate objectives as long term and short term? Personally, as far as my work in terms of trying to analyze things, we didn't really find that much utility in having the separate categories, and they didn't actually really apply most of the time. But it would be good to know ahead of time before we do it, or would you be okay with dispensing with long term and short term and just talking about them as one?

Do we want specific deadlines tailored to each objective or to have all the objectives maybe share a common deadline? For example, 2019, when this Committee is supposed to be completed with its work, or 2021, if you want a 5-year plan. It might be simpler than trying to follow like each separate objective with a different deadline because, again, that -- I don't think that ended up being very useful for the Committee.

It was hard for our office to track and make it meaningful for you all. So any thoughts about whether you might want to just consider a 3-year plan or a 5-year plan?

Dr. Mandell: I think it would really help shape the conversation of each working group if they were given a timeline. So that they can think expansively at the beginning, but when it comes to putting things on paper, it becomes very important then to identify a relatively small set of objectives that can be -- that are meaningful and can be met within that timeline.

And so I think it also might standardize some of the thinking across the workgroups, which may be important. So I would be in favor. I don't have strong feelings about 3 years versus 5 years, but I would be in favor of picking that shorter timeline for all objectives and making the working groups think within that timeframe.

Dr. Daniels: Great point. Do people have a preference about 3-year versus 5-year because that would be some of the direction I give to the groups.

Mr. Robison: I think 3-year is most relevant, given what seems to be the length of service of

the Committee members. Oh, sorry.

Dr. Reichardt: I would just say it's very short.

Mr. Robison: Yeah.

Dr. Daniels: Right. Most strategic plans are about a 5-year plan. So, you know, this specific group of people, it would probably be a different committee -- hopefully, if it's reauthorized again -- would be going forward. But you would get annual updates, of course, on this.

Other thoughts?

Dr. Amaral: So I just wanted to get a clarification based on what David just said. So for these objectives then, they should only be objectives that could be accomplished within 5 years? Is that so -- I mean, that's helpful if that's the case.

But I think in the current strategic plan, there's the long-term objectives, you know?

Dr. Daniels: Right. We have the aspirational goals as well, which are very long term in terms of where we're going. So, so, yeah, that might be something else to think about.

Dr. Birnbaum: So it seems to me that it makes sense to tie the timing of the goals, other than

the aspirational goals, to the timing of the legislation. So if this legislation extends to '19, that would be an appropriate time to say -- you know, you never meet all of your objectives and all your goals, but you make progress to them if you don't fully meet them.

And then, you know, then hopefully, we get reauthorization, and you go on another 5 years or whatever the timeline for the legislation.

Dr. Walter Koroshetz: I think -- I mean, I think it's great to have that kind of 5-year time scale in mind. But I would hesitate about just thinking what it would look like if you don't recognize the value of things that are going to take longer. In the report, people could read it as, you know, all this other stuff, why are we doing that? It's not in the report.

So I mean to solve some of these problems, it's going to take more than 5 years. So I think we have to be cognizant of that fact. I think if it's stated clearly that there is long-term research that needs to be done, these are the 5-year goals that we came up with, that's fine.

If it's just these are the 5-year goals, nothing else matters, then I think that could be a

problem.

Dr. Daniels: Some of the other strategic plans actually don't have timeline goals per objective either. And so we could talk about this as being a 3-year plan or a 5-year plan, but then not put specific dates on the goals and just write the goals the way we want to write them. And if they are long term, they are long term, and we expect that they won't be totally completed by the time the plan is revisited.

Dr. Cuthbert: Yeah, if I could just bring in an analogy to the new NIMH strategic plan. We have strategic goals that are fairly long term and somewhat aspirational. But then within those, we have what we've called specific strategic priorities, which is the sort of the current implementation of those long-term goals.

So an example from this morning's presentations would be that, you know, a long-term goal is, in fact, to conduct clinical trials to help improve social-communications deficits in ASD. But the specific priority right now might be to conduct the Autism Biomarkers Consortium study so that we have appropriate measurement tools to do really effective clinical trials. And doing a

clinical trial now would be wasting the money because we don't have the right measures.

So the preference right now, you know, the priority would be that, even though we outlined why that's going and where we want to get.

Dr. Daniels: So, John?

Mr. Robison: I'll just second what these two have just said, and I would add that we probably should stress in our -- in our statements about the plan that we recognize that whether it's 3 or 5 years, we cannot completely solve -- we can't reach those goals, but we're going to reach the steps, like you just said.

We've got to be -- we don't want to create a situation where a congressman reads our report and says, "Well, these guys failed at it. They didn't do this after 5 years." When we knew all along we wouldn't. We would just make steps.

Dr. Daniels: Perhaps it makes the most sense just to talk about it as if we're going to maybe say this is the plan that's supposed to be in place until 2019. Just keep it that way and not worry about trying to set specific dates on all of the objectives, and I think that will just keep it simpler.

Geri?

Dr. Dawson: So I guess, you know, one thing is that this is all rolling, right? We're not starting right now, and what are we going to accomplish in the next 3 years, right? So even your reporting processes, there are grants going on that are going to read out in the next year, in the next 2 years.

I guess for me the 5-year makes sense because the way this report is used and what we're actually defining has to do more with shaping priorities around things like RFAs and so forth, where you really usually set goals that can be accomplished in about a 5-year period, right?

So I guess the fact that the bill ends in 3 years to me doesn't map onto exactly how this report is going to be used. We're going to update it every year for one thing, right? So it's a rolling kind of dynamic document, but the goals we're defining should be one that can be accomplished in a certain amount of time.

But it may be that that activity isn't initiated until 2 years from now because that's the first time an RFA comes out that addresses that activity.

Dr. Daniels: David?

Dr. Mandell: If the -- if part of what we want from this report is for other -- if we want agencies to respond to it and to shift their priorities or make opportunities available, sort of leading from Geri's point, how -- if we don't have a timetable, how will that influence the sort of grandness of the scale of the objectives we come up with? And how will that, in turn, influence an agency's ability or willingness to respond?

That is I'm curious about sort of what the time limit, like how long does it take to get a PA or a demonstration project or something like that in the pipeline, which would speak to not picking the 3-year timeline, but picking 5 years instead.

But if I -- if we don't put any time limit on there and that affects sort of -- the objectives then become much vaguer and grander, how does an agency then meaningfully and specifically respond to the objectives that are in there?

Dr. Cuthbert: Yeah, that's a very good point, and it may surprise or even shock some people to hear that right now, all the institutes are working on funding announcements for FY '18.

That's how long it takes to plan them, put them out on the street, as they say, get them submitted, review them, and fund them. So, you know, we're looking like we have to work, say, 2 years ahead.

So that argues in favor of the 5-year strategic window that really gives agencies time to plan and implement these things. You can't do these things on a dime. So --

Dr. Birnbaum: So I think that's okay if every year you set this up, kind of a little bit what Geri was saying, as a rolling strategic plan. And then, you know, where you are taking into fact that it often takes many years to accomplish what your specific objectives or your specific goals are, and so it keeps rolling.

But I really think it would be to our advantage to have it broad, call it a 3-year or a 5-year plan without going into saying this is what -- we're going to accomplish this in 3 years and this in 4 years and this in 5 years. That's not strategic planning.

Dr. Daniels: So I think we have enough information on that to move forward. So in terms of planning the strategic plan update -- and I'm

cognizant of the time. I know that we're way over time, but I do need these answers so that we can get the actual work started.

My proposal would be for us to start with seven working groups, one for each of the strategic plan question areas, and the membership would be flexible. I can poll you all for what groups you want to be on, and we would need to find out who's willing to possibly chair each of these groups.

One question for you, do you want to invite external experts to participate in this planning process? And if so, would -- I can poll you all for possible names. Would about three to six per working group be sufficient?

I'm thinking in terms of the last time we did a strategic plan update, we did have an actual in-person workshop, and in terms of us flying people in, if we have an additional 40 people to fly in, it's, you know, that would be a lot of people. We probably wouldn't all fit in one room unless we get some giant place.

So that's one consideration. However, we don't necessarily have to have anything in person, but is three to six per working group kind of a

ballpark estimate that you think would work? So we could take the names, and then we'll work with each working group on and try to refine that.

So I could structure a series of phone meetings for each working group around the structure we talked about. And some of you that participated last time, you'll remember a little bit about how we did that.

And then we can talk a little bit next time about whether we feel that there's a need to have a workshop to discuss the entire draft. What we did last time is came up with the specific drafts and each working group brought them together, and then we had a workshop where all the external experts and the Committee could talk about the entire draft at once.

And I think that was quite helpful at the time, but maybe we could decide a little bit later about whether you think we need to do that. Unless you have a strong feeling right now about whether you want to do that or not.

So I'll be providing you with some information. I have some things listed here. I'm not going to go through everything. And we also do need to decide about how to look at duplication.

So the law says that the Committee has to come up with the recommendations to ensure that there is not duplication among HHS and some other Federal agencies' work.

Is that something that you feel you would want to do in the working groups as you look at each section, or would you want to just come together at the end and kind of come up with some global recommendations? Because if it's something the working groups need to do, I would want to know how to direct them.

David?

Dr. Mandell: I think it should be global recommendations so that we're not duplicative across working groups, right? So I think that we won't know what all the potential for duplication is and synergies are until we're looking across the sections.

Dr. Daniels: Okay. So maybe we can put that towards later in the process. Walter?

Dr. Koroshetz: I know you may want to tell the -- people may not understand the history behind this question.

Dr. Daniels: So just briefly, there was a GAO report where the GAO was concerned that since our

objectives are quite -- or our question areas are quite broad, and there are multiple agencies working on those, that there was a potential if you have more than one agency working on a question area that it could be duplicative.

Of course, if you're working on interventions and treatments, you're going to have multiple projects, hopefully. So that was a concern. And so they wanted to just ensure that there isn't duplication among the agencies that are working on these issues.

And so I think it's entirely feasible for after we work on our drafts to come together and come up with a strategy for developing recommendations, whatever kinds of recommendations the Committee would want to make regarding duplication.

Dr. Koroshetz: I think that's such a target. You know, we have a target on our backs. And so I think we really should, you know, carefully look at that question and give a scholarly response back about the duplication.

Dr. Daniels: Laura?

Ms. Kavanagh: But can we be more explicit about areas where we would recommend coordination,

get more specific there as well? I think that would help. There are areas where we want more than one agency to be conducting research on a particular area because they have different lenses on that topical area.

Especially as we make the objectives more broad, that's going to be a bigger issue. There's going to be more --

Dr. Daniels: Right.

Ms. Kavanagh: -- agencies funding within each objective.

Dr. Daniels: I think that's an excellent idea, and I think that's something we could easily incorporate.

And so I think this brings me to the end. I've already discussed most of this with you. It sounded like I didn't hear any disagreement with it. So my plan would be to contact IACC members to get started on determining working groups and external experts, set a meeting schedule.

Of course, we'll announce everything publicly. All conference calls will be available to the public for listening, and we'll be preparing materials and getting them to you. So we'll try to get this process started as soon as possible. I

know that everyone is eager to see a new strategic plan update.

So thanks for your patience.

Dr. Cuthbert: So we are way over time. So looking at the afternoon schedule, I think that we could successfully push things back at least 15 minutes, and we'll reconvene at 1:30 p.m. I think we can make up that time because rather than the RDoC presentation, I'll be presenting the science updates, but I can do a lightning round, run through those quickly and cut that in half.

So we want to leave time certainly for our oral public comment sessions and the very important discussion scheduled for 3:00 p.m. For the autism screening panel, it will now be at 3:30 p.m.

So we'll see you back here at 1:30 p.m., but let's start at 1:30 p.m. sharp.

Thank you.

Dr. Daniels: And there is a cafeteria down on the first floor. So if you go down the elevator, go straight down the hallway until you can't go any further, turn left. And then on your left, there is a cafeteria.

[Whereupon, the Committee recessed for lunch

at 12:39 p.m. and resumed at 1:36 p.m.]

Dr. Cuthbert: Okay. Hope you all had time to get a reasonable lunch, and we are back.

Our next section, as we know, is the public comment period. And so we have nine speakers lined up. I think I would introduce the segment today with the comment that we've discussed this morning that resources are scarce. We have many needs in services and research.

Another scarce resource is time. This Committee's time is very valuable, and we are -- you know, we can't gather even as much as we might like, but still four times a year is generous by many of our schedules.

So I'd just like to say to all our presenters we're so sorry we only have 3 minutes apiece to fit everybody in, but that's because the time is precious. We also want to hear a summary of the written comments that we think is important. Mr. Robison introduced that last time, and we're sharing the opportunity, and I think Shannon Haworth is going to do that today.

And we want to have time for the Committee to respond because an important part of your comments is, in fact, the opportunity to hear the

Committee's thoughts about that and to see if they have any questions or comments.

So please do not take it personally. You know, I'm going to cut you off at 3 minutes, which is hardly enough time to get going. And it's not that I don't want to hear what you have to say either, but simply that that's our time and we want to move on.

So we will start with our first presenter, who is Mr. Mazer, John Mazer, who is going to have some travel commitments. And his topic, I'm going to take the liberty of trying to just give a little tip-off as to what people are going to be talking about, which will help you jump right into your topic. And of course, forgive me if I mischaracterize your remarks and straighten me out.

So, Mr. Mazer, you're going to be talking about strategies to enhance ability of individuals on the autism spectrum to access educational curriculum with a case study on gut issues and how that plays out. Sir?

Mr. Josh Mazer: Indeed. Thank you to the Committee. I appreciate everyone's time, appreciate your being here. I appreciate your

interest in this very, very pressing matter that's in front of the United States of America and other countries around the world.

The prevalence of autism, according to the latest CDC numbers, as we know, is 1 out of 48, afflicting males 4 times more often. So we've entered a world where we are identifying approximately 1 out of 10 to 12 males with autism.

My name is Josh Mazer. I come from Annapolis, Maryland. The subject of my presentation is "Low-Cost, Effective Strategies to Potentially Enhance the Ability of Individuals on the Autistic Spectrum to Access Educational Curriculum -- A Case Study."

And by the way, I'd like to thank you, as I did, and good luck to our new Acting Director, Dr. Cuthbert. I wish you much success during your term. I truly do.

I live in Annapolis. I hold a B.S. in environmental biology from Tulane University. My wife teaches special education in Anne Arundel County, and this is what we've experienced in terms of helping children access the curriculum in either spec ed or regular ed.

The basis for my strategy, for our strategy

starts with an article I read that appeared in the Journal Pediatrics in November 2012. It was a special 100-page supplement entitled "Gastrointestinal Conditions in Children with Autism Spectrum Disorder: Developing a Research Agenda," written by Coury, et al. The article reported that there was a tremendous prevalence of gut disease in children with autism that is not diagnosed. And this was in the Journal Pediatrics 2012.

On the basis of this data, I want to talk about a male child who is age 14 years and 4 months old currently. He underwent evaluation and treatment for gut disorders, and what we found is that when we treated his gut, we saw some rather amazing results in terms of his neurochemistry.

So what happened was the kid was born normally, with normal Apgar scores. Born regular term. He progressed through all normal developmental milestones and suddenly regressed at age 14. Lost his language, lost his eye contact, et cetera. He was diagnosed with autism at Johns Hopkins School of Medicine by Dr. Steven Taylor, who was then the director of the McKusick-Nathans Institute for Genetic Medicine.

Age 18 was when we got a flag to the gut issues. Yellow, foul-smelling stools forcibly expelled four to six times per day. We're talking diarrhea spattering against the walls. And when you medical doctors out there talk to parents like me, talk to other parents with children on the spectrum, you will find the gut disorders in male children evidenced by a bloated stomach, lots of diarrhea. Guarding of the stomach is a very common feature.

We continually reported it to his physicians, and they continually ignored us. The kid self-selected a diet for French fries and pasta. He wasn't getting proper nutrition. His stomach was noticeably distended, and he guarded when probed.

He was checked for helicobacteria with negative results. We went to a number of different pediatricians. He was down to the 5th percentile for height, 90th percentile for weight with a BMI of 27 to 30.

Dr. Mary Megson in Richmond, Virginia, checked him for -- it was Clostridia and yeast. We put him on Nystatin and Vanco, and instantly, the diarrhea stopped. He was out of diapers within 3 weeks.

So that's learning point number one. Vanco and

Nystatin stopped the diarrhea and got the kid out of diapers like that.

Dr. Cuthbert: If you can summarize the last couple points? Again, I'm sorry. The red light is on.

Mr. Mazer: We -- the child was failing to thrive. He was very short for his age and very heavy for his age, chronic diarrhea, chronic gut problems. Evaluated by Dr. Mary Megson, a developmental pediatrician in Richmond, Virginia. She screened him for a number of things. She treated him with Nystatin and Vancomycin to treat gut pathogens.

As soon as she did that, within a period of 3 weeks, the diarrhea he had lived with for 3 years instantly stopped, and the kid got out of diapers. It was remarkable.

At age 11, we had the kid taken to a board-certified family practice physician, and based on my questions, he recommended a CAT scan of the stomach, which is a risk-reward equation for you all to consider. You're exposing the child to radiation, but on the other hand, you're getting some important diagnostic results.

In our case, the CT scan showed prominent

mesenteric lymph nodes in the ileocolic region, and -- I can't even pronounce these things -- retroperitoneal left periaortic, suspect those lymphs are post-inflammatory reactive, spondylolysis at L5 with Grade 1 spondylolisthesis of L5 and S1, and moderate stool.

We found on the CAT scan that the kid had gut pathology that had been undiagnosed his entire life, even though he had the best of medical care from the day he was born. The docs did not look at his gut, though we flagged it to them over and over and over again. Yes, sir?

Dr. Cuthbert: Well over the 3 minutes. If you could summarize, I think we have the gist of your comment.

Mr. Mazer: Yes, I'll summarize very quickly. After a proper gut intervention, his measured levels of neurotransmitters went from 2 to 30 percent of normal with no other intervention to completely normal. And I'll summarize it very quickly.

Serotonin was 20th percentile. GABA was 2.5. Glycine was 50th. Glutamate was 80th. Histamine was 80th. PEA was 25th. Dopamine was 58th. Norepinephrine was 70th, and epinephrine was 15.

After we put him on gut steroids and then later Pentasa, with no other intervention, every single neurotransmitter reverted back to the normal range.

