The Advisory Committee on Heritable Disorders in Newborns and Children

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P R O C E E D I N G S

DR. JOSEPH BOCCHINI: Well, good morning, everyone. I'd like to welcome you to the second meeting of 2018 of the Advisory Committee on Heritable Disorders in Newborns and Children. So, I'd like to begin by taking a roll call.

So, for day 1 -- Kamila Mistry will not be here for day 1 but will be here tomorrow.

Mei Baker?

DR. MEI WANG BAKER: Here.

DR. JOSEPH A. BOCCHINI, JR.: Susan Berry?

DR. SUSAN A. BERRY: Here.

DR. JOSEPH A. BOCCHINI, JR.: I'm here.

Jeff Brosco?

DR. JEFFREY P. BROSCO: Here.

DR. JOSEPH A. BOCCHINI, JR.: Carla Cuthbert?

DR. CARLA CUTHBERT: Here.

DR. JOSEPH A. BOCCHINI, JR.: Kellie Kelm?

DR. KELLIE B. KELM: Here.

DR. JOSEPH A. BOCCHINI, JR.: And then the Health Resources Service Administration alternate, Joan Scott?

MS. JOAN SCOTT: Here.

DR. JOSEPH A. BOCCHINI, JR.: Dieter Matern?

DR. DIETRICH MATERN: Here.

DR. JOSEPH A. BOCCHINI, JR.: Cynthia Powell?

DR. CYNTHIA M. POWELL: Here.

DR. JOSEPH A. BOCCHINI, JR.: Melissa Parisi for National Institute of Health?

DR. MELISSA PARISI: Here.

DR. JOSEPH A. BOCCHINI, JR.: Annamarie Saarinen?

MS. ANNAMARIE SAARINEN: Here.

DR. JOSEPH A. BOCCHINI, JR.: Scott Shone?

DR. SCOTT M. SHONE: Here.

DR. JOSEPH A. BOCCHINI, JR.: And Beth Tarini will be in on webcast. Are you here yet?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: She will be here in a little while. She's running a little bit late.

Cathy Wicklund?

MS. CATHERINE A. L. WICKLUND: Here.

DR. JOSEPH A. BOCCHINI, JR.: And then, DFO Catharine Riley.

DR. CATHARINE RILEY: Here.

DR. JOSEPH A. BOCCHINI, JR.: For organizational representatives -- American Academy of Family Physicians, Robert Ostrander?

DR. ROBERT OSTRANDER: Here.

DR. JOSEPH A. BOCCHINI, JR.: American Academy of Pediatrics, Debra Freedenberg?

DR. DEBRA FREEDENBERG: Here.

DR. JOSEPH A. BOCCHINI, JR.: American College of Medical Genetics, Michael Watson?

DR. MICHAEL S. WATSON: Here.

DR. JOSEPH A. BOCCHINI, JR.: American

College of Obstetricians and Gynecologists, Britton Rink by webcast?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: The Association of Maternal and -- and Child Health Programs, Jed Miller?

DR. JED MILLER: Here.

DR. JOSEPH A. BOCCHINI, JR.: And I'd like to introduce Dr. Miller. Jed is the new Association of Maternal and Child Health Programs representative. He serves on the Maryland Department of Health Maternal and Child Health Bureau as the Director of the Office for Genetics and People with Special Health Care Needs.

Before joining the Maryland Department of Health, Jed was a general pediatrician in private practice and then an environmental health advisor at the Maryland Department of the Environment. Jed completed undergraduate work at the University of Pittsburgh Medical School at UCLA, a residency in pediatrics at the University of Virginia, and public health training through the

Johns Hopkins University. So, welcome to the Committee.

I would like to thank Dr. Kate Tullis for her important work over the years that she did as the previous AMCHP organizational representative.

Next, Association of Public Health Laboratories, Susan Tanksley?

DR. SUSAN M. TANKSLEY: Here.

DR. JOSEPH A. BOCCHINI, JR.: Association of State and Territorial Health Officials, Chris Kus, by webcast?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: Department of Defense, Adam Kanis, by webcast?

COL ADAM B. KANIS: Here.

DR. JOSEPH A. BOCCHINI, JR.: Genetic Alliance, Jackie Seisman, substituting for Natasha Bonhomme today.

MS. JACLYN SEISMAN: Here.

DR. JOSEPH A. BOCCHINI, JR.: March of Dimes, Siobhan Dolan, by webcast?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: National Society of Genetic Counselors, Cate Walsh Vockley?

MS. CATE WALSH VOCKLEY: Here.

DR. JOSEPH A. BOCCHINI, JR.: And Society of Inherited Metabolic Disorders, Carol Greene?

DR. CAROL GREENE: Here.

DR. JOSEPH A. BOCCHINI, JR.: I think that's everybody.

So, for the Society of Inherited Metabolic Disorders, Dr. Shawn McCandless will begin serving as the new organizational representative from the society in August. I will formally introduce him in August unless he appears for part of the meeting today, and --

But, first, I want to thank Dr. Carol Greene for her many years of service to this Committee through her -- the multiple roles that she has played, and especially for her many years of service as the SIMD organizational representative. She's been an active member of the Follow-up and Treatment and has contributed

to much of the work that has been done here over the years, including the recent report on medical foods.

And so, Carol, we certainly value all of your comments and all of your participation in discussions and how you helped frame many of the arguments and discussions that we have here. So, thank you very much for your years of service.

(Applause)

DR. JOSEPH A. BOCCHINI, JR.: So, we now have the approval of minutes. We have two sets of minutes to approve, and apparently, we need to approve them separately. So, we have received some minor edits in the briefing book. The last iteration that you received has the most recent comments that were available at the time the -- the book was sent. There have been a few other, minor edits, nothing of substance to add to the minutes that we have received since this has come out.

So, this is to approve the minutes as they were -- were distributed for the November

2017 meeting. So, we'll go in alphabetical order. You vote to approve, yes or no.

Mei Baker?

DR. MEI WANG BAKER: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Susan Berry?

DR. SUSAN A. BERRY: Yes.

DR. JOSEPH A. BOCCHINI, JR.: I vote to approve.

Jeff Brosco?

DR. JEFFREY P. BROSCO: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Carla Cuthbert?

DR. CARLA CUTHBERT: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Kellie Kelm?

DR. KELLIE B. KELM: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Dieter Matern?

DR. DIETRICH MATERN: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Melissa Parisi?

DR. MELISSA PARISI: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Cynthia Powell?

DR. CYNTHIA M. POWELL: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Annamarie Saarinen?

MS. ANNAMARIE SAARINEN: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Joan Scott?

MS. JOAN SCOTT: Approve.

DR. JOSEPH A. BOCCHINI, JR.: Scott Shone?

DR. SCOTT M. SHONE: Yes.

DR. JOSEPH A. BOCCHINI, JR.: And then, Beth, have you made it onto the phone?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: Catherine Wicklund?

MS. CATHERINE A. L. WICKLUND: Yes.

DR. JOSEPH A. BOCCHINI, JR.: So, those are approved.

The same for the February minutes. You have the latest draft. There have been some

minor edits, subsequent to that, submitted.

Mei Baker?

DR. MEI WANG BAKER: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Susan Berry?

DR. SUSAN A. BERRY: Yes.

DR. JOSEPH A. BOCCHINI, JR.: I approve.

Jeff Brosco?

DR. JEFFREY P. BROSCO: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Carla Cuthbert?

DR. CARLA CUTHBERT: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Kellie Kelm?

DR. KELLIE B. KELM: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Dieter Matern?

DR. DIETRICH MATERN: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Melissa Parisi?

DR. MELISSA PARISI: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Cynthia

Powell?

DR. CYNTHIA M. POWELL: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Annamarie Saarinen?

MS. ANNAMARIE SAARINEN: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Joan Scott?

MS. JOAN SCOTT: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Scott Shone?

DR. SCOTT M. SHONE: Yes.

DR. JOSEPH A. BOCCHINI, JR.: Cathy Wicklund?

MS. CATHERINE A. L. WICKLUND: Yes.

DR. JOSEPH A. BOCCHINI, JR.: So, those are approved.

So, the next item is Committee correspondence. In March, on behalf of the Committee, I sent a letter to the Secretary regarding our recommendation to expand the Recommended Uniform Screening Panel to include the addition of spinal muscular atrophy due to the homozygous deletion of exon 7 in SMN1. We

received an interim response from HHS indicating that the letter was received and that we will have a response within the 120 days that is required by the Newborn Screening Saves Lives Reauthorization Act of 2014. Both letters and the full SMA evidence review report are now available on the Committee's website.

Next item was the call for new members in 2018. The nominations call has now closed. We have had a number of excellent submissions, and these nominations are currently under review.

Next is the call for organization representatives. Clearly, the Committee values the expertise and input from the organizational representatives. HRSA will be putting out a call for organizations interested in having a representative attend Committee meetings. I want to thank and, again, acknowledge the organizations that have already expressed interest in having an organizational representative here at these meetings. Your applications are all under review.

Also want to announce that, as per discussions that we've had at the last couple of meetings, we would like to begin to revisit the evidence review process, and in doing so, we will establish a steering committee to begin that process. It is very important that we periodically review the processes that we have in place for completion of evidence review and -- and continue to use the standards that have evolved in the field of evidence review, as well as the lessons that we've learned from past iterations and subjects that we have reviewed. And to tackle this effort, we will create the steering committee, which will be comprised of Committee members, HRSA staff, individuals from the current Evidence Review Group, and experts from the field of evidence-based medicine and public health.

The charge will be to review the current evidence-review process and decision-making process so that we can think through how the evidence review is actually being conducted, do

we need to make any changes in that evidence review, how is the decision matrix working, does it need to be revised, and what would a process look like for potentially nominating conditions for removal from the RUSP. This has certainly come up at a number of meetings, and -- and I think it's time for the Committee to consider how to address this issue.

So, this process will begin shortly, with the hope that we will put together a meeting coming up in early or late summer to begin to really evaluate this process.

Dieter?

DR. DIETRICH MATERN: Dieter Matern. I -- I appreciate that you're moving forward with that initiative. Does it also include a process to up- or downgrade a condition that might be a primary target and might should be a secondary target and vice versa?

DR. JOSEPH A. BOCCHINI, JR.: Yes, that's a -- a good suggestion. Yes. Thank you. We'll make sure that's included.

(Pause in proceedings)

DR. JOSEPH A. BOCCHINI, JR.: Back on. Thank you. That's my first failure to speak loudly. Okay. So, assessing implementation of new conditions --

One of the things that we would like to do is -- is evaluate what we have done and how things have been going overall with the conditions that we have recently recommended that were subsequently added to the RUSP. So, again, I'll be asking a few Committee members to help work on this. This will be a retrospective look on how implementation has gone, and as you can see, some of the key things are listed here: Were the estimated time frames accurate? What barriers and challenges were encountered that we did not foresee as a Committee or identify in the -- in the review? And what have been the overall clinic -- clinical and public health implications of the new conditions that we have added to the RUSP?

We've already heard some feedback about

critical congenital heart disease and -- and severe combined immunodeficiency disorders, but we should expand that and look at the more recent conditions that have added different nuances in terms of identifying patients with a longer term before onset of symptoms and -- and a variety of different other, potential public health implications.

So, the -- on the --

(Off-mic speaking)

DR. JOSEPH A. BOCCHINI, JR.: Yes.

DR. JEFFREY P. BROSCO: Jeff Brosco. Do we explicitly consider things like ethical issues that have arisen and/or economic issues, like availability of treatment? Will that be included?

DR. JOSEPH A. BOCCHINI, JR.: Correct, that -- that -- Yes. And as we develop these approaches, we'll certainly want significant input from the Committee. There will be members of the Committee that will be helpful in framing the specific questions that we need to ask and

get answers to.

So, next meeting -- You can see here that the August 02nd meeting will be held by webinar, and then subsequent meeting dates have been set up through 2020 and can be found on the Committee's website.

So, for today, we have on the agenda the following items: There'll be a discussion of newborn screening education and training tools that have been brought forth by the Education Training Workgroup. There'll be a presentation on CDC quality assurance and harmonization activities; discussion, subsequently, of cutoffs and risk assessment in newborn screening; an update on timeliness in newborn screening, lessons learned from states; and discussion on the assessment of the public health system impact of adding conditions to the RUSP.

Tomorrow, we will have an update on the -- on newborn screening pilot studies for GAMT deficiency. We'll have public comment, updates from the Workgroup meetings that are being held

this afternoon, and then discussion on the current survey tools for the public health system impact assessment.

So, now I'd like to turn this over to Catharine Riley, who will go over the DFO slides. Catharine?

DR. CATHARINE RILEY: Thank you, Dr. Bocchini, and good morning to everyone that's here with us in the room, and good morning to all those that are joining us from various time zones across the country via the webcast. So, thank you for joining us today.

This Advisory Committee's legislative authority is found in the Newborn Screening Saves Lives Reauthorization Act of 2014. This legislation established the Committee and provides the duties and scope of the work for the Committee.

However, all Committee activities are governed by the Federal Advisory Committee Act, which sets the standards for the establishment, utilization, and management of all federal

advisory committees. As Committee members on a federal advisory committee, you are subject to the rules and regulations for all special government employees.

So, I have some standard reminders to the Committee that I'd like to go over. I want to remind the Committee members that, as a Committee, you are advisory to the Secretary of the Health and Human Services, not to Congress. For anyone associated with the Committee or due to your membership on the Committee, if you receive inquiries about the Committee or the Committee's work, please let Dr. Bocchini and myself know prior to committing to an interview.

And I also want to remind Committee members that you must recuse yourself from participation in all particular matters likely to affect the financial interests of any organization with which you serve as an officer, director, trustee, or general partner, unless you are also an employee of the organization or unless you have received a waiver from HHS

authorizing you to participate. When a vote is scheduled or there is an activity proposed and you have a question about a potential conflict of interest, please let me know immediately.

So, per the Federal Advisory Committee Act, all Committee meetings are open to the public. If the public wishes to participate in the discussion, the procedures for doing so are published in the Federal Register with the announcement of the meeting. The notice of the meeting in the Federal Register for this meeting indicated two options for public comment: a request to make oral comments at the meeting, which will be held tomorrow, from 10:15 to 10:45. There was also the option to submit written statements. We did not receive any written statements for this meeting. So, any further public participation will be at the discretion of Dr. Bocchini as the Chair or myself as the DFO.

Any questions from Committee members before proceeding?

(No audible response)

DR. CATHARINE RILEY: Okay. Just a little bit of logistics, then, for today and tomorrow for having a meeting here in this building. Visitors -- I want -- need to remind all visitors that you only have access to the pavilion, which is the meeting room that we're in, the cafeteria, restrooms, and then, if you are going to participate in the meetings this afternoon. All areas of the facility are restricted and do require a HRSA staff member to escort you. There are no exceptions for this.

If you need to leave and reenter, you'll be required to go through security again and will require a HRSA escort to meet you at the security main entrance. For those who need to leave at lunch, about 15 minutes before lunch concludes and a little bit after our lunch break ends, there will be HRSA escorts at the main entrance in case people do need to leave and return for lunch. For all other reentry needs, please find a HRSA staff member or talk with one of the registration folks at the registration table and

let us know.

And then, just some other housekeeping is just to remind folks that visitors are not allowed to take any video or photography in the building, and in case of emergency, you can exit through the front doors, which is where you all came in. There is a parking lot across the street from the front entrance where folks that are exiting from this floor all meet. In the case of emergency, we want folks to exit quickly, so you can -- you can leave your belongings here.

And that's it. So, I want to turn it back over to Dr. Bocchini to get started. Thank you.

DR. JOSEPH A. BOCCHINI, JR.: Thank you. Let's see, Dr. Tarini, have you had a chance to get on the webcast?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: She has not. Okay. Cathy? No?

MS. CATHERINE A. L. WICKLUND: I haven't -- I haven't seen the slides. I could --

DR. JOSEPH A. BOCCHINI, JR.: Okay.

MS. CATHERINE A. L. WICKLUND: -- try if you'd like.

DR. JOSEPH A. BOCCHINI, JR.: You want? Okay. So -- Yeah, Beth has a -- a -- a conflict and was trying to get to the -- to the webcast as soon as she could, so hopefully, she will break in somewhere along the line. But, Cathy, if you feel comfortable doing this --

Let me just give the background. The -- both Cathy and Beth are co-chairs of the Education and Training Workgroup, and the plan was to present two products that the Workgroup has been working on, along with ideas for ways to disseminate the information. And this was -- these products were ready for presentation -- nearly ready in February, but our meeting was truncated, and, as a result, we didn't have the opportunity to hear them.

But just as a refresher, the -- the -- the Committee provided guidance to the Workgroup, in 2016, to look at development of two products.

The first project was to create a tool that provides PCPs with guidance and tips for discussing out-of-range newborn screening results with parents, and these were designed -- to be designed to be an accompaniment to the ACT sheets that are currently available. Project two was to -- an educational outreach project to map educational materials with dissemination to target audiences that would be embedded them -- embedded within their resources. And so, the goal here was to present the materials -- okay -- and then to see if the Committee can reach a consensus that these tools are ready for dissemination and then agree on -- or weigh in on the dissemination plans and best use of these tools.

So, Cathy, we'll let you --

MS. CATHERINE A. L. WICKLUND: Do you want me to stay here?

DR. JOSEPH A. BOCCHINI, JR.: Your choice. If you want --

MS. CATHERINE A. L. WICKLUND: Stay,

yeah.

DR. JOSEPH A. BOCCHINI, JR.: You'll stay, okay.

(Off-mic speaking)

DR. JOSEPH A. BOCCHINI, JR.: All right.

FEMALE SPEAKER: Turn on your mic.

MS. CATHERINE A. L. WICKLUND: All right, you guys. All right. I -- the work -- this is our overall Workgroup charge, you guys, and, basically, our charge is to review existing educational and training resources, identify gaps, and make recommendations. And our stakeholders are pretty broad, anywhere from health professionals, parents, screening program staff, hospital birthing facilities, and the public, and I think we've also thrown in, like, legislators and that kind of thing, as well, in this group.

And the next slide. So, this is the -- Okay, the next slide. And Cate can -- Cate led the effort on this, so if you -- Cate, if I leave something out, please chime in. But this was the

project. What we were doing is trying to give more guidance to different stakeholders when they're creating education materials about newborn screening. So, if you guys remember, this is what we were initially, kind of, calling the matrix or educational matrix. So, this was not just to be used by newborn screening programs. It actually could be utilized by many different stakeholders.

Next slide. So, if you guys remember, it was an actual grid that basically, in each of the columns, listed different content areas of newborn screening and different educational components, and then the stakeholders were listed, as well. So, you could find yourself as the stakeholder, and then, across the grid, it would basically say which educational components should be included in the different educational materials that you might be creating. And, obviously, it can be used like an index and was specific to each stakeholder.

Next slide. So, basically, it is

designed to help people -- and -- well, let me say this, too. This was also based on educational theory -- Right, Cate? -- in how to create educational materials. So, there was some basis in how this tool was created, and, really, we really brainstormed a lot about trying to include all the different stakeholders and really thinking about, from that perspective, what kind of information they would need to know about newborn screening.

Next slide. So, apparently, there was blood, sweat, and tears involved, really.

(Laughter)

(Off-mic speaking)

MS. CATHERINE A. L. WICKLUND: Wow, was there fighting, blood? Okay. I'm glad I was on the other group.

So, there were a lot of different revisions by a small group -- workgroup of the E&T members, and, also, this came to the full Committee several times for input, as well. It was also reviewed by different stakeholder

groups. There was, I think, a meeting that was hosted by the Genetic Alliance that it was taken to and presented to different stakeholders and gotten feedback in that way. So, there was a lot of input from external people, as well. And also, if you guys remember, this was reviewed by the Committee members, as well.

