>> SPEAKER: We're just waiting for the room monitor. Thank you all for being here. Just waiting for the room monitor. Maybe, for the sake of time, we'll go ahead and get started. I have a little timer up here, I promise. I'll stick to it. Give everybody a chance to sit down. Well, thank you all so much for being here. It's really nice to see everybody. We're going to be presenting, um, creating an online educational module for medical home providers on caring for children who are deaf and hard of hearing. My name is Arielle Spellun, and I'm a third-year developmental behavioral pediatrics fellow at Boston Children's Hospitaller in Massachusetts and the EHDI co-chapter champion for Massachusetts, and I'm joined by my esteemed colleagues who will introduce themselves.

>> SPEAKER: Hi. I'm Sarah Stone, and I am the EHDI coordinator for Massachusetts.

>> SPEAKER: Hi. I'm Jennifer Fleming, and I'm a parent, and I'm also the special projects coordinator for the program, Universal Newborn Hearing Screening Program.

>> SPEAKER: Hello. I'm Jane Stewart. I'm the co-chapter champion with Arielle.

>> SPEAKER: So, if some of you saw our presentation on virtual EHDI last year, we'll, hopefully, be sharing some exciting new updates, um, and if you're new, welcome, and we look forward to sharing our work with you. Um, so, before we begin, just want to disclose that our funding was made possible by a grant, um, through the university newborn hearing screening program in Massachusetts. So, throughout the presentation, you'll notice intentional use of certain terminology, such as deaf, hard of hearing, hearing differences, or reduced hearing rather than hearing loss or hearing impaired. These word choices are deliberate and reflect the culturally-appropriate terms by individuals who identify as such. The acronym, DHH, deaf and hard of hearing, was meant to be an inclusive term capturing culturally deaf, deaf, and hard of hearing people and all people with reduced hearing. So, the goal is that, by the end of the presentation, we hope that all participants will be able to describe strategies for developing interdisciplinary educational interventions, participants will be able to apply knowledge gained about assessment of educational interventions to their own work, and participants will be able to identify opportunities for cross-state EHDI program collaboration in generating and publicizing educational materials. So, I'd like to start today, just to get a sense of who's in our audience, um, you'll have to bear with, the technology's easier, when you're on Zoom, presenting, so we're going to be creative today, but if you want to scan with your smart phone, you can just open the camera app, and the link will automatically come up, you don't need a special app, or you can text med education or go to the website, poll ev.com/mededucation. So, I'll give everybody a chance to do that. Okay, we're going to talk about flexibility a little bit later in our presentation, but an example of being flexible during your educational intervention, so, you can go ahead, it should show you a map on the phone and, then, for anybody that entered, um, later wants to join, all of the poll everywhere questions that we have embedded will, at the top, you can just go to that same website, you don't need the QR code again, but that's great. So, it looks like we have people from all over the country, um, represented here, um, which we'll talk about a little later. One of the things that we thought was really important in our intervention is making sure that it's accessible and available for EHDI, um, stakeholders everywhere. Our next question. Did a poll pop up now on that same link? Cool. So, a nice, diverse representation of stakeholders, um, which, again, we'll talk about in a moment, but why it was important for us to include all of these people in developing our intervention and, then, two more questions. So, what is everybody's current role? Are you involved in education in your own state? You have been in the past? You're in the process? You're hoping to be involved? Awesome. So, lots of, we've got some seasoned veterans with, um, expertise, um, in medical education, and a lot of people interested to start. So, hopefully, this presentation will, both, highlight a project we've been working on, while also helping you to get started in your own projects and share some of those with the group. Okay, um, so, briefly, just a little bit of background information, um, that's, probably, review for most people in the room. We know that hearing differences are one of the most common developmental differences, with one to two out of every 1,000 children born with a developmentally significant hearing difference. That number increases to about three to five out of 1,000 by the time children reach school age, and up to one in 20 by the time children reach adulthood. Although the age of diagnosis of hearing differences has been reduced significantly due to universal newborn hearing screening and a lot of the people in this room who made that happen, children with hearing differences continue to experience sub-optimal developmental outcomes on the whole compared to hearing peers due to many factors, including the accessibility of interventions, the timing of diagnostic evaluations, referral to and enrollment in early intervention, levels of reduced hearing, presence of additional disabilities, differences, and diagnoses, and a preventable lack of language access. Despite the high incidence of childhood hearing differences, primary care providers report feeling ill-equipped to care for deaf and hard of hearing children, and relative to other lower-incidence conditions, do not traditionally receive extensive training in this topic. At the same time, parents of children with hearing differences report turning to their PCPs for guidance. So, what we don't know is updates to a lot of this information, because what I'm presenting on this slide, as you can see, is mostly from, um, older studies that were, um, doing needs assessments on primary care providers. We also don't know how best to improve primary care education on this subject and whether or not educational interventions that are aimed at improving primary care expertise on caring for children with hearing differences will lead to improved clinical outcomes, most importantly, improving adherence to evidence-based guidelines, such as the one-three-six rule. So, as most people are familiar with, um, according to the one-three-six rule, um, we want to make sure that children are screened for a hearing difference by 1 month of age. Those who do not pass have a diagnostic pediatric audiologist evaluation by 3 months of age and, by 6 months of age, are enrolled in early intervention. So, as of 2020 EHDI data, we know we're doing a really good job with hearing screening overall, with 92 percent of children screened by 1 month, but those numbers drop off, and only 60 percent of those who don't pass undergo diagnostic evaluation by 3 months. Then of those who have a confirmed hearing difference, only 61.4 percent are enrolled in EI by 6 months of age. So, there's significant room for improvement, and we hypothesize that by educating primary care providers on EHDI guidelines and caring for deaf and hard of hearing children in a medical home model, we'll improve developmental outcomes by improving adherence to these guidelines and helping families prioritize interventions that ensure language access during the critical period for development, while also being part of the team monitoring overall development in their deaf and hard of hearing patients. So, I'm going to turn it over to Sarah.

