>> Welcome everybody. You're here for the 11:30 session which is evaluating usability of early intervention, detection and intervention. I would like to welcome Maria and Kelly as our presenters for this session.

>> Good morning everyone. My name is Maria Sanchez. I'm an evaluator on the team. With me also Kelly. We are presenting together.

>> Okay. Good morning everyone.

My name is Maria Sanchez. I'm an evaluator on the team. Today's session is early hearing detection and information system, audiology report. Thanks so much for attending this session. Next slide. Just one minute. We're having issues with the -- it's not showing. It's not working.

>> Okay. Thanks so much. This is our disclaimer. This presentation is not the official position of the CDC. By the end of this session we would like participants to learn evaluation methods used by the early hearing detection and information program to assess usability of the information system audiology and summarize findings on the ADIS arm and also we would like to provide some recommendation that may help improve reporting in the ADIS arm. So let's start with the evaluation overview. The early detection and detection information system is a dynamic database tool that supports jurisdiction of EHDI programs.

This tool gathers level information about infants and children who do not pass hearing screening and receive audiology diagnostic follow up services.

This tool has ensured that all deaf and hard of hearing infants and children are identified early and receive intervention services. The CDC currently funds 39 jurisdictional EHDI programs to enhance their EHDI IS and improve documentation of audiology diagnostic testing for infants who do not pass the newborn hearing screening. To support program improvement jurisdiction had conducted evaluation of the usability of the EHDI audiology reporting model. So why to focus -- so why usability so important and why jurisdiction conducted this evaluation. Usability is considered a key quality attribute and integral determinant of user satisfaction and utilization of health technologies. Studying the attribute of the EHDI's arm is a sanction and best way to understand how the product interacts with audiologists and data reporters. The benefit of usual technology includes reduced training cost, enhanced performance and increased acceptability of reporting. This was a one year evaluation to understand how data reporters interact with the EHDI arm and also to make improvement based on the source. It's to understand how they are reporters interact with the EHDI reporting model. This evaluation started in March 2021 and where CDC and jurisdiction worked together developing evaluation plan and engaging stakeholders and then in '22 jurisdiction completed data collection, analysis and evaluation of stakeholders and CDC. Let's show a little bit about the evaluation design. So usability, we define usability as to which a product can be used by a SES -- specified users in this case audiologists and reporters and there are three main attributes, effectiveness, efficiency and satisfaction. These three attributes were evaluated early for this evaluation. Here are the definition for each attribute affecting the degree to which an interface facilitate users in accomplished tasks and goals. Efficiency was defined as the length of the time required to complete a task that usually completed task go from entering into the EHDI information system, reporting model, finding or locating a patient or infant and their documenting the diagnostic result. The last attribute satisfaction, subjective measures regarding a user's perception of usability and evaluation. So basically to assess the satisfaction of audiologists or the reporter using the EHDI's arm. So --

[ Indiscernible ]

Evaluation design in general.

The first column describes the definition of these three attributes. The second column we can see here the evaluation question that address each of the attributes. For effectiveness the evaluation question was are data reporters able to complete a task error-free? The second attribute, efficiency, the related evaluation question, how much time is required to complete a task and the third one satisfaction, the question was what is the degree to which data reporters perceive the audiology reporting to be usual.

The third column describe the indicator of success for this evaluation. So for effectiveness jurisdiction evaluate the percentage of tasks successfully completed error-free. And without assistance. And efficiency, time to document in the EHDI arm and for satisfaction, we know that satisfaction attribute is a subjective attribute but nevertheless we found valid instrument to assess satisfaction. CDC recommends to use the SUS scale which is reliable scale used for many years used to evaluate the usability of the information system. And I will describe --

okay. So now here in March 2022 jurisdiction shared evaluation findings with CDC and the stakeholders. 33 evaluations report were included in the analysis. We excluded nine recipients. The reason for exclusion was we found six jurisdictions that conducted a very different evaluation, focus evaluation or they used some indicators that were very different to the general of the jurisdiction. So we excluded from this report. But also we found three recipients that audiologists do not report directly into the EHDI and sometimes they report by paper.

Old reports were reviewed, categories were developed to analyze quantitative data. They were calculated using Excel.

This table representing the indicator of success. To present the result today. For each of the attributes we gather responses into three categories and you can see the criteria on the second column. So we will see these in detail when presenting the evaluation result. Okay. I will turn to Kelly to continue with summary of the evaluation findings.

>> Who is our technical support in here? Thank you.

>> I'm sorry.

>> Okay. So as you can see we'll start off with how did the states actually collect this data for their evaluation. As you can see the majority of the states used surveys as a method to collect it. Again, this was also when lots of people are staying at home working from homing. So one-on-one interviews or direct observation might not have been as accessible to some states depending how open their state was or how willing audiologists were willing to have them come to their office or watch or trial it. We did say 30 overall states were included in the study but you can see the ends in all of these columns are less than that. Again, that's some because their standards for each question they had for effectiveness, usability might have been different than how we categorized and were able to subgroup them. These are the ones that all did it the same way as far as timeliness and satisfaction using the scale.