Next slide. So, again, the intended users of this are public, families, programmatic people, legislative providers. You know, we really tried to be comprehensive about this.

Next slide. And this is what I -- Cate, maybe you can chime in here, because I'm not as familiar with what you guys came up with the dissemination plan. It looks like they're going to, obviously, house on the Committee's website and the clearing house, and others will be able to link to it. There was discussion about a publishable manuscript or white paper. Also, the APHL webinar NewSTEPS listserv, and then probably linking with other professional societies and organizations. So, for instance, NSGC would be a

good one. If a genetic counselor was going to be creating educational material, they could use that, as well.

And, Cate, do you want to add anything into that?

MS. CATE WALSH VOCKLEY: Yeah, I think one of the things we want to do, particularly in terms of the publishable manuscript, is to provide a little bit more explication of what the different content areas are, what we were thinking, because as we had stakeholders review it, we did get a little bit of feedback that made it clear that there was a little bit of -- of difference in the way some people interpreted the content areas. So, I think that's one area where we do want to provide some clarification.

MS. CATHERINE A. L. WICKLUND: That makes sense. Thank you.

Next slide. Any questions at this point? Do you want me to take any questions about the actual education guide?

DR. JOSEPH A. BOCCHINI, JR.: Yeah, let's

see if there's any question or -- any questions or comments or feedback to what Cathy has just presented.

MS. CATHERINE A. L. WICKLUND: And I know -- oh, go ahead -- there's a final version that's in the briefing book; is that correct?

DR. JOSEPH A. BOCCHINI, JR.: Correct.

MS. CATHERINE A. L. WICKLUND: Okay.

DR. JOSEPH A. BOCCHINI, JR.: All right. Scott? Okay.

DR. SCOTT M. SHONE: Scott Shone. I think it would be great -- In the dissemination plan, when you talk about organizations, I think it would be great -- I mean, obviously, the organizations who are represented on this Committee should -- should make this a priority, as well, if the -- as we go through and the Committee decides this is forthcoming that -- I mean, that they, not just the NSGC but everybody in general that's sitting back behind us, as well. So, that would be my suggestion.

MS. CATHERINE A. L. WICKLUND: And --

Agree, and that was one of the things with the communication guide. We, kind of, made sure we listed out every single liaison that we have on this Committee, and one thing we talked about, too, was being cognizant of presenting both of these to the organizations at the same time to be able to talk about the communication guide and the education tool, so that we can think about the ways to disseminate those with each professional organization. And some might be more relevant for others. I think this -- the education guide is fairly relevant for all -- almost all of the different professional societies, where the communication guide, maybe, is not, so.

DR. JOSEPH A. BOCCHINI, JR.: All right. Jeff?

DR. JEFFREY P. BROSCO: One other thing to -- to think about, in terms of dissemination, is how to build this into practice. So, for example, in -- in Florida, we recently -- our email, just -- and our newborn screening advisory

group said, you know, there's still some kids who are getting diagnosed with SCID who are getting vaccines, so we should really, you know, educate all the pediatricians. And what we ended up doing is connecting our newborn screening lab with our Florida SHOTS Registry for vaccines, so that as a child's record pops up, there's a banner that says, "This child has been diagnosed with SCID; please be cautious," and, you know, talk about the vaccines.

So, thinking about ways that can be built into the electronic medical record or something, so there's just-in-time information, may --

MS. CATHERINE A. L. WICKLUND: Yeah.

DR. JEFFREY P. BROSCO: -- be very helpful, as well.

MS. CATHERINE A. L. WICKLUND: That would be great. And I think, too, when we think about dissemination, this is our biggest challenge. And we know that a lot of the stuff that we create ends up sitting on some website that doesn't get utilized. And so, I do think having

a discussion with not just organizations that we might partner with but really thinking about how that's going to take it to the next step and -- like clinical decision support, right. I mean, if -- if -- especially like this -- this communication guide could be, actually, somehow pop up with an abnormal newborn screen for that provider. That would be pretty amazing. I also know, working, myself, with our own EHR, and getting clinical decision support tools and practice are -- are pretty difficult, but that's something that we could think about. I think that's a good -- good suggestion.

DR. JOSEPH A. BOCCHINI, JR.: Other questions or comments from Committee, organizational representatives?

Yes, Jackie.

MS. JACLYN SEISMAN: Hi, Jackie Seisman, Genetic Alliance. Similar to the comment about building it into your practice, are there any plans or opportunities for the Committee to validate these tools or track it in any way?

MS. CATHERINE A. L. WICKLUND: We have not had that discussion, but I think that's a good one to have, and we should think about that today on our E&T Workgroup, which you'll be attending, won't you?

(Laughter)

MS. CATHERINE A. L. WICKLUND: Jackie can spearhead that initiative.

DR. JOSEPH A. BOCCHINI, JR.: Great. Joan? Oh. Cate.

MS. CATE WALSH VOCKLEY: We did, in the small workgroup, have some discussions about validation of the education tool. We first had the stakeholders all look at it and provide feedback in terms of whether or not they thought we had done a comprehensive job, but we looked at, you know, people utilizing the tool and coming back to us and saying how valuable or not or can it be modified to make it a better tool. Who that might be is a question because it could be all the stakeholders that could utilize it.

I know I've had some feedback. Aaron and

I were on a call -- Aaron Goldenberg and I were on a call where there was some interest from some of the states in providing some validation of the tool. So, I think we can probably generate interest to get feedback. Particularly if we're going to publish something, it might be nice to have some validation component for our publication.

MS. CATHERINE A. L. WICKLUND: And, actually, Aaron, I don't know if I can put you on the spot, but I believe that you had, perhaps, a graduate student who was, kind of, testing out this product, as well. Is that correct?

DR. AARON GOLDENBERG: Sure. Yes.

(Laughter)

(Off-mic speaking)

DR. AARON GOLDENBERG: So --

DR. CATHARINE RILEY: Sorry, this is Catharine, the DFO. If there's going to be a person in the -- Yeah, there we go. And if you can state your name, as well? Thanks, Aaron.

DR. AARON GOLDENBERG: Sure. Aaron

Goldenberg from Case Western Reserve University in Cleveland. Yeah, so I have a genetic counseling student who's about to graduate, who is completing a study where she used -- utilized the content that was publicly available that was presented to this Committee last year -- so, it was all things that are publicly available -- used the content areas that we put into the -- at that time, it was called the matrix, and then did an analysis across all -- well, she did 52 programs, because she included Puerto Rico, and she included District of Columbia, where she looked at the content areas, she looked at readability and literacy, and she looked at user friendliness. And the hope would be that we can try to have her present her findings at, maybe, one of the E&T Workgroup calls or something like that. But it -- so, it may not reflect the final version, but it reflected what was publicly available.

So, pretty far along our process in terms of content and found really interesting data

about how well states -- She basically analyzed all state education materials across all these programs that were publicly available, validating, using these questions. And so, it really is as up-to-date as -- as publicly possible. And so, we would -- we would -- I think she would love to be able to share that data with the Committee. I think it would be very interesting for the Committee to see it, so.

MS. CATHERINE A. L. WICKLUND: Yeah, I think I -- I can say that, definitely, there was a lot more conversation about validation, obviously, in your group, and I don't think we talked as much about it in the communication guide. I'm not sure how -- I've had to think a lot about how to validate that communication guide, and maybe somebody else has some more expertise in that area.

So, should we go ahead and talk about that piece?

DR. JOSEPH A. BOCCHINI, JR.: Right. We do understand Beth has made it to the webinar,

but before we move on, Carol?

DR. CAROL GREENE: Hi, Carol Greene, SIMD. I apologize if I got really lost or confused, but I -- I -- I'm trying to track the connection between the educational resource and the point that was made about SCID patients in Florida getting vaccines they shouldn't get. And I -- I'm not sure if we're then working on a tool that is involved, somehow, in medical practice after the screen. I just didn't see the connection, and it made me question whether I understood the whole discussion. Sorry.

DR. JEFFREY P. BROSCO: This is Jeff Brosco. So, thank you for the question. So, what I meant is the just-in-time information idea. So, say you're working in your electronic medical record, and you now are seeing a child with a cold, and this child has one of the newborn screening conditions. If your electronic health record were able to have a banner that says, "Here's more information; here's how you talk to the family," the information would be

available at that moment, when you needed it. You wouldn't have to rely on having seen something, heard something, in your previous education.

So, the point was about just-in-time education, and the point that I made about the SCID one was, they talked about what we should try to educate every pediatrician about not vaccinating children who have immune disorders. That's thousands of pediatricians in Florida, very few children with immune disorders. If you can get the information in a way that happens at the moment you're about to do something or about to vaccinate a child, here's information you need. So, that was the point. I hope that makes sense.

MS. CATHERINE A. L. WICKLUND: Yeah, and let me just see if I can clarify this. That isn't something -- the actual educational guide is not something that would be linked to just-in-time education, because that is actually the tool that's being utilized to create the education,

and I think that's where you're getting -- maybe getting -- Yes? Correct?

(No audible response)

MS. CATHERINE A. L. WICKLUND: I think you might be talking a little bit more about the communication guide? Yes. So, does that help with the clarification?

(Off-mic speaking)

MS. JOAN SCOTT: I -- Joan Scott. Maybe the clarification is that the intent of the tool that you just talked about is general education about newborn screening before it happens and, maybe, generally, what happens if you get an abnormal result. The intent was not to provide condition-specific information about the conditions that are being screened. Am -- am I correct about that?

MS. CATHERINE A. L. WICKLUND: Okay. There's -- Okay, so, remember, we have the educational tool, which is a tool that if you were going to create an educational brochure, a video, or whatever you want, you're utilizing

that to help you determine the content that's included in that tool. Okay? So, that's one type, and the dissemination of that is going to look differently. The -- the target audience would be individuals who are actually creating the educational content. Does that -- Okay?

MS. JOAN SCOTT: The communication --

MS. CATHERINE A. L. WICKLUND: Which could cover a wide range of topics, absolutely. And it -- it could -- all different areas of newborn screening. Okay?

The communication guide, which we have not talked about yet, is for providers who are in the trenches, who are talking to parents about an abnormal newborn screen, and that would be in -- it -- and what you're saying, Joan, is right, about this. This is very -- it's supposed to be broad and not condition specific at all. Right? The -- the communication guide is. Does that help clarify? And, I think, Jeff, your talk to dissemination was about the communication guide, not so much about the educational tool.

DR. JEFFREY P. BROSCO: Correct.

MS. CATHERINE A. L. WICKLUND: Right. Carol, does that help?

DR. CAROL GREENE: It -- it -- it does help, and -- Oh, Carol Greene, SIMD. It -- it -- it -- it -- it does help, and, also, the abnormal newborn screening communication guide is not condition specific, but it's an alert. But it wouldn't be an alert for a baby with a diagnosis; it's an alert about a baby with a positive screen. And once you have a diagnosis, then you're going to go back to depending on whatever is the outcome of the first, which would be education that would be out there about the diseases.

DR. BETH TARINI: This is Beth. Can you hear me in the -- Can you hear me in the webinar?

DR. CAROL GREENE: That -- or at least, that was my understanding.

DR. JOSEPH A. BOCCHINI, JR.: Yeah, we can --

MS. CATHERINE A. L. WICKLUND: Yeah.

DR. JOSEPH A. BOCCHINI, JR.: We can hear you, Beth.

DR. BETH TARINI: Is there some way in which -- I know we've been presenting these multiple times at these meetings. Is there a way in which we can clarify what's going on to help the Committee and the liaisons understand the goals of each of these?

For instance, would it help, Carol, if we called it a out-of-range newborn screening communication guide, therefore immediately identifying it as not a discussion about the positives? And would it help if we called the educational matrix a resource to building educational tools for newborn screening stakeholders and made it a very specific, long title that would guide the understanding?

DR. CAROL GREENE: So -- so, this is Carol Greene, SIMD, and I think I understood it with the current title, and I think you would have to ask Jeff --

MS. CATHERINE A. L. WICKLUND: Yes, let's -- You guys --

DR. CAROL GREENE: -- because I think --

MS. CATHERINE A. L. WICKLUND: -- I think we need to --

DR. CAROL GREENE: I'm sorry.

MS. CATHERINE A. L. WICKLUND: I'm going to stop this. I'm going to stop. I'm doing it, guys. I'm just doing it, okay, because I think that this is getting beyond the scope of -- and I think there's just miscommunication and confusion that is not helping us move forward. So, I'm going to stop, and we're going to move forward with the communication guide.

Beth, do you want me to continue on, or do you want to jump in and take --

DR. BETH TARINI: You -- I'm fine with -- I'm fine with either since it -- but since you're more familiar with it, it might better for you.

MS. CATHERINE A. L. WICKLUND: Okay, I'll just keep going. All right. Next slide. Let's

get through this, too. That might help. Okay, this was -- The goal of this project was to create a guide that would help clinicians who are in the trenches discuss the initial notification and discussion of out-of-range results with parents about newborn screening results. And if you guys remember, this was also going back to the work that Natasha and Carol -- right? -- I think you did with some focus groups with parents who expressed dissatisfaction about the initial notification discussion.

Next slide. So, we -- it was really about how to communicate, not exactly what to communicate. There is a little bit of "what" in there, but we tried to be brief. We built upon the family focus group work that it's already conducted. We were trying to utilize known and studied protocol for providing high-anxiety news. We also had it reviewed by a communication health expert, with their input, as well, and so there were several different -- And we -- yes, it was really important to be bulleted, to the point,

fitting on one page, that, hopefully, a provider would actually utilize in their practice.

Next slide. So, remember, the goal of this is to help clinicians to fulfill the following objectives: discussing the results and relevant medical information, gathering information from the family regarding understanding, providing support to the family, and collaborating with the family in developing a follow-up plan.

Next slide. Oh, apparently, we had blood, sweat, and tears, too. Wow. All right. But there was -- maybe Amy can chime in there. So, there were a lot of revisions, and we got feedback from the committee, from the E&T committee. We also got feedback from the entire Advisory Committee on this, and we model it after the SPIKES protocol for delivering unfavorable information, and, also, genetic counseling core skills and tenets were utilized, as well.

Next slide. So, the intended users are pretty much anybody who is going to talk about

initial notification of out-of-range newborn screening results to families, and, also, the state newborn screening programs could also disseminate to their providers and/or if programs need to directly notify families themselves.

Next slide. So, this was just our initial, kind of, brainstorming, dissemination plan. We had a call, I think, within the last month to really think about all of the different organizations we could work with, and that was listing all of the liaisons here, present in the room, that we thought we could potentially work with. You can see, like, different people that we, kind of, came up with and ours really is to get it to the providers, and I think, again, Jeff, your comment about having just-in-time information is probably where this would fall into it as opposed to the other tool, just to, again, clarify.

Next slide. Oh, so that's it. So, any questions about the communication guide?

DR. JOSEPH A. BOCCHINI, JR.: Carol.

DR. CAROL GREENE: Carol Greene, SIMD. No questions, just, thank you. It's something that I know, Natasha and Beth, on the phone, we've been looking for something like this for a long time, and it's deeply appreciated. I hope it gets used.

DR. JOSEPH A. BOCCHINI, JR.: Yeah, I agree. It's been really fun watching these evolve to the products that you've created. So, I think that's great.

Mei --

DR. MEI WANG BAKER: I have a --

DR. JOSEPH A. BOCCHINI, JR.: -- and then Joan.

DR. MEI WANG BAKER: Mei Baker from Wisconsin. I have a -- Committee member. I have a quick question in terms of this communication guide. Is anything different than the ACT sheet?

MS. CATHERINE A. L. WICKLUND: Yeah, we've -- and we've talked about that. The ACT sheets are condition specific, and they don't have anything about how they actually

communicate. So, this is very different.

MS. JOAN SCOTT: So, I was going to ask a similar question. Will there be links to -- So, for providers who are thinking --

MS. CATHERINE A. L. WICKLUND: Yes.

MS. JOAN SCOTT: -- about how to report these results but then the specific condition information.

MS. CATHERINE A. L. WICKLUND: What we're going to try to do is work with ACMG to have a link -- Again, so the ACT sheet would have a link, then, to the communication guide, as well.

DR. JOSEPH A. BOCCHINI, JR.: All right, other questions, comments?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: Beth, do you have anything to add?

DR. BETH TARINI: No.

DR. JOSEPH A. BOCCHINI, JR.: Okay, go right ahead.

MS. CATHERINE A. L. WICKLUND: All right. Good. I --

DR. JOSEPH A. BOCCHINI, JR.: So --

MS. CATHERINE A. L. WICKLUND: -- just want to thank all the people that worked on this, too. Cate and Amy and Jeremy, the ones who led the two groups, did an amazing job with this, so I want to just make sure they're recognized for all their hard work.

FEMALE SPEAKER: Is it their blood, sweat, and tears?

MS. CATHERINE A. L. WICKLUND: Yes, it's their blood, sweat, and tears, exactly. Exactly.

(Laughter)

DR. JOSEPH A. BOCCHINI, JR.: Now we've identified the blood, sweat, and tears group. So, from the Committee, do we have consensus to have these two products moved forward in the -- in the ways that have been presented for dissemination and then do our best to try and get these in -- into the -- as many hands as possible to help spread the information about what's needed for education for newborn screening by different groups, as well as how to communicate a

out-of-range result? General agreement?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: Okay. Scott.

DR. SCOTT M. SHONE: Scott Shone. I would just like to feed back on the comment about validation. I think if we're going to say yes, we push this forward, we also agree that, at a certain point in the future, that we agree that we're going to come back to this and say, How did we do? Otherwise, like we said, it's in the -- the pantheon of educational efforts that haven't -- haven't been given enough time, not because -- The efforts are there, obviously, but that unless we commit to A)using them and B) evaluating, then -- then this was, again, a wasted effort, and it shouldn't be, because this is -- this was an unbelievable amount of effort that went into this, so.

DR. BETH TARINI: This is Beth Tarini. I -- I echo Scott's comment and feel that all of the projects from all of the Workgroups have an

educational component to them. And so, all -- we should be doing this across the board.

DR. JOSEPH A. BOCCHINI, JR.: Susan?

DR. SUSAN M. TANKSLEY: So, one of the elements they described in there is the MOC 4 activity. One of the things we're trying to build into that is some evaluation -- I mean, the MOC 4 by itself, intrinsically, causes the practitioner to do a self-evaluation but allows us to gather information about how things have changed in their practice and outcomes compared to -- So, there -- there's an element that, by using it in that way, will help us have some initial information.

It's tied to our -- our Midwest Genetics Network. That's undergone a lot of quality assurance activities, as well. So, we're kind of putting those two activities together. So, we'll look forward to seeing how that turns out and sharing that with the group.

DR. JOSEPH A. BOCCHINI, JR.: Great. Mei?

DR. MEI WANG BAKER: I just have a -- Mei Baker, Committee member. I have a general, quick comment regarding these two tools, because the Workgroup already had planned to do the peer review, the publication. I personally feel that's a very important step because that will be easier for other organizations adopt it and promote it because it has been fully reviewed. I think you do the validation, then the -- I hope we'll see the publication.

DR. JOSEPH A. BOCCHINI, JR.: Melissa?

DR. MELISSA PARISI: So, just a question about the MOC, so the maintenance of certification requirements that physicians need to retain. So, are you saying, Sue, that this is something that might be incorporated into national board-type-related MOC activities? Because that would be one really very important way to potentially disseminate this, at least to physician providers such as pediatricians.

DR. SUSAN A. BERRY: This is Sue Berry. The idea is, is that the project that we're

putting together for our initial MOC 4 is learning module about giving back newborn screening results. There'll be three modules, one about -- generally, about newborn screening, a second one about giving back positive results, either positive or borderline, and then making sure that the negative results are conveyed, also describing why. The communications guide is something we hope to incorporate into the learning module that goes with the giving back results, so that we can disseminate it that way.