>> SPEAKER: So, anyone who has a HRSA grant is very familiar, um, with the requirements of that. HRSA has asked all of the states to increase the number of health professionals and service providers trained on key aspects of the EHDI program by 10 percent. Um, so, that's a pretty big goal and, um, pre-COVID, one of the things, you know, we did things very differently. Um, we relied on folks, like Arielle and Jane, to go in and do in-person, um, you know, in-person meetings and to talk about EHDI, we looked to newsletters, um, we do letters to pediatricians, um, for every child who is identified with reduced hearing. There's lots of things, lots of strategies that we have tried, um, back even, you know, 20 years ago, we had posters that would go in pediatrician's offices, and it would be, like, you know, this is information that you need to know. These strategies, um, once COVID hit, weren't going to be as effective anymore, and it also, sort of, changed some of the way we were able to use funding within our own program. Um, so, Arielle had talked to us, um, 2017, is that what we decided, um, about doing, um, a video, um, for, um, for providers and how to train, um, both current, um, medical providers and medical students. So, this is one way that we were looking to provide the emphasis on the one-three-six, um, to maintain that family-centered medical home, and for pediatricians to be equipped, um, to really answer the questions of the families that they were serving.

>> SPEAKER: So, before we talk about our specific project, we wanted to share some information just about clinical education in general, so that all of our audience participants can bring these sort of strategies back home to your states when you implement your own educational interventions supported by your EHDI program. So, one of the models used to describe an educational intervention, um, that some of you, especially in education might be familiar with, but it's often used in medical school, is something called Kern's six steps. The first step is identifying the problem, both in the medical and clinical evidence and, also, understanding what the current approaches are versus what would be the ideal approach to a problem and, then, addressing that. Once you've identified the problem, the next step is doing a needs assessment to figure out who are your target learners, how do they learn best, and what are their learning needs. Next, you want to set what's called your broad goals and your specific measurable learning objectives, which can be done using something called Bloom's taxonomy, which we'll talk about all in detail. Once you've set those based on your goals and objectives, you develop an educational strategy, including creating the content of your intervention and the methods for instruction. At that point, you're ready for the implementation stage, which includes identifying your education team, securing resources and funding, and administering the educational intervention. Finally, when all is said and done, you complete your evaluation of the individual learner experience and the program, eliciting feedback to improve your intervention for future use and making any changes necessary to ensure that you're meeting your goals and learning objectives. So, now, we're going to break this down using our intervention as an example. So, as we've already talked about a little bit, identifying the problem, at this point, is, kind of, the easy part. So, we identified provider, primary care provider lack of knowledge and comfort in caring for children with hearing differences and providing medical home services, um, and the loss to follow-up that occurs, um, along the one-three-six pathway as our problem that we wanted to address. Currently, there's evidence that achieving these guidelines improves outcomes, which we've heard many times already at this conference, which I won't talk about today, that are endorsed by all of our professional organizations. Based on the numbers presented earlier, as I said, we have room to improve. Next, we had to think about who our learners are. When we're talking about medical home and providers who are in contact with families after a new diagnosis of a hearing difference, we wanted to ensure that we're being inclusive of all types of providers, so that means pediatricians, family medicine doctors, nurse practitioners, nurses, physician's assistants, social workers, early intervention providers, and if I've left anybody off the list, please, educate me and let me know, because we want everybody to be available and involved in this. Literature supports that people in these roles are not as familiar with the guidelines and details and that families often turn to them for that sort of support. We also looked into the literature to see how these professionals learn and, as mostly adult learners with clinical responsibilities, we felt that a self-directed learning opportunity that could be done at anytime would offer an incentive, um, and offers an incentive to participate would meet our learners' goals. For us, we also wanted to use our intervention to create an opportunity for us to update the needs assessment. So, like I talked about in the beginning, we don't have a lot of updated information on what primary care providers do know right now, since those studies are at least ten years old, um, and, so, we wanted that to be part of our assessment, and we also used, um, information that we had gathered from our previous study, which was doing this as a medical education intervention with residents, um, at Boston Children's. Just