Folks, if you want to get these kids into regular education, according to the Journal Pediatrics, the first step in intervening with a child with autism is to screen for gut issues.

Thank you very much.

[Applause.]

Dr. Cuthbert: Thank you for your comment. It's clearly an important issue, and your case studies are remarkable. So thank you.

Okay. Our next commenter is Lanny Edelsohn with three major issues of capacity, community, and choice. Sir, welcome.

Dr. Lanny Edelsohn: Thank you, and good afternoon. My name is Lanny Edelsohn, and I wear three hats. The first hat and the most important one is the hat of a father of a 43-year-old son with a significant intellectual disability.

He cannot add 3 and 3, cannot shave himself and needs supervision with most of his personal care. However, I enjoy reading his frequent poorly spelled, joyful, three- or four-word emails with

smileys daily.

My second hat is that of a neurologist and clinical professor of neurology, a hat I have worn for 43 years. I understand the brain and the many disorders that can affect it.

My third hat is that of a president of Homes for Life Foundation. My wife has single-handedly, as a volunteer with no paid staff, raised approximately $10 million over the last 25 years and has designed, built, and furnished 25 beautiful group homes and 2 apartments for 104 persons with autism and other intellectual disabilities.

My comments today will focus on three issues: capacity, community, and choice. Capacity. As a neurologist, I see patients who clearly fit the definition of IDD as federally codified. One of my many patients is Joseph, a 26-year-old man with severe autism and epilepsy. Joseph has no speech, minimal comprehension, has self-abusive behavior, sometimes will strike out at relatives and aides, and lives at home with his father, his disabled mother, two brothers with severe autism, and a neurotypical sister.

Joseph's capacity is that of an 8-year-old,

and he should be protected in life, as we always guide and protect someone with the capacity of an 8-year-old. However, there are those in positions of power and influence who stress self-advocacy but paint all those with autism and other IDD disorders with one brush, a single color regardless of capacity.

"Nothing about us without us" is a familiar mantra. Joseph's ability to self-advocate is clearly limited. Ari Ne'eman, the founder of ASAN, on the other hand, is a brilliant, articulate man who writes an extensive blog, testifies frequently, and alleges that because he has a mild form of autism, he can therefore speak for all those with autism and others with significant disabilities.

Mr. Ne'eman has a right to speak for himself, but not for Joseph or my son. Mr. Ne'eman does not have an intellectual disability and clearly has capacity.

The second is community. Ms. Sharon Lewis, the former HHS Commissioner, and others have decided to redefine the meaning of community under the ACL. Those with autism and other intellectual disabilities needing Federal and State support can

only live in communities consistent with the ACL's definition and now CMS's definition of community.

I understand communities. When building a home, NIMBY is the first rule we've had to overcome. And another thing that no one -- let me read no one -- no one has ever invited any of the 104 very nice people living in our homes to an event. Therefore, the premise that the neurotypical community wants us in their neighborhood and will embrace us is not only faulty, but naive.

Lastly, let me address choice. All of us have chosen where we live. It is an absolute right under the Constitution. Why is it that those with autism and IDD cannot have that choice?

Imagine the outcry if Chinese Americans, African Americans, Jewish Americans, Italian Americans, and other ethnic groups were limited in their choice of community. Good-bye Chinatown. Good-bye Little Italy. Persons with similar interests and backgrounds often choose to live together and thrive together.

Our loved ones with autism and IDD are entitled to choice as well, but the outcry related to a violation of their civil rights is merely a

whisper. They deserve better. They deserve a choice.

Some may choose to stay with their families. Others may want to choose an apartment, condo, a group home, farm, intentional community, or other arrangement. The menu of choices should be expanded, not limited, to ensure a meaningful quality of life.

And finally, let me briefly return to Joseph. Despite his many challenges, Joseph likes to prepare some simple meals like breakfast, but at 2:00 or 3:00 in the morning. He chooses the ingredients, and he chooses the time.

I can imagine him thriving in a farm community, where he could be taught to grow his vegetables, milk a cow, and prepare a meal for his new friends and staff. I can also imagine a life of isolation and loneliness should he be forced by regulation to live in an apartment in a community that isn't willing to accept him. The defining principle should be Joseph's quality of life, not geography.

Capacity, community, choice -- three critical issues that need to be addressed. As a father, physician, and advocate for those with

disabilities, I strongly urge you to use your voices to protect those with autism and other intellectual disabilities by remembering the three Cs.

Thank you.

[Applause.]

Dr. Cuthbert: Thank you, Dr. Edelsohn, for your cogent summaries of those three very important topics in this area.

Our next presenter is Lisa Wiederlight, the executive director of SafeMinds. To summarize, her contribution is about four workgroups that we might consider. Welcome.

Ms. Lisa Wiederlight: Thank you.

Okay. So you can hear me okay?

My name is Lisa Wiederlight. I'm the mother of a 15-year-old child with autism and executive director of SafeMinds, a national nonprofit organization whose mission is to end the autism epidemic by promoting environmental research and effective treatments.

In November, I asked this Committee to form four workgroups to address the urgency of the autism crisis. I'm told that you must begin to formulate a strategic plan immediately, and so I

ask that these workgroups are established today to inform the strategic plan document.

The first workgroup is on environmental factors that may underlie the rise in autism prevalence. Autism is an urgent issue for this country in terms of the safety, health, and welfare of people with autism and the skyrocketing cost to American taxpayers.

As you know, autism prevalence has increased from 1 in 88 in 2012 to 1 in 45, according to the CDC. With the number of potential environmental causes tentatively identified scientifically, but no policy in place to utilize these findings for prevention, it is unlikely this number will cease its downward spiral anytime soon.

A study published last year in the Journal of Autism and Developmental Disorders found that the total cost for caring for all people with autism spectrum disorder in the U.S. for 2015 were $268 billion, and this number is forecasted to rise to $461 billion in 2025.

The current costs of ASD are more than double the combined cost of stroke and hypertension and are on par with the cost of diabetes. If ASD prevalence continues to grow as it has recently,

the costs will far exceed those of diabetes in 2025. I ask where is the urgency to address prevention from modifiable environmental risk factors?

A second workgroup is co-occurring conditions with autism. According to a study published in the November 5, 2015, issue of the British Journal of Psychiatry, people with autism were more than twice as likely to die prematurely than the general population.

The risk of suicide in individuals with mild autism is about 10 times higher than in the general population. The most common cause of death among people with severe autism is epilepsy, which affects up to 40 percent of people with autism.

Approximately 49 percent of people with autism wander from safe environments, as this Committee knows. Sadly, in addition to the over 30 people with autism who wandered and died in 2015, the autism community learned on January 2nd that a 5-year-old child with autism wandered and died in Allentown, Pennsylvania. Serious co-occurring conditions are real, and they can be deadly.

The third workgroup addresses wandering and elopement from otherwise safe environments. We

cannot wait to solve the problems that families facing autism address every day, especially when there are seemingly simple things that can be done to effect change. In November, SafeMinds asked that the IACC coordinate with the legislative affairs offices at HHS and the Department of Justice to support Avonte's Law Act of 2015, S. 163, which provides funds to support law enforcement training on autism and wandering.

If you have not already done so, please make these calls today. There are many opportunities for cooperation and collaboration among persons with autism, parents, educational professionals, autism service providers, and public safety practitioners.

Fourth workgroup addresses caregiver support. For many families, the past 2 months since the November IACC meeting were not easy or eventful, especially for families facing autism. There is the autism parent whose child has his second seizure and now has epilepsy, which does not run in the family.

There is the autism parent whose child is extremely aggressive as a result of a bad medicine and -- has a bad reaction to medicine and who had

the police at her house 3 times in 4 days, except that the police did not have any training in addressing autism. And try as they might, they can only put a band-aid on the problem.

There is the autism parent who, while working full time as a single parent, had to prepare for and advocate her son at a school IEP meeting and then give feedback on a behavior intervention plan by herself. And what if I told you that that autism parent is the same autism parent who endured all of what I described in the past 2 months since the last IACC meeting. That family, unfortunately, is one of too many. Caregiver support is essential.

We're one third of the way to reauthorization of the Autism CARES Act of 2014, and HHS has not yet fulfilled its legal requirement to designate an existing official within the department to oversee in consultation with the Secretaries of Defense, Education, national ASD research services and support activities. Consequently, the IACC is now the only Federal Government autism policy-related body.

A great majority of what the IACC has supported in the past is academic research, very

little of which has helped families facing autism every day, including my own. We need public policymaking and best practices research now.

Today, the IACC members are faced with a great opportunity because the autism crisis demands urgency, and as my mentor, Ellen Camhi used to say, "Democracy is not a spectator sport."

One tenet of effective public policy development is consulting with relevant stakeholders in the formulation of public policy. Workgroups provide a mechanism to involve subject matter experts from outside the IACC so that the organization can make the most effective policy recommendation to the HHS Secretary.

These experts should include people with autism who are not able to participate regularly in the IACC meetings due to the characteristics and/or severity of their autism, caregivers across the country, environmental health specialists, toxicology specialists, gastroenterologists, and public safety professionals, among others. We're hopeful that the workgroups will be established today so that significant measurable and positive changes in the lives of people with autism and their families will occur as soon as possible.

Thank you.

[Applause.]

Dr. Cuthbert: Okay. Thank you for your comments about these four workgroups. Our Committee may want to take those up in the discussion period.

Our next presenter is Amy Lutz, and she will be talking about the issue of congregate settings and choice and safety and security instructions for living arrangements.

Ms. Amy Lutz: Thank you so much.

My name is Amy Lutz, and my son Jonah, 17, is severely autistic.

For most of the past 2 years, I have been immersed in the debate gripping our community over the type of housing that will be available to Jonah and his peers when they become adults, a project that culminated in my article, "Where Should Autistic Adults Live?" which was published by The Atlantic in May.

This piece discussed the push by organized self-advocates for small, dispersed, integrated housing as the only acceptable model and the regulations that have been accordingly proposed in several States, drastically restricting the size

and setting of housing available to waiver recipients. It's this problem I'm asking the IACC to address today.

There's no doubt that autistic adults who choose full community integration should be supported as much as necessary to achieve that goal, but it isn't the most important goal for everybody. Parents of severely autistic children in particular have an entirely different set of priorities.

Doors that can be locked by residents, freedom of mobility, and free access to food -- and these are all policies demanded by self-advocates -- pose significant danger to individuals with compulsions to elope or eat themselves sick. And my son suffers from both of those.

Rather, parents whose children have profound behavioral or medical challenges remain focused on the safety, security, and structure they feel will best maximize their quality of life. But congregate settings aren't just appealing to parents. In a 2013 survey by Autism Speaks, almost 30 percent of autistic individuals surveyed identified intentional communities as their "most preferred" housing style.

After traveling around the country for The Atlantic article, I understood why. I saw farmsteads that allowed residents to pursue agricultural, artistic, and commercial enterprises in peaceful, bucolic environments like Camp Hill in my own State of Pennsylvania and intentional communities designed to facilitate the development of strong peer relationships among adults who had never in their lives had real friends, like the Arc Village in Jacksonville.

The fact is many neurotypical people choose to live with their peers in gated communities. My mother lives in a retirement community in Florida, for example. It is baffling to me that autistic adults should not have the same right everyone in this room has to choose where and with whom they live.

The courts and Federal agencies have always recognized that the broad range of impairment in the autistic and IDD populations requires a similarly broad range of housing options, but inclusionists have persistently misinterpreted their findings. The 1999 Olmstead decision, which is frequently cited as a mandate for community integration, is actually a mandate for choice,

including congregate settings.

The justices noted there is "no Federal requirement that community-based treatment be imposed on patients who do not desire it." Similarly, the CMS final rule released in January 2014 set no size limits, no density restrictions, and no proximity rules. Rather, it looked to "establish a more outcome-oriented definition of home and community-based settings rather than one based on a setting's location, geography, or physical characteristics."

However, confusion over the final rule arose from the guidance CMS issued 2 months later, which did cite farmsteads, gated communities, and clustered group homes as potentially isolating. Afraid of running afoul of CMS and the Department of Justice and under pressure from organized self-advocates who claim that any setting larger than four people is an institution, many States have since proposed rules that would eliminate congregate settings entirely.

I am asking the IACC to review and investigate this concerning trend, particularly its impact on our most disabled adults, and to advance Secretary Burwell to direct CMS to issue clearer guidance in

keeping with Olmstead, reemphasizing the importance of choice and quality outcomes, goals that we've seen can be achieved across all settings and goals which are intended for all individuals with disabilities under Olmstead.

Thank you so much.

[Applause.]

Dr. Cuthbert: Thank you. Obviously, this is another issue that the Committee may wish to take up in the discussion period. Thanks.

Our next commenter is Mark Olson [off-mike].

Mr. Mark Olson: Thank you, Mr. Chairman, Committee members, and public guests.

My name is Mark Olson. I'm here on behalf of my daughter Lindsay, who is 20, nonverbal, and autistic. I'm her only parent and legal guardian.

I believe that Lindsay and other adults with autism have the human and civil rights to live, work, play, socialize, recreate, live, learn, and worship in the settings and manner of their choosing with the support of family, friends, and caregivers.

While Lindsay's abilities are many and largely undiscovered, her disabilities are significant enough that they may likely keep her from living

completely independently. They may also make it very difficult for her to earn enough money to be free of Government-funded supports. To what extent Federal and State regulations permit her to direct her own supports will ultimately enable or restrict her self-determination.

We're very active in our community, and she has traveled with me extensively to conferences, site visits to housing and employment settings, and meetings with other adults on the spectrum and their families.

She's walked Capitol Hill in Washington, D.C., to meet with congressional staffers and appeared in front of the Nevada legislature to speak up for insurance reform, expansion of workforces who can provide the support she'll need, and for the right to have her choices respected.

Today, as she and I engage in the process of person-centered planning for the next 5, 10, and 20 years of her life, we're optimistic and also deeply concerned. We're optimistic because we have seen and met with creative, inspired people developing innovative, promising housing and employment opportunities all over the U.S.

Lindsay is a unique individual with diverse

interests. A "one size fits all" approach to where she will live and work and enjoy her life won't work for her. And if she's anything like her father, she's likely to change residences and jobs several times in her lifetime.

Lindsay should have the broadest range of opportunities and settings from which to choose and the least red tape and fewest barriers to choose them. We're deeply concerned because some of the legislation and regulation meant to enhance the outcomes and experiences of her choices and some of the efforts of State and Federal agencies and private advocacy organizations are having the unintended or perhaps intended consequences of limiting or eliminating her options and her rights to choose.

Efforts by people who have never met Lindsay making judgments about settings and opportunities they've never seen that put limits on her autonomy are wrong. Enabling people with disabilities to make their own choices, even if you think they're making the wrong choices or different life choices than you would make is a true measure of diversity.

I'd like to finish with two quotes. The first

is from Brittany Dejean, founder and executive director of AbleThrive, writing on LinkedIn.com last month. "People with disabilities and their families are responsible for making their own life choices about disability and have their own views and narratives, all of which deserve to be equally respected and represented in society and in mainstream media. Let's let people make their own decisions and accept and respect the diversity that comes with it."

The second is from Micaela Connery, an inclusion advocate and founder of United Theater -- I'm sorry, Unified Theater, writing in the Huffington Post last June. "We have to put the risks, fears, challenges, and uncertainty aside in favor of choice. Choice is closely aligned with respect, dignity, happiness, and independence, things each of us seek daily. Funding alone won't likely fix the problem. The challenge isn't new, but the solutions will need to be."

Thank you for the opportunity to speak to you today.

[Applause.]

Dr. Cuthbert: Thank you for your comments about this very central issue in the lives of all

the people on the spectrum and the choices that they need to make and can make.

Our next commenter is Dr. Linda Varsou, talking about the issue of chronic parental denial for parents.

Dr. Linda Varsou: I bring to the audience for the sixth time the issue of denial, chronic parental denial. We have good news, and here it is.

Since Sunday, I watched a fantastic autism summit where all of the scientists, doctors, incredible personality talk about autism deeply -- research, everything -- and here is the Web site. You can click and go to watch that. It will end on Monday, and then you can buy with $80 all the video and the transcripts for those wonderful, absolutely wonderful presentations.

So all of them in those panels, they were saying parents know their children better than anyone. That's for sure. But, yes, not in autism. In autism in 50 percent of families, at least one parent is in denial of the child's autism or the extent of its severity. That's the difference. And it's only in autism, and it's not for any other disability.

If I asked the question is anyone in the audience in denial? Of course, the answer is no. Because you are here. Just that proves that you are not in denial. But because you are not in denial, you might ignore the family prevalence that exists of chronic parental denial of child's autism, which has devastating effects having the child with autism ultimately made victim.

So usually almost 50 percent of the families and usually the father is in denial. Very rarely cases where both parents are in denial. And it's in no other disability.

So research. We have two, three theses. All over the world, I search all the different databases for the word "denial" in autism, non-resolution or non-acceptance. We have two, three cases, and one fantastic article for Israel. This one, the publication.

This serious paper gives a prevalence of 53 percent. But if we study closely this paper, you will see that because parents' contribution for the study was at the volunteering basis. So that means that they were not in denial. So taking out this bias, we can have a 50 percent at least prevalence of autism denial.

What's denial in Europe? Fifty percent. In the United States, 45 percent. We don't have data -- careful -- but we have only what the professionals in the field of autism tell us. That's it. So really we need data, serious data, because if those data come to light, will we know what to do? It's a drama.

So what do we need to have studies to assess the percentage of denial in autism? We start right now a study in Greece in Europe, in the whole country, where parents consider denial very serious issue only second to the diagnosis of autism.

Also this study will be together with Autism-Europe and studied, which will extend to the whole 33 countries in the European community -- not community, European countries. I am in the board of Autism-Europe, the Board of Administration, and we try to assess this issue.

And now I'm asking IACC why not to collaborate to exchange protocols, to share with this Greek and European protocol and to assess denial, the effect, with no cost -- cost at all, very little cost. Everything can be teleconferenced through Internet, very easy.

We have access to hundreds of thousands of people and families with autism. Why not be able, having similar protocols, to make an analysis and find out what this issue is, how important it is? Okay?