And, yes, the -- the idea is that it's initially going to -- we're going to work first with the ABP, because that's, sort of, kind of, how you start with things. We're hoping to be able to have the overall module credentialed, so that it can be used more broadly by providers beyond pediatricians, as well.

DR. JOSEPH A. BOCCHINI, JR.: Deb? Debbie?

DR. DEBRA FREEDENBERG: Debbie Freedenberg, I guess American Academy of

Pediatrics. So, all physicians who are current are required to maintain their certification, and, with them, there are continuing education modules, and this would be one of an offering in which the pediatrician can choose, and even with the revisions to certification, there're still lifelong learning components to all of these and practice improvement components. So, all of those things also do include, automatically, every -- now every CME also includes on it, when you do that, saying, How is this changing your practice? What are you doing differently? What -- how has this impacted you?

So, there would be an automatic, built-in feedback that comes along with any CME-accredited activity or a maintenance of certification activity. And so, this would be one of a menu that the pediatrician can choose.

This -- however, under a maintenance certification module, this would not be open to the general professionals. It would be very specific to folks who are participating in their

maintenance of certification.

DR. SUSAN A. BERRY: So, the learning modules that we're creating will -- the -- the -- you have to go through a specific maintenance of certification. There's certain activities that are associated with that. But the -- the training elements of it, which are designed to be separate videos, you know, that we're going to -- going to create, or presentations we're going to create -- There's no reason why, intrinsically, that information can't be more widely available. And so, one of our -- one of the things we hoped to do was not only to use this as a way for people to obtain MOC 4, but also to make those available on our -- on our website as part of a -- what -- what we're trying to frame as a virtual learning collaborative, and we thought this was a great place to start.

MS. JOAN SCOTT: There is a effort out of NHGRI that compiles -- and I'm going to get the name of the site wrong -- that is a compilation of all education around genetics for health care

professional organizations, and it might be a good idea to make -- when this is --

FEMALE SPEAKER: Mm-hmm.

MS. JOAN SCOTT: -- done to make it available or -- through that group, so it can also be distributed that way.

DR. MELISSA PARISI: This is Melissa Parisi. Yeah, I think you're referring to the G2C2 site that is maintained by the NHGRI, the National Human Genome Research Institute at NIH, that tries to catalog as many educational resources around genetics and genomics as -- as possible.

DR. JOSEPH A. BOCCHINI, JR.: So, I have Debra and then Carol.

DR. DEBRA FREEDENBERG: Okay, Debbie Freedenberg, American Academy of Pediatrics, with a feedback loop. Okay, that sounds good. So, one of the really -- urge you, one of the really important aspects of it is the dissemination utilization, because we know that we have lots of resources that are out there, but they're not

being accessed and not being utilized. And to be quite honest, a -- a pediatrician or a family practitioner or any health care provider in the trenches, the first place they're going to go for resource, it's not a state or federal program. They're not going to be looking in those particular areas. So, it would be really important to dissemination and have it accessible and have people know where to look for it because, you know, as a state, we know we have tons of stuff up, and we know that's not where people go for their information originally.

DR. BETH TARINI: This is Beth. Can I -- can I follow up on that? It's an --

DR. JOSEPH A. BOCCHINI, JR.: Yes.

DR. BETH TARINI: -- excellent point, and -- Beth Tarini, Committee member. It's an excellent point and one that plagues education of physicians and providers throughout. The one thought we had discussed was allowing the programs to incorporate, if they like this or another amended version of the guide, into the

information they fax out to the providers with the out of range -- or the newborn screening results, be they out of range or not. That way, the provider has everything in hand in that packet, and it is more likely to be used because it is in alongside the results, and it is at their fingertips. So, that's, I think, one important potential dissemination that may be more effective than others.

DR. JOSEPH A. BOCCHINI, JR.: Carol and then Bob.

DR. CAROL GREENE: Carol Greene, SIMD. I'm just looking at the dissemination plan, which is great, and it's really focused on providers, going directly to the providers through the provider organizations, and then I see the disease-specific advocacy organizations. I'm not seeing on there Genetic Alliance, and I'm sure Baby's First Test will be picking it up.

MS. CATHERINE A. L. WICKLUND: It meant to be, and I apologize, that Baby's First Test should have been changed to Genetic Alliance on--

DR. CAROL GREENE: Oh, sorry. I -- I do see -- Yeah.

MS. CATHERINE A. L. WICKLUND: Yeah. So.

DR. CAROL GREENE: But I'm also not seeing -- or, and I'm also not seeing SIMD, and speaking for SIMD, we're actually going to be very happy to be part of it. I'm also not seeing all of the public health. I'm not seeing APHL. I'm not seeing AMCHP. I'm not seeing the labs who would probably be interested to include it with some of their results. Some of the labs might be interested in including a link, and I'm not -- I know CDC is working on education for the laboratories in collaboration with SIMD, and I think that might be a route, too. So, I'm missing the public health, and I'm missing SIMD.

MS. CATHERINE A. L. WICKLUND: Yeah, no, I think that's great suggestions, Carol. This is our initial list, and we wanted feedback on it. And I think we would just put newborn screening programs to kind of capture a lot of the public health piece of it, but yeah, absolutely. Thank

you.

DR. ROBERT OSTRANDER: Bob Ostrander, American Academy of Family Physicians. I'd like to just throw a real out-of-the-box idea at you, see if there's any way to make it workable. I think that in our office, the just-in-time -- and in many primary care offices, the just-in-time resource that people use, if it's not Google or Wikipedia --

(Laughter)

DR. ROBERT OSTRANDER: -- is UpToDate. And I don't know if there would be a way to connect with the author -- the person who does the newborn screening article for UpToDate and maybe get it referenced in there, because, you know, again, obviously, in my world, and I think most primary care worlds, you know, there's a link right on the computer used for the EMR, and that's -- that's our quick-place-with-patients-in-the-room place to look. So, I would suggest we investigate that possibility. I have no idea how that works.

DR. CAROL GREENE: Carol Greene, SIMD. Great thought, and a lot of us end up in eMedicine because some of our universities and organizations have subscriptions. So, UpToDate, I think, is a great idea. Do eMedicine, too.

DR. ROBERT OSTRANDER: And Medscape is the other one.

DR. JOSEPH A. BOCCHINI, JR.: If there are no other comments or questions, I want to thank Cathy, Beth, the Workgroup. I think this has been an incredible effort, and I think it's come to fruition very nicely, and I think there's considerable blood, sweat, and tears going forward because this -- the implementation, contacting the organizations, making them aware -- there -- there's -- there needs to be a plan to make that happen, as well as the evaluation, which I think is incredibly important. So, I -- I think we'll continue to move forward. Thank you.

All right, the next item on the agenda is CDC Quality Assurance and Harmonization

Activities, and as background, at the last meeting, Dr. Cuthbert indicated that CDC has been working on a harmonization project as part of their quality assurance efforts.

With us today to present this work is Dr. Kostas Petritis, Chief of the Biochemical Mass Spectrometry Laboratory in the Newborn Screening and Molecular Biology Branch at the Centers for Disease Control and Prevention. The BMSL assists newborn screening laboratories through in-house development of first- and second-tier screening assays, hands-on mass spec training, development and characterization of quality assurance materials, as well as providing technical assistance.

So, thank you for being here today. We look forward to your presentation.

DR. KOSTAS PETRITIS: Thank you for the kind introduction. Good morning, everybody. So, today, I'm going to covering two different topics. One is normalization of tandem mass spectrometry, results and cutoffs, by using the

newborn screening quality control materials from CDC, and the second topic will be the development of a new generation of proficiency testing materials.

So, I have a couple of introductory slides about the newborn screening quality assurance program, which is the only comprehensive newborn screening quality assurance program using dried blood spots. We produce and disseminate proficiency testing and quality control materials. We do filter paper evaluation of new batches. We provide training at CDC for molecular and mass spectrometry techniques, as well as consultation, and we perform newborn screening translational research, method development, et cetera, and we do everything inhouse, from the preparation of cold blood pools to spotting, certification of blood spots, packaging and -- and -- to participating labs. By the numbers, we make about 1 million blood spots per year, using about 100 liters of blood.

In 2017, we had about 660 participants

from 84 different countries. We distributed our materials each quarter, and we have been doing that for about 40 years. So, we have about 16 proficiency testing and 13 quality control programs, and that covers about 64 biochemical analytes. That excludes, of course, hemoglobinopathy phenotypes and cystic fibrosis phenotypes. That's not biochemical analytes.

So, now I'm going to transition into the normalization of tandem mass spectrometry results, and -- Oh, I apologize for the slides. I -- they work really well in my computer.

(Laughter)

DR. KOSTAS PETRITIS: So, more -- why mass spectrometry? More than 70% of the RUSP blood spots disorders can be screened by tandem mass spectrometry. And so, as you know, the tandem mass spectrometry biomarker measurements and cutoff can vary significantly among different labs. The reason is the methods used -- there's -- it's different extraction methodologies.

Some labs decide to derivatize their

analytes, while others, they don't. A few labs actually take into account analyte recovery. Most labs do not. There are also some difference with people using -- with labs using different analytes per disorder or using second-tier screening. So, if you use second-tier screening, you can use a little bit more conservative cutoffs, and then you can eliminate the increase of false positive by using second-tier screening. Other factors include the population tested, instrumentation, different standards of calibration techniques.

So, I would like us to familiarize ourselves a little bit with this slide, because I'm going to showing those -- a few of those figures in a bit. So, what I'm showing here is method-specific variability in glutarylcarnitine or C5-DC cutoffs in United States newborn screening laboratories. Different dots represent different U.S. lab cutoffs for C5-DC. So, in the Y axis, you have the values of the cutoffs, and on the X axis, you can see the different tandem

mass spectrometry methods. And you can see, already -- So, the solid line in the middle is the mean cutoff, and then the dot slides enter standard deviation, and we also calculated the coefficient of variation, which assessed statistical measure of variability.

So, you can see right away that there is methodology variability: non-derivatized techniques, which is the blue and purple -- the cutoffs are above the mean -- and then derivatized techniques, which is the red and gray. You can see that the cutoffs are below the mean.

So, how can we normalize those? And I will attempt to explain how normalization works by making a simple analogy, mostly for the general public, and I will talk a little bit about normalization of thermometer results that, probably, everybody can relate to.

As you may know, there are liquid and glass thermometers and platinum resistance thermometers, and let's say those represent

different technologies. But, also, different thermometers can have different -- express the -- the temperature in different units. If you're in Canada, you're going to have it in Celsius. If you're in the United States, you're going to have it in Fahrenheits. But this part of the normal of differences -- we know that the cutoff for fever is 38 degrees Celsius, or 100.4 degrees Fahrenheit, and we can do that because we understand their relation. Okay?

But what if we didn't know their relation, and we wanted to normalize those results? What we could do is take those two thermometers and take different temperature, a different -- different measurements or different temperatures. So, for example, we could put those two thermometers in the freezer and take some measurements, put them in the refrigerator, at room temperature, and at the oven, and then plot those results, where you're putting the X axis, the liquid and glass thermometer at Celsius and the platinum resistance thermometer at

Fahrenheits. And then, you can do a simple linear regression and come up with an equation that, hopefully, looks of what I have on the bottom right, and then this equation can actually normalize the results from Fahrenheits to Celsius and Celsius to Fahrenheit. So, that's how we attempt to normalize.

So, it's the same idea, actually, with tandem mass spectrometry. Instead of thermometers, we have mass spectrometers. Instead of four different temperatures, we have four different concentration of Fitz (phonetic) biomarker in our quality control samples that we distribute to the labs.

So, a little bit about our quality control mass spectrometry materials: They contain 29 amino acid and acylcarnitines at four concentration levels. We ask the labs to run five duplicate tandem mass spectrometry interday runs of each level and report results back to CDC, and at CDC, we run those same specimens the same way.

Now, I have to mention that newborn screening laboratories have been using already those quality control materials to answer the following questions: What is the variability of each instrument within the same day, what's the variability of each instrument between days, and how similar are the results between instruments?

So, we're going to try to address, by using this method, succinylacetone lab variability. So, the same way that I described before, we took -- we have four concentration. We took measurements at CDC. The state lab took measurements at -- at -- at their labs, and then we plot them, where the X axis has the CDC results and Y axis is what the -- the state labs got for those specimens, and we can come up with equations that you can see on the upper left side. So, we can now normalize those by using the QC results.

Now we want to see if the normalization worked, and in order to do that, we need to use another specimen that was not QC's, and we do

have a specimen like that. It's our proficiency testing materials. So, we can validate the normalization work. So, the expectation is, since the labs get the quality control materials and the proficiency test materials the same day, the results from these proficiency test specimens should be the same.

So, just as a reminder, the method here is flow injection analysis by tandem mass spectrometry. These specimens are analyzed only once -- just keep that in mind -- and the results I'm going to show today is from the third quarter of 2016 event.

So, just to demonstrate how the normalization work here, I took just these three labs and CDC, and you can see, on the top table is the proficiency testing normalization. On the left column, you have the row value. On the right column, you have the normalized value.

And you can see, for example, for the Lab A and C, we had about six times difference in those values before normalization. After

normalization, only 1.12, which is about 12%. Same for the cutoffs. Again, the row value was 5.5 times difference. After the normalization, we only have about 20% -- 28% difference. And when we looked at coefficient of variation, we go at about 62- to 64%, to 7- to 15% after normalization.

So, that's -- I think this demonstrates that, you know, if you don't normalize the results, you cannot make an assessment that, you know, this laboratory has a high cutoff or this laboratory has a low cutoff for the same analyte. And you can see from the row values for the cutoffs, maybe you would think that State Lab C has the lowest, the most conservative cutoff, but after normalization, actually, it's the State Lab B that has the most conservative cutoffs. But those are very similar results.

So, decreasing the coefficient of variation doesn't mean, automatically, that you eliminate the bias. So, hopefully -- going back to the C5-DC, this time we're showing proficiency

testing results, and on the left, you have the C5-DC proficiency testing results before normalization, where you can see the methodology bias. On the right, you have, after normalization, where you can see this bias mitigated or eliminated. And, again, the CVs goes from 32% to about half, at 15%.

Let's look at another analyte, citrulline, which it's already pretty -- it has a low coefficient of variation to begin with, before normalization, but you can still see bias. So, the blue method, all the points are distributed above the cutoff. The red method, you can see below, the -- the mean cutoff. After normalization, the -- the bias has been eliminated, and actually, the CVs for that is about 6.6%.

Finally, I have another example for C3-DC, and I saw that because if -- you probably know that you can only analyze this marker by using derivatization approaches. That's why you only see two methods here, and we, a lot of

times, say that you -- you -- you have differences between derivatized and non-derivatized approaches, but I just want to show that even within methodologies that this derivatization, only derivatized, you still get variability. And the only difference between those is, one is an FDA-approved kit; the other is -- is a laboratory-developed test. Okay. And you can see a lot of variability before normalization. This has been -- the -- the bias has been eliminated after normalization.

So, we have done that not only for the U.S. labs but also for international labs. So, what I show here is, on the left, all the phenylalanine results reported to us from different U.S. and international labs. U.S. labs representing as a cross here, international labs as a dot.

And there are about 15 different methods that the laboratories report back to us phenylalanine results, and you can see that, actually, normalization works, also, for methods

that are not tandem mass spectrometry. If you see on the left, for the green and red methods, those are non-tandem mass spectrometry. They have a positive bias, and that bias has been eliminated, as you can see on the right side, for the same green and blue methods. So -- and the coefficient of variation from about 21% down to 10%.

That's a busy slide. I'm not going to go through it. I just -- So, the improvement after normalization for U.S. labs and U.S. and international labs, and just to show that after normalization, the coefficient of variation always improve.

So, let's go back to cutoffs. So, how can we use this information? One of the ways to do that is to actually normalize the cutoffs. As I said before, you cannot really do that without normalizing the results, but after normalizing the results, we can provide feedback to the labs, newborn screening labs, with deidentified data showing their cutoff in comparison to their

peers. And if, for example, you are the dot that I highlighted, you may want to reevaluate your cutoffs, as you are higher than other laboratories.

So, I'm going to transition now to the development of new-generation proficiency testing materials, and I'm not going to get into technical details, but in the last few months, we had a breakthrough, where we were able, actually, to come up with a new method that allow us to enrich multiple analytes at the same time with very high accuracy. So, we are able to achieve, now, enrichments within 5% of the desired concentration for multiple analytes.

So, this, in addition -- with our ability to normalize tandem mass spectrometry data and the willingness of newborn screening labs to provide us with tandem mass spectrometry data from confirmed cases, with quarter and year info, we are able to actually, more or less, come up with proficiency testing materials that are biochemical carbon copies of babies that were

diagnosed with a disorder. So, we have already created those, and we'll make them available right away. So, when those will become available next July for the next PT event.

What exactly it is, is proficiency testing materials that are biochemical carbon copies of babies that diagnosed with a disorder for the analytes and the rest have (unintelligible due to accent). Which disorders are we looking: amino acid, fatty acids -- fatty acid oxidation and organic acid disorders, and, again, those are like -- from tandem mass spectrometry data that the states communicated to us. You're going to report as usual. We're working, actually, right now, to update our NSQAP website.

In terms of interpretive algorithms -- So, those materials will work with any workflow and any algorithm, including if you are actually -- it reflects the biochemical second-tier screening. So, those specimens include the second-tier screening analytes like MSUD, MMA,

PROP, or homocystinuria. Those include, actually, second-tier screening analytes. So, we're looking forward for the feedback from the newborn screening labs for that.

And just some future direction: So, we will continue to improve the normalization and visualization of the results. Those are, like, preliminary results, and we plan, also, to expand the number of analytes in our QC materials, because if the analyte is not there, we cannot normalize.

We have our new approach, where we can do high-accuracy, multi-analyte blood spot enrichment. We'll allow, actually, the creation of borderline materials, as well, which we will distribute for educational purposes.

Furthermore, we are planning to create some kind of tandem mass spectrometry kits, where we're going to provide the states with different analytic materials or these next-generation proficiency testing materials to verify or validate their methods in the case of

instrumentation change, method, or kit lots. So, one of the challenges when you try to validate a method or verify a method is availability of confirmed cases. So, this should resolve this problem. And we're also redesigning the data reporting website to improve quality control and proficiency testing data submission and to accommodate, actually, our expanded programs.

So, in conclusion, again, I want to emphasize that those are preliminary results, but it looks that it is possible to normalize tandem mass spectrometry analyte results by using the CDC QC materials, and so the coefficient of variation for the PT analytes improved after normalization. CDC will be reporting deidentified normalized cutoffs to newborn screening laboratories to help them compare their cutoffs to their peers. We have started the development of new proficiency testing and borderline materials that closely mimic the pattern concentration of biochemical analytes, and then we are going to be creating a repository

of these artificial blood spots to provide these kits for verification or validation efforts for program evaluation. So, this will be, actually, specimens that will be distributed upon request.

And finally, some acknowledgements: my colleagues at CDC, and then the U.S. newborn screening labs that work with us in the normalization, especially Mary Seetherland (phonetic), who actually had the original idea of using the CDC quality control materials for normalization, and many thanks to all the newborn screening laboratories that submitted deidentified confirmed cases data to CDC.

And with that, I thank you for your attention, and I will take any questions you may have.

DR. JOSEPH A. BOCCHINI, JR.: Thank you very much. Dr. Petritis. That was a great presentation and a tremendous amount of work that's going on there. So, thank you.

DR. KOSTAS PETRITIS: Thank you.

