Leveraging Smartphone Applications to Improve Communication, presented in partnership with Seminars in Hearing

Recorded Jan 12, 2022

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- [Moderator] It is my pleasure to welcome Dr. Lori Zitelli and also Grant Rauterkus. They are gonna present to us on "leveraging smartphone applications to improve communication." It's presented in partnership with our Seminars in Hearing series. Over to you, Dr. Zitelli.

- Hello everyone, thank you so much for joining us here today. We are very, very pleased to be here speaking with all of you. So first, thank you to the amazing team at AudiologyOnline for all of the hard work and dedication that creates all of the content that we love. So, Christy, Kimberly, Carolyn, everybody, thank you very, very much. I'm joined here today by my colleague and friend, Grant Rauterkus, who's gonna have an opportunity to introduce himself here in just a minute.

So we are here today to talk to you about some thoughts and considerations related to using smartphone applications to improve communication. These are our disclosures, so you can feel free to read them in as much or as little detail as you would like. And in the interest of full disclosure, I am drinking decaf coffee, and I wish it was fully caffeinated.

So, with that, let's get started. Okay, after this course, it is our hope that everyone who's in attendance is gonna be able to define the term "m-health" and other related terms, list at least three categories of smartphone applications that could be applicable for users with auditory complaints, and describe three situations where a person with this type of complaint might find this kind of technology to be beneficial. Also, one other note, is we would like you to just keep an eye on the top right-hand corner of the slides, because each slide that corresponds with one of the CEU questions is gonna have a designation. It's gonna be a box with a Q in it, up in that top right-hand corner. So anytime you see that, you will want to pay special attention because it has information that you are gonna need to answer those questions.

So before we really get into everything, Grant and I just wanted to take a minute to briefly tell you what the two of us are doing here, and why we're the ones talking to you today. So, back in 2020, I authored a publication with my colleague, Elaine Mormer at the University of Pittsburgh. It was in Seminars in Hearing in the edition related to wireless connectivity. So this issue was all focused on options for wireless connectivity for individuals with hearing loss. It's a really good edition, you should check it out if you're not aware of it. And the specific publication outlined several types of applications that could be used in this capacity. So, the article had a bunch of links to different apps including the QR codes, some considerations for how to use them, and a lot of that is what we're gonna do today, but in the article itself, which is linked with a QR code here, there's kind of more information and more examples. So you can feel free to access that if you would like to. A QR code is just a visual link. So the way that you would access that is to your cell phone, pull up your camera application, and just hold it over the QR code and let it scan it, and then the link will pop up. So feel free to access that at any time. And Grant, do you wanna introduce yourself and talk a little bit about why you're here today?

- Absolutely, and I'm so glad to be here with you, Dr. Zitelli. So, I'm a medical student at Tulane in New Orleans, but I'm really here in my capacity as an Albert Schweitzer fellow. So, through my fellowship, I've worked with a nonprofit to connect older people in New Orleans to non-hearing and communication solutions like the ones that we're gonna talk about today, really inspired by the article here that Dr. Zitelli wrote. And to do so, I piggybacked on the infrastructure of this nonprofit that primarily offers affordable, self-enrichment education to older folks in the community to set up a combination of group sessions and one-on-one consults, where we introduce people to the full spectrum of these solutions and then work to set them up with people and then practice with them as well.

- This is awesome, and I really hope that other Schweitzer fellows get ahold of this information and replicate it around the country. So, this is now your job. We have a couple of Schweitzer fellows at Pitt who are doing some really exciting things as well. It's a great program.

Okay, so let's get started with a little bit of background information then. So, people started talking about e-health or electronic health, like 20 years ago, probably, or maybe even longer than that. So it's not a new thing, and the term e-health is really meant to refer to health services that are delivered over the internet. Really, there are aspects of medical informatics, business, public health, all kind of combined into this one concept. And over time, it's really become a term that has been kind of more than the sum of its parts. Som it's becoming representative of a state of mind, like an attitude, a way of thinking about delivering health services, and really a commitment to improving access to healthcare, especially for the populations who need it most. So, there are a lot of characterizations for this term that have been proposed, but many of them include things like care that is evidence-based. So, we want the effectiveness and the efficiency of this type of care to be proven by scientific evidence, just like we want the same for all of the things that we do. And we want it to be efficient.