going back, um, to one other thing. So, while we planned, together, this information using surveys, a needs assessment can really be done in a bunch of different ways. So, some of those are focus groups, which is where you might sit down with the stakeholders in your community and ask questions, um, have somebody recording that information, so that you can learn from it. Also, structured and unstructured interviews that offer a one-on-one setting, so that people who might not want to present in front of a group have an opportunity to share their opinions. So, once you've identified the problem that you want to address and completed your needs assessment to focus your intervention, the next step is to set goals and objectives. So, goals are broad and apply to the entire intervention. So, our goal is to improve primary care provider knowledge on caring for, um, this unique population and their families and, then, in order to meet these goals, you want to break them down into specific measurable learning objectives, and that's where something called Bloom's taxonomy comes into play. Bloom's taxonomy is a framework that was developed to describe the objectives of learning interventions and specific learning outcomes. So, at the bottom, you can see, um, in dark blue is the word remember, so, learning categories, learning objectives for this category are, simply, recalling facts. Once learners understand facts and they understand them, they can apply them. For example, demonstrating knowledge gained by solving problems, such as case-based clinical examples. Beyond that, though, the next higher-order cognitive goal for learners is not just to apply the knowledge, but be able to analyze novel information related to a topic and examine, question, and test hypotheses. Next, you are able to evaluate. So, an example would be a practice participating in an intervention, then looking at their own outcomes and evaluating where there are ways that they might improve those. Finally, at the top of the pyramid for what you can hope to achieve with learners is that the, with the material you present, they're able to create their own thoughts, investigations, and interventions and, in clinical education, this is where we think about whether your learners are able to take what they learn and lead to a clinical change in their practice, something that's often very difficult to study, but is, ultimately, the goal of medical education intervention. So, for us, the objectives that we established were for our learners to recognize the diversity of experience of individuals with hearing differences, to discuss the physiology and epidemiology of childhood hearing differences, to outline the process for hearing screening and diagnosis, to describe the initial management after a new diagnosis, explain the importance of language access for development, and identify interventions that are aimed at restoring language access and, finally, to be able to describe what the role of the medical home is in facilitating all of this care. So, after you've established your objectives, you want to define the educational strategies that you're going to use. The most important step in this part of the process is identifying the key stakeholders who need to be involved in developing content to ensure that it's accurate and represents a diverse range of perspectives. For our project, we felt that this was a very critical step, given the complexity of caring for children with hearing differences and some of the historical context that has happened with communities with hearing differences and other minorities. As a result, we decided to include input and stakeholders representing developmental and behavior pediatrics, primary care -- psychology, public health, audiology, speech language pathology, early intervention, um, deaf advocate and community perspectives and, most important, parent and family perspectives. We wanted to make sure that all of the content, as I mentioned in the beginning, is generalizable to all states and territories in the U.S. and not to a specific one and, in order to accomplish all of this, we had multiple rounds of feedback, um, that were, both, anonymous and known, sending the content materials out to many stakeholders and have also undergone anonymous peer review through the platform that we're using to create the intervention, which I'm going to talk about now. So, once we had our content, we had to determine the method of instruction, which I think is very important for all of us, coming from very different states. Um, some might be much larger than you can drive to in a day to deliver a talk versus, in Rhode Island, where I grew up, if you drive too far, you might have actually left the state. Um, so, when deciding the methods of instruction, you, again, want to go back to your needs assessment and your learners and think about who your target audience is and what method is going to be best to meet their needs. So, as Sarah was mentioning, in the 21st century, that means deciding whether it'll be online or in-person, synchronous, so, something happening at the same time, or asynchronous, such as a self-directed module, pamphlet, or presentation. Given our goal to reach as many people as possible, we chose to do an online asynchronous learning platform that's called Open Pediatrics. It's a web-based medical education platform that functions as an open-access, peer-reviewed repository of educational content, with videos, simulations, and courses that are all available for continuing medical education credit or for free. As I mentioned, all