And you can see even some states used more than one method for one. There was a lot that did.

Maybe EHDI IS analysis and maybe a survey that answered some questions as far as how effective was their system and were they able to do it without assistance and task-free.

Overall for the effectiveness, these are the ones we're able to do without assistance and were able to be done correctly.

Overall most audiologists are able to report information into the EHDI IS without any assistance and do this accurately. So that's great. We know that our EHDI IS systems are able to capture that data, report it accurately or the audiologists feel confident that they are reporting it accurately again if it was a question to the audiologist are you able to do this. As far as the time overall to report these results to the EHDI IS, over half of the ones included was able to be done in less than ten minutes which seems to be a reasonable time. You see we also got a few other variable responses from the states. The inability to rapidly find the child was a barrier but they didn't necessarily give us how long does it take overall. There was concerns with the timeliness which doesn't elude to how much time does it take and one state had a response reasonable which again doesn't really tell us is time a barrier or is this a problem in the usability of your EHDI IS. But again over all over half states did some time categorization as far as capturing information. Most were less than ten minutes. And then for the satisfaction results, again, the recommended scale was the system usability scale. Do you want to talk a little bit about the system usability scale?

>> No. Yes. As I mentioned earlier, that was -- the scale is a valued and reliable scale and is very recommended scale to evaluate satisfaction among users of any information system.

We recommend jurisdictions to utilize this among the 30 recipients, 12 used that and those are the results that we are presenting. Others utilize different scales. Kelly will explain later. Some of them which value the scale used but others develop their own custom scale.

>> So a little more on the SUS scale. It's ten questionnaire with five response options for the respondents from strongly agree to strongly disagree.

Somewhat similar to a Likert scale but different in the format of the questions posed in the SUS. So you can see overall these are the results gathered from the states that use the SUS scale. There was a few reports that had very poor usability reported by the audiologist and some that had very excellent and strong -- above average usability where you can see the average fell into the category of an average usability system.

So there's definitely a lot of room in some of the states to improve the usability in the EHDI IS to document that information but most EHDI IS systems seem to be okay. This goes into the SUS results a little bit more. Again, the average was 67. Two state EHDI IS arms had above average, seven had average and three below.

Again, the majority of them fell within that average group as far as usability. As Maria indicated there was seven other states who used the Likert scale to get at the information as far as user satisfaction with the EHDI IS arm. Likert scale is a five point scale rated from very unsatisfied to very satisfied.

You can see the average as far as -- so this was categorized as far as like again we are limited as to what the states provide us in this evaluation, so we used what percentage of the respondents provided either satisfied or very satisfied. So on average again most of them were average as far as usability and the satisfaction of it.

There was a few strong states that had a lot of reporters that said they were highly satisfied with it and again kind of like the other one, there was a few that said they were very unsatisfied with the EHDI IS arm and had lots of recommendations to improve upon the usability.

So some of the technical issues that in detail that the states report are the audiologist reported when they were provided opportunities to provide feedback. Some of it was system access issues. So inability to log in. Work browsers weren't compatible. Like they had to use a certain browser in order to have optimization for their EHDI IS but their hospital system might not allow that. Password reset is required too often. I think that's required of us now because of these concerns about people trying to get in and all of that stuff and locating the right patient was a huge theme that came up again and again and again. You can see one-third of them, the states that we had had issues in locating the child.

Systems doesn't accept baby's name changes before they get to the audiologist. And so those sort of things. Spelling errors can be an issue if it's coming from the birth certificate and say the clerk put it in wrong sort of thing and if the EHDI IS is getting it from the birth certificate and the audiologist is searching and no one catches it, they can't find the kid because the name is spelled differently. So on and so forth.

There's states that had audiologists reporting that there was record completion issues. That data didn't save properly. Obviously that's a pretty big issue if you're going in there and can't save it. And again more issues with saving it and then system required input wherein put was not needed. It might not have been -- maybe it was a test that wasn't complete completed but no way to document within the module itself. Some of the limitations of our study. For each attribute. The number one method was the survey. For effectiveness 45% used the survey efficiency 67% and satisfaction 90%. But the survey responses is hard to get anyone to complete a survey. No one wants to complete a survey.