So one goal of providing more efficient care is to decrease the costs of healthcare, and that's something that I hope we're all thinking about. One way to achieve this is to improve the quality of care that you're providing and reduce unnecessary visits and interactions. We want it to be empowering for both the clinician and for the patients. So by making all of this knowledge and these services more accessible, it kind of opens new avenues to encourage patients to take a more active role in their healthcare and really promote patient-centered care and enhance their participation. And we want it to easy to use, right? If nobody is able to access this type of care, it won't have any value.

So this is one of the things that we're hoping to focus on during this presentation, just providing some considerations and practical tips for audiologists and other providers who might be interested in incorporating this type of care into their practice. So to get even more specific about what we're gonna be talking about, m-health is another term that I'll introduce to you. So m-health is referring to e-health services that are provided over mobile devices. And this can be done in a lot of different ways. Some ways are directly applicable to clinical care. So for example, communicating with the patient through their cell phone for a video visit, telephone visit, things like that, things related to clinical care, and other ways that are more of a supportive role.

So an example of that might be a program that is designed to deliver text messages to help someone who's trying to lose weight or stop smoking. So it's a really good way to help people to manage chronic problems and promote that behavioral change that we're trying to help them to achieve. So today we're gonna be focusing on the use of smartphone apps to enhance communication. And of course, m-health and e-health, telehealth as a whole, really experienced a big explosion at the beginning of the COVID-19 pandemic. It's my personal opinion that I don't think it's going anywhere. I think we're just gonna continue to see it developing and continue to expand in more and more ways, and hopefully continuing to expand access to care.

So then my next thought was, well, who actually has a cell phone, and who can use them? So, if nobody has one or can use them, all of the rest of this presentation has moot, right? So, the Pew Research Center is a research institute that provides information related to social issues, demographic trends, public opinion, and they collect data every year related to cell phone ownership and cell phone usage. So those are the data that you see over on the right hand side of the screen here. So that leftmost column is showing you the date of the survey, and the middle column is telling you the percentage of respondents who indicated that they do own a cell phone. The

right-hand column is the percentage of respondents saying that they own a smartphone specifically. So not just the cell phone, but a smartphone. And you can see that over time, as they've continued to ask these same questions, the number of adults in our country who own and use smartphones has increased significantly. With the number being an estimated 81% in the 2019 survey.

So, the 2021 data are actually even a little bit higher than that. But 2019 was the most recent I had when we made this. So, then my next thought, I'm like walking you through my thought process here. My next thought was, what about specific populations that might be of interest to audiologists? So, children, elderly adults. I think we can all imagine that there may be barriers to cell phone usage by people in these populations. So the data really support that children are able to use smartphone devices around the age of two, and they continue to develop those skills over time.

So in a 2017 study, there was a group of preschoolers who were provided a drawing app. And their reactions, and all of the drawings that they made were captured. And it's kind of fun to see them. So if you pull up the article, you can see in the supplementary materials, the different pictures that they made. But they were able to kind of group these kids into age and skill level based on the things that they made and the things that they did. So all of the children were able to hold the smartphones in their hands, and many were able to draw without any help from others.

So what they noticed was that the two-year-olds were doing some very simple things. They were drawing some kind of zigzag lines using single colors. Some of them were able to tap on a specific spot if they wanted something specific to happen. The three-year-olds were able to do a little bit more complex things. They were able to draw some irregular curves, more purposeful lines, simple closed shapes like circles, they were using multiple colors, just kind of building on the things that they had previously been able to do. And four-year-olds is when, that's when they started to be able to

draw identifiable things and explain what they're drawing. People, objects, they were able to move objects, starting to develop those skills of tapping and holding, things like that. And then as kids get older beyond that age, that's when they start to develop those more complex skills of sliding, dragging, dropping, pinching, zooming, all of those things that require more fingers and specific movements working all together.