DR. JOSEPH A. BOCCHINI, JR.: Let's open

this for questions/comments from the Committee first.

Yes.

DR. CYNTHIA M. POWELL: Thank you very much. I appreciate your analogy. Hi, Cynthia Powell.

Realistically speaking, how often would a state newborn screening lab need to go through this? You mentioned, like, if there was a new batch of kits that came in and things like that. Any estimate as to how often, ideally, a lab would -- would go through the validation?

DR. KOSTAS PETRITIS: So, validation, full validation will be if they completely change the method. I think a lot of labs are looking at their cutoffs at the 6-month interval, and we actually provide quality control materials every 6 months, and we could provide, in the future, feedback every 6 months.

Yes.

MS. JOAN SCOTT: Joan, HRSA. How often does CLIA require laboratories to do proficiency

testing? Does any -- You -- you said they -- they're looking at doing it every 6 months. Is that what --

DR. KOSTAS PETRITIS: So, this is -- The every 6 month, I don't think -- I mean, proficiency testing is yearly, at least. I think looking at your cutoffs, it's a CAP requirement every 6 months, and I think the new document that will come out for a cutoff, the CAP cutoffs will have a suggestion there to do that every 6 months.

DR. MEI WANG BAKER: Mei Baker, Committee member, and I just want to have a follow-up comments. And in terms -- Cindy was talking about a lab change. By the CLIA, by the CAP, every single time laboratory change a lot, you have to do the verification.

DR. KOSTAS PETRITIS: Yeah.

DR. MEI WANG BAKER: And so, be sure your lot perform in the same manner, if anything need to be changed.

And in terms of cutoff, actually, it's a

relatively new concept for the CAP inspection. Talk about -- called a cutoff of (unintelligible due to accent) quality study, and the cutoffs are set correctly. And according to CAP inspection, it require you to do the every 6 months to assess your cutoff.

And I -- I cannot speak for other laboratory. We even do, like, on the monthly basis, just be sure, and -- and we utilize -- because especially when a lot change stuff that you really want something normalized to compare, and we are starting to adopt -- Like, for example, the monthly cutoff of monitor, and we use a multiple of the median. So, that's a way you can have a objectively aware far from your median to utilize instead of using absolutely the numbers.

DR. JOSEPH A. BOCCHINI, JR.: Dieter?

DR. DIETRICH MATERN: Dieter Matern. I think that's really exciting that you've found a way to create actual metabolite profiles in the blood spots that are more like real cases that we

see out there and, therefore, promote the need to do interpretation of metabolic profiles where they're just looking at cutoffs. So, I hope that you will make sure that there are always borderline cases included.

Also, you -- you said that it's going to be reported as usual. When you say that, that means that the labs provide you a report, assay work report, a abnormal case for follow-up, or is it just the way that you provide feedback back to the labs that is as usual? I think it might be interesting for the Committee, or if we could look at harmonizing the way that abnormal results are reported and ensure more conformity across the country, so that physicians who may train in one state and then go to the next one don't have to relearn how to follow up a case just because the information provided by the program is so different.

DR. KOSTAS PETRITIS: Carla has a question. Oh. I see. You -- you want to address that?

DR. CARLA CUTHBERT: I -- I want to address what, yeah, Dieter said.

DR. KOSTAS PETRITIS: Okay.

DR. CARLA CUTHBERT: That -- that's really --

DR. CATHARINE RILEY: Who are you?

DR. CARLA CUTHBERT: I am Carla Cuthbert from CDC.

(Laughter)

DR. CARLA CUTHBERT: Thanks, Catharine. Dieter, that -- that's a fantastic point. That -- the idea of harmonizing how we do reporting is something that, in the branch, we've been considering a lot, and we've been -- Kostas mentioned that we are revamping our entire website, and that's giving us an opportunity to consider how we do business in terms of how we administer the PT program.

And we're -- we're -- we're looking at trying to modify how we have -- how -- how -- how we receive reporting -- the reporting of results. So, instead of just saying you have an elevation

of this particular marker, we want to be able to understand how the states are actually putting out their -- their reports and to be able to get a sense of what that looks like, and then, perhaps, have the Quality Assurance/Quality Control Subcommittee take a look at maybe addressing harmonization across the -- across the country.

DR. KOSTAS PETRITIS: So, I do have a comment, as well, if I may. So, we're still discussing how we're going to do it right now, but one of the ideas is, instead of saying that this analyte is above the cutoffs or inside or outside the limits, just report the specimen is -- presented positive for this and that disorder. So, it's either normal, or the biochemical profile is -- presented positive for this disease. So, you're going to maybe providing what is the disease instead of doing one analyte per disorder, which actually mimics more of what the newborn screening laboratories are currently doing.

DR. SCOTT M. SHONE: So -- Scott Shone. Just a follow-up on that point, Kostas, but I -- I want to come back to a different question, as well. If -- if you end up going down a path of talking about either abnormal for a disorder or, perhaps, given the recent discussions, talking about risk of a disorder, which is, I think, where, as a -- as a system, we need to probably be headed, and I think that's the feedback from the newborn screening community is, you need to talk about that, and a cutoff discussion will probably lead to that, coming up.

I -- I think it's going to be crystal clear to -- you're going to have to make crystal clear what the definition is of the disorder that you're talking about. And so, if we're going to agree that, okay, the CDC are going to use the NewSTEPs definition -- case definitions that are out there or what, because that's the only way you're going to be able to -- to take normalization or harmonization of a biomarker and then transition it to a disease. And so, before

we jump to that, I think we -- we need to agree on that. That's a much broader issue than just this. So, I -- I am cognizant of that.

But to go back -- to go back to my -- my -- Well, my original question was, you -- in your presentation, you talk about -- and I echo the sentiments that Dieter said, about the -- the new -- the new breakthrough. I think that's fantastic. But you talked about PT, and you -- you sort of threw in there QC. And so, I don't want to conflate the two, especially for the group here, to think about, oh, how often do you run PT, because, okay, PT is -- it's done quarterly. That's well beyond what we need to do from a regulatory standpoint, but QC is run much more frequently. And so, if you're talking about harmonization/normalization, is it going to be around the PT, the QC, or is it a -- Do -- what do you envision in terms of these new materials and the ability of the programs to use them?

DR. KOSTAS PETRITIS: Yes, so we distribute quality control materials every 6

months, and we have proficiency testing materials 3 times per year, and we have, also, our UDOT, which, probably, the UDOT will probably become more borderline materials for educational purposes, and the other 3 -- 3 times per year proficiency testing materials and 2 times per year quality control materials. And since -- since we need the -- the quality control materials to normalize, that we will be providing feedback every 2 years -- once every -- sorry, twice every year, every 6 months.

DR. SUSAN A. BERRY: Sue Berry, two comments. The idea of specifying a given disorder almost ends up suggesting you need a series of second-tier tests to be more specific about what the disorder is. So, if you've been reporting C3, and it could be 5 things, how are you going to name a disorder, as -- I mean -- I mean, it could be maternal B12 deficiency. So, I -- I -- we'll -- we'll -- that'll require some conversation, I suspect, unless I'm being overly naive.

The second question I had that I'd like to really highlight is the understandability and comprehensibility of the reports. They're certainly, I'm -- I'm guessing, because I'm naive to this, there must be expectations in terms of how the report is prepared for credibility in the laboratory community, but the pediatrician or family doctor or family that's reading the report often cannot understand the report; it has to be translated. And -- if there is a -- a strategy by which the reports could be more comprehensible to a less laboratory-oriented person, I'd certainly urge it. Thanks.

DR. DIETRICH MATERN: Yeah, Dieter Matern. Just a quick comment. I think you can name the conditions that are part of a differential diagnosis. For C5 hydroxy, you should mention 8 different conditions, including the possibility that the mother may be the patient.

Sorry, one -- one more comment. Just looking at the ACMG ACT sheets, they do have a

condition description that you could just copy/paste into your report, but I think it would be nice if -- again, if there was harmonization about how results are reported, and maybe that is something where ACMG could help in crafting some of those, as well.

DR. JOSEPH A. BOCCHINI, JR.: I have Carol, then -- then Debra.

DR. CAROL GREENE: And just to follow up that last, maybe APHL -- Carol Greene, SIMD. Maybe APHL could have a role in if there are going to be harmonization.

One small comment about language that we tend to -- I -- we tend to say conservative cutoff, and I don't know -- and I -- I'm -- I'm hoping we can get away from using that language, because I don't know if a conservative cutoff is one that minimizes false positive or one that minimizes false negatives. You can be conservative either way, and different people will be conservative depending on their -- we'll call it conservative depending on their point of

view. So, I think it's, maybe, a word we should try to get away from in describing and just say, is it a -- you know, a low or a high. Are we minimizing false negatives or false positives?

And my question may be beyond the scope of the discussion, maybe, coming up later, but I know that there's a whole question of, should we be using cutoffs? Should we be using risk? I think that was a beautiful description, very much appreciated, of the normalization and the -- the different reasons that people might have different levels, and I'm wondering how that relates to some of the tools that we -- I know our labs are now using to look towards the big databases of, if your level is X, it has this much of a positive predictive value. And are those levels -- are those -- are those -- I don't want to get into anything parochial, but are those databases constructed using normalized data, and when you put your level in, does your level get normalized? And maybe that's going to be a discussion coming up later.

DR. JOSEPH A. BOCCHINI, JR.: Debbie?

DR. DEBRA FREEDENBERG: Debbie Freedenberg, AAP. So, one of the things, though, that kind of didn't hear in that proposal is that for the level about a range, there's maybe a graded response from both the program as well as from the health care provider. So, just saying out of range may not give sufficient information. So, if you have a child who has a level that's 250 times your upper-limit cutoff and you have a critical condition, your action's going to be very different than if you have a child who's just sort of a little bit borderline.

And so, they're both going to be out-of-range tests, but you're -- you're grading your -- there's a gradation to your response to what the actual levels are and what your clinical actions are going to be for follow-up. And so, I'm just a little concerned about the just saying normal/not normal or out of range/not out -- not out of range.

DR. KOSTAS PETRITIS: Yeah. I mean, for

proficiency testing point of view, you know, us making materials that are, like, completely on the critical level is not going to be helpful, I think, for the newborn screening labs. So, I think what we're looking at proficiency testing, to have them been clearly abnormal but not at a critical level, and then for when we distribute our UDOTs, probably, we'll have a, you know, 20-something borderline, maybe, materials that it will be for educational purposes.

Yes.

DR. DIETRICH MATERN: Dieter Matern. So, I'm going out here on a very thin limb from an ethical perspective. I totally agreed with your thought that you don't want to be too wishy-washy about what goes into a report, and there -- there is a little tool out there that actually provides your risk score as to where your patient sits towards a specific diagnosis.

DR. SUSAN A. BERRY: So, this has been focused around the MS/MS results, but it seems like there's ample opportunity to bring this up

in other contexts. I understand why it wouldn't necessarily be the first focus, but there are other disorders where this kind of application would certainly be valuable. So, hoping it can be extended more broadly.

DR. CARLA CUTHBERT: Go ahead.

DR. KOSTAS PETRITIS: Please.

DR. CARLA CUTHBERT: Your point is well taken. My name is Carla Cuthbert, again, CDC. Thank you, Sue. We're starting off, right now with this. We are looking at the possibility of -- of enzyme activities and that sort of thing. That requires tweaking at a different level, and we are looking at ways that we could get the level of enzyme activity to the place that we want it in our blood spots, and it requires us looking at a couple of different options for actually getting it to where it needs to be. So, I -- I have people who are working on this right now, but it's really, just, brand new. Thank you.

DR. JOSEPH A. BOCCHINI, JR.: Other

questions or comments?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: Any on the telephone from board reps?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: All right. Hearing none -- again, thank you for a great presentation.

DR. KOSTAS PETRITIS: Thank you.

DR. JOSEPH A. BOCCHINI, JR.: Thank you for the work. I think this is very -- going to be very helpful, as it evolves, for the states. Thank you.

So, I'd like to now open up a discussion by the Committee and -- and org reps concerning cutoffs and risk assessment in newborn screening. We've certainly had a number of presentations over the last few months related to this topic, and -- and so, I think it's really important that we now, as a Committee, make some decisions about whether there are other things that we can do to go forward, going forward, to help states.

So, the catalyst for discussion of this certainly came, in part, from Committee discussions, newborn screening advocates, newborn screening in the news about patients that were ultimately diagnosed with a screened -- a condition screened for but not identified by screening, and state newborn screening programs expressed a need for working in this area.

Next slide. So, again, the issues that were raised by stakeholders included cases that were missed, borderline results, how we deal with them, what's the communication from the newborn screening program to providers, and then address the lack of uniformity, sometimes with laboratory methods, sometimes with condition screen, and the -- the role of the out-of-range results and -- and proficiency testing in -- in -- in minimizing the number of false positives while minimizing the number of false negatives.

Next slide. So, clearly, based on the presentations that we have had, a number of challenges were identified. The complexity of

newborn screening was clear based on the variety of methods, multiple factors that impact screening results. These cutoffs and algorithms that can't -- the outcomes cannot be directly compared to one another, and there was no consensus from the presentations, that we heard, about the definition of a borderline result or how to process borderline results. And then, we do have a -- an incomplete data set for false negative test results, in that the -- the cases that ultimately are diagnosed with a condition screened for but not found on screening really depend on report back to the state to understand that that was a missed case.

Next slide. So, in addition, lack of resources to implement QA/QC activities -- we heard some, clearly, today, opportunities for improvement with that -- and then access to evaluate the states' data, with individual states potentially not having staff with expertise to analyze and interpret complex data, and that can inform the evaluation of cutoff values and

screening algorithms.

Next slide. So, as you know, to address the challenge, the APHL is working on a document on risk assessment in newborn screening to serve as a resource. We have seen that document. Our Laboratory Workgroup has played a -- a -- a role in -- in -- in hearing where the -- where the -- the document was, providing feedback, and going back and forth in -- in a couple of our -- our meetings through the Committee with some recommendations for that document, and that document is designed to serve as a resource for states on the available approaches. It can be used to assess risk tools available to assist in those efforts. And we understand it's in near-final draft and that it is expected that it might be completed and posted on -- on the APHL website in -- in June. The Committee did look at a draft last meeting and felt it was really too early to weigh in on -- on whether we should endorse that document.

Next slide. So, in addition, to address

these challenges, the CDC's Newborn Screening Quality Assurance program, harmonization activities you just heard about as -- as another resource that's being developed and that -- that will be available. It's already been available to some states. And then, the Newborn Screening Technical Assistance Center and Data Repository that exists within the NewSTEPs program, which does support state program evaluations that can help individual states in -- in this area. So, there are resources available and additional resources becoming available for states in this area.

Next slide. So, the -- the question for the Committee is, is there a role for the Committee to play in this arena to help states address these issues. And so, the -- a fair amount of guidance and resources are now becoming available. Should the Committee or can the Committee help by weighing in, by providing guidance on developing a systematic approach in -- to evaluation of cutoffs and screening

algorithms? Should the Committee work to support efforts to improve access to data, laboratorians, epidemiologists, biostatisticians, as needed, who can conduct complex analyses on data available at the state level and/or provide a rationale for the development of resources at the state level to implement needed activities in -- in this arena?

And I just want to start the conversation with those three areas but not limit the conversation to those three areas and just get feedback and considerations from the Committee on whether you see us having an additional role in this arena and what that may be.

Next slide. So, just that brief review, just to give us an opportunity to open a discussion in this area.

(Off-mic speaking)

DR. JOSEPH A. BOCCHINI, JR.: Flip back. Okay. All right.

Scott?

DR. SCOTT M. SHONE: This is Scott Shone.

So, correct me if I'm wrong. The Lab -- Laboratory Standards Workgroup is working on this, as well, and this -- the purpose of this discussion is to help guide the efforts of the Workgroup, or is this some -- a separate endeavor from what --

DR. JOSEPH A. BOCCHINI, JR.: So, the -- the Workgroup has played a significant role in interacting with APHL and providing feedback for the development of their resource -- resource document, bringing back to the Committee some concepts, ideas, and then have -- the Committee has brought back to APHL. So, this may end up as being continuing work for the Workgroup, or it could be something that we bring out from the Workgroup to the full Committee, with an ad hoc group, to address this issue further. So, that's open for discussion.

DR. SCOTT M. SHONE: Right. So, I -- I -- I think that this is a -- a great lesson. I have comments on them, but I would like to, while we're -- while we have this up, add a bullet,

which would also involve the Education Workgroup, around, what are -- what is the risk assessment that state labs do, to explain not only to providers, which is a discussion that just came up during Kostas' presentation, but also -- and -- and Natasha has spoken about this, trying to explain to parents about, what does this mean. Not only what does a result mean, but what -- it goes back to the risk assessment in general and -- and the -- the potential for both false positives and -- and false negatives.

And the fact that -- that these endeavors are going to be -- are -- are intended to bring uniformity to the programs, but that the reality is that by nature, screening is going to identify kids. It's going to identify kids who -- who have the disorders of interest, identify kids who don't -- false positives -- and, inevitably, still, unfortunately, we're -- we're not going to have a perfect system where we're going to catch everybody. And I think that's a critical part of this discussion, that this is all around making

sure that we are all -- it's, sort of, around best practices.

I'm reminded of the succinylacetone discussion from a few years ago, where -- and, Dieter, correct me if I'm wrong; I wasn't on the Committee at the time, but part of the discussion was that -- to help support states to transition to what would be the best -- the best process. And I think that's what this is about is a process discussion.

And so, I think that there are some efforts for both Workgroups to do around -- around these areas and -- and help -- and I didn't reread the APHL document before -- before this meeting; I probably should have -- but that a lot of that is around process and reinforcing if they should follow those processes towards -- towards the goal of harmonization.

DR. JOSEPH A. BOCCHINI, JR.: All right, thank you. And we did ask the Education Workgroup to consider the issue that -- that the provider needs to understand what the results are

on a screening -- what a screening test is as -- as a result of this and the importance of understanding that it is a screening test, not a diagnostic test, and to understand false positive/false negative. And -- and that is something that came out of this, and -- but you're asking a little bit more for the Education and Training group, and I think that's very appropriate. Okay.

Dieter?

DR. DIETRICH MATERN: Yeah, I -- I think that the Committee should look into this and -- and find ways to -- to help the states. I -- I totally agree that we will not pick up every case. That's why it's important to define what a case is, but also, there's biology involved, and so that -- that just needs to be stated.

I do declare a conflict of interest in the following because I am a taxpayer, and I don't like my taxpayer money to be wasted. This -- HRSA funded, years ago, this R4S thing, which is now CLIR, where you can perceive a conflict,

but that already allows you to enter a lot of data and look at the data. So, if -- if you want to encourage the states to participate, they -- they can look at their data, they can compare them in -- in deidentified ways so they don't know who the other state is, and can basically get to a point where they -- where it's more harmonized across the country as to how you look at the data and how you interpret them.

I -- I basically don't want -- that's where the taxpayer, I think, comes in. When I read this, it sounds like we're basically going to do this all over again on a state level, when you already have very good tools to do exactly what you want to do.

DR. JOSEPH A. BOCCHINI, JR.: So, it's not a question of creating new tools but providing advice on, potentially, how to use them best in -- in some fashion, but.

Mei?

DR. MEI WANG BAKER: Yeah, Mei Baker. Actually, I have a question for Dieter, yeah,

because most challenging, I feel, with the state laboratory, is address false negative, because usually, you have a assay then you -- you cannot get some true cases of samples, and you have population data. You set the threshold. And Carol just said, "Let's not use a conservative concept," but in general, for screening, it's why people tolerate false positive. The intention is to chew on hard, not miss case. So, this is the general principle practice.