Everybody wants information but no one wants to complete anyone else's survey which is mind boggling because we're always doing it. So fill out facility survey. But you can see on average there was a response rate on average for the surveys of 41%. Again, there was some states that had a lot higher participation in them. Those tended to be the smaller states that had a handful of audiologists that they probably have a good pulse on and some states only had 13%. Depending on what the audiologist's motivation was for completing it they might be someone that was a user using it all the time and didn't have any issues or maybe it was someone who only accesses the system once a year and they're going to have more usability issues just because of their lack of frequency of using the EHDI IS. There's also limitations as we said at the beginning. There's differences between how the states determined error-free or without assistance. Some of them that actually did an EHDI IS analysis were able to see which ones had errors when they looked at certain things. Some of them asked the audiologist are you able to do it without assistance, what percentage of the time and if they're going to say 100% of the time I don't ever have to ask for help but we try to group them as much as possible with the similarities that we could in order to do this analysis. Then again for efficiency if you're asking them in a survey how long does it take you, well, gosh, I don't know, how long does it take you to do it, ten minutes, 15 minutes. I don't really know but if you sit there and watch them do it click by click you have a better idea as far as how accurate that time estimation may be. Another instance of limitations with it, some sites only did intervals of ten minutes. Did it take less than ten minutes where some states got even more smaller, five minute intervals or some had an open field. Again there was some limitations as far as how potentially that could impact our results. Some of the opportunities, so platforms that can operate on all Internet browsers. Like I said before, one of the resounding errors that they couldn't get into it or didn't perform optimally, that might be reason why it wasn't saving when they went in, if it was supposed to be on chrome and they went in with edge. Retrieving non-exact matches or allow users to search other identifiers like mother's last name. Coming from the state I know we had strong -- like these were the only ones that our legal department would let us do but maybe your state has opened it up or maybe your legal person changed and maybe this person has different ideas as far as what you can and cannot allow users to search. Providing easy mechanism to report system bugs or errors. There should be something in your EHDI IS to say report errors here so they don't have to hunt you down or who do I tell when I can't save rather than I just rumble in my office and say maybe do it later and forget and it's lost to documentation. Simplify reporting. Figure out what you need, what you don't need.

Provide opportunities for to report details. Some audiologists want to give a novel and allow them to have a free text so they can write whatever details they want.

Provide tip sheets or quick guides within the EHDI IS and color can also influence it. I don't necessarily like red lettering, it has like negative.

Figure out a coloring pattern that might be more smoother, easier on the eyes. Other opportunities within the audiology community. Regular communication with them. Also if you're planning enhancement get the audiologists included.

They're the ones who are the ends users. You want to make sure they're included in your decisions. If you have an opportunity with Zoom and Teams get them included. They want the system user friendly and they're the ones who are ultimately using it. So have them involved in planning enhancements.

Provide reports to them as far as their performance. Length and timeliness to report or percent error-frees. Try to do stuff like that so they know how they're doing. They might think they're doing great but in reality they're messing something up and you're going in on the back end and fixing it.

Oh. Okay. And then as recommended by audiologists, please consider providing clarity on the why of reporting.

You know, don't just report --

let them know what happens. Why is it so important. How is this information being used to improve the outcomes. Again, it's all about what happens after this, I don't just report it into a whole and you're just reporting out these numbers.

There's a use for it. We're trying to get them into intervention, other resources that might help these kids and families. Provide clear and consistent guidance and training on how to report and don't forget it's not just audiologists reporting.

Sometimes it's the front desk staff. So make sure they're included in these conversations, too. Any final comments?

>> I just want to mention that recipients conducted a previous evaluation a couple of years ago and these results are consistent with previous evaluations. So looks like in the past recipients also found issues with the system searching for patient or audiologists report that was --

[ Indiscernible ]

For them to locate the patient in the system. Still there are some issues with the system and still there is a gap on those systems that need to be filled and sometimes those errors came from the hospital. So everything is together and an important issue. Also I was attending some stakeholders meetings and that was the topic that was discussed again. So just important thing to consider for future action items with the system or engaging the stakeholders to try to solve an issue.

>> So that is it. I think there's maybe 30 seconds for questions. Sorry for all our technical issues. I never thought I would be that person not being able to manage a computer. But here I am. Any questions? Yeah.

>> Yes, please.

>> [ Indiscernible ]

[ Off mic ]

>> So Suzanne asked -- for the interpreter's behavior and the CART Suzanne asked why isn't there a report card and grading system like many other providers? There's other providers that have these report cards, you can look them up as far as how well they do X, Y and Z. I do know -- I'm pretty sure some states do do that to some level of their providers and it's not consistent across the board. But it is good, something to consider to bring up to your state EHDI coordinator to see if that's something that they have the capacity to develop and build and report and that was kind of back into the suggestions and opportunities is to provide that regular feedback, how are you doing on certain sort of things. So that sort of thing but not exactly to what you said. Any other questions? I think we're done.

Thank you.

>> Thank you so much.

[ Applause ]

>> Please make sure you go to the app and complete the evaluation for this session. You have a decent size break right now. So please make sure you go up and take a look at the poster presentations. Visit the vendors in he adjacent room and we will see you this afternoon.