Now --

Dr. Cuthbert: Dr. Varsou, excuse me. We're well over the time, and I think --

Dr. Varsou: I'll finish.

Dr. Cuthbert: -- we have the gist and that last slide, I think, really expressed what I've seen.

Dr. Varsou: I'm finished. I'm finished.

Dr. Cuthbert: So if you could wrap up, thank you.

Dr. Varsou: Just tell you that within the Research Domain Criteria, you can include the issue of others and please make sure that autism will be -- denial will be only a river in Egypt and not anything else. We can include also that to your strategic plan 2016.

And if I can make -- give me this chance to make a comment? When you presented the strategic plan before this session, those questions were consumer based. I wrote an article, very important

article saying that when you have autism, when you are a patient or when you are the mother of the person with any disease, you are not consumer anymore, and you are not a client because you don't choose to go to the doctor. You have to go to the doctor.

So the terms "consumer" and "client," they don't have a place in autism, you know? If we change this word, it's very important the significance of words, to put something else. User or something, not consumer, no clients.

Thank you.

Dr. Cuthbert: Okay. Thank you very much for your comments about this.

[Applause.]

Dr. Cuthbert: This again may be an issue the Committee wishes to take up.

Okay. Our next speaker is Kathryn Walsh, and she is going to be speaking on the topic of wandering. Ms. Walsh?

Ms. Kathryn Walsh: Good afternoon. My name is Katie Walsh, and I'm the proud mom of a child on the autism spectrum.

However, my son isn't my motive in my petition and plea to you today. The recent disappearance of

Jayliel Vega captured my attention. His death broke my heart. I'm sure you shared similar emotional responses to this tragedy.

I'm ashamed to admit it required the glare of the local spotlight on Jayliel's disappearance and his preventable death to recall my attention to the ways in which we're continuing to fail these children and their families. In the days before Jayliel's body was recovered, the community united in their search and demanded an Amber alert be issued in efforts to bring him home.

After his confirmed death, public support for alerts issued for missing children with autism also ironically disappeared. Entirely inappropriate and yet not unexpected, part of the general public's response moved instead to pass judgment on Jayliel's family and their supposed culpability. Many were quick to assign blame and question how his loved ones could have momentarily looked away.

And what struck me is the irony that we share responsibility for Jayliel's death. Because like his caregivers regrettably did in that brief and tragic moment, we've taken our eyes off of him, too, and other children very much like him.

Limited time prohibits me from detailing the appalling statistics regarding incidence and prevalence of wandering. But I'm stunned to discover that a new medical diagnosis code had been approved by the CDC in October of 2011. The code is listed as "wandering and diseases, classified elsewhere." Is this really how prevalent wandering is, to necessitate a medical diagnosis?

Conditions like Alzheimer's and dementia are supported by Federal dollars to counter very similar wandering incidents. Yet autism-related wandering initiatives do not yet receive Federal funding or support.

This Committee's expressed mission is to provide advice to the Secretary of Health and Human Services on matters concerning autism spectrum disorder. You've been tasked with the responsibility to facilitate the efficient and effective exchange of information on autism activities among the member agencies in order to enhance coordination of autism-related programs and activities. And to this end and in efforts to satisfy your mission, I ask that you undertake the three following steps.

First, immediately reinstate the Safety Subcommittee dissolved in 2012. IACC has since been petitioned multiple times to reinstitute a Safety Subcommittee, but to no avail. Since 2012, the avoidable deaths of Jayliel, Avonte, and dozens of other children may have been prevented through the findings and actions of the IACC Safety Subcommittee.

This Committee has both the ability and the obligation to respond to the call to action in reinstituting the Safety Subcommittee.

Second, provide directives for mandated reporting and data collection of incidence and prevalence of wandering, bolting, and eloping, as data proves critical to effective advocacy efforts and resource mobilization, for program development, policy implementation, and monitoring of interventions. Data must be aggregated and collated on a number of important elements, such as the prevalence and incidence of wandering and eloping, the costs and consequences related to such incidents, especially loss of life.

Develop and immediately implement a standardized format for recording and reporting data that can be centralized from local to State

to national level. Institute systems management for regular data collection and analysis, then gather data from entities such as law enforcement, hospitals, and healthcare facilities, social work agencies, child protective services, schools, childcare centers, parents, and caregivers of children with autism.

Eliminate stigmas endured by parents and caregivers when their autistic children have wandered or eloped. The reality is we simply don't have enough accurate, timely, and serviceable data on the issue of wandering.

Finally, and perhaps most importantly, Congress must be called upon to pass the stalled Avonte's Law Act. U.S. Senator Chuck Schumer of New York State has twice put forth legislation that will go a long way in addressing the issues regarding the safety and the recovery of wandering children with autism. Avonte's Law will provide Federal funding for tracking devices, resources for families, and training for first aid responders that can aid in reducing incidents, particularly those resulting in tragedy.

"Making voluntary tracking devices available will help put parents at ease and, most

importantly, help prevent future tragedies like Avonte's," said Senator Schumer in his statement when he put forth the legislation. His statement is even more profound today, 364 days later, yet it's still days late, too late for Jayliel and his family.

This Committee faces monumental tasks. You're hearing numerous calls to action. You're likely presented with conflicting objectives. I implore you to prioritize the safety of our nation's autistic and special needs children.

In reinstating the Safety Subcommittee, in providing increased research and opportunity to report, record, and amass critical data, and in vigorously advocating for the passage of Avonte's law, this Committee can satisfy your most important mission.

Thank you for your time and attention.

[Applause.]

Dr. Cuthbert: Thank you for your very specific comments about this very important issue.

Our next commenter is Desiree Kameka from the Madison House Autism Foundation to talk about community housing and adults.

Ms. Desiree Kameka: Thank you, IACC and all

who are here. This is really important that we have the opportunity to provide public comments and that you will have discussion afterwards, addressing them.

My name is Desiree Kameka. I direct three housing programs of the Madison House Autism Foundation and have visited well over 100 different residential and employment opportunities across the country.

Last time I spoke here in April 2014, I shared a story about a friend of mine who was living in a homeless shelter. He had lost his waiver supports and affordable housing voucher because someone whom he considered a friend said they should move out of State together. That friend then took control of his finances, leaving him homeless and without any access to the supports he previously had.

Stories like this are not uncommon. Based on a national survey of the Disability Abuse Project, 67 percent of autistics have been victims of abuse. Abroad, mate crime has been measured at 80 percent.

Thankfully, since I've spoken, my friend has found a supportive housing community. He has

complete control over his life, can afford to pay rent for a single apartment in Seattle, has had access -- can access supports as needed from onsite coordinators.

He lives in an intentional community of 66 peers with various disabilities, and this has made a huge difference for him. He still gives money to almost anyone who asks, but at least he has trustworthy neighbors to whom he can easily introduce his new friends.

I'm extremely concerned that changing policy and regulations without a basis in research would one day force him and many others to leave their homes. Unfortunately, even if a waiver recipient can clearly communicate that he or she wants to live or work in a particular setting, if the State determines through a State-developed assessment tool that the setting does not meet their home and community-based criteria, that waiver recipient will be forced to move or forego their waiver funding.

Policy and related assessment tools should be based in current research that help shape policy into a direction that honors person-centered plans and preferences, as well as ensures barriers to

one's quality of life are being identified and assessed.

There are three national trends of utmost concern for the future of autistic adults. One, States do not have a strategic plan to prevent the forced institutionalization or crisis placements of autistic adults living with aging caregivers. Over 1 million individuals with developmental disabilities live with a caregiver over the age of 60. Yet nationwide, in the past 35 years of data, less than half a million are currently living with supports outside of their family home.

My second concern is that States are creating barriers to the public-private partnerships who want to develop new supportive housing models. These planned communities provide an additional housing choice for those on a fixed income. Yet without basis in research, these models are being stigmatized as isolating and segregating.

As a neurotypical, I experienced a huge expansion of personal growth and independence when I left my family home. Why should we expect anything different from the autistic adults?

And third, States are promoting adult foster care, sometimes incorrectly termed "shared

living," without outcome measurements. Research findings by the National Core Indicator Study show that adult foster care settings have the highest rate of reported loneliness by individuals with developmental disabilities at 51 percent.

Surprisingly, the setting with the lowest rate of loneliness is actually institutional settings at 37 percent. Further research is needed for autistic adults to be more meaningfully informed when deciding if living with a host home is a good fit.

As a federally funded interagency entity, IACC can speak with authority and dictate research into areas that should be shaping policy to meet the needs of autistic citizens throughout their lifespan. The National Quality Forum is producing reports on the characteristics of HCBS quality indicators, and Madison House was the only autism-specific organization that provided input.

IACC, your voice is needed in those spaces. Research is needed to determine if and how supportive housing communities, farmsteads, or other forms of intentional communities are creating barriers or if they're enhancing community access and the quality of life of

individuals on the spectrum.

Please consider researching the outcomes of different settings for different populations of those on the spectrum, including private pay settings or postsecondary residential transitional options. Research is needed to develop effective strategies for identifying abuse of autistic victims and improving person-centered quality of life assessment tools to reflect what matters most to this diverse set of people.

I close with just a quote from a young man who I visited while visiting a planned community in North Carolina. His name was Slayer. He told me that in his other apartment, he could go to a neighbor and ask for sugar, and they would give it to them. But in this place, he can go to their neighbor with his hurts and his tears, and that they would stay with him.

Slayer is not isolated. He is not segregated but has found a community within the greater community. This is his choice of home and community, and it should be protected.

Thank you for your commitment to those on the spectrum. Please don't hesitate to contact me if Madison House Autism Foundation or I can provide

any assistance or insights in the future.

[Applause.]

Dr. Cuthbert: Thank you. Clearly, the choice about community housing and choices and opportunities is a theme in this meeting. So I think that's probably something that the Committee will want to address.

So our final commenter today is Mr. Albert Enayati, and he will be speaking about co-occurring conditions, particularly the area of treatments, trials, and biomarkers.

Mr. Enayati?

Mr. Albert Enayati: Good afternoon, and thank you for allowing me to be here today.

My name is Albert Enayati. My son Payam, regressing to autism after receiving 7 vaccines in the space of 2 days.

Today, I would like to expand on SafeMinds' recommendation to establish a workgroup under IACC to investigate co-occurring conditions, many of the most disabling and fatal features that are present in a person on the spectrum and comorbid condition. These conditions are amendable to treat.

There is an urgent need for workgroup to

follow promising treatment leads, shepherd existing treatment through clinical trials, and facilitate FDA approvals and/or mainstream acceptance. This group would require membership from within the Committee, as well as significant representatives from broader autism advocacy and research communities.

An example is Isaac Kohane, M.D., of Harvard Medical School, who was invited to speak at IACC in the past and who has knowledge of advice -- knowledge to advise IACC on this topic.

Over the history of IACC, there has been no coordinating effort to develop treatment for the people on the spectrum. In spite of $1.6 billion in spending, parents still have few options that have been proven effective. Risperidal and Abilify are only appropriate for certain symptoms and have significant side effects. We can and must do better.

In 2015, researchers at Johns Hopkins University Medical School, in collaboration with the Massachusetts General Hospital for Children, determined that chemicals extracted from broccoli sprouts may help ease autism symptoms. In another published paper, a researcher at the Stanford

University found that the symptoms of autism can be caused by gene mutation that both block the body's natural production of endocannabinoids and also interfere with the way cannabinoids communicate with the brain.

These leads needs immediately follow-up, and there is currently no mechanism to ensure this.

There are existing medications such as antibiotics, pioglitazone, and naltrexone that need further study in autism. In addition, there are vitamins and supplements such as folic acid, melatonin, methyl B-12, carnitine, probiotics, and tetrahydrobiopterin that have preliminary evidence of efficacy but need further study.

Lastly, many psychiatric medications are prescribed off label for those with autism, despite of lack of properly controlled clinical trials and long-term safety studies in this population. A toll-free number and IAN survey should be used to collect community input on the treatment to be investigated and to report side effects as a way to include the broad community input.

All of these areas need concentrated attention and dedicated workgroup to move research forward.

One more. Perhaps most importantly, the workgroup should play a key role in identifying the biomarker associated with the values comorbid assessing that what treatment might help and shepherding these treatments through clinical trial.

For example, someone with a co-occurring phenotype of PANDAS and tics will have underlying immune problem (biomarkers) and can't be treated with the existing and validated intervention IVIG for PANDAS. Or someone with a co-occurring irritability and glutathione imbalance can be helped by the N-acetyl cysteine treatment.

We need to investigate broadly what differentiate the biology of the people with autism compared to control and pursue treatment that makes sense.

I'm going to stop because I know my time is up. But Dr. Cuthbert, Dr. Daniels, I appeal to you, what you see here is not just me. There are thousands and thousands of parents across this country. They are desperately looking for the medication for their children. Please help us to make this workgroup established here, and let's try to find a medication for our children.

My son is going to become blind. He hit his head so many times that sooner or later, he is going to be either blind or deaf because there is no medication for my son. I appeal to you, please help our children.

Thank you.

[Applause.]

Dr. Cuthbert: Thank you, Mr. Enayati.

Like Mr. Mazer's comment before you, you've emphasized the need to find these treatments for the co-occurring conditions that are so frequently accompanying people on the spectrum. So thank you.

And now we're going to turn to Shannon Haworth. We'll have a written summary -- a summary of the written comments that were submitted to the Committee. These are quite long, and we appreciate your efforts in summarizing all the comments, but we feel that it is important for these comments to be heard, just as with the oral comments.

Thank you.

Ms. Haworth: Thank you.

So these written comments were summarized by the Committee for time, and they were grouped into topical themes. I'll start under causes of autism.

John Best believes that autism is caused by

mercury, and Asperger's syndrome is not autism. People with autism cannot speak, read, write, or perform any useful function. He asks the Committee to stop lying to the public about the causes of autism.

Michael Kazee says he wants to know why autism rates are increasing and asks the Committee look at all factors that might be contributing to autism prevalence, including increased vaccinations and environmental factors, and presses for Congress to subpoena Dr. William Thompson of the CDC.

Eileen Nicole Simon would like the Committee to discuss vulnerable brain systems and how these may be -- may be injured by all unknown causes of autism.

Joseph Jackson says his son would not currently have severe autism had it not been for vaccines and would like the Committee to do something about it.

Dr. Kerry Scott Lane states that the evidence is now abundantly clear that acetaminophen, also known as Tylenol, is a trigger for autism and would like the Committee and the FDA to act on this information.

Gail Elbek says she would like the Committee to alert the public that there is evidence that proves soy phytoestrogenic endocrine disruptors, plus additional soy phyto poisons are a possible, probable, and absolute cause of multiple fetal, infant, and child adverse behavioral effects, to include autism.

Dwight Zahringer says new parents of autism need help and need resources, and they also need answers to what could have happened and who to see and who to get the needed tests from to establish a real baseline of what could be going on.

They challenge the Committee to uncover the truth of information from the whistleblowers that worked at the CDC in relevance of autism being linked to vaccines.

Holly Masclans lists areas where she would like to see more research, including vaccinated versus never vaccinated studies, vaccination's effects on microbiome, thimerosol concentration and mitochondrial disease, and justice for all vaccine-injured children.

Matt Carey says that discussions of vaccines as a cause of autism has taken up too much time of the Committee's time. With regard to the claims of

a CDC whistleblower cover-up, he feels that there is no substance to the claims of fraud, malfeasance, or other wrongdoing and no reason for the Committee to support investigation of this issue.

He suggests that discussions of vaccines is a diversion and the Committee should stay focused on topics that could help people with autism have a better life.

Anne Jakus wants the Committee to address the CDC vaccine whistleblower issue and hopes this year the Committee will finally demand the independent study of the various health outcomes of fully vaccinated versus never vaccinated children.

Brian Hooker -- sorry. Brian Hooker and his organization, the Focus for Health, would like the Committee to maximize the amount of research dollars allocated for elucidating and understanding potential environmental causes and contributors to autism and the current autism epidemic and believes that funds should be allocated to independent researchers devoid of financial and other conflicts of interest.

Bill and Karen Fuller says that while the

Committee meets, 1 in 45 American children are affected by autism, and when will it be an emergency?

Nicole Cassidy is writing on behalf of her daughter, and she says girls are still under diagnosed and no research has been done on girls with autism, as the focus has been on boys. She asks for the Committee to do something about the rate of autism and improve access and funding for vital therapies.

Under comorbid conditions and health, Rosemarie Dubrowsky wants comorbid medical issues, like gastrointestinal issues and seizures, that go hand-in-hand for many individuals on the spectrum to be addressed and also wants more research on what environmental issues are causing or exacerbating our loved ones' autism symptoms.

Dr. Deanna Mulvihill would like to draw attention to the nonverbal and minimally verbal children with the diagnosis of autism, especially the ones who have evidence of digestive or neurological disorders and says many of these children go without treatment because their primary physician or pediatrician don't recognize these symptoms or ask about them.

Megan Davenhall wants the Committee to address the health outcomes of our children under our current medical system and to heal the co-occurring conditions.

For care throughout the lifespan, Christine Matovina thinks that one of the key issues for autism is for what happens to those with autism after the age of 18 and says the Committee should focus on employment and housing.

There was a lot of comments under wandering and elopement danger. So I've grouped most of these together.

Gizelle Tolbert urges the Committee to make Congress pass the Avonte's law. She says the bill will authorize 10 million Federal dollars in order to help fund the purchase of voluntary tracking devices for children with ASD, education and training for parents, schools, and local law enforcement, as well as other innovative methods that will assist families of children who wander with ASD.

This is also echoed by Ethel, no last name; Kristen Festa, who is a mother of four, who would like the Committee to help pass Avonte's law; as well as Lea Googe and Michelle Del Rosario.

Lori McIlwain asks for the IACC's participation and formal support of Avonte's law as well. Asha Kumar is also the parent of a child with autism, supports Avonte's law.

And Lisa Ackerman says that 49 percent of individuals with autism wander from safe environments, and the Committee needs to act on behalf of families living with autism in keeping children safe and to help families by pushing support of Avonte's law.

Eileen Miller says there needs to be a plan of action when a child who has autism is missing, including looking near bodies of water and hiding places.

Donna Jo Kazee suggests the IACC -- the Committee should focus on the need for more training for parents, teachers, therapists, respite workers, and police officers in de-escalating and managing behaviors when dealing with autistic children and adults and include input from individuals with autism.