The question for Dieter is -- I -- you -- you just mentioned the CLIR tool. Is -- does CLIR tool also address a false negative situation?

DR. DIETRICH MATERN: In a way, yes, because what -- what is entered there, as well, or can be entered, the data from any case that you know was deemed false negative. So, if you hear about -- I mean, our problem is, often, that we don't know that there was a false negative, but when you know about one, you should include that as a false negative case and see whether it

could have been picked up in a new way.

DR. MEI WANG BAKER: Yeah, I -- I think the -- I just want to emphasize that you measure already because of some biologic reasons. That's my big concern. Each time when have a false negative become aware and the state trying very hard to understand why missed. And my concern, the big concern, is, a lot of situation, changing cutoff doesn't necessarily will be helpful, because this is a very isolated situation, because for certain, special biologic reason, even environmental reason, that kit, at the time, didn't. So, I think we need to keep this in mind, and I just emphasize what Dieter just said. Yeah.

DR. CYNTHIA M. POWELL: Cynthia Powell. On a broad level, I think this is extremely important. You know, I think every newborn screening lab in every state wants to do the best they can, but they're so limited by funding. And I think if we, as a Committee, you know, or -- or the working groups can, you know, say that these

are the best practices that all labs should be doing and, you know, something that the lab directors can then take to the legislators and say, "Hey, you know, we need more money in order to meet these best practices," that that, you know, may be helpful.

I'm reminded of, you know, cases where, you know, there's lawsuits that occurred because, despite a lab director wanting to, you know, modify cutoffs and things and -- you know, there were missed cases because there was not the IT support to make those changes. So, I -- I do think this is critically important.

DR. SUSAN A. BERRY: Sue Berry. I would also speak on behalf of the clinician providers that are the downstream recipients of results, which is that anything we can do to reduce -- to make each test more meaningful is -- is critical. The more false negative -- the more false positives you have that are just silly false positives, the more it burdens the system, certainly from the point of view of the

providers.

And the other thing it does is reduce the credibility of the system. If you have tons and tons of false positives, people start thinking -- it's -- it's crying wolf over and over. So, I can't speak strongly enough about the necessity for tightening the utility of each result to -- to -- to reduce the number of -- of false positives, even though we know the risk exists to have false negatives. That's always going to be there.

DR. DIETRICH MATERN: Yeah, Dieter Matern. I totally agree. When it comes to asking for more money, I -- I -- again, I do not agree, because I think if you -- what I think the newborn screening laboratories have to figure out -- and, again, it's something where maybe we can help -- is not -- I mean, they know they can ask for more money, but the chances are, they don't get it. But if they can actually -- actually educate that by reducing the false positive number, you have an overall reduction in health

care costs, which, however, of course, is not coming back, then, to the screening laboratory, but just to make that point that the citizens of that state will not have to pay for unnecessary testing, then maybe the politicians can be swayed to say, "Well, we're saving here by giving you some money, so let's do that."

DR. JOSEPH A. BOCCHINI, JR.: Other questions/comments?

DR. MEI WANG BAKER: Mei Baker again.

DR. JOSEPH A. BOCCHINI, JR.: Mei.

DR. MEI WANG BAKER: Make a quick comments, because you asked this, you know, the current activity going on and should we, you know, independent do something. And I'm thinking, my head, I feel maybe it's more efficient to -- and effective -- just continue working with the current established. And I -- I think maybe more work to do going forward, because this started with even assess what practice are there.

Then, afterwards, I -- I do think it's

necessary, and I think other my newborn screening call, because I recognize and thinking perhaps we need some normalized data do some comparison. Then, you also compare with, well, we kind of have a general science in terms of disease incident rate, and if you have, you know, not detect enough disorders, or you have too many false positives after the data normalized, and you compare with your cutoff or maybe indeed informatively, you know you need to make adjustment.

And I -- I just feel -- I'm turning my head and work like you have another independent group, because this group has talk to each other, and this one has be adopt -- the data has to come from the state lab, and at this point, I don't feel another independent group seems to me it's -- I -- my personally, I feel should continue work with that and set a certain goals. If a certain thing we haven't achieve or we evolve something, we address so we can continue give the guidance. That's what I think.

DR. JOSEPH A. BOCCHINI, JR.: Carla.

DR. CARLA CUTHBERT: Carla Cuthbert, CDC. I'm not sure how much I can speak about this, but we do have a funding opportunity that is out there for state programs, and it's, in part, an implementation opportunity, but we included in the language harmonization approaches. And so, essentially, it was meant to challenge those who are applying to consider ways that we could work together to harmonize our work. So, again, we left it very open. So, I think what's going to happen, I hope, is that those who are applying for this funding would try to come up with novel ways to work together.

So, you know, I'd be happy to -- and again, this is me committing something that hasn't happened yet, but I'd be happy, once this gets rolling in a year or two, to be able to report back, maybe, to the -- the Workgroup, the Laboratory Standards Workgroup about any progress that is being made or even about the nature of some of the projects that are -- that -- that

we're going to be initiating.

DR. SCOTT M. SHONE: So, I do think -- I mean, I think the topics of harmonization and this risk assessment review cutoff analysis, whatever we're calling it, are -- are -- are connected but not completely linked, because I think that even if the harmonization efforts are effective in terms of trying to bring some more normalization across cutoffs, so that, state to state, we have this idea of -- of who -- what babies are at higher risk, it doesn't negate the fact that what we're talking about here is a routine process by which programs review the -- the quality of their performance and, as Sue said, you know, looking at that balance of making sure that we're responding appropriately if we're having too many calls that are not turning out to be true or, as Mei said, identifying if a -- if a baby with a -- a target disorder -- to be defined clearly for both sides, follow-up, clinicians -- or for all sides, clinicians, follow-up, and -- and -- and laboratory -- is not identified, why

not?

And so, I think it -- I still think it comes back to -- and I won't say this is the case for every state, but I think that programs still need some guidance in terms of how to look at the data. It's not always straightforward. And especially when you talk about profiles, while there might be tools out there, they're not readily -- they're not always accessible because of data-sharing concerns, which have grown recently in terms of all sorts of data.

And I think that the APHL document that we talked about in February is -- identifies a variety of tools that are available to them. Perhaps NewSTEPs can lead an effort to -- to -- to help states, and whether it's regionally or -- or on a case-by-case basis, to learn how to help process through that or, you know -- and -- and that constant review, and -- and what -- what is that -- what goes into that. I mean, I think that funding is one thing, but there's an expertise.

You mentioned IT, Cindy, but, you know, Dr. Bocchini, you have a peer (inaudible). So, that's epidemiologists. Sometimes it takes that; sometimes it's just a matter of having somebody who can put data on a scatter plot and look at, Oh, look at all the cases that are here, and our cutoff's way down here. I mean, that's a way oversimplification, but I think this is just about -- I think, initially, we need to attack the process and help guide and identify what's needed around -- around that routine process, besides all the other efforts are about how to make it harmonize, just-

DR. SUSAN A. BERRY: So, I'm probably naive to this because I'm not in a state lab, but it seems like each lab sets its own strategy for setting cutoffs. I mean, they -- they sit down in the -- the room and do different things and reanalyze the cutoffs. And I know that's partly based on methodology and so on, but -- but I -- I don't quite understand how you can get into a position where you have 50 bazillion false

positives because you're trying not to miss a case and that, somehow, that can be okay that -- any lab could get in that situation. There's -- isn't there a standard process by which you can say, Oh, my god, we've got too many false positives? Isn't there any sort of algorithm that labs follow to do that?

DR. MEI WANG BAKER: And, Sue, what you described, actually, is quite accurate and how we do, but I think, right now, we are talking about harmonization and do the comparison is why data need to be normalized, and constants are measuring the one method here in terms of, everybody uses -- the QC sample has become the one source, and you give the different numbers and you calculate a factor that you bring in is normalize. But have other normalization method.

And I'm going to say, I don't want -- I think Stan will do some presentation, maybe get more detail. Again, but -- but this is the experience coming from prenatal screening, because each individual levels of numbers so

different, so the society, together, get if Pete say, ‘Well, let's use the multiple of the median.’ So, everybody in the median, then, your cutoff is whole -- far away from median. Then, you normalize data. You -- you -- with this, then you can compare with your neighbors, with others, because if my amount is at 1.1, you're .02, our cutoff different. So, it doesn't matter which method you use, you know. This is one thing.

Another thing is, people have a lot discussion, talk about a positive predictive value. Indeed, the disease incident can somewhat -- could misleading, but if you compare with some disorders, across the method, that's valid comparison because well kid is well kid, you know, to some instance, if you use method 1, method 2. So, then you can tell why I have more false positive rate than others than you can draw details. I think if you compare different lab among the lab, the data has to be normalized, and we talk about, to normalize this, you don't need

to do extra. Every testing you have median, and you can do the ratio. Then, you have that. So, I think we, personally, need to think about this line a little bit more.

DR. SCOTT M. SHONE: Scott Shone. But even -- Mei, even by your suggestion, I mean, it still requires this routine evaluation of your statistics and/or everything's following. So, it still comes back to, there's still this -- there is a need -- there is a -- a requirement and an understanding of this -- these -- this is one of, again, many things that have to happen routinely in the program, looking at every analyte, to make sure that we can -- we do that, right?

DR. MEI WANG BAKER: Agree 100%.

DR. SCOTT M. SHONE: Okay.

DR. MEI WANG BAKER: Yeah.

DR. SCOTT M. SHONE: I think, to Sue's point, I just want to comment. I mean, I know it was exaggeration, but I -- I mean, in defense of the newborn screening programs, I don't think anybody who has a bazillion false positives is

not responding to that, and if it is, I think that's a completely separate issue.

But, I mean, I -- you know, in defense, there's a lot of talk around missed cases, and I -- and I go back to my first statement, which is, I think it's crucial that, at some level, whether it's through the Education Workgroup or whatever, that we understand, as Dieter said, it's biology. No matter -- no matter what type of screening --

I mean, it gets a lot of attention because it's a newborn who ends up suffering, but across the -- the health system, you know, people with -- people can have routine colonoscopies and still get colon cancer. They can have routine normal blood pressure and have strokes. They can have normal cholesterol and have heart attacks. You can have normal newborn screen and still have a newborn screening disorder. And the fact is, as long as the processes and procedures are in place to make sure we're doing the highest quality work, which everybody wants to do and just needs, perhaps, some additional guidance and

resources on, you know, that's how we -- how we address the issue that we're talking about.

DR. JOSEPH A. BOCCHINI, JR.: Sue?

DR. SUSAN A. BERRY: This is Sue Berry. Some of the discrepancy that -- that comes out in the publicity from this, though, has to do not so much with missed cases, per se, but -- but the idea that one state is different from another. It's the lack of uniformity. And that's one of the things I think, that we are really coming to grips with here, which is that by hook or by crook, we have to find ways of unifying some of the procedures that labs do, so that if a missed case is a missed case in one place it's a missed case in another for the biologic reason, not because of -- of differences in performance. I think that's the key. And there are -- you know that there are states that have much higher false positive values, and who -- for that reason and economic burdens and all of the other things, stress the system in ways that are just not appropriate.

DR. JOSEPH A. BOCCHINI, JR.: Carol?

DR. CAROL GREENE: Carol Greene, SIMD. I'm coming back to the -- in what ways can the Committee participate in this process, and I come back to the idea of the education. To build on what was just being discussed is -- I mean, obviously, we want to decrease false positives but not to miss babies, and I think that was a very rich and wonderful discussion.

I think one of the issues about public understanding is this notion that my baby's level was 2.3, and it was called normal in Nebraska, and if my baby had been born in Wyoming, that 2.3 would have been abnormal, without understanding that in Wyoming, they use a different method, and it would have been 1.2, and it would have still been called normal. And I think that's where we get into trouble with the public understanding that it's a cutoff and a number and not understanding that there are different methods and that laboratories are individually doing due diligence, and we've got all this beautiful, you

know, different methods and -- and normalizing.

So, I think there is a role for the Committee in education to try to help the states not be exposed to this kind of inappropriate criticism, when the states are actually doing -- I mean, I'm not saying anybody's perfect, and there's always room for improvement, but I think the states are being inappropriately criticized, and the Committee may be able to help with education for that. Otherwise, yes, I think that -- that -- that the states could appreciate help in all of these ways, as long as we always appreciate -- I mean, I -- I -- certainly, in the states I've been, people are reaching out to the providers. They're trying to minimize the false positives. They're trying to do their best, and I'm sure they would appreciate help.

MS. JACLYN SEISMAN: Just to touch on the other points that have been made around education. I think that's a valid effort -- or valid point about the efforts and investments being made to communicate to the public on trying

to understand this topic, but also, to your point -- I'm sorry, this is Jackie Seisman from Genetic Alliance -- also, to your point about not just understanding the topic but also why states are screening for different conditions -- I think that's a question that Natasha and I receive often from parents through Baby's First Test. And so, with that communication about cutoffs, but also about the communication of why states are screening, which I know that conversation's happening later.

DR. SUSAN M. TANKSLEY: Susan Tanksley, Association of Public Health Laboratories. So, I really appreciate all of the discussion that we've had so far today. We've talked a lot about screening and the need for education on what that means, the fact that there are biological differences in these babies that can be explained by other things. When there are false -- false negatives, when there are missed cases, it's incredibly important to be able to, first of all, know that there was a missed case.

So, if there's something that the Committee can do to support efforts to be able to -- for states to collect that information -- and I know that we request that information, and -- and we have really good relationships with some of our subspecialty providers, and they will provide that information, but we also have some conditions that are probably being cared for by PCPs, and we may never receive the information that -- that the babies actually have a disorder that should have been picked up by newborn screening. The lack of information hurts us, in the lab, in that we can't -- we can't go back and review the case if we don't know that it's actually a disorder.

The other -- other important thing to consider is the definition of what we're screening for, and that is different, probably, in every state. And it's important, as a state, to know exactly what we're screening for and to make sure, perhaps, to communicate that to our specific population, to our public, to say, This

is what we're screening for.

Sometimes we get questions about missed cases, and, you know, something that we should have picked up, and perhaps it's not something that's a target of our screening program. So, in our eyes, that's not a missed case. That's not a thing that we were screening for, but there's a perception out there that we should have picked that condition up. So, therefore, the black eye is sometimes not really warranted because it's -- it's not a target of screening; it's not something we're looking for.

And even in the publicity -- you know, the media stories about the missed cases, when I reviewed those, read those, I was like, Well, that's -- that's not something we would be screening for in newborn screening, yet it's out there in the public. It still makes newborn screening programs look bad, even though it's not something that we're actually looking for.

So, I think there's -- we talk about definitions a lot in this Committee, and I -- I

think this is the critical area where maybe we go back and -- and review those definitions, and -- and perhaps states should go and look at the NewSTEPs definitions or try to relate to the NewSTEPs definitions and what are they actually screening for in the states. Perhaps that's information that could be gathered at this level as to what is actually being screened for when you consider each condition, because it's -- just because you say it's hypothyroidism doesn't mean it's going to be all the different variants of hypothyroidism. Just because you say you're screening for CAH doesn't mean that each state intends to pick up simple virilizers as well as salt-wasters. So, I think these are important considerations as we continue this discussion.

DR. SUSAN A. BERRY: This is Sue Berry. So, I want to reinforce what Susan just said about the target that you are screening for. I don't think, when everybody thought about how we were going to work to pick up infantile Pompe that people really thought very hard about what

we were going to do about late onset. Those are both disorders that are identified by the screening process that we -- we've undertaken, and now we're struggling and will struggle for many years with what we do with late-onset cases. We have no mechanism by which to pick up what then I would call the missed cases for late-onset disorders. They weren't our target in the first place. Are we responsible for keeping track of that? I -- I really am -- and -- and who's going to go back and find the 20-year-old blood spot that got burned 10 days after it was done anyway?

So, I -- I -- the -- I can't emphasize enough how important it is, when we make these decisions for the Committee, that we, perhaps, be more precise about that target when we say we're approving this or that. So, Kellie and I were just kind of looking at each other and saying, Well, SMA, we only really approved the ones that have a specific mutation. And I don't think we make that clear enough when we -- when we make our decisions and make it overt enough for

families to understand when we talk about what we -- what are missed cases. We're -- those are missed cases in the sense that they -- kids have SMA, but they're not missed cases based on what we decided to screen for. Precision and language is going to be key to all of this and the potential for longer-term follow-up, which we really don't have in place.

DR. DIETRICH MATERN: Dieter Matern. So, I mean, I -- I agree with pretty much everything that was said, but I think you can -- or should, every newborn screening program should post on their website what they are screening for. However, I also believe that when new information becomes available about conditions that are picked up through screening for those conditions that you want to screen for, every program has the responsibility to be up to date, to a significant degree, with the current literature and then address that on their website.

Again, if -- because, yes, there are things that we learn. We -- last week, we

figured out that maybe there is a way to pick up mucolipidosis type II by screening for lysosomal disorders. So, once that in the literature, I think you have to consider putting that on your website, whether you're screening for it or not.

MS. CATHERINE A. L. WICKLUND: Cathy Wicklund. So, in listening to this conversation, I -- I think it's important for us to also, like, separate out the things that we really think that labs could improve on that we aren't doing well versus things that are just inherent in a screening process. And we talk about precision in our language, we talk about providing education, and I think what's hard, too, is understanding, when it's relevant to an individual, they will be receptive to education on a particular topic.

And we can educate all we want, but we have to be realistic about the perception of what screening is, how people are going to take in this information. And I think we just have to give ourselves some -- I don't know,

acknowledgement that we want to be able to produce materials and have the education there, but it will not be relevant and there's a lot of nuance to these conversations.

And speaking from somebody who, every day, talks to people about abnormal screening results and what that means, it's -- it's -- it's difficult for people to understand the complexities around this. And if it's not relevant to them at that time, it's not going to really be, you know, received in a way that we necessarily want it.

So, I -- I just think it's hard. When something really horrible happens like this, you know, that's when people want the information and care about the information, and I just think we have to be realistic about that for provider perspective, public perspective, and everybody that we're trying to educate about this. And this is, of course -- screening concepts in general apply across all aspects of medicine.

DR. JOSEPH A. BOCCHINI, JR.: Debbie.

DR. DEBRA FREEDENBERG: I was just going to comment a bit on the false negatives. I think that the -- the Committee can do something to help, kind of, relieve the onus. A lot of states consider reporting false negatives as a liability to the program and to the state, and if there's something that can be done, you know, across the whole screening program, that would be great.

I mean, I happen to be in a state that requires us to be notified of a missed case on newborn screening, but as Susan alluded to, we know there are some areas that we're very tightly linked and we will hear about each and every case, whether it's true or not, and we do investigate that, but we also know that there are some other areas where they are, you know, kind of more common, like the hypothyroidism, where people don't know if it's acquired, if it's congenital, and we will not necessarily hear about something that may actually have been congenital hypothyroidism.

But -- so, we're fortunate in that in our

state, we actually do get that information back for a small -- a large percentage of the time, but I do know that states do consider it a liability to report false negatives and put that out there in the public, and if there's some way that the Committee can think about lessening that burden on states to help improve the system, I think that would be really useful.

DR. JOSEPH A. BOCCHINI, JR.: All right. Anyone on the phone wish to make a comment or ask a question?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: If not, Kellie, do you want to weigh in from the Workgroup perspective at all?

DR. KELLIE B. KELM: You know, we -- This is Kellie Kelm. We have not had a chance to go back and, for example, look at the -- I know the -- one of the things was to go back and look at the APHL document, but I mean, if it's -- depends on what the Committee wants to do, if they want us to consider some of these bullets

and -- and think of -- come up with a list to bring back to the Committee based on the discussion today and -- and our discussion -- You know, I guess it's up to the Committee and the charge and what -- whether or not the Committee wants to direct us or whether or not you want the Workgroup to come back with their ideas.