content is free of charge, or you can pay for a fee for CME, and what's nice about this platform is that CME is offered for nurses, physicians, pharmacists, physician's assistants -- and social workers, and they're working on, um, because of some conversations we've had, um, access to midwives as well, um, and, really, open to just making this available to as many professionals that need it. Accreditation for the continuing education portion is through Boston Children's Hospitaller joint accreditation program. There are currently over 85,000 registered users. Videos have been viewed over 16 million times. Um, I know, as a resident, their ventilator simulator was very helpful to me in ICU at night, and it's used in every country and territory worldwide. So, here's an example of a screenshot of what a course looks like. There's captioned video in the middle, and the captions are often available in multiple languages and, then, you can see, on the side are some interactive features and, now, I'm going to excitedly give you a preview of what our course will look like, although we are waiting for a few peer reviewers who have not answered yet and, so, it was supposed to launch last week, and it will, hopefully, be next week. While this is loading, um, I'll just share that this is, as somebody who's new and younger to the EHDI world, this is an example of one of the benefits of networking, um, at these meetings and meeting your people, um, and knowing, hey, could there possibly be money to do this, which allowed us to pay for animators and interactive technology versus just a recorded power point. So, for those who were here last week, last year, that's what we've been working on for the past year, because we had a chance to do that with the funding that Sarah helped us secure. So, just to click through a couple of examples, so, the learner will open up to this, um, screen that has all of the information, like the objectives we've talked about. Importantly, and I'll let, um, Jennifer talk about this a little bit later, one of the things that makes this really unique is the parent testimonial videos, and I should say parent and child, because we have a lot of, um, surprise visits from the children in the videos, that it's just really powerful, talking directly to the pediatricians and primary care providers about what went well in their experiences, what helped, um, after they were first identified as having a hearing difference or their child was. We also had families, um, review the entire content of the module as well, which Jennifer will speak to. Other exciting things are the interactive features of it. Um, so, I don't know, those who were just at Dr. Sheer's presentation, um, he was one of the ones who helped us to develop this content and all of the different etiologies of hearing differences that a medical home provider needs to be aware of, and you can click on them to try to make it more exciting. The next thing to share is that there are videos that include animation and are all about, um, for example, this video that I'm highlighting is about the one-three-six rule, and the nice thing about these videos is, in the final version, they're all going to have English captioning at the bottom with an option for other languages, like you saw in the full open peds section, as well as ASL interpretation for any video or voice-over that's part of the module. The videos are also all going to be available for free for anybody to use on the open pediatrics YouTube page and, so, we created videos on the diversity of experiences of individuals with hearing differences on how to read an audiogram, um, which one of our esteemed audiologists who helped teach me all of this is in the audience right now, so, thank you, but how to read one, how the ear works, what the one-three-six guidelines are and what's the evidence behind them, what are the different interventions that are aimed at restoring language access. So, early intervention, sign language, cochlear implants, hearing aids, and aural rehabilitation and speech therapy and, so, all of those are available, will be available on the Open Peds site for any EHDI program to embed or anybody to embed, um, into their own learning and educational initiatives. Then, the last thing just to share is we wanted this to be, um, something that could be used by, like I said, all of the different EHDI programs and, so, we created a lot of interactive features. So, for example, um, if you want to click on Massachusetts, it will bring you to the Massachusetts university newborn hearing screening page, and I'll let Jen speak to this, but one of the most exciting things about this is that it will come with a PDF of resources that can be printed out for patients and families, um, that the provider can give to them, that is a compilation of all of the resources that, both, our