Heather Price says already in 2016 there has been a death attributed to autism wandering. So the Committee needs to act quickly. She says that children with autism are getting older and

stronger and more violent while parents are getting less support and less help.

Shannon Primer, parent of a 14-year-old with autism, is saddened by the Committee's lack of doing anything to help families like hers and says 50 percent of children with autism wander, and this is the number-one way that they die.

Mary Bornstein, parent of a 14-year-old nonverbal child, says that hearing the stories of the 30 children who have died from wandering since June 2015 makes her very fearful and asks the Committee to please support GPS technology for children with autism.

Melissa Schneider says that as the prevalence of autism increases, there must be a plan of action to prevent more deaths and tragedies from occurring, and it's imperative that the Committee represents families and expresses families' concerns to Congress and the President.

Joanna Ashline suggests that the Committee focus on training for first responders, support systems such as GPS tracking, prevention protocols in schools, educational programs and training for caregivers and respite workers, access to affordable swim lessons that accommodate various

levels of ability, and passing legislation designed to protect our loved ones.

Other priorities mentioned in the comments, Jeffrey Brown suggests several priority areas for the Committee -- early childhood identification and intervention, available regardless of income; increased earmarked funding for public schools to ensure all students, not just students with autism, receive a free and appropriate public education; encourage 2-year community colleges to offer or increase the number of specialized programs for people on the spectrum.

Kathy Blanco would like the Committee to have a battle plan on how to confront autism, as well as how to prevent autism, give proper information to parents on toxicity scales, and identify proper experts who can help stop the epidemic.

Donna Knepple says there is not a genetic -- that autism is not a genetic epidemic and hopes the Committee will do what it was created to do, which is combat autism.

Jill Rubolino, who represents AIM, Autism is Medical, which is a nonprofit organization that works to bring awareness to complex medical needs, would like the Committee members to focus on

accountability and the urgent need for the development of a medical standard of care.

Chanda Jackson wants to see this Committee invest in comprehensive environmental prevention science and biomedical autism research and treatment trials, and she states that research aimed at funding purely genetic causes for autism is a waste of resources.

Julie Clymer, mother of a 9-year-old daughter on the spectrum, wants to know what has been done to ensure that activities under the Autism CARES Act are not unnecessarily duplicated. And are there current reports focused on funding implementation to confirm that there has been no duplication of effort?

Simran Mangat-Garcia wants the Committee to do the following -- prioritize and evaluate all possible environmental causes of autism, declare autism an epidemic and public emergency, consider a more diverse board on the Committee to include some of the world's researchers and cause innovative treatment, collaborate with families via support groups and identifying needs for those living with autism today, and operate with a sense of urgency on the strategic plan and on

committees.

Carol Fruscella asks the Committee to hold a press conference and call for autism to be at an epidemic level, and she says the lower-functioning autism community needs real help now.

Jackie Martin-Sebell wants the Committee to know that our children are sick, often abused, and not getting properly cared for or educated.

And lastly, Yadira Calderon and Thomais Moshopoulos says future initiatives to address autism must involve all efforts and interest and asks the Committee to address parental emotional and physical health.

[Applause.]

Dr. Cuthbert: Thank you, Ms. Haworth, for that very concise, comprehensive, and accurate summary. Much appreciated.

We have just a little bit of time before the break. Obviously, I'm going to postpone giving the science highlights, which you have If we have time later, I will revisit those. But if not, we will post the PowerPoints that the staff have prepared on the Web site so that you can all catch the science highlights.

There are a number of very significant papers

since we did this last that I would encourage you all to look at, but I think it's more important to have the discussion. You can read the papers. They're not going anywhere.

But it's really important for the Committee to react to some of these themes, which we've heard, especially I think the four themes would be the importance of choice for adults on the spectrum. Choice about living conditions and other very important life choices. Housing is a related thing, congregate settings and so forth. The wandering issue and co-occurring conditions.

So I'm going to start with Alison Singer to make the first comment in this discussion.

Ms. Singer: Thank you. I want to just start by thanking everyone who came today to make -- to deliver oral testimony. It takes a lot of courage to get up there and talk about your family situation. But it brings a lot of important information to this Committee. So thank you very much.

Several of the commenters today and many of the people who gave oral testimony at our last meeting expressed similar concerns, as Dr. Cuthbert was just summarizing, and this is that

individuals who have the greatest needs and the most severe disability are having their civil rights violated, particularly their right to choose how they want to live.

And in response to this continued stream of concerned testimony, I propose that the IACC convene a working group for the purposes of examining and offering recommendations to the Secretary on the impact of service delivery reforms in Medicaid and in other programs that provide ongoing support to individuals with the most severe autism disabilities. Specifically including individuals who are self-injurious, who are aggressive, who are prone to wandering, as we heard about so many times today, and who have significant behavioral and medical comorbidities and conditions.

As our presenters so clearly explained today, these individuals are at huge risk of being left behind. We need to make sure that HHS focuses on making sure that its programs are meeting the needs of the most severely affected people with autism.

This working group would be similar in scope to previous workgroups that advise the Secretary

on issues like wandering and restraint and seclusion. And its focus would be to examine whether those who have the most severe needs are unintentionally being left behind.

This severe autism working group would need to examine how we can make sure that all people with disabilities live in the best places for them, making sure that all factors, including their safety, are taken into account.

Dr. Cuthbert: Okay. Thank you.

Let's just -- John and then Kevin and then Samantha.

Mr. Robison: I'd like to build on what you said before me, and I'd like to make the point with respect to self-determination that it's very easy for the best-intentioned of us to unconsciously take away the civil rights of severely disabled people. And to illustrate that, I'd like to cite as an example Ms. Lutz's comment, and I want you to know that I believe you have the best of intentions. It's not any kind of attack on you.

But before you came to us to address the Committee, you published a much more substantial article in The Atlantic magazine. You're the same

Ms. Lutz, right? Okay.

So in that article, you describe a number of potentially really wonderful and very nice living situations for autistic people with all levels of challenge and what have you. And it sounds like you're describing colleges to send your kid to. But when we read descriptions of children going off to colleges, it's always stories like "I went with my daughter to look at six schools, and she decided she liked this school out in Denver or she liked this one here."

When I read your article, Ms. Lutz, you describe the institutions or the living places with the same enthusiasm as a mother would describe colleges. But in every account of a person who placed somebody there, it is always "I put my son there. I put my daughter there." There was never a mention of "My son chose this place."

And like I said, I know that it wasn't intended to depict us as not having an ability to choose, but you know, my dog can choose which doghouse he wants to live in, and my 5-year-old son could choose where he wanted to be when he was 5. And I can certainly choose where I want to be.

And it's really, really important that when we

talk about people who have severe disability that we talk about what those people want. It's great for us to want the best, but we surely should be able to establish what do our autistic children want?

Because I'm a parent, too, and I think we have to be really, really mindful of that, especially when we communicate with the public because it's all too easy for us well-intentioned people to make autistic folks seem like we have no rights and we're non-people. And I would just please urge all of you to think about that.

Dr. Cuthbert: Okay. Thank you. Kevin?

Dr. Pelphrey: I would like to second what Alison has said in the suggestion for a specific workgroup, happy to serve on it, happy to be involved.

And I think it would speak to what John very eloquently brought up, which is how do we understand what someone wants who is nonverbal? How do we understand how a nonverbal person's mind works?

And I think it's a tremendous opportunity, I was really delighted to see that Jamie's consortium, for example, is looking at individuals

with IQs as low as 50, and that's really extraordinary, and it's very hard to do. And as some of us are doing imaging, are beginning to look at the functional brain development of people with autism who are nonverbal, very low IQ, you know, we're seeing that a lot of what we thought was absolutely true and reliable in terms of when we had studied high-functioning autism turns out to be not the case.

And not in the sort of obvious way, well, it's worse. But it's different and better in some ways and worse in others. So there's a terrific opportunity to do some, I think, really incredible science as we're beginning to try to unpack the heterogeneity.

So I think that what Alison has proposed would do service to both of the comments that preceded me.

Dr. Cuthbert: Okay. Thank you.

I think that one minor response to that is that it brings up the importance of connecting science with something we might not think is so directly connected, like housing. But you made that link very nicely.

So, Samantha?

Ms. Crane: I first want to sort of just correct a couple of things that are -- were part of the testimony, and as someone who's worked extensively and an attorney who's worked extensively with the home and community-based settings rule, I feel like it's very important that we actually under the rule and what it says.

One thing that we need to establish is that the home and community-based settings rule applies only to a very specific source of funding, which is home and community-based services funding through Medicaid. There are other funding sources for housing options, such as intermediate care facilities, that are unaffected by that rule.

Another thing that we need to acknowledge is that many of the rules in the home and community-based settings rule are intentionally made to be flexible. So one rule in the home and community-based settings rule is that in general, a person in a home and community-based setting needs to have access at any time to food. However, there is an explicit exception in that rule for an individualized determination that access to food at any time would be unsafe or otherwise inappropriate for that individual.

The only thing that the rule says is that if that individualized determination is made, it can't simply be applied to everyone in that setting simply because one person can't safely access food at any other time. Would you want to not be able to access food at any time simply because your next-door neighbor is not supposed to access food at any time?

I wouldn't want that for myself. I would want the policies to be for everyone in a group setting to be individualized to that individual person's need. So it's simply not true that we have a regulation saying that everyone needs access to food at any time.

I also want to note that when we're talking about housing, we do need to pay attention to the research base. And there is a research base showing that larger settings are harder to customize to individual needs, and more isolated settings make people more, not less vulnerable to abuse and exploitation. There is a very good ProPublica study on that issue.

The home and community-based services rule was also created after extensive consultation with people across the autism spectrum, including

people with significant intellectual disabilities, and has the support of organizations that exclusively focus on people with significant disabilities, such as TASH. And so if there is going to be a housing committee, subcommittee, I think it's very important that we include people who are very familiar with the policy and very familiar with the background research.

Finally, I want to mention that I support the formation of either a subcommittee or a working group on both safety and comorbid conditions. I think we need better research on safety.

There is right now a lot of policy discussion on how to address wandering, how to address situations that might make autistic children and adults unsafe without any good research on actually which interventions work and which interventions don't work in terms of preventing outcomes such as fatalities or injuries. So I think that's very important to address research on that issue.

Dr. Cuthbert: Thank you for your very knowledgeable comments.

I'd like to get more people involved, but I think people need to have a break, partly to have

some offline discussion about this, and we have a very important session coming up at 3:00 p.m.

But David Amaral had already raised his hand. So, David, you get the last brief comment. I'm sorry to cut this off, but we do have to move on to this very next part of the agenda today.

Dr. Amaral: Thanks, Bruce.

And I'd actually like to go to another topic, if I may, and that is the co-occurring conditions. So I was -- I've been moved by lectures by Margaret Bauman and others who suggest that a lot of individuals with autism are not given the same benefit of medical treatment because oftentimes things like acid reflux are simply pawned off to "Well, that's autism."

And so I do think that we know that 20 or 30 percent of individuals with autism have GI problems. You know, something on that same order have very severe sleep disturbances. Yet I'm not sure whether there is a sort of a comprehensive approach to try to look at those co-occurring conditions.

And if we want to actually do things that have demonstrated benefit, I think, you know, trying to cure or to solve a GI problem in a child that's 2

or 3 years old is going to have enormous benefit for families and then, you know, will obviously allow the core components of autism to be addressed later on.

So I would actually like to see a workgroup established to formally evaluate what's being done on a national level to study the co-occurring symptoms, as well as educating the medical community about the need for evaluating these things.

We have hundreds of families coming into the MIND Institute who are still complaining about the fact that they'll go to their local practitioners and the practitioners will say, well, you know, you don't have to worry about the GI problems or this or that because that's just part of the autism.

But I think, again, these are low-hanging fruit. These are things that can be addressed relatively quickly. Yet you know, and I'm not a physician so maybe I'm missing some national comprehensive approach, but it seems to me that this is something that we as a committee could encourage more, more avid and aggressive sort of effort into.

Thanks.

Dr. Cuthbert: Thirty seconds?

Dr. Dawson: I just want to say that the last thing that we did in last IACC was because this was raised as a major issue of medical co-occurring conditions is we had a work -- a whole workshop, all right, on medical co-occurring conditions.

Was Margaret Bauman here? Yeah. So I think Margaret came. Dan Coury was here. I don't know where Dan is.

But what's really interesting -- so we did get, I think, a very comprehensive view of the state of the science, but because it was at the end of that IACC, what we didn't do was articulate the research objectives or connect it to services.

So I think that we can go back and actually look at the content of that workshop and then build on it to really move that forward in the way that you're talking about.

Dr. Cuthbert: Okay. Thank you.

So I think we're going to revisit some of these issues and specific motions during the first part of the round robin session. But right now we have coming up this very important session

regarding the autism screening panel, and so we should take a quick bio break, but I'd like to start at 3:00 p.m. sharp.

So if you can, get back here by 3:00 p.m., and we'll get underway. Thank you.

[Whereupon, the Committee members took a brief break starting at 2:52 p.m. and reconvening at 3:03 p.m.]

Dr. Cuthbert: Okay. Thank you for reconvening.

This is a very important session we have this afternoon. As you know, this is a topic that hardly needs any introduction, but in brief, the recent draft recommendations of the U.S. Preventive Services Task Force regarding screening for ASD has prompted a considerable amount of debate in the community, and so I thank Susan for organizing a panel to discuss this this afternoon.

And we are very pleased to have Dr. David Grossman, the vice chair of the U.S. Preventive Services Task Force, joining us by phone from Seattle. Dr. Grossman, are you with us on the phone?

Dr. David Grossman: [on telephone] I am. Can you hear me okay?

Dr. Cuthbert: We can hear you fine. Thank you

so much for joining us.

And the other members of the panel are I'm not quite sure what order they're going to speak in, but Dr. Daniel Coury from Ohio State, Karen Pierce from the Autism Center at the University of California San Diego, Diana Robins from Drexel, and Amy Wetherby from Florida State University.

And so I thank all of you for coming to contribute your knowledge and experience in this area. So I think each person is going to speak for around 10 to 15 minutes, and then after all the presenters are done, they're all going to come up in the front so we can have, at least in the room, a panel discussion.

And I think, Dr. Grossman, you can join us for the entire time?

Dr. Grossman: Yes, I can. Thank you.

Dr. Cuthbert: Yeah, great.

Female Speaker: So, Dr. Grossman, when you're ready to start, go ahead and just let know "next slide," and I'll advance them for you.

Dr. Cuthbert: Okay. So thank you. So Dr. Grossman will be the first presenter. So please go ahead, and thanks again.

Dr. Grossman: Great. Thank you very much for

the opportunity to speak with you all today. I'm very sorry that I can't be there in person, but very much appreciate the opportunity to present the draft recommendation from the U.S. Preventive Services Task Force on screening for autism spectrum disorder.

So next slide, slide 2, just a quick overview of the task force. Some of you may be less familiar with the task force. As many of you know, we make recommendations that are based on a very rigorous, unbiased review of existing peer-reviewed evidence. So that's only the literature that shows up in the published sphere.

And our focus is on helping primary care clinicians and patients decide together whether or not a specific preventive service is right for a patient need. We look at preventive services across the spectrum of age from children through the elderly, including also pregnant women, and this particular recommendation that we're talking about today is a new one for us we have not looked at before.

Next slide, please.

So just a really quick overview, a little bit more about the task force. We -- it's important to

understand the task force does not actually conduct research studies themselves but reviews and assesses the research. The systematic evidence review that accompanied our draft recommendation was performed by one of the evidence-based practice centers, which works under contract to the Agency for Healthcare Research and Quality.

And that's what the task force uses to evaluate the evidence. We look at both benefits as well as harms of every service, based on factors such as the age and sex and other factors as well.

The group is a group of 16, a panel. It's an independent panel. It's appointed by the Government but is independent of the Government, and everyone has a deep expertise in preventive medicine, primary care, and also evidence-based medicine.

I also want to point out the methodology for our work is transparent. We have a full procedure manual that's actually available on our Web site, and I'll gloss over just a few things that are in our procedure today. But certainly, the methods that we use are the same for children and adults and for every preventive services.

Generally, our services are divided into

categories of screening, counseling, and behavioral intervention, and preventive medications. So this one, of course, is the screening topic.

Next slide, please.

You should see in front of you the grades that the task force uses or attaches to its various recommendations. There's a choice of five different grades, and the one we'll be focusing on today is the "I statement," which isn't really a grade. It's a statement. And, but we do have two grades that recommend the service uniformly. Those are A and B.

C is selectively offering a service based on individual professional judgment and patient preferences. Generally, there is -- those are services for which there is demonstrated benefit, but that benefit is small.

And D is one where we recommend against a service because we have high or moderate certainty that it has no benefit or that harms outweigh those benefits.

In the case of I, I think that's where we need to focus. And that's a judgment on the basis of the task force where the current evidence is

insufficient to really assess that balance of benefits. Why? Either because the evidence is lacking. There's not much that's been published out there, or there's not enough volume of it.

It could be because the evidence that's out there is generally poor quality or because it's very conflicting. There's half the studies say one thing. Half the studies says another. And also it all leads up to the fact that our assessment is that there's low certainty, and therefore, the benefits cannot be determined.

Next slide.

So to do that, the draft -- develop a draft recommendation statement, we look at the best available science and research. We do have experts consultants that are involved. Both the draft evidence review is peer reviewed, and the task force reaches out and calls out for help with people with expertise on an as-needed basis.

So all of our draft recommendations are up for public comment. This one has already been up, and all those comments are reviewed and considered in making the final recommendation statement.

I also want to say that the research plan that lays out what are those key questions is also

subject for public comment, and we get draft -- I mean, sorry, we get public comments on that and use that to finalize and improve on the research plan.

So next slide.

In August, I think, as you all know, for the first time, the task force released a draft recommendation on screening for autism in children under 3 years of age. And I want to emphasize that the task force did this recognizing the burden of autism spectrum disorder as a disorder among parents, families, and also because of its prevalence and as a pressing medical and public health problem in the U.S.

We very much wanted to see if we could help understand what opportunity there was, as well as to help advance the science to address it.

Next slide, page 7, please.