DR. JOSEPH A. BOCCHINI, JR.: I -- I think, from the discussion, it makes sense to continue the process of looking at this in -- in the Workgroup, continue the interaction with APHL related to their document, as well as with other -- the NewSTEPs program and -- and the CDC at this point, and -- and -- so that we can kind of follow this through and see if there are opportunities, based on what has been discussed here, to bring back something to the Committee for an action.

In addition, it sounds like we need to go back to the Education and Training Workgroup, perhaps, with some specific questions around the

issues that have come up today. Maybe we can frame that in -- in a way to -- to give a task to the -- to the Education Training Workgroup. That be a general feeling from the Committee?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: All right.

DR. KELLIE B. KELM: We have -- we have time reserved to talk about that today, so --

DR. JOSEPH A. BOCCHINI, JR.: Perfect.

DR. KELLIE B. KELM: -- we can start that discussion about some ideas.

DR. JOSEPH A. BOCCHINI, JR.: Okay. Great. Okay, thank you all very much for excellent discussion.

All right, so that concludes our business for this morning. I just want to note that Dr. Dolan, Kus, and Rink were online on the webcast but could not communicate with us earlier. And so, Catharine, do you want to give some guidance for lunch?

DR. CATHARINE RILEY: Sure, thank you. This is Catharine Riley. So, again, I mentioned

this, this morning, but do need to reiterate the -- the visitor policy. So, you do have access to this room and the cafeteria and restrooms, but the rest of the facility is restricted, so if you do need to exit or you do need to go somewhere else, if you could let one of the HRSA staff know, that would be great.

We are breaking a little early, so we will ask everyone to come back, maybe, a few minutes early, so we can get started with the afternoon session promptly at 1:15 p.m. For those who are viewing via webcast, we will start at 1:15. So, thank you.

DR. JOSEPH A. BOCCHINI, JR.: All right, that'll conclude this morning's session. We'll see you back promptly at 1:15. Thank you.

(Whereupon, the above-entitled matter went off the record and then came back on.

DR. JOSEPH A. BOCCHINI, JR.: All right, let's go ahead and call the afternoon session to order. We'll start with a roll call.

So, Mei Baker?

DR. MEI WANG BAKER: Here.

DR. JOSEPH A. BOCCHINI, JR.: Susan Berry?

DR. SUSAN A. BERRY: Present.

DR. JOSEPH A. BOCCHINI, JR.: I'm here.

Jeff Brosco?

DR. JEFFREY P. BROSCO: Here.

DR. JOSEPH A. BOCCHINI, JR.: Carla Cuthbert?

(No audible response)

DR. JOSEPH A. BOCCHINI, JR.: Not back yet.

Kellie Kelm?

DR. KELLIE B. KELM: Here.

DR. JOSEPH A. BOCCHINI, JR.: Joan Scott?

MS. JOAN SCOTT: Here.

DR. JOSEPH A. BOCCHINI, JR.: Dieter Matern?

DR. DIETRICH MATERN: Here.

DR. JOSEPH A. BOCCHINI, JR.: Cindy Powell?

DR. CYNTHIA M. POWELL: Here.

DR. JOSEPH A. BOCCHINI, JR.: Melissa Parisi?

DR. MELISSA PARISI: Here.

DR. JOSEPH A. BOCCHINI, JR.: Annamarie Saarinen?

MS. ANNAMARIE SAARINEN: Here.

DR. JOSEPH A. BOCCHINI, JR.: Scott Shone?

DR. SCOTT M. SHONE: Here.

DR. JOSEPH A. BOCCHINI, JR.: Beth Tarini by webcast?

DR. BETH TARINI: Here.

DR. JOSEPH A. BOCCHINI, JR.: Cathy Wicklund?

MS. CATHERINE A. L. WICKLUND: Here.

DR. JOSEPH A. BOCCHINI, JR.: And Catharine Riley, DFO?

DR. CATHARINE RILEY: Here.

DR. JOSEPH A. BOCCHINI, JR.: Robert Ostrander?

DR. ROBERT OSTRANDER: Here.

DR. JOSEPH A. BOCCHINI, JR.: Debbie

Freedenberg?

DR. DEBRA FREEDENBERG: Here.

DR. JOSEPH A. BOCCHINI, JR.: Michael Watson?

DR. MICHAEL S. WATSON: Here.

DR. JOSEPH A. BOCCHINI, JR.: Britton Rink by webcast?

DR. BRITTON RINK: Here.

DR. JOSEPH A. BOCCHINI, JR.: Jed Miller?

DR. JED MILLER: Here.

DR. JOSEPH A. BOCCHINI, JR.: Susan Tanksley?

DR. SUSAN M. TANKSLEY: Here.

DR. JOSEPH A. BOCCHINI, JR.: Chris Kus?

DR. CHRISTOPHER KUS: Here.

DR. JOSEPH A. BOCCHINI, JR.: Adam Kanis?

COL ADAM B. KANIS: Here.

DR. JOSEPH A. BOCCHINI, JR.: Jackie Seisman?

MS. JACLYN SEISMAN: Here.

DR. JOSEPH A. BOCCHINI, JR.: Siobhan Dolan?

DR. SIOBHAN DOLAN: Here.

DR. JOSEPH A. BOCCHINI, JR.: Cate Walsh Vockley?

MS. CATE WALSH VOCKLEY: Here.

DR. JOSEPH A. BOCCHINI, JR.: And Carol Greene?

DR. CAROL GREENE: Here.

DR. JOSEPH A. BOCCHINI, JR.: All right, thank you, all.

So, we're going to start the afternoon with three presentations from additional states to talk about timing -- timeliness and lessons learned as each of the states approached timeliness issues. I'm going to introduce all three presenters. They're all presenting by phone. They'll go one after each other, and then we'll save the questions for after the three have presented and after we've learned what each state has accomplished.

So, the first presenter will be Tonya McCallister. Tonya McCallister has worked in the newborn screening lab of the Oklahoma State

Department of Public Health Laboratory since 2001. Her current role in the laboratory includes supervising staff and newborn screening specimen accessioning and testing, overseeing QA/QI processes, and managing newborn screening LIMS activities.

The second presenter is Sondi Aponte. Sondi is the education and outreach manager in the Office of Newborn Screening at the Arizona Department of Public Health. She also oversees outreach campaigns and social media, provides training, coordinates partnership and project developmental -- or development activities.

And the third is Stan Berberich. Stan is the program manager in newborn screening at the State Hygienic Laboratory at the University of Iowa, a position that he has held for the past 18 years.

So, let's start with Tonya's presentation. The -- Tonya, your slides are up on the screen, so we're ready to go when you are.

MS. TONYA MCCALLISTER: Okay, good

afternoon. Thank you for the opportunity to speak with you today about our timeliness efforts in Oklahoma.

Next slide. The Oklahoma Newborn Screening program partnered with the Oklahoma Hospital Association to create a quality improvement program to address delays in newborn screening. The aim of the Every Baby Counts program was to improve transit time efficiencies by collaborating with our state-contracted courier and birthing hospitals. Our initial focus was to provide quarterly transit time reports and improve courier service. Upon receiving NewSTEPs 360 funding in September of 2015, we were able to expand our efforts to include monthly hospital reports, courier expansion, a newborn screening resource guide, site visits, including a workflow analysis, and newborn screening lab process changes.

Next slide. The format of the quarterly transit time report was not user friendly, so we developed a new monthly report that includes

graphs that rank the hospitals from the best transit time compliance to worst. We also developed a monthly unsatisfactory specimen ranking report. Both of these reports are transparent, shared with all hospitals, and are available on our health department website.

In addition to these reports, we developed individualized hospital reports. These reports contain more detailed information specific to each hospital. The individualized hospital reports are not transparent and are only shared with the hospital for which the report is generated. All reports are emailed to specific members of the hospital mother-baby unit, NICU, and laboratory unit as requested by managers of each section.

Next slide. This is an example of the transit time report. While the Advisory Committee's recommendation is that specimens should arrive at the lab as soon as possible, ideally within 24 hours of collection, Oklahoma law states that specimens should be received to

the state health department public health laboratory within 48 hours after specimen collection. Therefore, we have set a transit time goal of 95% compliance, meaning that 95% of all specimens should be received to the public health laboratory within 48 hours from the time of specimen collection. The format of the report allows hospitals to see how they are performing at a glance relative to other hospitals receiving the same courier service.

Next slide. This slide shows an example of the graphs from an unsatisfactory specimen report. Hospitals are grouped according to the number of specimens submitted, by low, medium, and high volume. If a hospital has zero unsats in a month, they get a green star. Our goal is to see as many green stars as possible, since every unsatisfactory specimen means that another specimen must be collected before testing can occur. This causes delays in testing and reporting, which could be detrimental to a baby with a disorder, especially if it is a time-

critical disorder.

Next slide. These are examples of the individualized hospital report. There is a summary table at the top of the report that lists the total number of specimens received, how many were unsatisfactory for testing, and how many were received with key pieces of demographic information missing. The pie charts provide the reasons why specimens were unsatisfactory for testing and which key pieces of information were missing from the demographic portion of the newborn screening form.

The table at the bottom shows birth-to-collection times for initial specimens. To comply with Advisory Committee recommendations, newborn screening specimens should be collected in the appropriate time frame for the newborn's condition but no more than 48 hours after birth. Our goal is for at least 95% of specimen collections to occur within 24 hours and 1 minute of age to 48 hours. For hospitals that do not have a NICU or special care unit, there should be

very few, if any, collected outside the 24-hours-and-1-minute-of-age-to-48-hour window.

Next slide. The next three slides are graphical representations of our state-contracted courier expansion. In January 2015, we expanded 7-day courier service, indicated by green triangles on the map, to include 18 hospitals. This accounted for approximately 58% of initial specimens received.

Next slide. In December 2015, 7-day-a-week courier service was again expanded to include an additional 20 hospitals, accounting for approximately 93% of initial specimens.

Next slide. In March 2017, we added 2 more hospitals to the 7-day-a-week courier service, bringing the total to 40. This now accounts for approximately 94% of initial specimens.

Next slide. We initially focused on the preanalytical aspects of timeliness: getting quality specimens collected and transported to the public health laboratory as quickly as

possible. Collaborating with the Oklahoma Hospital Association and our hospital partners, we created a comprehensive newborn screening resource guide. Included in the guide was a model policy hospitals could tailor to meet their needs and a hospital self-evaluation form that could be used on an annual basis to ensure policies and procedures are in place and are available to staff. We also provided an example collection log to report key information related to newborn screening.

We developed an extensive train-the-trainer resource, which includes all aspects of filling out the newborn screening demographic information, as well as guidance regarding specimen collection and transport, information about newborn screening disorders, and staff competency resources.

We purchased CLSI resources, including an instructional video on how to collect the newborn screen. All resources were provided on DVDs to each hospital unit involved in newborn screening.

We also obtained permission from CLSI for each hospital to upload the instructional video to their intranet, making it easier for all employees to utilize the resources.

Next slide. During the site visit, we ask for the hospital to gather key individuals from each unit that collects or submit newborn screening specimens to participate in a walkthrough of each department, starting from newborn screening filter paper storage through courier pickup of the specimen. Notes from the walkthrough were used to create a workflow analysis depicting processes within and between hospital units. This process provided a valuable opportunity for staff in all departments to learn and identify barriers and solutions together. In the next few slides, we will show improvements made for these collective efforts.

Next slide. This graph shows the transit time compliance percentage for each month of 2018. It is important to note that when we initiated the Every Baby Counts program, transit

time compliance was 35.87%. In March 2018, we achieved 86.53% compliance. We have yet to meet our goal of 95% compliance, but we have made great strides in getting to where we are now. We continue to work with our hospital partners and our state-contracted courier to identify barriers and ways to overcome them.

Next slide. This graph shows the percent unsatisfactory specimens received each month in 2018. For every unsatisfactory specimen we receive, it means a delay in testing and reporting of results for that baby, while we wait to receive a satisfactory specimen. This graph can be a little misleading without knowing that we typically see an increase in unsatisfactory percentage in December and January every year. What I would like to emphasize with the graph is that March, for the first time, we met our goal of less than 2% with an unsat percentage of 1.97%.

While we're proud of the accomplishment, we are still working to improve specimen

collection. We currently scan all unsatisfactory specimens and then email them back to the submitting hospital, allowing managers to use the images for education and training. We also provide additional data to hospitals whose unsatisfactory rates are consistently greater than the 2% goal.

Next slide. Our next step was to review lab processes to identify changes that would shorten the time between when a specimen is received into the public health lab and when results are reported. The three areas identified for improvement were specimen processing, testing and reporting, and demographic entry proofing and release.

One of the changes was made to batch closeouts. Typically, the courier delivers the majority of specimens prior to 6:00 a.m., when laboratory staff arrive and began processing. Once all specimens have been punched, batches are closed and testing begins. Specimens accessioned after batches are closed are not punched and

tested until the following workday.

One of the larger hospitals utilizes its own courier and does not deliver specimens until after batches are closed. To avoid weekend delay, we changed our process to wait until these specimens arrive on Thursday and Friday before closing batches. This ensures these specimens are not held until Monday for testing to begin.

We also looked at the time frame for retesting abnormal specimens. Prior to changes, initial testing occurred on the same day the specimen was received. If results were abnormal, the specimen was retested and released the following work day. This meant that an initial abnormal specimen received on a Friday was not retested and released until the following Monday. We have changed this process on Thursday and Friday, so most abnormal specimens are retested and released the same day they are received. This ensures results are not delayed over the weekend.

Finally, we evaluated the demographic

entry process. Prior to changes, demographic entry began once batches were closed and were then proofed and released the next day. We changed this process so that on Fridays, all demographics are entered, proofed, and released. Therefore, nothing is held over the weekend. In the next slides, we'll examine the impact of these changes.

Next slide. To evaluate improvement, we compared the date differences for specimens reporting pre- and post-lab changes. The date difference is the date the specimen was reported minus the date the specimen was received. Prior to changes, no specimens reported on the same day they were received, which is lab day zero. After changes were made, 28.6% of specimens were reported on the same day.

Lab day 2 is also significant, because it potentially represents reporting of specimens by day 5 of life, which is a measure for any time-critical result. Prior to changes, 61.5% of specimens were reported by this day. This

improved to 72.7% after changes were implemented. Due to the success of these changes, we have expanded same-day demographic entry, proofing, and release to additional days of the week.

Since our ultimate goal for timeliness is to provide timely care for infants with newborn screening conditions, I will now review data for reporting of time-critical conditions, as well as data for all initial newborn screening results for 2018.

Next slide. For time-critical conditions, the goal is at least 95% of specimens reported within 5 days of life. This graph shows that zero percent of time-critical specimens were reported within 5 days of life for January and February, and 100% in March. Of the four total specimens in January and February, two belonged to infants who had an initial unsatisfactory newborn screen, resulting in a delay from birth to reporting results. The other two specimens were reported on day 6 of life. It took 3 days for the specimens to reach the public health

laboratory. They were received on a Saturday, and results were reported on Monday.

Next slide. For all infants, our goal is to report out all initial specimen results within 7 days of life. In February, courier service was unable to pick up specimens for a couple of days due to icy road conditions. State offices were also closed during this time. This resulted in 87.92% of specimens reported within 7 days of life for February.

While we have made noticeable improvements in multiple areas, we still have some barriers to overcome with transit time, specimen collection, and testing. However, we continue to work with our partners to review processes for and to look for barriers and possible solutions to meet timeliness goals.

Next slide. This is our contact information for both our follow-up program and our newborn screening laboratory. Thank you, again, for the opportunity to speak with you today.

DR. JOSEPH A. BOCCHINI, JR.: Tonya, thank you very much. That was a very nice presentation of a very comprehensive plan that has already reaped some significant achievements.

So, next, we have Dr. Aponte. Ms. Aponte, let's put up slides. Sondi, your slides are up, and you're ready to go.

MS. SONDI APONTE: All right, thank you so much, Dr. Bocchini, and it's not Dr. Aponte, but thank you, again. Good afternoon, everyone. My name is Sondi Aponte, and on behalf of the Office of Newborn Screening, I want to thank the Committee for inviting our state to participate on this panel discussion.

To begin, I'll be focusing on transit time, a crucial aspect of overall timeliness and one we've learned a lot about in our state over the last 5 years. You'll notice that I've inserted some of the goals for timeliness throughout my talk for reference, and I'll be going -- referencing them several times.

Next slide, please. So, let me tell you

a little bit about the state of Arizona. We're the sixth-largest state, and you can see that it's pretty well -- or pretty widely dispersed. There are frontier and rural counties, there are Indian territories, and, really, if you look at the pink spots, we're only talking about Phoenix and Tucson that are urban areas. So, when we talk about transit time, we really have to think about, many of the counties and communities that we serve are very rural.

Next slide, please. So, this is how we got started with timeliness. We just really didn't realize the magnitude of the problem. Up to this point, we hadn't really focused on how long it was taking for samples to be received. Of course, this Journal Sentinel article and subsequent ones have challenged us to recognize and solve problems to avoid potential delays to treatment for newborns. At the time, and I think that was in 2013, only about 67% of samples arrived within 3 days, and many took 5 or 6 days to be received. And that was -- at that point,

we had a 5-day-per-week courier service. So, there's nothing like being called out. I -- I think, of the 26 states that submitted data, we were right near the bottom, so this was our call to action.

Next slide, please. So, we established a plan. The director set an agency priority. We started collaborating within interagencies to send letters, to start talking with people to really understand what some of the barriers were. A statewide goal was announced, and there was a taskforce that was developed, and I was able to serve on that taskforce as the subject matter expert, and it was assigned executive sponsorship.

And I think that was really important for this transit time taskforce to get started, because we needed access to resources immediately. And so, there was no way we were getting anywhere toward having samples delivered within 24 hours. We were less than 10% that were arriving at that time point. So, we had a lot of

work to do, and a plan was established.

I wanted to call out this photo. This is Owen. This is an actual Arizona baby, and he's one of our success stories in Arizona and certainly the reason we come to work every day.

Next slide, please. So, we identified the problems, and in 2014, we started with the low-hanging fruit. We knew that since 99% of babies in Arizona are born in a hospital, that was a clear point to start. It became clear, pretty quickly, that Item 3, Courier Limitations, was really hindering our ability to receive samples quickly. There were a couple of reasons for that, but 1) the service was limited to 5 days per week, and 2), as you can see here, many hospitals weren't using the service efficiently. Some didn't even realize we were paying for it, and it was free of charge. So, there was a lot of batching going on and other limitations that you can see. We didn't solve all these by the way, but we did start with courier limitations and -- and move from there.

Next slide, please. So, we aimed high. Within 6 months -- and that was in early '14 -- we set a goal of having 95% of samples -- initial samples, first-screen samples, received to the lab within 3 days, and that -- as you can imagine, that took -- that was fairly ambitious and took quite a lot of work. We applied the continuous quality improvement methods to the project, we asked a lot of questions, we visited a lot of hospitals, we met with courier vendors, and we transparently started posting hospital transit time data to the website. And at that time, I think that was pretty innovative. I don't know of many other states that were doing that. But we knew that what got measured would get changed, and the director supported this transparency in collaboration with hospitals in a way that we think really drove significant change.

So, the good news is, the goal was reached in 5 months, not 6. We actually issued monthly hospital certificates. We had a party

for stakeholders and hospital leadership when the goal was achieved. We -- we drove to outlying hospitals. We shook a lot of hands. We posted a lot of pictures on social media. And consequently, Arizona was awarded the first-ever Newborn Screening Award for timeliness.