providers and, more importantly, our family advocates put together, including, um, webinars, books, organizations, and things that are available for anybody, regardless of where that patient is. So, one thing that's really important, now that we've looked at, um, our educational intervention, that, you can kind of tell, we made sure we were thinking a lot about is something called adult learning theory. So, as I mentioned, a lot of those parts were interactive and meant to stimulate the participant, um, to learn in a certain way, and adult learning theory was something that was developed in the 1970s, um, and it was when people realized that teaching adults is actually very different than teaching children, and adult learners have unique needs. They're self-directed, um, as we can see by all of us being here, when we could otherwise be on a beach, not in Massachusetts. That's not a good joke. Um, adults learn by doing. Um, we desire relevance, so, we want what we're learning to be applicable to what we're doing in our day-to-day lives. We learn by utilizing our own experiences. We process things in multi-sensory modalities, benefit from repetition, and are goal-oriented. So, what is this educational intervention going to help me to achieve, for example, in my clinical practice? So, those are just some important things to, sort of, keep in mind when you're thinking about developing your own intervention. How is it going to fill these principles for your participants, to keep them excited? So, now that you've developed your intervention and your content and your materials, the next step is implementation. So, first and foremost, you want to identify your team. So, who's going to be conducting the teaching, disseminating the materials, collecting evaluations or data from completion, um, distributing the continuing education credit? Um, most importantly, with all the hard work you've put in, how are you going to fund your project? Although typically used for developing hypotheses and grant-writing, we thought that something called the finder criteria would be helpful to share here. Just out of curiosity, who here is familiar with the finer criteria? I actually only learned about this very recently and thought that it was a really great approach. So, it stands for feasible, interesting, novel, ethical, and relevant. Although, again, this is typically applied to developing hypotheses for big grants and, when you think about your project, it's a really nice frame for thinking about your own interventions and how you're most likely to convince the person you're asking money for to give that to you. So, feasible, meaning, like, are you going to actually be able to achieve this? How can you really write out, in your goals and objectives and your aims, that, like, you are going to be able to achieve what you're asking for funding to do? Interesting, how is this exciting? How is this going to, sort of, pique the curiosity of the person you're asking for funding from? Novel, has this ever been done before? If it's something that has been done before, can you spin it in a way that what you're doing is unique, so that you can add that aspect to the funder to be able to say they funded? Is it ethical? Do you include all of the appropriate groups and stakeholders? And have you thought through barriers and ways that you might make sure that everybody has access to the intervention you're creating? And is it relevant? Does it matter that you're doing that? If you can prove all of that in your development of an application for funding based on evidence from the research world, it helps you be more successful, and I'm sure, um, same applies for EHDI. It worked in our situation. So, um, and, then, like we talked about, EHDI specifically, having money that might be able to be put towards some of these things. So, then, once you've created your content, you're ready to administer your intervention and, for us, one thing that, again, was really important is having a diverse set of primary care providers in Massachusetts who would have access to the intervention and, so, we use something called, or we're going to use something called purposeful sampling. So, what we've done is we've reached out to primary care provider list serves around Massachusetts, as you can see, a lot are clustered in eastern Massachusetts and, because of conversations that happened this morning, we have some new connections to western Massachusetts, which is really exciting, um, and what we're going to be doing is sending out a link and a description of the module and the study to all of these primary care organizations, and anybody that participates during the pilot period will get free continuing education credit for participating, um, and we're hoping, um, to get at least a sample size of 193 providers, because, again, while it would be