So, I would say that my own personal experience supports this as well. What you're looking at here is a picture of my two little maniacs playing joyfully with their new Christmas presents this year. And my two-year-old on the left, he can tap in an intended place, he knows the passcode to unlock his iPad, but he does often need help steadying his hand to do that and opening the device. My four-year-old on the other side, I think he might use the darn thing better than I do. So I think that's definitely around the age when we start to see that kind of thing take off. And then on the other end of the spectrum, we have older adults.

So, I think for a lot of us, that's gonna be a focus. There was a semi-recent article that estimated that more than half of older adults are smartphone users, and it also discussed some of the barriers that are specific to this population. So I'm gonna outline some of them here. So the cost is the first barrier that they identified. So, this is the perception that the device was something that they could not afford and something that they would be very worried about coming up with the funds to replace if something happened to it. Age-related disabilities like vision impairment, cognitive impairment, hearing loss were all things that were noted to make it difficult for them to see, and understand, and hear the devices, and made it difficult for them to use them.

Third thing was related to a lack of interest. One of the participants said, "I don't want that, I'm too lazy to learn how to use it." So, either a lack of interest, or a perception that it was not necessary for them to do. The next one is a lack of knowledge. So that would be related to the perception that they would not be able to

learn how to use it, or the perception that they would be able to do it, but not be able to remember it, so that they would forget. So a lot of them were reluctant about their abilities to do this, and just really unsure of whether they would be able to. And then lastly, a motor impairment was something that was noted to be experienced by a lot of people. So this is just the perception that they would not physically be able to use the touchscreen. Grant, in your experience with your population, would you say that this is a reasonable estimate of the number of older adults who have smartphones, or do you have different experiences?

- You know, I think 61% as the estimate that it is is already really exciting. You know, I think that represents a huge opportunity for connecting people. You know, these barriers are certainly real, and I think you see them even with people who have smartphones. You know, the cost of the next tool that you need to unlock the smartphone could itself be prohibitive from using a communications solution. But we surveyed about 70 people in our target community before we started our intervention, and more than 90% of them actually used phones or tablets that could unlock a solution like the ones that we were offering them. So, I think it's really important to survey the population that you're gonna try to serve or that you are serving to really get an understanding of whether or not there's an opportunity to help people access the solutions that we're talking about.

- 91, that's great. So I think hopefully, I don't have any data to support this, but my guess would be that more people are doing this now in this population than ever, just given what we've been experiencing over the last couple of years and the way we've been kind of forced to connect to people in different ways. So I think that's great. And the authors of this article indicated that they believed that the thing that was most motivating to an older adult to learn how to use a device is that the device had to provide something beneficial to them. So I think that really just speaks to our need to familiarize ourselves with whatever these offerings are that may be able to improve our

patients' lives. Because if they don't see how this may be able to help them, they're not gonna be motivated to learn how to use it.

Okay, so we have established that children and adults, and elderly adults, can use smartphones. What about audiologists? So, are we willing to incorporate this kind of thing into our practice? It does involve a whole new set of skills, a whole new knowledge base, and in many instances it requires additional time, sometimes more than we may wanna spend in this specific thing, which may or may not directly impact our profits. So I think this is just something to think about for us. There was a 2017 survey, and also a 2018 survey that both addressed this, and they were asking groups of audiologists about their experiences with hearing aids and mobile devices.

So what the clinicians generally reported was that although there were some notable issues related to frustration relating to connectivity, which I think we have all experienced and know probably better than we want to, overall most people felt like they were able to use their clinical judgment to determine which patients are gonna be the best candidates for this. Most people felt that it helped them to know their patients better, because they were asking more specific questions about their occupations, the way they'd spent their time during the day, their hobbies and lifestyle, and there was at minimum, a moderate level of interest in providing this type of care. And that generally audiologists are open to that.