So our draft recommendation in August concluded that the current evidence actually we viewed to be insufficient to assess the balance of benefits and harms of screening for autism spectrum disorder in children who are asymptomatic or who concerns of autistic spectrum disorder have not been raised by their parent or clinical

provider.

I'll come back to some of that language a little bit later. I know that that's been the subject of some discussion. But, and we recognize that in certain cases, we're dealing with disorders that may have symptoms that aren't necessarily recognized versus those that are silent and completely different.

Next slide, please.

So I want to clarify what an “I statement” is not. And we have had -- we realize that this is complicated. Some professional organizations, many professional organizations do not have such a thing as an insufficient evidence statement. They'll make a recommendation, for example, based on what are called "grade criteria," where they say the evidence is low or very weak so, therefore, it's a weak recommendation.

We don't use that. We basically say if the evidence and the certainty is low, then we will call it out as such, and then what we're saying is an “I statement” is a call for additional research. If we don't call out what those gaps are, then we lose an opportunity to improve the quality of evidence.

So in this particular case, we're really calling for more high-quality evidence with external and internal validity for the benefits of treatment. We're saying that that's inadequate for children under the age of 3 and in particular for screen-detected populations.

The gaps -- I also want to mention that the gaps from "I statements" are looked at carefully. We call those out as high-priority areas for research, and we include those in our annual report to Congress, where we put a heavy focus on, you know, what -- and those reports are available to all the Federal agencies that sponsor research.

So we also want to emphasize that an "I statement" is not -- again, I want to emphasize again. It's not a recommendation of screening and that we also recognize that the potential harms of screening and behavioral treatment are likely low in this circumstance.

Given that the screening tests are questionnaires and given that the treatments are behavioral, we're comfortable calling those harms as potentially low. The problems is more on the other side, where the benefits that are evidence-based could be improved.

Let's go to the next slide.

So in the face of "I statements", clinicians are advised to use their clinical judgment in areas of uncertainty around screening. I'm a pediatrician. I see patients. I and all of the clinicians understand that in much of our practices, we deal with a lot of uncertainty and we have to use our clinical judgment when we face that uncertainty.

So, and that, I recognize and we recognize, is not what necessarily people want. Everyone loves more certainty, but we -- our job is to call out what we see the science as standing right now.

I also want to emphasize that an I -- I think there is -- there has been a misunderstanding. So it's important to clarify that an "I statement" will -- on this particular topic will not influence insurance coverage.

I think although the USPSTF was called out as being -- the grades A and B as leading to mandated insurance coverage, first dollar coverage, it's also important to recognize that other organizations were recognized in that law as well, and those include Bright Futures. Bright Futures does recommend screening, and therefore, our "I

statement" will not influence the current interpretation of that mandate.

So the other -- and the last thing I want to emphasize is that the "I statements" do not apply to testing or targeted testing. The difference between screening and testing, and screening is where you have no prior hypothesis as to whether or not the patient has got a problem.

Testing is where you're led on the basis of some constellation of signs or symptoms that the patient has perhaps something, and you're going to embark on using a tool, including something like the M-CHAT, to decide if there could be something going on.

So "I statements" really -- this particular thing applies to universal screening of all children, regardless of whether or not they have any concern expressed at all.

The next slide, and I know that some of the discussion will focus on this, people have asked us, well, what type of research is needed? We did want to say that we do think that there's been important progress that's been made to date in research.

There is -- the designation of insufficient

doesn't mean that important work hasn't been done. We recognize there's been very good work done and that has answered some of those key questions. But we do think that the trials could -- more trials that are larger, high quality, and focused on specific populations would help close some of those research gaps.

So some examples would be randomized screening trials, with the invitation to screen in early childhood and infancy, and those could be -- take various forms. And we can go into that later as needed or as desired.

Or if randomized screening trials are not feasible or possible, then randomized trials that are focused on treatment of very young children under 3 who are actually identified through screening.

Slide 11, next slide, please.

So in summary, I think what we're wanting to say here is that we do believe that important research progress has been made in the areas particularly of treatment trials of clinically identified older children. We also want to recognize the good work that's been done on the identification of accurate and balanced screening

tools. The task force did agree that there was adequate evidence around the -- particularly of the M-CHAT as a good tool.

And I also just wanted to say that, you know, I think our -- and we look at a lot of screening. We look at a lot of science in a lot of areas, you know, in pediatrics, in adults, and across a whole, wide variety of areas, and there is a lot of variation in terms of where the science is at, ranging from cancer screening, where there's, you know, abundant numbers of trials that have been done, to other areas where there is really fairly sparse evidence.

We would say that the progress in this area is actually very good. We were impressed and that we think that the evolution of the science in this area is appropriate, meaning that the trials that have been done to date were started in clinically identified populations, which makes sense. That's usually how science starts because clinicians are faced with complex situations who are often referred -- children who are often referred and in need of treatment.

And as treatment trials start to prove efficacious -- reveal efficacious treatment, then

people become interested in early identification, and that's where screening test development goes on. And that's where the science has gone to with the development of the M-CHAT.

In some circumstances, scientists would embark on screening trials to decide if screening really works. By screening trial, I mean where you take all children and some have -- they get randomly assigned to screening or no screening to decide what that outcome is.

But we know that there's many areas where there haven't been screening trials, and we will look for an indirect pathway as well, which is to say that if we do have evidence of a good screening tool and we have good evidence of treatment in the population that is similar to one which would be identified through screening, then that can suffice for a recommendation from the task force. We don't demand screening trials.

In some areas, like cancer screening, we do mostly screening trials where people are subjected to screening or not screening. And, but in behavioral science, that's probably less -- less common, and we recognize that there are alternate ways to achieve this goal.

So last slide. In summary, we just want to say that we think it's important that children and families deserve to know what works when it comes to screening for autism, what the state of the science is with regard -- from a preventive medicine and screening and primary care standpoint. And we think, you know, that we owe it to our children to execute those high-quality studies that can help fill in some of these research gaps that we've identified.

And then, in closing, I just want to identify and recognize the work of the partners present in the room there who have done a lot, a tremendous amount to identify not only issues around screening, but also about potential causes of autism and encourage that continued work and push for treatment.

So I think I will stop there, if that's okay?

Dr. Cuthbert: Yes, thank you very much. That was a very clear presentation and very helpful, really outlined the issues very well and the basis for your current decision. So, you know, I appreciate the positive framing that you presented this whole issue.

So our next speaker is Dr. Daniel Coury from

Ohio State, and Dr. Coury, welcome.

Dr. Daniel Coury: Thank you. I want to thank the IACC for inviting me to participate in this panel, and I want to thank Dr. Grossman for being available to present the task force's viewpoint and how they operate.

My comments are going to be looking at the clinical practice of screening, how this works in -- in clinical practice and some of my concerns that these recommendations may have some negative effects.

Briefly summarizing the task force's statement, they conclude that the current evidence is insufficient to assess the balance of benefits and harms of screening for autism spectrum disorder in children for whom no concerns of ASD have been raised by their parents or clinical provider. And elsewhere in the draft recommendation, they use this term "asymptomatic."

So this is children who fail a screen, but neither the parents or family or the clinical provider express any concerns, and this is where the task force feels that screening is -- there is insufficient data to recommend this.

Which button do I push to go forward? I hit

return because the arrows weren't working. And return isn't working.

[Pause.]

Dr. Coury. So there we go. So parental concern or lack of concern is not something that is infallible. Parents are humans. I'm a parent. I'm human. And many parents do not recognize signs of developmental delay in walking and talking. They are simply unaware of these, and the same is true for so-called red flags for autism spectrum disorders.

Now there are reasons for this that have been studied. Some of these are parental knowledge. Some of these are cultural factors, and there are some references there. But the first point is a lack of concern on the part of a parent does not mean there are no symptoms. It means no symptoms have been recognized by the parent.

Okay. There we go. Now the second part of this is the physician concern or lack of concern, and that also is not infallible. Physicians also are humans. I'm a physician, and I'm human. We do make mistakes.

For a long time, part of clinical practice in pediatrics has been developmental what has been

called screening and in the last two decades more accurately labeled as developmental surveillance. And it's well known that this is not as accurate as formal screening, which is why the current American Academy of Pediatrics recommendations are for surveillance at each health supervision visit and then, at certain visits, following up with formal screening because your surveillance just isn't that good.

But a second part of that is that children with autism may not display their autism behaviors during the course of a regular health supervision visit. One study I've quoted here points out that many of these children display typical behavior as much as almost 90 percent of the time. And in this study, there were expert raters who were missing the diagnosis in children who already had a diagnosis because they didn't display autism-type behaviors during a 10-minute visit.

Now these are experts more qualified than a general pediatrician or family physician. My point again being the clinician misses it not for a lack of knowledge, but for a lack of it being displayed.

The third area that I have concerns with of

the statement of asymptomatic is that, again this is a quote from the task force's draft recommendation, children identified through screening rather than through case finding are likely to be younger and possibly less severely affected. So it's unclear whether these young children detected by screening and not by concern will experience similar or any benefit. And this is one of the concerns of the task force.

Well, most of our evidence regarding early intervention and early treatment suggests that those that are more mildly affected, in fact, often respond even more positively to treatment. But, yes, it's true. We cannot predict the response to treatment in any single child, and we certainly see different trajectories in children with autism of different degrees.

But there is no evidence at this time that children with autism who are identified through systematic screening rather than the expression of parent concern are, in fact, less severely impaired. So this concern of the task force that we may be picking up children very mildly affected who won't benefit from treatment, there is no evidence to show that screening is only picking up

those children.

The U.S. task force concludes that there is insufficient evidence to assess the benefits of screening for autism spectrum disorders, and they state that the balance of benefits and harms cannot be determined. And I don't disagree with that, actually.

But the evidence that they present in their recommendation, they present evidence that there are effective screening strategies out there. There are effective interventions out there. And there is evidence of better outcomes when these interventions are applied earlier.

So certainly early identification leads to earlier intervention and better outcomes. And so it would seem that we've got a fair amount of evidence there supporting continuing with screening.

Now where they point out that evidence is lacking is that the effectiveness of this early intervention for those who screen fail only, the so-called asymptomatic. We have insufficient evidence here to say that this is going to be helpful for this group.

And again, I've summarized through all of

this, but briefly, based on these topics, they do seem to have come up with a balance and a decision when they even say that it's insufficient. This is my opinion. There seems to be adequate evidence there to continue to screen.

There are unintended consequences of this. Again, Dr. Grossman mentioned this also. There are concerns that the wording "insufficient evidence" is too easily interpreted by many clinicians as there is no need to do this, and we already have problems, the American Academy of Pediatrics has been spending the last 50 years trying to get physicians to do regular screening. And it's still far from perfect. Anything that might take a step backward certainly concerns me and most pediatricians in this country.

And that's it. I'm going to turn things over at this time to Dr. Robins.

Dr. Diana Robins: Good afternoon. It's a pleasure to be here.

So what I wanted to do is just kind of summarize where we are with screening studies because although the task force did have a sentence in their draft statement that said that they do see evidence that screening is effective,

I think that they were not emphasizing that point as much in their final insufficient conclusion.

So actually, to follow up on what Dr. Coury was just ending with, the first study that I'm aware of that asked physicians how often they were screening for autism in their toddlers during regular well-child checkups was in 2006, just before the American Academy of Pediatrics came out with their statements that were recommending universal screening, regardless of other surveillance, other broader screening.

And so the first number was about 8 percent of physicians were doing autism screening. A couple of more recent surveys showed that that number is somewhere between 40 and 60 percent, as of about 2012. So I really am so worried that we are going to take a giant step backwards toward that 8 percent because I talk to a lot of pediatricians.

I'm not a pediatrician. But I talk to them almost every day in the work that we're doing, and I really feel for the fact that they have about 4,000 things to cram into a checkup that sometimes if you sit down and figure out exactly how many minutes the doctor has to spend with each child can be as low as 8 minutes.

So they have an awful lot to do, and so if they see that there is not sufficient evidence to recommend a strategy, I'm just not sure it's going to make it onto the top of their list to cram into those 8 minutes. And instead, it will be one of those, "Oh, we wish we had time, but" kind of activities.

And so for that reason, I thought it would be helpful to just do a quick review, and I wanted to point out that I'm drawing this summary from two sources. So the first is the evidence report that the task force based its statement on, and the second is a paper that just came out this fall that a large number of collaborators -- in fact, many of them are here today -- participated in.

We held a 2-day meeting back in 2010, if you can believe it was that long ago, and we all sat around a room and tried to come up with statements about best practices. And it was all focused on young children with autism.

So we looked at early identification strategies, screening strategies, treatment, and we came up with a set of -- a pretty large set of recommendations, which were published as a series of four papers in the supplement to Pediatrics

this fall. And so I found it interesting that there was probably about 70 to 80 percent overlaps in the papers that each of the groups separately found to meet inclusion criteria, but it was not actually 100 percent overlap. So that's where I'm drawing these comments from.

So this table just kind of counts up the papers that report on Level 1 or low-risk samples. So it can't be children already flagged for autism concerns. It can't be just siblings of children already identified with autism. This is like primary care checkup kind of samples, and there have to be children under 2 for inclusion in this table.

And you can see that there actually are a number of tools out there. The M-CHAT is not the only one. And as, you know, many of you know, the M-CHAT is near and dear to my heart. It was, you know, my first baby before I had other babies.

But I also continually strive to find ways to improve screening and improve early detection. And so just because we were one of the early ones out of the gate, if it turns out that there is another tool that works better, then that's the tool that we'll be promoting.

So what I wanted to comment on here is that there's a couple things that are not on this list. There are two tools that have had some attention in either the literature or the media, the BISCUIT and the PDDST-II, that actually don't have any studies in low-risk samples, even though they are presented as Level 1 screeners.

And then there is a tool called the SACS from Australia that has -- it was included in at least one of these sources, but it's really a developmental surveillance approach, and it's not a screening tool, per se. So these -- this is a list that I could come up with really scouring the literature to look at papers out there. And you can see that there is more than 25 papers here that are looking at the effectiveness of screening in low-risk toddler samples.

And so just trying to -- whoops, the move from computer to computer moved my table a little bit. Sorry. Trying to look at the four -- it's really five because Number 3 is a combination of two papers, five studies that the evidence report graded as good quality, and you can see that they have some commonalities. The samples are very large. The age range is not all over the map.

These are toddler studies.

And although the PPV, so the positive predictive value -- let me see if I can get this to show. No. I'll use this. Although the PPV for autism is variable and not that high -- so PPV is an interesting psychometric property. It gives you a gauge of your confidence that a positive screen really warrants action.

So if -- you can have high sensitivity and high specificity, but your PPV still not as high because your base rate of your disorder is not that common. And even if autism is 1 or 2 percent, it's still not that common compared to all of the, say, non-autism cases out there. And so you want to have confidence that a positive screen needs immediate action.

But when we extend the PPV to look at children who screen positive on these tools, the Infant-Toddler Checklist or the M-CHAT, who have anything that's not developmentally typical, those numbers jump sky high. And so what that should be telling physicians is it may not be perfect for just autism, and that's probably because there is too much overlap between autism spectrum disorders and other developmental disorders. But these kids all

need to be seen so that an expert can decide do they need an autism-specific intervention, or do they need interventions for other kinds of developmental disabilities?

And then a reviewer in our last paper pointed out to me a new statistic I had not been as familiar with called the likelihood ratio. And I did a little bit of research, and if you have likelihood ratio of 7 or more, it's considered to be a good outcome.

And so what this tells us is the likelihood of a child with autism screening positive on the M-CHAT, this is actually the M-CHAT Revised, it's 114 times more likely than a child without autism screening positive. So if 7 is a good number, 114 is a really good number.

And I also wanted to point out something that I don't think has been mentioned yet, which is there's a lot of concern in the field about disparities in age of diagnosis, access to early intervention services, and these trickle down throughout the lifespan and impact long-term outcomes. So the CDC prevalence reports continue to show that the numbers of children from racial and ethnic minorities who are diagnosed with

autism at either age 8 or at age 4 is lower than the number of Caucasian children.

And many, many studies find disparities in referral processes, in misdiagnosis. So David Mandell, who had to sneak out right before our talk, is responsible for a lot of this literature. And we have some evidence that if you implement a universal standardized screening system, you can reduce some of these disparities.

And so, again, I'm really concerned about us taking a giant step backwards if we let these task force -- the lack of recommendation really, the insufficient recommendation, if we let it in any way decrease our efforts to screen all children because I think that we'll be doing a huge disservice to the children who are in the greatest need of screening.

And so to give you a sense, I just pulled one statistic out of this paper. There is still actually a significant difference in the age of diagnosis for our minority sample, which was a combination primarily of African-American children and also Hispanic children because neither sample was quite bit enough to do alone versus the nonminority sample. But if you look at it, it's

only 1 month.

So we've reduced a much larger gap of maybe as big as a year, a year and a half, down to 1 month. So although it's still statistically significant, the clinical meaning is that we are really reducing this gap.

So just a quick summary that I really hope becomes the driving force between -- in how we act on the task force outcome is we do have evidence that supports the usefulness of autism-specific screening during toddler checkups. And the currently available screening tools do the job.

So everybody is pretty much in agreement on that, and the part that I think could use a little more emphasis is that many children identified by screening have not yet been identified through parent or physician concern. So Dr. Coury touched on this a little bit.

The task force evidence report says that as many as 50 to 60 percent of children may be detected first through screening, and that's huge because the symptoms are there. It's just a matter of identifying them. And so I wanted to leave us with that really like pushing motivation to get those trials done, get that research done so that

we can have a strong recommendation to bump up the number of physicians who are screening to 100 percent, which is what we need.

Thank you.

Dr. Karen Pierce: Thank you. And thank you so much to the IACC for inviting me here today.

I am Karen Pierce from the University of California, San Diego. And I wanted to kind of take the 20,000-foot view of this and talk about how biology and what we understand about early brain development interfaces with screening efforts and how the task force recommendations could potentially impact the degree to which, as Dr. Robins mentioned and Dr. Coury mentioned, engage in screening.

So when I started in the field over 25 years ago, the mean age of diagnosis was around age 7. Today, the mean age of diagnosis hovers closer to age 3, and I think the reason that everybody has changed and is pushing for younger and younger and younger is because we understand that the mammalian brain has a huge amount of plasticity during early development.