great to just send the intervention out and hope that it works, we want to be able to prove that it's helpful, makes a difference, and get feedback, so we can improve it, if we need to and, so, that was our decision for starting with a pilot study of it. So, I know that this is at the end of the assessment, sort of six steps, but you really want to be thinking about your plan for evaluation and feedback, um, all along while you're creating your educational intervention, even though you're going to be performing it at the end, and what I mean by that is, first, how are you going to assess whether your individual learners' needs were met and whether the program as a whole meets the learning objectives and the broad goals? And, if not, where can you modify things the next time around to improve the chances of meeting these? So, similar to the needs assessment, this can be done in many different ways, but surveys, interviews, focus groups, and, ultimately, being able to measure not just whether your learners met the learning objectives, like on the bottom of that triangle from the beginning, but whether or not your intervention led to a change in clinical practice is the gold standard of medical education interventions that most people are striving to, but, as you can imagine, that's really, really hard to achieve, because there's so many different confounding factors that could lead to a change in clinical practice over time, not just participating in the educational intervention. So, because we have to have a framework for everything, in medicine, there's a framework for developing your evaluation. It's called kirk Patrick's, if anybody's familiar with this, and this includes evaluating whether learners responded positively, so, that's those questions of, like, did you enjoy this intervention, did you enjoy this lunch-and-learn kind of thing, were satisfied with the training. Next, did it lead to a change in attitudes and perceptions? So, if you asked beforehand, do you feel comfortable communicating with someone who uses a different communication or language strategy than you, was there a change before and after? As you go up the triangle, you want to see whether participation in the educational intervention led to new knowledge and skills to be acquired. In developmental peds, we have the challenge of that being harder to measure than whether or not someone intubated someone successfully, but I think that there's a lot of opportunity and, actually, we talked about, today, different measurement tools for seeing, um, how knowledge and skills are acquired. Then, finally, you want to see whether there was a change in professional behavior. Did the intervention ultimately lead to a change in clinical practice that benefited the patient? Which is the ultimate goal of everything that we do. So, for us, in order to understand this, embedded into our Open Pediatrics platform, there will be a pre-module, post-module, and three-month post-module survey. They all contain eight subjective items, including things like I feel comfortable being the medical home provider for a child who's deaf and hard of hearing, knowledge-based items, including early hearing screening and detection is done by which of the following screening tools, um, and multiple choice items. Three case-based items, um, that emphasize the importance of early intervention and language access and screening for developmental differences and, then, importantly, in our pre-module survey, like we talked about in the beginning, we're going to be collecting demographic information, um, to better understand the needs of our participants before they partake in the module and, then, after the module, we have feedback items, um, that, both, give us quantitative and qualitative information on how participants responded to the materials, whether they felt like they learned the material, whether there was anything that was missing in the material, and whether, in the post-module, whether they believe that it will change their clinical practice. Although it might be challenging to get, we're going to try to get three-month post-intervention follow-up data during this pilot phase, so that we can ask the question, did participation actually change your clinical practice? Because our goal is that, if we can show that participation in the pilot led providers to self-report that they had a change in their clinical practice, then we can use that data to apply for additional funding, to use the module as a directed intervention that could be sent to primary care providers after they have a child who didn't pass or referred on their hearing screen and, then, track, over time, whether having access to that curriculum actually improves patient time to diagnostic evaluation, enrollment in early intervention, and, as some peoples' presentations today, we were talking about, maybe, kindergarten readiness and language levels at age 3, if NIH will give us all their money. So, now, I'm going to skip this for the sake of time. We tried to come up with good statistical analyses to be able to show some of these things, and highly encourage consultation with biostatisticians, if it's not your area of expertise. Um, so, in summary, for our project, we developed the module, we're going to do the needs assessment and evaluate the effectiveness with our surveys, sampling primary care providers across Massachusetts. So, where we are, when we first presented at EHDI last year, we had just developed everything and thought about it. Very excitedly, we're at the pilot phase and ready to launch, um, have recruited our participants, gotten IRB approval, and we'll, hopefully, be able to analyze and, maybe, publish some of the results this fall. As I mentioned, once we have that, we're hoping to revise the module based on the feedback and evaluate that clinical impact and, hopefully, expand and, so, that's why one of the opportunities to share this with all of you is, hopefully, in the future, we can use this in multiple states. I want to let Jennifer talk a little bit.