And I have to say here, March of Dimes and other partners have really been important in helping us achieve and sustain the timeliness goals. We worked with the Hospital and Healthcare Association. We brought everyone in who could help support this initiative. And we knew that everybody was out for the same thing. We all want health and wellness for the babies and families in Arizona. So, we aimed high, applied the methods, and reached the goal.

Next slide, please. So, as you know, you can't rest on your laurels. We were focusing, throughout '15 and into '16, on maintaining that original goal and set a new one. So, in August 2016, we stretched that goal from 95% within 3 days to 98% of samples to be received within 3

days. And, you know, it took a lot of retraining, refresher, hospital site visits. People tend to get a little lax as you go through. So, what was easy to maintain at 95% wasn't always easy at 98%. Although we have a courier service 6 days a week and our receiving department accepts samples 6 days a week, our lab only processes samples 5 days a week.

So, the -- we knew there were some barriers that were going to limit our ability to reach this 7-day-of-life goal. So, stretching to 98% meant we had to reach back out. We had to stretch those goals. We had to refine pick-up times, delivery times. And so, it's been an ongoing process.

We had some recognition back in '15 and '16. We published an article in Lab Matters. We did some APHL posters and presentations. We started participating in the CoIIN trainings, and applied for and received the NewSTEPs 360 grant, which I'll talk about in just a minute.

But, really, what we knew was that

transit time was only one important factor in achieving the recommended goal and reporting out all -- of reporting out all results in 7 days. So, we had to move on to the next problem.

Next slide, please. So, on we go to the NewSTEPs 360 grant. What is posted here is part of the statement of work for year 3, but I want to talk a little bit about year 1 and year 2, as well. We embarked on this grant-funded project with APHL, NewSTEPs 360, and the Colorado School of Public Health, and the first 2 years, we primarily focused on modifying internal workflows, and those are going to be highlighted on the next slide.

For this year, though, 2018, we're focused on our biggest challenge yet. For Arizona, that's demographic data entry delays, and those are illustrated a little bit in this statement of work. So, you can see here, the time from specimen receipt to reporting out of a result, at the time of this year 3 grant, 60% of normal and out-of-range results took 7 days or

greater to be reported out. And when we broke that down and measured at what point was it getting stopped, it was inevitably falling in the demographic data entry, which is a very manual, time-intensive, person-dependent process. So, that's been the focus for our 2018 year 3 grant, and I'd like to go ahead and move on to the next slide.

Okay, so this slide is a poster that was presented at the annual NewSTEPs 360 meeting a few weeks ago, and it highlights some of our achievements, as well as some of our ongoing challenges. And you can look at some of those challenges. Those aren't all fixed. We've tackled a few successfully, but we continue to have barriers and challenges within the Office of Newborn Screening.

But let me talk a little bit about some of these positive results. The first chart under Results illustrates a lab workflow change that improved turnaround time for hemoglobin testing, from a baseline of about 12% of samples being

processed within 48 hours up to 91%. And that was pretty amazing with some retraining, some simple workflow changes, and some forms and structures being realigned. So, pretty significant for an internal workflow change.

And then, the second one is about that demographic data entry and verification delay. The second chart illustrates the reduction in demographic data entry delays from an average of 7 days down to zero through a series of workflow changes. I'll talk about that a little bit more, but it -- it was very dependent on the number of staff we had, the qualifications of each of the staff in the demographic team, and the process through which we entered and then came back and verified demographic -- critical information in the demographic fields, and I'll talk more about that on the next slide.

Next slide, please. Oh, you know what? I want to -- you can go ahead and move to the next slide, but I don't want to forget to talk about optical character recognition on this

slide. I only briefly touched on it because it's a year 3 project, but optical character recognition has been something that's been on Arizona's plate over 2 years, and I am happy to report that it is finally in the testing phase. We believe that optical character recognition, whereby the card's demographic information will be scanned and sent to a provider, who will upload the demographic information into our database within 24 hours, as really being a system-sustainable change so that we can get rid of the demographic data entry delays. I don't have a lot to speak on it yet; it's still in the testing phase, but I definitely wanted to point it out to the group that we know manual data entry has been a problem for us, ongoing, and we recognize that a system is going to have to be in place to mitigate those delays that we continue to see.

So, on to the next slide. I'm assuming we're on slide 10 now for reporting out time-critical results. So, this slide you may

recognize. I think Josh from Colorado School of Public Health may have discussed a few states when we looked at reporting out time-critical results, and Arizona certainly has some important lessons that this slide illustrates. We knew that achieving these timeliness goals were -- were directly tied to these resource limitations, and we were going to have to get very innovative and creative, living within the resource personnel limits that we had, for example, and taking this reporting out -- out of a person-dependent process, i.e. the demographic data entry team.

So, this slide highlights the impact of that entry and verification process on timeliness, and you can see, in this last quarter, from quarter 4 '17 to quarter 1 2018, that a significant increase to 70% of time-critical results reported out within 5 days of birth and 90% within 2 days of specimen receipt was realized just by making a change to the way the card is verified inhouse.

Next slide, please. Okay, now I want to talk a little bit about overall lessons learned. You know, we have to keep babies at the forefront. That's our overall goal. We have to talk to families. We have to think about long-term and short-term impacts. We have to involve subject matter experts, both right here in the building, where we're co-located, and other experts outside that would help us to really look at timeliness in a transparent way. We had to look for a lot of internal opportunities, and I hope that I've highlighted that to really demonstrate that we could be creative, we could be innovative, we could think of new ways to approach timeliness that were achievable that -- that applied these smart methods to achieving some realistic goals.

We had to find some quick wins to keep motivated through the course of these 5 years, because some of them have been slower than others. Some have been fairly quick. The hemoglobin project was a fairly quick win for us.

But they're so important, because we were able to shave a day or two off with that one internal process improvement.

And then, finally, I really want to talk about utilizing partner resources: Genetic Alliance, Baby's First Test, NewSTEPs 360, the Colorado School of Public Health. We would not have come this far, in Arizona, had it not been for those partnerships. And -- and I think what I wanted to really say is that the newborn screening system depends on internal collaboration within the newborn screening program working at peak performance, being transparent about finding and fixing problems when they exist, and most importantly, as I mentioned, learning from other states and organizations established to improve newborn screening systems.

Next slide, please. And finally, what -- you get what you inspect, not what you expect. This Committee has set the expectations for newborn screening public health programs to

achieve the best outcomes for baby -- for babies, and achieving these goals requires us to take a hard look at where we're at and set a standard for continuous quality improvement.

And next slide, please, and I think I'd like to just close in saying thank you to the Committee and thank you, Catharine, for coordinating the discussions, for keeping me on track and on time, and I believe we're holding questions 'til the end. So, thank you, again, for your time.

DR. JOSEPH A. BOCCHINI, JR.: Sondi, thank you for another great presentation and, again, another great state-based success story. Thank you.

Next, Stan Berberich is up next. Stan, your slides are up, and you're ready to go.

DR. STANTON L. BERBERICH: Great, thank you, Dr. Bocchini, and I want to thank the Committee for giving me the opportunity to present our Iowa perspective on timeliness in newborn screening. The Iowa perspective is based

on some very simple concepts.

So, first slide, please. The facts: Babies are born every day, and any baby can be born on any day with a disorder not recognized at birth. Some of these disorders will be time -- time critical. That is a condition that puts the baby at risk of a catastrophic event, which can result in sudden disability and even death. As soon as a baby is born and separated from its mother, these time-critical conditions put the baby at risk for one of these events. These facts also lead to certain realities.

Next slide, please. Babies are born every day, and on any given day, a baby may be born with a time-critical condition. Therefore, unless appropriate structures and processes are in place to treat every day the same, disparities will result based on the day of the week a baby happens to be born on. The day of the week a child is born on should not determine whether they will benefit from newborn screening or not.

Next slide, please. It is these simple

facts and understood realities that led to the Iowa response. Since babies are born every day, these functions take place every day in Iowa. Specimens are collected every day. Every day, specimens are picked up across Iowa and delivered to the newborn screening laboratory that same day. Specimens are received by the laboratory and tested every day, which also includes the data entry. Results are reported every day to short-term follow-up staff, and every day, short-term follow-up staff contact the health care provider with recommendations to enable appropriate interventions to minimize harm.

Next slide, please. So, how are these functions performed? Our same-day courier provides service 7 days a week, 365 days a year, including holidays. Specimens are picked up across Iowa every day. Specimens are delivered to the newborn screening laboratory in the evening, around 9:30 p.m., that same day they are picked up. The newborn screening laboratory is operational 20 days -- 20 hours a day, 360 days a

year, including holidays. Our night shift begin testing the same day the specimens are delivered and continue through the night. Our day shift finishes the testing, and any abnormal results are communicated that day to short-term follow-up staff. The short-term follow-up staff are scheduled so that recommendations for abnormal results on time-critical conditions can be communicated to the baby's health care provider every day.

Next slide. But we've found the "how" is not enough. We also need to communicate the "why" and have it understood by all the partners in the newborn screening system, because unless all the participants in the newborn screening system know about the available resources and understand why their role is critical to protecting newborns, the full benefit of newborn screening will not be realized. It is not enough to tell them what to do. They must understand why what they do is so critical to the outcome.

Next slide. So, the result is, each baby

receives the same opportunity for benefit, regardless of the day of the week they happen to be born on.

Next slide. This chart is simply to show the distribution of birth by day of the week in Iowa. You can see that the percentage of -- of births on Saturday and Sunday are less than on weekdays. There's about 50% more births on a weekday than on a Saturday or Sunday. Until I looked at the data, I assumed births were random and every day should have the same number of births. I had not taken into account, scheduled deliveries would favor the normal workdays. It may be difficult to see, but the chart has two lines, one representing pre-365-day structures in red and one representing post-365-day structures in blue. As you can see, there's basically no difference in the distribution of births before or after we implemented our 365-day-a-year structures.

Next slide. This chart looks at the median number of hours between birth and when an

actionable result is available. This is the metric that is most important to the baby. This is the at-risk time and compares pre- and post-365-day structures by day of the week. A couple of things stand out.

The red line is the pre-365-day structures. There is a significant difference in the time from birth to results based on the day of the week a baby is born. You will also notice that the days with the greatest delays are the days with the most births. Remember that weekdays had about 50% more births than the weekend days. Those days with the fewest births had the shortest times, and those days with the most births had the longest delays.

The blue line is the post-365-day structures. You will see that regardless of what day of the week a baby is born, each baby receives the same timeliness results. So, what does this mean in terms of risk?

Next slide, please. So, this chart is an attempt to illustrate the impact on risk

reduction to the babies we screen. The hours between birth and when an actionable result is available can be understood to be exposure risk. So, this chart sums up the total exposure risk by day of the week for our 40,000 births, comparing pre- and post-365-day structures. For each day, I summed up the total hours from birth to actionable result for all babies born on each day of the week to come up with a total exposed risk in hours.

So, the area under the curve is the overall population risk. It is during this time when an event for a time-critical condition could occur. You can see that there is a significant reduction in exposed risk after the 365-day structures were implemented. However, you will also notice, if you look at the blue line, there still appears to be a difference by day of the week, even after the 365-day structures were put in place.

So, next slide -- slide, please. But notice how the risk curve post-365-day structures

mirrors the curve of percent of births by day of the week. The difference in exposed risk post-365-day structures is only due to the difference in the number of births by that day of the week, not due to differences in timeliness. So, how does this impact the ability to meet the timeliness recommendations made by this Committee?

Next slide. These charts look at the primary goals set by this Committee. Time-critical conditions should be reported out within 5 days of life. These two charts display the number of specimens by the hours between birth and actionable result. The specimens are also color-coded based on the day of the week the baby was born.

The top chart presents the data pre-365-day structures. You will notice a broad distribution, with several peaks at 24-hour intervals. The recommendation that all time-critical results should be reported within 5 days of life is indicated on the chart.

The bottom chart presents the data post-365-day-a-year structures, and you will notice, everything has compressed down to fairly tight distribution, and each day overlaps the others. The majority of the results are available within the third day of life, and more than 95% are available before the baby is 4 days old.

Next slide. This also shows the -- another major recommendation by the Committee that all results -- all results -- should be available within 7 days of life. These two charts also display the number of specimens by the hours between birth and actionable results. The specimens are also color coded based on the day of the week the baby was born.

The top chart presents the data pre-365-day structures, and you will notice the broad distribution, with several peaks at 24-hour intervals. The recommendation that all results should be reported within 7 days of life is indicated on the chart.

And the bottom chart presents the data

post-365-day structures. You will notice, everything has compressed down to fairly tight distribution. The majority of the results are available within the fifth day of life, and more than 95% are available before the baby is 6 days old. Now, how does this performance compare with other newborn screening programs participating in NewSTEPs 360?

Next slide. This is a run chart taken from the NewSTEPs 360 repository and represents the 4 quarters of last year, 2017. What is shown in this chart is the percentage of specimens where results for time-critical conditions were reported out within 5 days after birth, which is one of the Committee's recommendations. This represents the efforts of those programs involved in NewSTEPs 360 to improve -- to improve timeliness over the last 3- to 4 years.

Although there has been significant and, in some cases, remarkable improvement in timeliness among states participating in NewSTEPs 360, you can see, only 2 states have been able to

consistently meet the 95% recommendation for time -- time-critical conditions. There are two lines on the chart that run along the top between 95- and 100%. Iowa is one of those lines. I've also obtained permission to reveal the identity of the other state, and it is North Dakota. Iowa provides the laboratory and short-term follow-up support for North Dakota, and so they benefit from the 365-day structures. So, this leads me to suggest that the 365-day-per-year structures may be necessary to reliably meet the timeliness recommendations made by the Committee.

Next slide, please. I just want to acknowledge that these accomplishments are certainly due to some very dedicated, passionate people in newborn screening in Iowa. Kimberly Piper is Executive Director of the Center for Congenital and Inherited Disorders at the Iowa Department of Public Health that -- that administrates this program. Ron Hardy, who is one of the most dedicated people to newborn screening that I know, who -- who owns and

operates the -- the Central Delivery Service of Iowa which provides the same-day courier service for our program, and Mike Ramirez, who is supervisor of the newborn screening laboratory, and his great staff are dedicated to make this happen, and, of course, Carol Johnson, Supervisor of Short-Term Follow-Up Staff at the University of -- University of Iowa Hospitals and Clinics, and her staff that ensure that this information gets passed quickly on to the babies' health care providers, and, of course, the -- the -- the dedicated work of those people out in the hospitals and the physicians that cares for these kids -- I want just to acknowledge, all of these are the people who make this -- this system work.

Next slide, please. Just want to thank, again, the Committee for their attention and allowing me to present this information.

DR. JOSEPH A. BOCCHINI, JR.: Stan, thank you, again, for a great presentation and another example of a very effective intervention -- series of interventions that -- that changed

things dramatically.

So, these three presentations are open for question, comment, discussion, and we have all three of the lines open of our presenters. So, from the Committee first.

Cindy.

DR. CYNTHIA M. POWELL: Cynthia Powell, member of the Committee. Thank you, all, for your presentations, and congratulations on all the success that you've had. I had a couple of questions.

One is, was there additional cost involved in, you know, achieving this and, if so, who, you know, is -- has picked up that cost?

And then, secondly, I know that -- at least, speaking from some experience in my own state -- that the birthing centers can sometimes be a challenge to get them to improve, and sometimes they're the outliers, despite a small percentage of births, relatively, but I'm wondering if any of you, you know, had dealings along those lines, and, if so, how you worked

with the birthing centers.

DR. STANTON L. BERBERICH: This is Stan. I'd -- I'd be willing to offer a little bit of our experience into this. We -- we also have found that as -- as challenging and that there were outliers. I think what we discovered in -- in our efforts, was, is that if we could, in fact, share with those at the hospitals what their role is and how it impacts the overall outcomes of -- of -- of these babies, and so they understand why what we're asking them to do is critical to these outcomes -- We -- we've seen real -- real swings from those that, you know, we kept telling them what we want them to do, and they just seem not to do it, to actually, once they understood what their impact was, we ended up having a number of them pushing us to improve our systems.

So, I -- I -- I think, at least in that realm, where you -- it -- it takes additional time, obviously, to interact with the hospitals in a way to communicate an understanding of why

we need them to do what they do, but it has made, really, all the difference in -- in their performance.

MS. TONYA MCCALLISTER: Tonya from Oklahoma.

DR. JOSEPH A. BOCCHINI, JR.: Tonya or Sondi?

MS. TONYA MCCALLISTER: Tonya.

MS. SONDI APONTE: Hi, this is Sondi. I'll speak to your question, Cynthia. Thank you, again, for the time.

So, two issues, one about cost. For our program to initiate this transit-time project, we did have to find a new state vendor that -- so, we took it out of that, you know, UPS/FedEx realm that was next-day by 10:30 and found a local courier who could really provide a customized service for us. I think it costs around $150,000 a year for us to get that service, but we now have 5 drop-offs throughout the day at the lab, which really improves and streamlines processes. And then, we took what -- what we were using, a

FedEx account, and transferred that over to birthing centers, midwives, pediatricians, so that we still had a better mechanism than the one they were often using, which was the mail, to at least get samples for those, you know, less than 1% of births and pediatrician second-screen collections to us 5 days a week, next business day.

But for us, it was a good investment because for the courier, not only do we have multiple deliveries every day, we have 6-day-a-week courier, and about 80% of all the hospitals are picked up and delivered same-day now. That was not possible under the current contracts -- or the prior contracts we had. So, for us, it was a good investment and has really streamlined processes.

Your second question, about birthing centers -- yes, it has been a challenge for us. About 99% of our babies are born in a hospital, but for those 1% that are born to a licensed midwife attending, we do have challenges with

that, from everything from cost to timeliness to transit. And so, we've been doing some targeted interventions over the last 3- to 5 years and are making some improvements, but we still only have about 50% documented blood spot hearing or CCHD screening results for kids that are born to a licensed midwife.

MS. TONYA MCCALLISTER: This is Tonya. We also have -- have incurred some additional cost for expansion of our courier service. We tried to get as many of our more outlying birthing hospitals as possible in the 7-day-a-week courier service route. We still have some, about 10, that are only receiving 5-day-a-week courier service, and they represent a pretty small percentage of births. And then, for the hospital birthing centers, we still struggle, and we still have communication trying to improve that process, and the third year of our NewSTEPs 360 funding is focused on our midwives.

DR. JOSEPH A. BOCCHINI, JR.: Thank you.

Joan?

MS. JOAN SCOTT: Joan Scott, HRSA. So, given the comment about how helpful it is that everybody in the process understands the importance of -- of -- of having the timely processes, how often have your -- do you -- have you found that you need to, like, retouch or reeducate or redo the message given staff, over time -- or staff change in hospital systems, et cetera?

DR. STANTON L. BERBERICH: This is Stan, again, and -- and I guess my response to that is, we -- we've really had to change our -- our -- our own understanding of what it was that we needed to accomplish. I -- I -- I think, years ago, when things were simpler and less complex, and we had a wider window of time in which to carry out all of these things and get them accomplished, our -- our interaction at -- at the hospitals that were collecting specimens and -- and -- and transporting and so forth just needed to be reminded occasionally of something.

What we've found now is -- is that that

interaction has to be ongoing and it -- it -- it -- which also includes feedback to the hospitals, so -- so -- so -- so they can assess how -- how -- how they're doing and to assess that in the context of how other hospitals within our state are doing, as well. So, we actually have an individual who one of their primary responsibilities is to maintain monthly contact with -- with all the birthing facilities. And -- and -- and -- and so, that -- that education and involvement and the awareness of the "why" is -- is actually a constant thing now. It's not just once every other year, we go out and do education.