So, it sounds like overall, our willingness to provide this type of services does outweigh some of the frustration related to some of the negative things that are attached to it. So good for us, and I hope most of us do feel this way. I wanted to stop and think a minute next about how audiologists can integrate this into their practice. So in my opinion, audiologists should be involved in this process, even if hearing aids are not. So there are a lot of different pathways to care that might take someone to and through your clinic, and you really can use smartphone applications with patients who

are not able to pursue custom hearing aids. And when I say custom, I mean customized to them in terms of the physical fit, and the sound output, and things like that. So people who are not able to do this, people who choose not to do this for whatever reason, and for the people who already do use these hearing aids, or who are interested in using hearing aids.

So I think there are a lot of ways that we can definitely think about integrating this for all of these different kinds of patients. And one way that you might be able to improve your ability to do this is to integrate an assistant into this process. So, we always wanna be thinking about practicing to the highest level of our scope, right? So this is where assistants can play a really critical role in provision of these services. An assistant is the perfect person to help a patient decide, what kind of app might be helpful, figuring out how to download it, and then learn how to use it. There have been hundreds of apps that have been identified that are specific to hearing and other related things.

So the first category is screening and assessment apps. So these would be things that could be used by a clinician or by a patient. Pure tone testing, speech and noise tests, things related to tinnitus, et cetera. Intervention and rehabilitation apps. This is where the hearing aid apps would fall. Auditory training, tinnitus treatment apps, et cetera, et cetera. Education and information would include apps related to simulations of hearing loss and hearing aids, noise level meters, service finders, et cetera, and then the fourth category are the apps that we're gonna be focusing on today. So these are assistive tools, apps that provide a variety of services that would be useful for people with hearing loss, or other auditory complaints. This is another hot take I'm gonna throw out there before we start diving into some of these apps. It's also my opinion that someone with a hearing loss may actually be better off with a smartphone and a data plan than hearing aids. Just depending on what their lifestyle and needs are, I can really see several instances where some of the things we're gonna

talk about today might be very, very useful for a person and might solve all of the problems that they're having.

So for the rest of the presentation, we are gonna try to support that statement with some information, some tips, some anecdotal evidence, some tricks, and we picked some of these categories that you see on the screen here to focus on, and our goal is to give you the information that you need to start thinking about how to integrate this yourself. So truly, I believe that the best solution for any given communication challenge is the one that works best for each individual user, which might include a cell phone.

So for the rest of the next several slides, you're gonna be seeing a heading that describes the type of app or the category that we're gonna be talking about, and then you'll see an example of one specific app down on the bottom part of the screen. So some of these apps are specific to Android phones, some of these apps are specific to Apple phones, and some of them can be used by either. So you're gonna see a QR code on the screen, and if you scan that with your camera app, it's gonna take you directly to the app store where you can download or purchase that app. So directly to the Google Play Store, or to the Apple App Store. If you want to do that, that's right there for you. So each one of these is just gonna be one example. There are gonna be many available apps in each one of these categories that you could choose, but this is just gonna be one to show you some of the things that you need to be thinking about, no matter which app you use. And thankfully, we have Grant here today, who can talk through some of the considerations related to some of the things that we need to be thinking about when we use them, and things like that.

So the first category is related to sound amplifier apps. So essentially, these are gonna turn your phone into a non-custom amplifier. So somewhere there's gonna be a microphone that's assigned to pick up sound, and then the amplified sounds are

gonna be delivered to the person's ears through headphones or earbuds, whatever you have connected. And I think Grant is gonna give us some more information about some things we need to think about related to that.

So this type of non-custom amplifier can be used in a lot of different situations. We actually use them, not smartphone-based, but we use non-custom amplifiers in our medical center just to promote effective communication between patients and providers. Someone could also use this, for example, if they're alone in their house, watching television, essentially to create a personalized volume control for their TV. Or in a small group of friends doing something like a low key activity, like playing cards or something like that. So basically, anytime the listener would be interested in improving their signal to noise ratio, this kind of app would be appropriate. So Grant, what are some things that you think are important for us to keep in mind related to this type of app?

- You know, there are a couple of considerations. The one to which you already alluded is the wired/wireless headphone situation, right? You know, unless you're really using a headphone that is pretty effective at noise canceling, and also seals really well to your ear, a lot of people who use these apps on their phones, depending on circumstances, have a pretty bad echo that that kind of makes the app, defeats the purpose of the app. And then the other piece is the echo can be worse too, if there's a delay with wireless headphones.