>> SPEAKER: Thank you. I think one of the things that's so excited about this project is the family voice, just being instrumental throughout all stages of the development of this project. We really wanted to be intentional about which families were selected to participate, particularly in the parent testimonials, knowing that every child is unique, every child is different, every family is different, the goals and the values of the families are different, which makes such an art of what you do. So, the families that we chose represent different languages, represent different technology choices, different communication options, um, different cultures, different values, and different ages and stages. So, we have, um, a preschooler, if you see, one of the videos is, um, Thea's daughter, who's in preschool, came in and, then, we also have elementary school kids in the video, we have middle school and even high schoolers, kind of sharing their experiences as well. I think getting feedback from families, all kinds of different families, really helped expand the resource list and, kind of, brought that to a more broad level. So, hopefully, it will be able to be applied to all kinds of different families. So, thank you.

>> SPEAKER: So, overall, as we've gone through this process, we've had many valuable take-aways. First and foremost, having flexibility in your timeline. Um, as I had mentioned before, we originally were going to just have a 25-minute recorded power point presentation, um, but once we learned about opportunities for animating and recording video that could be shareable, we thought it was worth the wait to invest the time to make that product, and we also had to calculate the additional time, as COVID, kind of, came in the middle of preparing this project. Um, peer reviewing was not at peoples' priority list, and that's absolutely appropriate. Um, another key lesson that we learned was being really open to feedback, um, from all the involved stakeholders, to making sure that we were including diverse perspectives, in, both, the creation and the review of the materials, because our goal was to create a final product that reflected the appropriate, accurate, and evidence-based recommendations of all of the different professional and personal stakeholders that exist in caring for deaf and hard of hearing children, which leads to the last lesson of the importance of humility and respect when working with such a large interprofessional group. It's always very important for us, for me, to acknowledge the limitations in my own individual knowledge base and be able to learn from colleagues and grow personally and professionally while shaping the contents of an educational intervention that will, hopefully, be able to be used for a long time. So, as we come closer to our pilot study, um, we're hoping to begin, um, discussing opportunities for collaboration, um, really, across discipline as well. Um, I talked about a lot of this already, so, I'm going to skip ahead. So, there's one more survey. If people want to fill this out, um, it'll bring you to a Google form, you can either, if you can see it, type the website or scan the QR code, um, and this is if you're interested in partnering with us in the future when we have this ready to go, maybe across other states or, just as importantly, if you have your own educational intervention that you're working on, that you want help with, like, other people bringing to other states, we wanted to make this as collaborative as possible, so we can all work together, because there's no reason to reinvent the wheel, when we work together and we can accomplish so much more. So, I wanted to, kind of, end here, actually, since we have a couple of minutes and just see, I know about 20 percent of the people in the room said they had worked on educational interventions before, so, if you want to share some of the stuff, I'll give people, I think, I put in some questions in the form, so, people are answering those, but if anybody wants to share something they're working on or an idea that they have, um, or, even afterwards, to spark ongoing collaboration beyond just me e-mailing you later tonight, please feel free to do so.