MS. SONDI APONTE: This is Sondi. Thanks for your question, Joan, about training/retraining processes, collaboration. You're right, and I think I -- I touched on that a little bit in talking about transit time. We had hit that 95% goal within 3 days, and we haven't been off of it since. However, things have changed. Now we're working on getting them

here in 24 hours, 48 hours. Seventy-two hours no longer is good enough. And so, we keep stretching those goals and moving them, refining the processes.

But for us, hospitals had turned over what they thought were best practices were not -- were not always being followed. So, we've done many, sort of, small CQI projects. We've gone to hospitals and done some demo walks, where we actually walk through the process and see -- You know, inevitably, you'll find samples are being left on a drying rack for a day or two here or there, or the send-out person for the -- that handles the envelopes and the blood spot cards doesn't work on Saturday, so the driver's there, but there's no specimens to pick up.

So, we think it's an ongoing, constant process for touching those hospitals routinely. We tried the quarterly e-newsletters, et cetera, but oftentimes, it's just monitoring the data much more actively, reaching out quickly if we see a pattern or a problem, and then trying to

resolve, quickly, before we get down that road of, you know, really having a -- a problem.

MS. TONYA MCCALLISTER: I would basically mimic that. It seems like the reports that we send out monthly generate a lot more communication with, at least, a good portion of our hospitals. They have questions about why they performed the way they did on their report, and they want to know more detailed information, down to the number of specimens that did not meet their transit-time compliance, for example. So, we've developed some easy ways to run some programs and give them that information, because they are now interested in doing their own follow-up with that to see what the hold-up was.

So, we have really good communication with some. Some, we have to reach out to them more instead of them reaching out to us, but it has become a constant communication. And it -- it does take up a lot of time, but it seems to be helping the process.

DR. SCOTT M. SHONE: Scott Shone. Stan,

you talked about pre- and post-365. When did -- when did Iowa begin screening -- begin 365-day-a-year operations? How long ago was that?

DR. STANTON L. BERBERICH: We -- we took this on back when we were adding tandem mass spec testing to -- to our -- our program. We recognized, at that time, that there was a number of conditions that were going to be included in this that were time-critical that changed the equation that we had been operating on.

So, back in 2006, we actually approached our advisory committee and presented the case that the structures that we were currently using and had been successful in -- in accomplishing our purposes in the past were -- were not adequate for addressing if we're going to add these time -- time-critical conditions to our -- our panel. And so, we presented to them a proposal that included a same-day courier, as well as an -- an additional staff at night, and our cost associated with that was -- was similar to what the cost would be for -- for adding a new

condition, like the tandem mass spec conditions.

And -- and so, that was back in 2006 that we put those structures in place. With 360, one of the things that we discovered is that although the structures were in place, they weren't being used as effectively as they could be used. So, we -- we've actually seen some additional improvement in -- in the whole process over the course of the last 3- to 4 years.

DR. SCOTT M. SHONE: And just one -- one follow-up: How long did it take for you to transition from, I think -- I -- I'm assuming it was a 5-day-a-week operation when you made that -- that proposal to when you fully went live running every day of the year? What -- what -- just trying to think -- you know, Dr. Bocchini started the meeting today talking about looking at implementation of disorders, but I'm also thinking about implementation of timeliness, and we've heard a lot about these initiatives. And so, if -- if -- if the 365 is the -- the farthest -- is -- is the -- I don't know what to call it,

but is -- is -- there you go, whatever Kellie just mimed to me. How long would -- or what would it take to get there, I guess, is my question. What did it take you to get there?

DR. STANTON L. BERBERICH: Yeah. Well, it -- I mean, this -- this is a bit interesting because the proposal was actually presented in 2005, and it was approved. What -- what happened very shortly after that was, Katrina hit Louisiana, and then we took on the back-up support for the Louisiana laboratory. So, we were quite busy with that, and what we thought was going to be maybe a few weeks to a couple of months ended up being a 3-year thing. But it was in the midst of that that we brought on the courier and -- and -- and the night shift.

So, although we had the approval to do that, it -- it was delayed a bit until we got a handle on -- on Louisiana. But we were able to hire a staff for the night shift, so we weren't disrupting or impacting the -- the staff we already had on -- on the day shift. And the

courier, once we found an individual who was, actually, very eager to put the structures in place to -- to do that -- I think it was within just a -- a -- a few months, once we had an -- you know, that that's what we wanted to do that we were actually able to bring on the same-day courier, and -- and the night shift, bringing it on -- I don't recall, exactly, the timetable of that, but that -- that took at -- at least a -- a few months to recruit and to get people hired and get them trained before we could actually have them work independently at night.

And the funding for this -- and I didn't mention that, but, again, the -- the -- the funding for this, we -- we -- we approached our Advisory Committee with it. It was approved -- It -- it was shared with the health department, and they strongly supported this, as well, and -- and allowed us to increase our -- our fee, I believe it was, by $15 to -- to then support these additional structures for 365-day newborn screening.

DR. SUSAN A. BERRY: This is Sue Berry. Thank you, all, for your presentations, and I guess one of the unifying features I found in the presentation is that there was, essentially, a champion educator, sort of, person whose responsibility it was to say, "This is a critical thing that we're going to take care of, and I'm going to visit with the hospitals, and I'm going to help them with quality assurance." I -- I think to implement something like this, you need to have somebody whose job it is to make it happen. Is that a fair conclusion from each of you?

DR. STANTON L. BERBERICH: Well, this is Stan, and -- and -- and I would certainly say yes, that -- that -- that's true on our part. It -- it -- it requires an individual to -- to -- to -- to champion it, to put forth the case and basically to allow other people to recognize and understand the importance of it and that it needs support. And -- and at -- at least we've found that once people understood the necessity for it,

we began to -- to identify where those funds would come from. If people aren't convinced of it, you -- you -- you can use the funding as a reason why you can't do it, whereas if you're convinced it's something that needs to be done, you're challenged, then, to find the funds to make it happen.

DR. SUSAN A. BERRY: But, Stan, you had to have somebody go to each of the hospitals and tell them why it was important is what I'm -- You need an educator. Is that something that you had available to you when you did this? I meant staff.

DR. STANTON L. BERBERICH: I -- I --

DR. SUSAN A. BERRY: Staff time to do it.

DR. STANTON L. BERBERICH: Yes, I mean, it -- it -- it -- it -- it -- it took involvement -- I -- I -- I think the -- that the hospitals were -- were onboard because we picked up the cost of the courier. So, from their perspective, I think that was an -- a benefit to them.

MS. SONDI APONTE: Hi, Dr. Berry, it's

Sondi from Arizona. It's good to talk to you again, and -- and I think you're right. You -- you came for our site visit here in Arizona. And it not only takes decision-making authority support, but then it does take somebody who's going to see it through and the multiple trainings and the multiple site visits and the multiple phone calls and the data analysis and interpretation. It is ongoing. You -- I took it on as a mission, but it was because I had leadership support to do so, and literally, I delegated off 30% of my other work and just focused my mission on improving transit times.

So, I think, to your point, it takes leadership approval and involvement at the resource, time, and -- and -- and financial level, and it takes a champion or two or three, I think, both from the program and then finding your champions at each one of the hospitals that will see this through from the very end. And -- and we really found that to be really important at the hospital, finding a champion who became

that timeliness subject matter expert, so that a nurse or a phlebotomist or a send-out person could go to that person and say, "What's it going to take to get this done? Are we doing this right?" So, I think, from Arizona perspective, that's been key.

FEMALE SPEAKER: I agree, it does take a champion, or it at least takes someone who's willing to take on those extra tasks, but I think it's more than that, too, because I -- I felt like this is a great thing, and it was a worthwhile project, and we definitely should do it. And I participated and went out to all the hospitals as part of our education, but without having the staff behind me who also thought it was important and who was also willing to take on those delegated tasks, we still would not have been able to do it. So, it really took a lot of people to make it work.

DR. MEI WANG BAKER: Mei Baker, member of the Committee. This question is for Stan, and thank you for those wonderful presentations, all

of them.

The specific question is, looked at your graph. The action bullet, screening positive case indeed available earlier. My question is more, how impact to the physicians? And because given the structure change, I assume your summary result, you were counting in, like -- in the morning of the data because in general, newborn screen result more likely have result afternoon. And I often, especially medical doctors, "If I get a call for newborn screening --" I -- I just wonder, you have some additional benefit, and have you look into that or you had some feedback from clinical parts in terms for this structure?

DR. STANTON L. BERBERICH: I -- I -- I'm -- I'm not -- I didn't catch everything, so I'm not really exactly sure what you're asking. I -- I think you were asking about what impact it has if -- if we're, like, making calls on the weekend or off hours and that sort of thing.

And one of the things I know that our short-term follow-up staff do is that it's the

time-critical conditions that we are primarily focused on. So, for some of the conditions that are not time -- time critical, those -- those contacts may not take place until the -- the next business day. But for those that are time critical, those contacts will be made as soon as they get those results, whether it's on a Saturday, Sunday, holiday, or what. Did that answer your question?

Dr. MEI WANG BAKER: Yes. I also think, because you have this two shift, certain critical result may be even come to the better time of day -- for example, in the morning. Is that true?

DR. STANTON L. BERBERICH: Yes, so they -- you know, we -- we try to get those results out as early as -- as we can during the day, and I -- I -- I think many of the -- of -- of the tandem mass spec conditions can actually -- that information can go out, you know, by -- by 8:00, 9:00, 10:00 in the morning, which provides the short-term follow-up staff a real significant opportunity to actually get that baby seen that

day if -- if necessary.

DR. JOSEPH A. BOCCHINI, JR.: So, I have Dieter and then Joan.

DR. DIETRICH MATERN: Dieter Matern. So, my blood pressure has been ebbing and flowing and whatever.

(Laughter)

DR. DIETRICH MATERN: I -- first of all, I want to thank those states for presenting and having made that progress. I also like that Stan told us what the facts are, which is, babies are born every day, and I appreciate what Sue recognizes, that it apparently needs a champion, locally, to get things moving.

But where my blood pressure goes up is, when -- when you are working in newborn screening, your mission is -- are these babies, and you should -- everyone should be a champion for them. I don't think we need this -- it shouldn't need this Committee to tell you why there's timeliness importance. Everyone in newborn screening should understand that. And if

you don't have a mission statement for your own screening laboratory that incorporates that as the mission statement for this Committee does, I suggest all of those programs should look back at what they have and update it, and no one in a screening laboratory should be afraid to speak up for babies in front of their supervisors and superiors, governors, commissioners, whatever.

DR. JOSEPH A. BOCCHINI, JR.: Thank you.

Joan, we're going to give you the last --

MS. JOAN SCOTT: Oh, the last --

DR. JOSEPH A. BOCCHINI, JR.: -- question/comment.

MS. JOAN SCOTT: Well, I -- this is a follow-up to what -- Joan Scott, HRSA -- what Sue was asking, and not just having a champion to get it rolling, necessarily -- I agree with you, Dieter, this should automatically be part of it -- but ongoing resources. So, how much FTE time does or should a program need to have someone who's assuring that this is -- that this is occurring on a regular -- Just like a laboratory

has a QC/QA person looking at their laboratory procedures ongoing, what kind of FT is needed -- support is needed for ongoing to continue to assess the processes? That's a question for the states that have -- that have invested so much. Do you have a fulltime FTE?

MS. TONYA MCCALLISTER: This is Tonya in Oklahoma. We do not have a dedicated person as of yet. I'm not sure if that will ever be something that -- that we're able to accomplish, but we have two to three people who spend -- probably encompasses at least a week out of a month on follow-up and providing reports and making phone calls, and we could certainly do more if we had more time to do that end. The sad part of that is, we don't have a fulltime person, so we're unable to provide as much follow-up as we would -- we would prefer.

DR. STANTON L. BERBERICH: Yeah, and -- and this is Stan at -- at Iowa, and we do have an individual who's identified for this specific -- this specific purpose, to address those -- those

issues of timeliness in Iowa, and about a -- I -- I -- I would estimate about a third of her time is -- is -- is devoted to those activities, but there's other folks, both in the laboratory and short-term follow-up and at the state who also participate in these activities of -- of educating and equipping. I don't have a real good way of estimating what that translates into full FTEs, but -- but we do have that one individual, Ashley Comer, who's -- who's identified as the person who's taking the lead on improvements within our newborn screening program.

MS. SONDI APONTE: Hi, Joan, this is Sondi, just as a final on FTE support. Newborn screening timeliness and, specifically, transit time is definitely a team approach, and that's how we've addressed it in Arizona. I think, in my slides, I talked about the Transit Time Taskforce, and even though the taskforce has sort of gone away, myself as an educator, the office chief, the lab director -- everyone up and down

the chain is maintaining an interest, sort of keeping a very high interest and close watch on timeliness and, specifically, transit time, and I think it does take that. I'm -- I'm one FTE, and it could take a fulltime person just for timeliness.

So, I think that does have to be considered. If you want to maintain and continue to stretch goals and start talking about samples being received within 24 hours, realistically, it does require, you know, a fulltime response just to maintain the contracts, do the training, you know, monitor outcomes.

So, I think that's a -- a really good consideration, Joan, is that it -- it really does require -- I mean, we deliver 85,000 births a year. So, I think it's to scale, but for us, I would say, a fulltime equivalent person to manage timeliness is -- is reasonable.

DR. JOSEPH A. BOCCHINI, JR.: All right. Again, I want to thank the three presenters and congratulate you on the successes of the efforts

that you've made to improve the timeliness part of your newborn screening program. And I'll close by echoing Dieter's comment, which, I think, is the -- is the bottom line for everything we do, that the goals that we set as a Committee were really based on providing the best outcome for babies, and so efforts that you're all making certainly go to those goals and -- and represent how you approach public health efforts. So, thank you, all.

MS. SONDI APONTE: Thank you, Dr. Bocchini and group. This is Sondi.

DR. JOSEPH A. BOCCHINI, JR.: All right, you're welcome. Annamarie?

MS. ANNAMARIE SAARINEN: Thank you, Dr. Bocchini. Thanks to the presenters even though we're moving on. I was wondering if we could remind the Committee if there are explicit goals or if there is a specific document coming out of this Committee that provides some level of standard or uniformity? And I think the remarkable achievements of the three states in

making their progress -- I -- I -- I can't remember. From what I've seen in the past, if those are all meeting those, sort of, benchmarks that we looked at, nor do I remember if those benchmarks were really, like, these are officially Committee-endorsed, you know, standards that we're looking for across the states.

And -- and one last comment on -- on funding, because the advocacy piece is -- is really important, having that champion, but champions can do little in the face of no resources. So, this becomes, in my mind, very much a -- a public-health issue and one that if not having some sort of parameters around it and some sort of guidance that state programs can look to and then tell their funding bodies, be that legislative or otherwise, that "This is the standard that we're expected to meet so that babies in our state receive equitable care at birth as they do in the state next to us."

DR. JOSEPH A. BOCCHINI, JR.: So, theses

are formal recommendations from the Committee, and they are available on our website. And in addition to establishing these, we did ask that all states -- that 95% of the goals are achieved by all states and that -- that the results of their activities be transparent and published so that people knew that their children were getting the -- the value that was needed and met the standards, so.

All right, now we're getting ready to go into the Workgroup meetings, but before we go, we have asked each Workgroup to spend a little bit of -- or a portion of their Workgroup time discussing the public health system impact surveys that we now have available and are being used in the evaluation of -- of the -- of a condition to -- that is being considered for addition to the RUSP. I just want to go through a couple of the -- of the slides just to bring everybody up to speed on this.

Remember that we were asked, in the last iteration of the Newborn Screening Saves Lives

Act, to include an assessment of the impact of public -- on public health and, therefore, we needed to integrate an evaluation into the evidence-based review of all conditions nominated for the RUSP. And the goal of this, the purpose of this, was to evaluate the states' ability to implement the screening of a new condition and the cost implications of implementing population-based screening for that particular condition, and that would include resources needed, the impact cost and -- and so on that -- that were involved for -- with that condition.

So, what we decided to do was put together, through the Evidence Review Workgroup, a survey that each state would utilize to help us in -- in looking at some key factors, which are listed on this slide: the organization of the newborn screening program, what sort of authorization is needed to bring on a new condition, what screening methods would be used and what that meant for the laboratory to introduce this condition, what short-term and

long-term follow-up implications were related to this condition, anticipated resources that might be needed, cost, and what the projected timeline was for adoption. And based on the results of the survey, we could then determine the resources needed, what impacts, costs, opportunity costs, that would exist and -- and -- and affect the states' ability to implement that screening, and then, also, to estimate, through that, how long it might take for a state newborn screening program to add that condition to their screening panel.

And since we've included this, we've looked at four conditions. So, we now have experience with public health impact assessments for four specific conditions that have been reviewed. Three have been implemented; one is before the -- the -- the Secretary in terms of a -- of a decision, but we have impact assessments on all four of those.

We have two survey tools that are used. The first is an initial survey that's

administered to all state and territory newborn screening programs, and then there's a follow-up survey, which is administered to a few states and territories, that is used to supplement the information gathered through the initial survey. Hit it one more time. Yeah, it'll come up.

So, these survey tools require approval by OMB, and the current approval that we have for these two surveys expires this year. So, a continuation application needs to be submitted this year to OMB. So, this is a really good opportunity for us to evaluate the surveys that we're using and to understand whether there are things that we have not included in the survey that need to be added, things that are being asked on the survey that are giving us information that's not, you know, very effective in helping us make a decision.

So, what I'm asking each Workgroup to do is to spend some time this afternoon reviewing the surveys and then considering what sort of feedback you would like to give to the Committee

tomorrow, when you give your Workgroup reports, that might influence what sort of major changes or other things that we might consider to add to the survey so we could get a better idea of -- of -- of -- of what we're looking for to help us make a better-informed decision. So, the guidance is to look at, sort of, high-level revisions for the next iteration. Are there gaps in information collected which could be addressed by the survey, and are there recommendations for adding or removing questions, modifying the questions, to get better answers? And then, we'll discuss this tomorrow.

I also want to tell the audience that you can be involved in this, as well, that HRSA will be sending an announcement out to the Federal -- through the Federal Register very soon about revising the surveys, and we certainly welcome everybody else's feedback, as well, as we come to a final decision on how to modify them before we go before OMB with the -- with the new survey.

So, with that, we are ready to adjourn,

take a short break, and begin the three Workgroup meetings, and Catharine will give us some guidance as to where each of the three Workgroups will meet. So, Catharine?

DR. CATHARINE RILEY: Great, thank you, Dr. Bocchini. This is Catharine Riley. So, we will take a short break. We're going to try to get the Workgroups started right at 3:00. We know that you -- all the Workgroups have a lot of material to get through. There will be HRSA staff just outside the doors here to escort you to the three rooms. They're listed here, your room numbers for the different Workgroups. The Workgroups will be from 3:00 to 5:00 p.m., and again, just wanted to remind you that you do have to have a HRSA escort, so kind of follow the -- the groups that are going out to the Workgroups. If you're not staying, of course, you can -- there's the -- the main exit through the -- the entrance that you came in. And just to remind everyone, we'll start again tomorrow morning at 9:30 a.m. and, Cathy, you have a question?

FEMALE SPEAKER: Just real quick -- Alaina (phonetic) sent out a correction for that room; is that correct, that we're in a different room?

(Off-mic speaking)

DR. CATHARINE RILEY: Oh, yes.

(Off-mic speaking)

DR. CATHARINE RILEY: Sorry, so Education and Training Workgroup is Room 5S --

(Off-mic speaking)

DR. CATHARINE RILEY: -- 5 West -- with a "W" -- 5 West 11, this way. Okay. Follow Alaina right there if you want to get to that room. Okay. Well, great, thank you all so much, and we'll see you tomorrow morning, 9:30 a.m. Thank you.

(Whereupon, the above-entitled matter was concluded at 2:47 p.m.)+