An enriched environment, a lot of what we've learned is from animal model studies, can actually

increase the number of synapses in the mammalian brain, which are the connections between brain cells. You can increase dendritic branching. The dendrites are the part of the neuron that receives information from other cells.

You can actually grow new neurons. We used to think that we were born with all the brain cells we would ever have. But now we know that in the dentate gyrus, a portion of the hippocampus, neurogenesis can occur, and the presence of an enriched environment can actually also increase capillary profusion. So you can get more blood flow to the brain with an enriched environment.

But a lot of these wonderful plasticity effects happen most readily during infancy and decrease with age. So a lot of what we know, again, is with animal model studies. So just a quick study from Helmbrecht, et al., 2015, looking at mice that have a Sema3F mutation, which impairs their ability to engage in motor behaviors, here this shows the amount of time that these rodents fall off a rotor rod. And so this is under natural conditions, the wild type and the mutant mouse. This is without any intervention whatsoever.

You can see that there is a lot more slipping

and falling for the mutant mouse across different ages -- 4 weeks, 8 weeks, and 12 weeks. But if you place the rodents in an enriched environment right after birth, here there are no differences. So the motor deficits are largely corrected.

But if you delay and provide this enriched environment of a lot more wheels and toys to play with, the deficits are back even higher than they were originally. So there is a critical period for kind of exposing someone or something to an enriched environment in order to impact brain development.

And I'm not sure what happened. Okay.

But a lot of what we know is largely from animal model studies. For obvious reasons, there isn't as much research on humans, and my favorite study, though, that kind of addresses this period of critical periods and intervention in human babies is a study by Chuck Nelson published in Science in 2007, where he looked at 136 infants abandoned at birth in Bucharest, Romania, and institutionalized.

And half of these infants actually were in the institution, but they got out and placed into foster care. But the other half remained

institutionalized. And then they did a contrast group of 72 babies that were never institutionalized, and they were reared at home with their biological parents, and then they just compared and contrasted the IQs of the different groups.

And not surprisingly, the babies that stayed in the institution, which was very impoverished -- they didn't have a lot of staff or toys or a lot of interaction going on -- they had the lowest developmental quotient of 77.

The kids that got out into foster care had a slightly higher developmental quotient of 85, and kids that stayed home with mom and dad had an IQ of -- a developmental quotient of 103, which is what you'd be expected.

But here is where the data get interesting. If you look at the age of placement that the children got out of the impoverished institution and placed into foster care, there are big differences in IQ. So at 30 months and greater, 2 1/2, the mean developmental quotient is 79.1. At 24 to 30 months, if the children got out of the institution into foster care a little bit older, it's 80. If they got -- I'm sorry, a little bit younger. From

18 to 24 months, it's 89.

But if they got out of that institution and into foster care between 0 to 18 months, their developmental quotient was 95. So that's 15 IQ points difference, and the only difference was the age at which they got out of the negative environment into a more enriched environment.

So if we think about the way brain develops, this makes sense. This is a classic slide from Conel, a Golgi stain in frontal cortex in 1939. You know the frontal cortex is really important for higher-order social cognitive behaviors.

And you can see in the newborn, cell bodies are very small in frontal cortex. There's not a lot of local circuitry at 1 month. At 6 months, you can see that cells are starting to communicate. You've got some local circuitry formed. And by 2 years, there's a nice dense level of local connectivity in frontal cortex.

Well, when do we traditionally diagnose, get on the waiting list for treatment, and start treating children with autism? Out here, which is well after a lot of circuitry has been formed.

So it's theoretically possible that treatment might actually be more efficacious if there is a

standardized effort to identify and treat while a lot of local connectivity in frontal cortex is happening rather than waiting until after the fact and trying to correct some of the connections that may be causing some social symptoms. So that's one reason why we really want to try to standardize detection and treatment sometime in this time period.

So that just brings me to point number one. The human brain undergoes massive and rapid changes during the first few years of life, and if we delay screening because some pediatricians most evidently will probably take the task force recommendation as an opportunity -- as a reason to not screen, can we take this chance and miss this window?

So that's point number one. Point number two is that it may be kind of a new concept, but I think that there's more and more research to suggest that autism begins in the womb in many cases.

And so I know that a lot of people think that there are postnatal cases, and there certainly can be interactions and there's interactions with genes, and we can get into building cases. But

overall, there's compelling evidence that suggests that for many cases, it begins in the womb.

Well, how do we know that? Here is some study from Courchesne and colleagues published in JAMA in 2011, looking at cell counts in dorsolateral prefrontal cortex, and here on the Y-axis, we can see the number of neurons in billions. And here is autism, and here are the control cases. And you can see that there is a greater number of neurons in the autism cases than the controls.

Well, we know that all the brain cells we're ever going to have, except for dentate gyrus in the hippocampus and olfactory bulb, largely -- I mean, all of neurogenesis is complete during pregnancy. And so if children with autism, when you look at postmortem tissue and examine with blind serological counts the number of cells, have in some cases twice as many neurons, a logical conclusion is that something must have been going wrong during the cycle of development gestationally when neurogenesis was occurring.

So that's one piece of evidence that autism likely begins prenatally. Another piece of evidence comes from also Eric Courchesne's lab -- Rich Stoner is the first author, published in the

New England Journal of Medicine -- looking at cortical layers, right?

The cortex has six layers, and you can see here -- this is just staining. They use in situ hybridization to stain for markers so that each of the six layers of cortex are visible. And you can see that it looks -- this is an image from somebody with autism, and you can see that the six layers looks really nice through most of cortex, except for in this part, there is a patch.

And this kind of lamina disorganization is obvious, and it's not continuous throughout the entire sample. And so, again, these six brain -- the six layers are something that happen during gestation. And so if you're having some patches occurring, this is another piece of evidence that it's possible that something is going wrong prenatally.

And there's obviously, you know, old, not old -- there's kind of hallmark studies of Geraldine Dawson and Osterling showing the first birthday videotapes where even at that young age, you're seeing some responding -- failure to respond to name or social attention issues, and there is Maestro's research at 6 months they have social

attention issues.

So it's not just biological. There is also behavioral evidence that at least for some children their symptoms come online really within the first year of life.

So this is point number two. Biologically autism most likely begins in the womb. So, again, if we delay screening, this will impact and delay treatment at least for some kids.

And so the third point that I want to make is that all of this screening also interacts with large-scale research studies that are trying to find biomarkers that are trying to understand early causes. And screening cohorts provide a valuable place in this equation. We get children into treatment, but we also can study autism during early development.

And at our center, we use the 1-year checkup approach now called the GET SET Early model, where we use Amy Wetherby's CSBS, a broadband screen to screen for autism at 12 months at all well baby checkups, with the idea that some children with autism will fail the screen and we can identify them and send them off for treatment.

And we have a network of 170 pediatricians.

We've screened 60,000 babies to date, and we're getting children into treatment an average of 17 months in age.

And using this cohort, we're getting these kids into treatment, which we love, but we're also making some discoveries about the early biology and the early phenotype of autism. So using eye tracking, we have this test that we developed called the Geo Pref test, where a baby sits down in their mother's lap. They watch a movie for one minute, and here are some eye tracking results from a 15-month-old later diagnosed with autism. The red dot shows you where the child was looking.

I don't have time to show you a typical child and a child with autism. But if a typical child were watching this video, the red dot would stay on the right side quite a bit, whereas a child with autism shows much more variability. So this is a child with autism and what they're looking at.

[Pause.]

Dr. Pierce: So that's just a quick sample. So this child was screened, got the treatment he needed, but he also participated in valuable studies trying to discover biomarkers of autism.

And just here is a little bit of the data published in Biological Psychiatry. The ASD sample is shown in the red circles.

This is a really large sample. From a single city at a single site, we had 444 subjects because pediatricians participated in standardized screening and referred for evaluations and treatment and participation in research.

And you can see here, we plotted, because it's a preferential looking paradigm, the percent of time the baby looks at the geometric images is plotted on this axis. So if somebody is looking 90 percent at the geometric images, by default that means that they -- we should have flipped this axis -- were only looking 10 percent at the social images.

And so here you can see that this test is not very sensitive for autism because a lot of children with autism pass the test, but it's very specific. Because only a few children from these other diagnostic categories failed the test.

So that's one thing that we're doing at our center with these screening cohorts. Here's another one. We're also looking at newer imaging-based biomarkers of autism in screening cohorts.

We have a paper published in Neuron.

And we have 103 subjects, again a large sample, where we did functional brain imaging during natural sleep. So the parents were told, okay, have your baby get really tired, go down to the brain scanner, and while they're sleeping, we put on some headphones, and we pipe in a story, a bedtime story.

And a typical child, when they hear this story during natural sleep, you're getting activation in the superior temporal gyrus, which is a really important area for language processing, and you're getting it bilaterally, although a little bit more heavy in the left side than the right.

And what we did was we took our ASD toddlers and we imaged them while they were 12 to 24 months, but then we tracked them until they turned 3 or 4. And when they were 3 and 4, we knew, based on language tests, who had really good language at 3 or 4 and who had poor language and was having a hard time talking at 3 or 4.

And we went backwards and looked at the brain images we collected when they were just babies. So we're trying to disentangle the heterogeneity, which has been a hot topic here at this

conference.

And it is not showing up. I will quickly show this to you because it's a really important slide. I don't know why it's not showing up, but --

[Pause.]

Dr. Pierce: That is really disappointing, but it's a really good slide showing a lot of activation in the children with autism who have good language and poor activation in the children with autism that don't have good language when they're 3 or 4.

So that's point number three. Standard of care screening facilitates important discoveries regarding early ASD. And I just want to conclude by reviewing these points.

The first is that screening facilitates treatment during the crucial time of life when intervention could have its greatest impact on brain development.

Two, screening makes possible the essential RCT treatment research of screen-positive toddlers recommended by the task force. Ironically, if people follow the task force recommendation or the implication to not screen, this would reduce the necessary RCT trials of screen-positive toddlers.

So there's a problem there.

We think it's ethically required since the disorder is already in progress, can be detected, and effective treatments are available.

And finally, it makes possible the discovery of early biomarkers of the disorder, prognosis, and treatment responsiveness.

[Pause.]

Dr. Amy Wetherby: Okay. Good afternoon. I am going to just continue this discussion and make a few additional points. My focus being on some of the challenges of screening in primary care, but also how can we overcome these challenges, future directions.

So I want to start with a point about treatment research. So we've already heard the point that we know that treatment makes a difference on children's outcomes, and I'm going to refer to this article, which is part of the set that Diana mentioned of the group that got together for years and the articles that just came out in Pediatrics, the series.

So one of them focused on early intervention, reviewed 24 intervention studies, and concluded that comprehensive and targeted treatment models

show evidence of clear benefit. So I don't think we disagree on that. The question is are there children who are screened in primary care in these samples?

So I went through and looked at the articles, and the problem is most of them do not specify where they came from, but most do not use screening in primary care to ascertain. They use other methods. So the most common being referred for suspected ASD.

So we don't really know from the studies, and that included studies published through 2013, which children came from primary care or if they respond similarly to treatment. So a newer study that was just published, and actually, it's a typo, it's actually -- this is looking a little different. It's 2014 November, was a study that I directed with Cathy Lord.

And we did a large randomized control trial. I think one of the largest of toddlers, average age of diagnosis at 18 months. And we actually had two different samples, and we mentioned it but probably didn't highlight it enough.

So the sample from UM were 43 toddlers who were referred in for suspected ASD. The sample

from FSU were 39 toddlers screened on the ITC and then screened for autism and then identified and diagnosed. So those children were from a community screening sample.

We did compare and mentioned in the article that there were significant, but small differences in cognitive level, with the sample from UM averaging a 72 early learning composite standard score and the sample from FSU is 77. But we did not get a site difference in terms of the treatment effect. So we got main differential treatment effects for both sites.

So I think that ours is evidence that the treatment effect is similar in children identified from primary care. So I think that's a really important point that the task force may have missed our study, and it may have missed the deadline of timing, but it's been published now for more than a year.

So I also want to mention that as we think about the screening samples that have been identified in primary care, it is challenging to sort of judge the accuracy of the sample that's obtained. So this just shows, starting with the CHAT, the number -- if you look at this column

over here -- per thousand that were identified with ASD.

So we knew, from the hard work of the CHAT, that it wasn't doing very well. It was catching 2 per 1,000. We know from the newest CDC estimates of if we go with a 1 in 68, that's about 15 per 1,000, 14-something per 1,000.

And so the M-CHAT has improved things, made it more efficient to screen and improved things when they reported the 5 in 1,000. But you also have to think about that's still missing more than there are. It's missing more cases than are there, right, if the 15 is our target.

The M-CHAT conducted in Europe right at 18 months without the follow-up interview does not perform very well in primary care. They identified 1 per 1,000. And the ESAT, which was done on a huge sample in Europe, 31,000 children, but it was at an average age of 14 months, worked even worse.

So our study that they refer to with the ITC, which is a broadband screen for communication delay, does seem to be looking more promising as a method to find more. We were at 11 with that study.

And we're hoping that some of our newer

screening methods will improve it, and I also mention that a recent article by Robins, et al., has the M-CHAT with a follow-up interview, the M-CHAT are up to 6.5. So it is improving. So we're making headway on this.

So the selection bias, as we interpret sensitivity and specificity, needs to consider the intellectual ability of the population identified. So the percentage of children with an IQ we now know from the new CDC data, we would expect maybe a little bit more than half of the sample should have an IQ within normal limits.

So if we look at the selection bias, if the IQ of the sample is much below 70, then it's missing a lot of the higher-functioning children. As a target, this recent article by Sally Ozonoff of younger sibs studied prospectively, they identified the ELC, early learning composite, again at a 79. So this is kind of a target of what we're looking for then if we screen in the general population.

The Robins, et al., study had an average of a 68. So it's missing, appears to be missing -- we know then that it's not getting the 15 per 1,000, but also probably missing the higher-functioning

cases.

The Wetherby, et al., study, we had an ELC of 73. So, again, a little bit better. We're still missing some. So this is a gauge that can help you judge the accuracy, and we need to be more informed on who we're missing so that we can improve our screening methods.

Now this isn't just a problem within autism. We're not doing very good as a country in terms of identifying children with other developmental delays either.

So these are average, national average of who we serve, and it's school age, 11 percent of the children qualify for special ed. When we get to preschool, we're serving half. When we get down to infants and toddlers, we're serving 2 percent.

That's actually 20 percent if you do the math, which means -- we're going to turn it around -- we're missing 80 percent of children who will qualify, do not get early intervention. So we need to do better than this.

Part of the reason is that our tools, our cut score for our screening tools are often too low, and so as an example, the Ages and Stages, which is the most widely used broadband screening tool,

has a cutoff at two standard deviations below the mean. That's equivalent to the 2nd percentile.

You're never going to get to your 11 percent if you don't go higher. So we need to think about the accuracy of our broadband screening tools as well.

This shows you from our Infant-Toddler Checklist study, we identified 60 children with autism, and this shows you in the purple bar the true positives, the screening score that was accurate based on parent report. Of course, we're not doing so -- as great at 9 to 11 months as we are, but we're doing quite well once we get to 12 to 14 months.

The yellow bar shows you the parents who are indicating that they're concerned about their child's development. So this gap between the yellow and the purple shows us that parents are actually reporting more accurately what their child can and can't do, but they don't know to be concerned.

And so I'm going to look at this in a list format. So our study was from prospective. If we compare this with studies of retrospective parent report, they're actually very consistent. At 24

months, about 75 percent of parents of children who have a child with autism are concerned. If you go younger, at 18 months, about 50 percent. And if you go down to 12 months, 30 percent.

And so we do not want to -- while every parent concern is important and it needs to be addressed, we don't want to rely on parent concern to decide who gets screened. And I think that's going to even contribute to the health disparity that we already have and that was recognized.

So if we then think about in the few minutes that I have left, then how many -- or how are we able to begin to think about overcoming this? So we've conducted focus groups as part of a new grant that we have funded by NIMH, and the parents are telling us one of the reasons they don't act on screening earlier is that they need more information on developmental milestones. The stigma of autism, it's very scary.

They want to have access to services. Why screen if you don't know that you're going to have access to services? So we need to give better information. So we have a national campaign -- the Birth to 5: Watch Me Thrive! -- the Office of Administration for Children, in collaboration with

many other Federal agencies.

So this is great. We're getting the message out there. But the problem is with some of the details of the milestones. These are the first three milestones in social and emotional and in language. There are more. I'm just pulling the first three up as examples.

And if you just draw your attention to 18 months as a starting point -- likes to hand things to others as play, may have temper tantrums, may be afraid of strangers. So if parents look at this, do they know whether to be concerned?

Imagine a child with autism at 18 months probably does all these things. So I don't know if these are going to really move the needle.

So I want to give you as an example the most common parent concern is delay in language. So we can actually help parents understand that there's a whole host of social-communication skills that come in before language, and doctors need to know this as well. One example is gestures. Did you know that all children should have at least 16 gestures by 16 months?

Gestures predicts language 2 years later, including in low-income families and families with

less education. I'm going to come back to that in one moment.

Doctors, this is what they're telling us. Training on early signs, they need more of it. They need better available validated screening tools for the primary care setting. And they need to know, our doctors have told us over and over I'm not going to screen unless there's intervention services available. What's the point?

And there's a backlog on good intervention, and we need to address that, and we need to have better, more intervention for children if we're going to expect doctors to screen in primary care.

So I want to end by letting you know an initiative that we have developed called Autism Navigator. You can go to our Web site. I'm just going to go through these really quickly. We launched our first 2-hour course last April called "About Autism and Toddlers." It's free to the public. It has a dozen different toddlers at 18 months in edited video clips to illustrate the early signs.

We have developed a 7-hour primary care training for physicians, nurses, other healthcare providers, or anyone interested or who touches the

primary care population.

We have a new screening tool with funding from NICHD. We're validating it down to 12 months, combining the Infant-Toddler Checklist with a broadband screener called the Early Screening for Autism and Communication Disorders.

And we have an ecosystem, electronic communication system, around it because what the doctors said is they want to know how it's going in early intervention, but they don't have the time to actually talk with them. So we have a portal where they can get this information, the physician.