>> SPEAKER: Um, so, I was asking, really, more about the content, and just wondering if you're also going to be including the idea that children who are deaf or hard of hearing aren't identified just from newborn hearing screening. We all know that they're missed or their hearing changes, so, I just wondered if that is part of the module or if that was part of your goals.

>> SPEAKER: Yes. So, excellent, excellent question. So, when we first approached Open Peds, um, and if you go play around on the website, there's a whole section on critical care, there's a section on pulmonary, cardiology, there's nothing on children with hearing differences, um, there's not a lot on primary care-related topics, um, and there's not a lot on child development and, so, they were really excited about us filling that void, but told us we could start with just a 25-minute video of medical home and, so, that's why, for this part, we chose to focus on just the early, the EHDI kind of content and laying the groundwork for why it matters to screen and get language into kids who have hearing differences. Our goal is to create additional modules with them, including later-identified or progressive hearing differences, specifically developmental screening in children who have hearing differences. As a developmental pediatrician, that's something that's become really important to me, both the idea of having high expectations for our children with reduced hearing, um, and making sure that we are providing all of the interventions, while also having a low threshold to refer for additional evaluations, if children aren't meeting their milestones because of increased rates of developmental differences. Um, so, a whole other 25-minute module just on that is the ultimate goal. The nice thing about OPen peds is a lot of their interventions, it's really hard for them to characterize whether or not they've made a difference in clinical impact, but because of our relationship with EHDI and being able to, hopefully, collaborate and tracking some of that data in a clinical outcome, they were really excited about our intervention, because it actually gives an opportunity to measure whether or not there's been a clinical change at a population level. So, they've been really, really supportive of us, and my hope is we'll make additional modules on all of those topics, so that when you open Open Pediatrics, you click on hearing differences, and you get a whole repository of curricula that can really cover the span of what a primary care provider would need to know in the community to appropriately care for that population. Um, but, for now, we tried to squeeze all of that into the module, and we cheated by having the module be interactive and, then, 25 minutes of video, so, we got extra, but, yeah.

>> SPEAKER: Two questions, and you might have already said this. How long is the module? Did you already say that?

>> SPEAKER: I did not.

>> SPEAKER: Okay. How long is the module? And, then, second question, and this might be for Sarah, has there been a discussion of how this is going to be distributed to providers across the state once it gets, once the pilot is finished?

>> SPEAKER: It should take no more than an hour, including the surveys, from start to finish and, so, that's why we're giving an hour of CME credit. As I said, there's 26 minutes of video, but, then, there's seven family and parent testimonial videos as well and, then, all of the clickable content, the pre-survey, which I had my co-fellows, um, test for us, which takes between 3 to 5 minutes to complete, and the post-survey. So, no more than an hour, and that's why you get that one hour of credit. We've brainstormed a lot about, like, after the study phase, how do you get this out, and, like, do you put the link to the course in the discharge summary? When kids are in the nurseries and we have the connection through our universal Newborn Hearing Screening Advisory Committee of all the birthing hospitals and, so, is this something that could be added to the discharge summary? Is it something that we can, sort of, publicize on the different Massachusetts-specific list serves? Could we put it on EHDI websites? Um, that also gets you into, um, having to get approval and wanting to make sure that, if it's going to go on an EHDI or AAP or CDC website, it needs to get approved by them and have the content be appropriate and, so, that's also why we worked really hard to make sure that, while we created it, it fit all of the guidelines. So, we don't have a specific plan right now, unless Sarah has other plans, but those were some of the things that I fantasized about, and I think that's also balancing research and creating an intervention, is that, on the one hand, you want to just send it out to everybody once you made it, because it's really cool, and you want to start working, but if you do it as an intervention, can you, then, show that it makes a difference and get it even further? Which I know means that it's limited and it's not public during the pilot phase, um, but, ultimately, hopefully, we'll be able to share it more once that pilot is over with data that shows that it makes a difference. On that note, um, thank you all so much for your questions. I really look forward to, hopefully, collaborating and sharing this, maybe, at EHDI 2023/2024. So, thank you.

(Applause.)