And lastly, I'm going to end with the parent portal. So we now have a seamless -- from the screener to what we're calling a seamless path for families, and we have five steps to the seamless path. The first two are for all families screened, whether they have a positive or a negative screen. Every family needs to learn about our "16 by 16."

Secondly, our social-communication growth chart. So we've developed a new Web site called the First Words Project. It doesn't have autism in it much because most parents don't yet know their child has autism. So this is for all parents

because what they care about is their child learning to talk.

And so it's a friendly site. We have launched our first look-book for 16 by 16. The first one is the gestures. Next is coming 16 actions with objects. We will have three more coming later in the year.

Just an illustration of at 10 months, reaching, how it develops -- the open-hand reach and the hands-up reach. So this should be happening at 10 months before children show and wave at 11 months, and so on. So these are all the different gestures that are illustrated. It's free. You can get there now. Spread the word.

We also have developed social-communication growth charts, which have video illustrations. To think a picture is worth 1,000 words, imagine what a video is worth. So we have hundreds of video clips of typical children illustrating from 9 to 24 months these early milestones.

And we've come up with new milestones in five domains that are the average 50th percentile, not the 2nd percentile. Because we can expect all children, if they're in a good environment that can impact their brain trajectory, they can learn

these. And so we have explore function and chart function, and all families then who get screened get invited to this.

Then we have -- and I'm ending right here -- for families with a positive screen for autism, we then invite them to three more steps -- the "About Autism and Toddlers." We have the ASD video glossary that's been launched and is getting rebuilt, and we have a "how to" guide for families, which is a 10-hour online interactive training with lots of video examples. And so you can learn more at our Web site.

And I want to end with this slide to make sure you're aware that there's a new network that's been formed by NIMH, and we are one of five sites. So we -- ours is a multisite. I'm in the bottom right corner with my esteemed colleagues. In four cities, we're rolling out the Autism Navigator for primary care and our ecosystem and the Smart ESAC.

And then our other studies, including Karen, who's here. So there's five studies. We have the baby sibs network. This is the community-based network, which NIMH is funding. So it's important for you to be aware of.

Thank you.

[Applause.]

Dr. Cuthbert: So thank you to all the presenters. I apologize for not introducing you individually, but we weren't actually sure which order you were going to go in. So we thought we'd just let you fire away.

So thank you. This has been a very interesting set of presentations, and we do have a few minutes for discussion. And here in the room, Dr. Grossman, our panelists are all up in the front.

Obviously, all or a great deal of the evidence that our four panelists here presented were available to the task force and were considered. So I think the first obvious question is just, you know, what are your thoughts about the quality of this evidence and the quantity and how you went about evaluating this evidence in your deliberations?

Dr. Grossman: Well, let me thank the panelists for their presentations. Unfortunately, my webcast did not work. So I was unable to see the slides. I'm looking forward to getting copies of the slides, if I could?

Dr. Cuthbert: Oh, dear. We'll send those out to you as soon as we can.

Dr. Grossman: Yeah…

Dr. Cuthbert: Sorry…

Dr. Grossman: …and I'd like to share them. I'd like to review them with our workgroup and also cross-check some of the -- some of the studies that were mentioned specifically to assure that we -- we've caught everything. That's the reason we do public comment is, in fact, to get advice about whether or not we missed literature.

It's too early for me to make any comments about specifics on that. I do think that the concerns that were expressed we very much understand and appreciate. But I also think that we all, as scientists, appreciate the need to strengthen the quality of our science, and based on some of the written comments I reviewed, it sounded like there was fairly significant agreement across the group about that there is room for improvement in some of these areas.

I think that some of the assertions that were made about the screening, we did -- although I called out the M-CHAT specifically, I did not mean to say that that -- the task force did find that this was an area that -- that that particular tool had perhaps was of particular note to us. But I

think one of the speakers mentioned specifically the issue of positive predictive value likelihood ratios.

And I did want to point out that one concern, unlike many areas where we looked at screening tests where we normally are able to see the predictive value positive and the predictive value negative, I think we pointed out, and this was echoed in some of the materials that were submitted by the panelists, that the need to follow on with people post screening to really understand who, in fact, so we are able to derive if predictive value negative is important so we have a full understanding of the -- of those tools.

Nonetheless, we were comfortable, based on a high predictive value positive of around [inaudible] percent. That's fine. So we have no argument around the issue, and there's no concerns around the issue of the screening tests themselves.

And I think that in the end, I think that some of the concerns that were expressed may relate to the fact that different groups use different approaches and methods to reaching decisions on

guidelines. And I want to emphasize earlier that our group doesn't use expert opinion and extrapolation, and we recognize that some groups do that and that we respect that.

I think that some of the remarks that were made, some of the comments that were made about early brain development, prenatal development, are critically important and help to add to some of the issues around plausibility and making the case for screening.

So I want to thank the panelists for their comments. I want to carefully review the both the documents that were submitted in advance, as well as the PowerPoint slides.

Dr. Cuthbert: Okay. Thank you for those comments, and sorry that you don't have the slides, again.

One other question. I was impressed with this slide, and they went by so fast I didn't quite track who presented the data that I think it was the positive predictive value for ASD by itself was relatively low. But it jumped up markedly when all other developmental disorders were included.

As I'm sure you know, people working in this area have noted the comorbidities among areas like

syndromes like ASD, intellectual inability, ADHD, and so forth. So, and some people, like Christopher Gillberg, have proposed the ESSENCE program, just dumping everything into one big neurodevelopmental bucket and then kind of sorting it out because there are so many overlaps. None of them are very specific.

Is that something that the group -- I know you didn't look at that, but is that an approach you would consider just because these things do show so much overlap? Or do you still prefer to work at more of a disease-specific level as we currently define them now?

And this is a hypothetical question. I'm not saying you should have evaluated that in your evaluation.

Dr. Grossman: That's a great question. Thank you.

So we also noted and it's in the evidence report that those that actually screened positive that ended up not having ASD often did have other developmental disorders. And so we agree that, you know that that's of interest and, of course, importance for clinicians as they sort through that.

Of course, at that point, it's likely in the hands of the developmental, behavioral or a pediatrician or a psychologist who's actually at that point of trying to make those distinctions. But recognizing the importance that if you've triggered positive on an ASD screener, you're -- it's the predictive value of that is quite high for something happening developmentally.

I think what you're raising is the question of sort of broad screeners for developmental disorders, and the task force has really attempted to -- has actually has looked at this. It's difficult, and it's challenging.

As you point out, this is a syndrome that's often -- for which the common features are often behaviors, and it's -- it doesn't fit as neatly into a box as, say, other diseases that we screen for. But nonetheless, I think that -- and for those reasons, we felt that it was important actually to look at this issue separately than to try to bundle this into a whole package of developmental disorders.

So, you know, in the end, I can't say what will happen. As we -- as science continues to unravel this and we better understand this

disorder, the potential heterogeneity of it, then we may end up deciding to -- needing to split this off somewhat differently.

But it's a great question, and it's one we've really grappled with.

Dr. Cuthbert: Thank you for that thoughtful answer.

I'd like to let the panelists, you know, discuss any other points that you might have made or anything they want to add. And then if you have a few more minutes, Dr. Grossman, we're about at the end of the originally scheduled time, but I'd like to have the Committee members have a chance to ask any questions or make any comments, too.

Dr. Pierce: Yes, we just had a quick question that we were asking on the side. What was the quantity of public comments, and will the public comments be made public so that we can see what people sort of wrote in after you published your draft statement?

Dr. Grossman: So the public comments will be -- the general themes of the public comment, there were roughly around 150 comments posted with -- and the people who provided comments ranged from individuals, from patients, families -- I mean,

from parents, families, ranging all the way up to, you know, professional associations, advocacy groups. And those comments will be summarized by theme as when we publish our final recommendation statement.

We always address public comment and try -- what we try to do is those are -- we actually have a separate contractor who reviews all those. The task force members who are part of the workgroup actually take it on themselves to personally review all the comments themselves. But for the benefit of the full task force, our contractor reviews all of those, aggregates those into themes, and then we review those carefully to see how we respond.

And it's -- we always modify our draft statements in some fashion in response to feedback. We find the feedback extremely valuable. Sometimes it relates to the way we frame things, the way we word things, communicate things. Sometimes it relates to missing science. Sometimes it addresses issues. And so we find this feedback extremely valuable.

In terms of your question about the task force does not -- it's not at a stage yet where it

releases all of its feedback, in part because the site does not promise anonymity or confidentiality -- I'm sorry, does not indicate that the feedback that will be received will be released in the public domain.

Dr. Pierce: Okay. I just have one more quick question. Then I'll hand it off.

When I looked at the draft statement response and the research supporting your conclusions, I didn't notice that there was a study by Baranek listed. It just came out where there was a screen-positive cohort, and then the children entered treatment, and the children who were prescreening cohorts had really nice gains in a parent-mediated intervention.

And so during this public period, I had written that in to you, and I also have written other statements. Just wanted to make sure that even though it's only one study, and Amy Wetherby's study actually was from a prescreened cohort, there are a few studies that do have children engaging in treatment who were identified through screening.

The reason I'm sort of harping on this is because I -- and I got the sense that the reason

for your "I" was that, yes, you acknowledge that screening is effective. Yes, you acknowledge that treatment exists, and it is beneficial. You just couldn't make the link that children who got screened were any better off than children who didn't or that this cohort was an efficacious cohort.

So I just wanted to just highlight again to you that there are at least a few studies with screened cohorts that I want to make sure enter into the final decision.

Dr. Grossman: Yeah, I appreciate that very much. I mean, that's exactly the kind of feedback and input we're looking for as we, you know, roll up to a final.

If you don't mind, we do have a representative from AHRQ, who -- you know, and AHRQ supports the work of the task force. Since I'm not in the room, you can either email me -- Dan Coury and Susan Daniels both have my email. Or if you can touch base with our AHRQ representative there, that would be great.

Dr. Pierce: That'd be great. Thank you so much.

Dr. Grossman: Thank you.

Dr. Cuthbert: Did other members of the panel have comments or questions? I thought you had said you were going to pass it off to somebody else?

Dr. Pierce: Anybody else? I have more comments, but I wanted to open it up to the audience. I could talk all day.

Dr. Cuthbert: Okay. Perhaps we will. Do any members of the Committee have questions or comments for any of the panelists? Yes?

Dr. Christensen: Well, yeah. So this is Deborah Christensen. I'm the alternate member from CDC.

So the heterogeneity really brought up for me, you know, what we see in terms of the high positive predictive value for any disorder, for any sort of developmental concern. But then, you know, that brought me back to how you defined, you know, sort of this asymptomatic population because the parent or the provider may not have a concern specifically about ASD, but many of these children have other developmental concerns.

And so are you then sort of losing out? And I mean, again, you know, it's this heterogeneity of different signs and symptoms that are common to a number of different disorders. But for example, if

the concern might be, you know, sort of excessive temper tantrums or aggression or something, or excessive fearfulness or something like that where the thought may not be in anybody's mind, "Oh, yeah, this is ASD."

But guess, you know, you -- it may turn out to be ASD. It may turn out to be something else. So it was just interesting to think about how you define and I know a lot of people have brought up here how you define asymptomatic.

Dr. Pierce: And I just want to speak really briefly because I was really irritated that my slide didn't work. I got it to work now. Again, this is brain imaging.

The point here is these children were brain imaged before they had these full-blown symptoms, before they were fully diagnosed. They got their brain images between 12 and 24 months, and then we diagnosed them between 3 and 4.

And the children who at 3 and 4 didn't have very good language were showing this on their brain scans. And the children who eventually later did have good language were actually showing nice activation in language circuits.

So autism is incredibly heterogeneous, and

we're so excited to be starting to parse this and figure this out. And we also have a language delay contrast group that kind of falls in the middle. I didn't have time to show this. So we can have the multiple contrast groups. Again, all possible because of screening.

Dr. Cuthbert: Yes, Geraldine? Maybe you could just identify yourself for Dr. Grossman?

Dr. Dawson: Sure. This is Geraldine Dawson from Duke University.

So I have also read the report in detail, and you know, I understand that you make a statement in there that there is no evidence that screening is harmful, or something to that effect. And then although there hasn't been a study randomized of screened versus nonscreened children and followed them to look at their long-term outcome, you also in the report detail a number of potential benefits, which include the fact that the majority of children identified through screening have not been identified by the pediatrician or parent and that they receive a diagnosis earlier, enter into service earlier, that it reduces ethnic disparities in terms of age of diagnosis and also that there's evidence that entering into early

intervention earlier is associated with better outcomes, which, you know, is many potential benefits that could be associated with treatment.

And we did conduct a randomized clinical trial funded by the NIH, where we began intervention below age 2 1/2 intensively and showed that we could actually normalize the brain activity in children as measured by EEG in terms of their responses to faces. So I mean, we have shown that you can -- there's brain plasticity that occurs when you begin the intervention earlier.

So with that said, what I would request is in the part of the document where it says something to the effect -- and I don't have it in front of me. But it says implications for clinical practice or, you know, what are the practice implications of this? That statement I find is very vague and hard to read.

And I think it would be really helpful if the task force could actually explain what the report does and does not mean for clinical practice, that you are not saying, for example, that you do -- that you're recommending that people do not screen, right? That insufficient evidence is not meant to say that we do not recommend that

children be screened.

We're not necessarily recommending that they are screened. But I think that clarity around the interpretation of that word, of those words would be extremely helpful because I think there's just a tremendous amount of misinterpretation.

Dr. Grossman: Thank you very much. We'll take another look at that again.

We have also attempted to address the issue of "I" statements globally with clinicians of, you know, in all primary care specialties and have a special section on our Web site about how to interpret I statements and how to think about, you know, incorporating them.

But again, we're framing this really as a call to research, most importantly. And I do want to -- you know, you're correct that we did -- we did score the potential harms of screening as well as treatment as low. So it's really this treatment area that is the gap.

I also want to point out that another group has actually looked at this as well that does evidence-based reviews of screening. In the U.K., United Kingdom National Screening Committee looked at this area as well and came up with very similar

conclusions that in citing very similar gaps that we identified as being barriers to their recommending universal screening on a systematic basis.

So, you know, I do want to point out that the task force is not actually the first to identify some of these areas in need. And again, we do think these can be addressed. I do want to, you know, plant the idea again, because this has been done in other fields in preventive medicine, that even a concept of a screening trial and a minimum of trials, that more trials -- and it sounds like there's some good stuff that people are surfacing today. But in addition, more trials and high-quality trials focused on younger children that -- and particularly those that are screen identified.

But think about the concept of screening trials, even if it means doing it in a different country, for example, in Canada, where screening is not -- is not part of universal practice. The Canadian Preventive Services Task Force is currently looking at the broader universal screening and I believe will be coming out with a recommendation later this spring.

But there are a number of places in the world

where screening is not done routinely whatsoever, and there's a potential there for to actually think about investigators launching an invitation to screen trial.

Dr. Robins: So I wanted to say just two really quick things. This is Diana Robins.

It seemed that the draft statement said there is evidence that screeners work, and there is at least some evidence that early intervention works. But the connection between kids detected through screening and then treated early was the missing piece. And if there are two RCTs out there, it seems to me that that missing line should be drawn between those two data points.

And then the other small thing that I think was missing was I think you made a comment earlier that none of the studies report things like negative predictive value, and that's incorrect.

I know for sure that the most recent paper that I first authored on the M-CHAT Revised reported all of the psychometrics, and I think we were cautious in some of our earlier papers because we were still making efforts to find every single kid later on because in some of the smaller countries, like in some of the Scandinavian

countries where they have great registries, they really can screen a whole bunch of kids at, say, 18 months and then really know where all of them landed when they're in elementary school.

And what we found is that in the U.S., that's pretty darned hard to do, and so we were cautious and holding back on reporting things like negative predictive value until we could try to rescreen or look for missed cases in every single screened child. And the feasibility of that kind of study I think is outside of what our healthcare system will support.

But I do know that our most recent paper definitely reported things like negative predictive value not just for our final recommended scoring, but for some alternate thresholds that we considered as well.

Dr. Grossman: Thank you.

Again, I want to underscore that -- to both your points, just let me address the latter one first. We're fine with the literature on screening tools. We don't think that -- and my mention of the predictive value issue was one in which we thought that there could be more data developed there. But that's not a barrier to a

recommendation here.

In terms of the issue you brought up about two trials, I appreciate that, and I think that that is a -- comes down to a question around methodology or what's judged to be adequate in terms of an evidence base.

And two trials usually does not meet the -- you know, the threshold for adequacy, but it does depend on the quality of the trials, the number of people in those trials. And there's a -- and actually, the slide that -- there is Slide 17 in my slides, and it may be too late to put anything up on the screen there. But Slide 17 actually shows you the criteria that are used by the task force, and these are on our procedural manual on the Web, that are used for judging adequacy and evidence base.

I'm thinking this might come up -- I thought this might come up, and so I put that slide in the deck. So if you all have hard copies or if the slides are distributed, you'll be able to see that.

But if there are two, for example, two very high-quality, very large trials, it's conceivable that would be deemed adequate. But there are, you

know, really a number of factors that go into deciding if that's enough or not.

But it doesn't need to be, you know, scores of trials or really in many cases we're able to make a decision. And again, it depends on the heterogeneity of the findings. But I [inaudible] at that point.

Dr. Cuthbert: So -- so thank you very much, Dr. Grossman. You've stayed an extra 15 minutes. We've run quite long, but this additional conversation has been very helpful and useful.

So thank you again for joining us, and thank you to all the panelists for presenting all this data.

[Telephone feedback.]

Dr. Cuthbert: Something came in on the phone on our end. But at any rate, you've given us a very good idea of the ways that we can move forward, and I think, clearly, this is a very hot area and we can expect to see a lot more research and findings emerging in the near future.

So thanks again to everyone. And Dr. Grossman, thanks and good-bye, and we'll be in touch about these things.

Dr. Grossman: Sounds good. Thank you very

much. Really appreciate the opportunity. Bye-bye.

Dr. Cuthbert: Oh, thank you. Bye-bye.

So now we can move on to the final segment of our agenda for the day. We are moving into the round robin section, but before we get to that, I think we do want to resume, as I mentioned before, the end of the discussion that we had during the public comment period.

And I think, Alison, you wanted to make a motion that we might consider. So let's do that, and we'll see.

Some other people also had wanted to make comments at the end of the public session. Some of them may have had to take off. But we would like to give people an opportunity to comment here as well.

So, Alison?

Ms. Singer: So just to follow up on the topic of housing that we were discussing before, in response to the public comment, I move to create a working group to study the effect of Olmstead enforcement and HCBS settings rules implementation on more severely affected people with autism. And in that group, I would include those who have intellectual disability, self-injurious and

aggressive behaviors, complex medical conditions, people who are nonverbal and [off-mike].

Dr. Battey: I'd second that.

Dr. Reichardt: Second, yes.

Dr. Cuthbert: Is there any discussion?

Dr. Daniels: So --

Ms. Crane: I would recommend against having the working group have that particular definition of "more severe autism." I think that any working group that is discussing a policy should be able to consider the effects of the policy on everyone covered by the policy and also to consider people who are -- have need for communication supports.

Ms. Singer: I think, though, the issues that have been raised in the public comment and at the table were not with regard to the effect of the policies on the majority of people with autism. I think for that group, the policies are having their intended effect.

But what we heard in public comment was that there was this group of people with autism who are left behind, who are unintentionally being harmed by some of the policies in Olmstead and Medicaid, and that's really the group that this working group needs to focus on, in my opinion.

Dr. Pelphrey: And we really are talking about the majority in the sense of the majority of people with autism are affected with intellectual disability.

Ms. Melissa Harris: Hi. My name is Melissa Harris, and I'm with the Centers for Medicare and Medicaid Services. And this is my first meeting with you all. So my introduction to you all is to jump straight to "final jeopardy" and to talk about the regulation that was at the heart of a lot of the public comment.

It came out of the group that I work in, the Disabled and Elderly Health Programs Group. And I will use this -- you see my name on the agenda at 4:15 p.m. So I'll just kind of roll in my thoughts here because I think it's important.

I don't have a strong feeling one way or another whether we have this workgroup, but I'd like you all to hear the context directly from CMS to understand, you know, some of what you were hearing today and how CMS and our HHS colleagues react to these types of concerns.

So I take you back to why we started the regulatory process in the first place, and again, you know, as Samantha indicated during the

listening session, what we're talking about are services that are funded by Medicaid and they are in the rubric of home and community-based services. So they are not services in a nursing facility or an intermediate care facility. They are services authorized under discrete Medicaid authorities that Congress has said must be provided in a "home and community-based setting."

If you looked in our -- but Congress did not define what that was. If you looked in our regulations prior to the last 10 years, there was no real standard of what a home and community-based setting was for purposes of Medicaid funding. And so we embarked on a journey to make some standards in that realm.

And through several solicitations of public comment, we first went out to say talk to us about the type and variety of settings that are in existence today that are receiving Medicaid funding. So we knew kind of what we were working with.

One of our particular challenges was because we were talking about people across all ages and through -- across a disparate range of disabilities. We're talking about individuals with

physical disabilities, developmental or intellectual disabilities, individuals who are aging. And so it's very hard to write a set of unifying characteristics when your population is so disparate, but that was the task.

And so, as we were reviewing the public comments, it became clear that over time in the absence of any kind of Federal standards, there were a whole lot of settings that were under the heading of home and community-based that I certainly would not want to live in, I would not want my family member to live in, and I dare say you would not want your family member to live in. And yet they were all receiving home and community-based funding federally.

The Medicaid program, as you're all aware, is a joint Federal-State partnership. Federal dollars pay for at least 50 cents of every dollar spent on a Medicaid individual, and in some States, that percentage is almost 80 percent of every dollar.

And so we found it to be a great responsibility of ours to move the ball and make modifications or at least put some standards down in writing that represented a minimum floor of how settings that were receiving Federal home and

community-based services funding needed to meet.

The goal was not to cause disruption. The goal was not to say individuals had to move. And so as we finalized the regulation and it was issued in January of 2014 with an effective date of March 2014, but we are now in a 5-year transition period that ends March 2019, and it gives States those 5 years to understand the final provisions of what constitutes a home and community-based setting and go out and do an assessment of not only their State regulations that define at the State level, you know, what gets home and community-based funding, but to also work with their provider community to do an assessment of the operations of their existing provider population to figure out what modifications those providers needed to make by March of 2019.

Federal funding continues to flow during the transition period. So we are now -- we continue to fund everything, you know, that was receiving Federal dollars when the reg came out.

So we are -- we asked each State to submit a transition plan to CMS, and they were due March of 2015. And we have reacted to every State's transition plan, and the State was to say -- to

look across all their systems for individuals with a developmental disability, individuals with a mental illness, physical disability, aging populations, and say here's how we're going to work with all the specific agencies in our State and here's how we're going to work with our providers across the spectrum to tackle the transition period and to make sure that at a State level and at a provider level we are compliant with the Federal reg by the end of the transition period.

So suffice it to say we're almost 2 years in to a 5-year transition period, and there's room for improvement in terms of how much progress States have made and providers have made. We continue to have conversations like this on a State-by-State basis and with the different provider groups to make sure people understand what the Federal regs require and what they don't.

I heard a lot of good characteristics this afternoon of what the Federal reg requires. There is no numerical limit of bed size that says above X many beds a setting is considered not to be home and community based. There was not -- there was not enough evidence for us to make any kind of

pronouncement like that.

There is not -- also there is no intention behind this regulation to eliminate providers who have a licensure of X or who look like Y from the home and community-based services landscape. Our goal is to say providers receiving HCBS funding after March 2019 can be licensed, no matter what the State calls them, can look whatever way they want, as long as they meet the requirements that define the home and community-based setting.

And those requirements are sometimes specific to qualities of life that you and I take for granted, like dignity, respect, freedom from restraint and seclusion. And then there's the section that is directly pertains to congregate settings and provider-owned and controlled settings.

And that section talks about that individuals need to have access to food at any time. They need to be able to decorate their room. They need to be able to choose their roommate. They need to -- I'm blanking on what some of the other ones are.

The bottom line is they need to be able to experience the community, and the provider has to establish its operations in such a way to

facilitate that person experiencing community integration to the extent they want to and the extent they are able to make those decisions.

Samantha indicated earlier that part and parcel of this regulation, in a recognition that the Federal Government cannot possibly understand all the different nuances of an individual person's presentation, and we couldn't possibly say that a "one size fits all" approach even to defining a set of principles for home and community-based settings is appropriate.

And so at the heart of this regulation is a person-centered plan that needs to be established by the Medicaid individual, his or her representative, family members, other people of his or her choosing, coming together to figure out what that person needs in terms of Medicaid-funded services. If there is a reason that one of our provisions of a home and community-based setting needs to be modified, like there is a reason they should not have access to food at any time, there is a reason that they should not -- oh, one of the other -- one of the other provisions is that they should be able to lock their doors.

Maybe that represents some sort of specific

danger to that person. That's okay. It is the person-centered plan then that is the place to document a modification to our home and community-based requirements, and it would be because they have an eating disorder or some sort of behavioral disorder for which having access to food is a danger, having the ability to lock their door is either a danger. Or they should be allowed to lock their door, but here's who else, one of the healthcare practitioners who works in that facility who also has a key to that door.

And so this is all supposed to be exceptionally tailored to take the individual's preferences into account. We hear a lot, and I hear today, and we place very high importance on the concept of personal choice and the fact that some individuals are very impaired. Some individuals have been living in a particular setting maybe for decades and have no desire to move from that setting.

And to that, we say this. There is nothing in the regulation that requires any Medicaid beneficiary to move from the setting they are in. The only way that would need to happen is if their provider says I am unwilling or I am unable

between now and the end of the transition period to modify my operations to comply with the regulation.

And if there is a specific component of our reg that a provider is having trouble with or a State is having trouble with, please contact CMS, and we will walk through, you know, what is intended.

The requirement that people have access to food at any time is not meant to say that there needs to be a buffet available 24 hours a day. It's, you know, if we miss lunch, can we go into a refrigerator and grab something at 2:30 in the afternoon, or do we have to wait until the dinner hour of 6:00 p.m. because nothing is available to me if I miss lunch until 6:00 p.m.?

That's what we're talking about. And so I understand that there is a lot of fear, and we have a lot of thoughts about how that fear has been stoked, to be quite blunt. But we will -- we will defend all of our requirements in the reg as achievable and exceptionally necessary to -- for the lives of our Medicaid-funded individuals.

But again, if there is a problem, if a provider says I can't comply with this, we want to

know that, and we'll walk you through what that is. So I will end my spiel there. But I wanted you to have that context as we are voting on, you know, what to do next.

We are engaged in a pretty consistent technical assistance structure in the form of webinars, in the form of frequently asked questions. So I don't doubt at all that there needs to be additional conversation, particularly as it relates specifically to individuals with autism. I support that wholeheartedly.

But I don't want anyone to think that this regulation was done without public comment, without understanding all the various settings that exist today, without being cavalier -- or with being cavalier to the impact this has on real people. And that's it.

Thank you.

Dr. Cuthbert: Thank you. That's very helpful. I'm so glad you're here giving us all that information.

Samantha?

Ms. Crane: I wanted to add thank you so much, Melissa, for that very thorough explanation of the rule. I think that's an incredibly accurate and

well thought out justification of the rule.

I wanted to also add that, you know, to the extent that if we have a housing subcommittee, I don't think the role of a housing subcommittee should be to re-litigate the regulatory process that CMS went through. It was a 4-year regulatory process. Everyone, every voice that we've heard today had the opportunity to comment during that regulatory process. There were many experts and many organizations involved in that process.

Frankly, I would think that that would violate our restriction on duplication in Government activities to actually spend a lot of time discussing what a regulation should look like. I think that's CMS's role.

I think that there is a role for discussion of housing services research, improvement in housing services programs, demonstration projects that are consistent with the rule, finding ways to serve people with very significant disabilities in a way that's consistent with the rule. But I don't think that, you know, it's consistent with our mandate to re-litigate that question.

Dr. Cuthbert: Good. Alison?

Ms. Singer: So, Melissa, I really appreciate

your comments, and I think they added a lot of clarity. But I think what they also reinforce is that there is a lot of misunderstanding and confusion about this process and that what you are describing in terms of what is supposed to be happening is not the experience that we are hearing from families who are out in the field and actually experiencing the effects of the regulations.

So I do think that it's important for us in our collaboration and coordination function to advise the Secretary as to what the opinion is of the IACC with regard to these issues. So there's a motion on the floor that was seconded, and I would like it if we could take a vote.

Dr. Daniels: So I want to clarify a little bit of what the IACC can and can't do. In terms of duplication of effort, I don't think that really applies in this situation. The duplication of effort GAO was talking about was research projects, and so that was really a different issue.

The IACC is always free to discuss and deliberate any kind of issue related to autism and to provide advice to the Secretary as appropriate,

as agreed upon by the Committee.

If we are thinking about forming a working group, one request I would have would be that working groups that form would start meeting only after we finish the strategic plan working group meetings just because we already have a potential seven working groups to form and start working. And if we have another one, it will be a little bit too much to do.

So, but of course, we're always open to the IACC forming working groups to be able to work on issues that are important to you.

So with that, we do have a motion on the floor to have a working group formed. In terms of the definition of the working group, also there was a little bit of lack of clarity about would it be a working group for housing for autism in general? Is that what people feel like they want this to be about?

Ms. Singer: Well, I mean, I think what we heard in the public comment today and at the last meeting was that the issues are specific to a subpopulation of people with autism, those who are most severely affected. I think the regulations are having their intended effect for the majority

or, as Kevin says, maybe it's not the majority.

But there is a group of people who are benefiting as they should be from the regulations, and there is a group that is falling behind. And it's my opinion that the working group should focus on those who are being left behind.

Dr. Cuthbert: Samantha?

Ms. Crane: I think that we need to be very clear what, again, even if we -- you know, if we put aside the duplication question, we need to be very clear what the mandate of this working group is. I think many people who otherwise would be supportive of a working group to discuss best practices in housing, to discuss research on housing might not want to start a working group if one of the issues on the table is to advise the Secretary to change its policy in one way or another in enforcing regulations that have gone through the regulatory process.

So I just wanted to make that clear. I would support a working group that was talking about best policies, best practices, you know, supporting research on how to support people in the community. But I can't support a working group that would -- that would discuss, you know,

reversal of existing policy at CMS.

Dr. Cuthbert: Is that -- are you having --

Ms. Singer: No, I think everything has to be on the table. I think it's important for the group to look at how the regulations are affecting all people with autism, particularly those whose families came here today to talk about the fact that they are left behind, that they are not benefiting from Olmstead as intended.

So I think everything has to be on the table. I think we don't know what the recommendation would be to the Secretary until the group meets. So it's hard to say what we would be suggesting to the Secretary until the group discusses and deliberates.

Dr. Cuthbert: Yes?

Dr. Birnbaum: I just have some concern that our Federal members, including myself, really can't vote on something that would tell the Secretary what to do.

Ms. Singer: In the past when this came up with wandering and restraint and conclusion, the Federal members who felt they couldn't vote abstained.

Dr. Daniels: Right. There's no prohibition on

a Federal member voting for something. But if you feel uncomfortable, you can always abstain.

This is an independent advisory body, and so when Federal members are serving here, you're serving as a part of that independent Federal advisory body. However, I know that some people don't feel entirely comfortable voting on certain issues and are able to abstain.

But we do -- in order to have anything that goes forward from this Committee, you need a quorum of the Committee to be able to agree to it. And so if we don't have at least a little bit more than half of the members that agree to it, then we can't do certain things.

David?

Dr. Amaral: So it sounds to me like this working group is a good idea. But I'm a little concerned that it's a little ambiguous what the charge of this working group is. And maybe at this point, what we need is a subcommittee to come up with a definition of the work. I'm sorry, but you know, just a sense that we need to have something that we can really look at and say, okay, everybody agrees. We have a consensus and then move forward.

Because at this point, I'm not exactly sure what -- even though theoretically it sounds good, I'm not exactly sure what the working group's charge is.

Dr. Daniels: To have a working group, you don't need -- you don't need to have a specific project or charge. You could just have a topical working group. You could say, okay, it's going to be a working group on housing and then just come together and, if you're talking about housing, talk about whatever you want to talk about related to housing. And come up with projects, come up with ideas.

But you would -- any ideas that you come up with in a working group then have to come -- if you want to make it something that's an action of the Committee, you need to bring it back to the Committee, and you need to get more than 50 percent of the people to vote for it. And if half the Committee abstains, then, of course, you wouldn't be able to get that quorum.

Dr. Pelphrey: And I think the very productive discussion that's happening is evidence for the need for a workgroup to continue talking about this. We can always -- I agree with Alison that

nothing can be off the table. We're talking. We have a right to speak on whatever we wish and discuss it, and that's the point of the workgroup.

Dr. Daniels: Workgroups also have a very important role in just fact finding. And if you wanted to invite in experts or members of the public or other people to talk about an issue, give you more information to help formulate your ideas, I mean, you could spend one or many meetings talking about these things.

So if you agree as a group that you think this is an important issue overall, housing, that would you really like to spend some time on, it would be worthwhile to form a working group.

So given that, I guess we have a motion on the floor. If it were modified to just be a working group that will talk about housing to be determined and not any specific charge, do we have -- how many people do we have in favor of forming such a working group?

[Show of hands.]

Dr. Daniels: So I need to get a count.

Dr. Cuthbert: I count 13.

Dr. Daniels: Thirteen.

Mr. Brian Parnell: [on telephone] This is

Parnell. I've been attending this meeting remotely, and I want to register a vote in favor of the motion.

Dr. Daniels: Okay. So that's 14. Is there anyone else?

Dr. Mandell: [on telephone] Yes, this is David Mandell on the phone also, and I would be in favor of the workgroup.

Dr. Daniels: Fifteen. So I need 16 for a quorum. Okay. Shannon. So then we have a quorum then to form a working group, and the only stipulation I have is that if we just can start it after we finish with the working groups for the strategic plan a little bit later this spring.

So, but, you know, hopefully we can put this together and find out what your issues are and allow you to do any fact finding and formulation of plans. So thank you.

Dr. Cuthbert: Okay. So that is passed.

So we are almost at the end of our time. I'd like to thank David Amaral for graciously relinquishing his time for the round robin, and we will make sure you get a chance to present next time.

Larry?

Dr. Wexler: Yes, two things. One, in the interest of time, of course, I think that we heard a great deal from the public and this Committee on the potential of reforming the Safety Committee or something along those lines. Could we ask that that be at the onset of the agenda on the next meeting to consider that?

Dr. Daniels: We could talk about it as a part of the Committee business.

Dr. Wexler: Okay. And the other thing is I just wanted to announce that the Department of Education after a hiatus of a number of years, which we won't go into, we've posted all of our special education data again. And that's State-level data, but it's highly useful data. It's broken out by disability, school environments.

The best way to get to it is to Google. Don't go to our site. Google OSEP, O-S-E-P, 618 data and go to the static tables. Okay, if you go to the CSV tables, you need to have a doctorate in Excel in order to deal with it, but the static tables are manipulable. They can be downloaded, and they're useful.

Thank you. Sorry.

Dr. Cuthbert: That's quite all right. Thanks

to everybody for staying here until the end. And if we could just wrap up, Susan, can you summarize next steps for us and what we can expect in the coming weeks, especially with respect to the research literature review --

Dr. Daniels: Yes, so --

Dr. Cuthbert: -- and the workgroup composition, getting going on the strategic plan.

Dr. Daniels: So I'll be getting in touch with you all. I'll be sending out a reminder about the summary of advances. You all have the initial information in your inboxes to get us a list of your top 10 nominations for 2014 and for 2015. So we'll get that project started.

And one of the other orders of business is I will be sending an email to find out who wants to be on working groups to work on the strategic plan and who is willing to chair potentially, and we'll determine some chairs for each of those groups. And of course, people will have the opportunity to help draft. We always have work to do. So we're happy to have people participate actively.

So we'll get all of that started, and as you participate, I guess the rest of it will roll out. I did kind of go over some of the process for that

in my slides earlier.

So, but thank you very much.

Dr. Cuthbert: Okay. Thank you to the Committee members, to everyone in the audience for your interest and dedication to this cause.

Safe travels back, all of you, and we will see you in April. We are adjourned.

[Whereupon, at 4:55 p.m., the Committee adjourned.]