So, oftentimes the most effective way to use one of these apps is with the microphone on your phone, obviously picking up the sound, but then also delivering it through wired headphones into your ears. I'm really glad you brought up all the use cases, but also that you use, you know, non-custom amplifiers that are just plug and play in your clinics. Because if you look at this screen here and you can see the screenshot from the app, there's actually quite a bit of customization that you can do

with these amplification tools, which is exciting 'cause you can maybe shape the sound that you're hearing, but actually can itself be a barrier, can kind of be prohibitive or overwhelming to someone who just wants a little bit of help. You know, just a little bit of amplification. Which I think speaks to the point that you brought up earlier, that, you know, if maybe they're setting this up in a healthcare setting with an audiologist assistant, that can be a less overwhelming barrier to using an amplifier app like this successfully.

- I'm curious how much you tell people about these slider bars here. Do you talk to people about, you know, you probably have this shape of hearing loss, so you might wanna give yourself a little bit of a boost in the higher pitches, or are people interested in doing that kind of thing? Like how much detail do you go into for that?

- Yeah, so, some of it's actually structured by the app details itself. So, some of them have you take a short survey and it'll try to guess maybe what kind of help you need in the higher frequencies based on your age and even their gender. And there are also other apps that will actually do like kind of a screening test themselves to try to customize the sound on your behalf. And then this app in particular actually has some music settings as well. So, you know, it depends on the solution that you've set up for someone. You can even tailor the solution based on how much customization do you think they're gonna benefit from, or how much they're willing to tolerate.

- Nice, and I guess if they're using it and they're doing well with it, they don't need to change anything. And if they're not, then they can kind of play with it. It's kind of like a, there's very little risk here, and I think probably people would like to know that, you know, you close the app and you restart it, it's gonna start right back where it was before, so there's really very little you can do to mess it up permanently, right?

- Absolutely, it's just getting them to that first set of settings that is gonna work for them.

- Yeah, yeah. Great, so then the next category that we're gonna move on to is the "Live Listen" capability, which essentially allows iPhone users to turn their phone into a remote microphone, either with their AirPods or with their hearing needs that are connected to the phone. So again, this is gonna allow them to position the phone near whatever they want to hear, and improve the signal to noise ratio by streaming the sound directly into their ears. Grant, what are your tips related to this?

- Yeah, this is an amazing tool, it's so powerful. The challenge here is that it's only available on iPhones right now, and you can only do it either with hearing aids, or with basically, Apple-branded technology. With Apple-branded earphones. So, you know, so many people signed up for our sessions really interested in the solution that was gonna help them hear better in noise. You know, especially before the pandemic, New Orleans restaurants were really noisy, really popular, so everyone wants to be able to hear better in those settings. And everyone wanted this, unfortunately, you know, between the iPhone and the AirPods, it's, you know, a $1,200 investment before you can start really using Live Listen as it's designed.

So in those cases, the one consideration is if they have an Android, you know, we can actually just use the full length of wired headphones or wireless headphones, to set up the previous app as kind of turning their phone into a remote mic in sort of a separate way as well. So, you know, it doesn't actually work as well as Live Listening. This is really an incredible capability on iPhones that is only available to so many people.

- Yeah, and I like the screenshots that you have here related to how someone would access this. So, you would wanna add this capability to the Control Center, and there's

a way that you do that in the settings, and that way when they swipe down, it's just right there and then they can tap it. It's like a shortcut to get there. So you mentioned, I just want to clarify, you mentioned it has to be Apple-branded headphones. So if someone has Bluetooth headphones that are not AirPods, this capability would not be available to them. Correct?

- Really, unless they have two kinds of Beats headphones that basically are Apple headphones themselves. Yeah, they don't have the Live Listen function. Unless of course, they're using compatible hearing aids actually. So, you know, Apple will work with those as well. Yup.

- Well, that was a perfect segue into the next slide. It's almost as though you knew it was coming. So if someone has hearing aids that are connected to their iPhone, they are gonna be able to do the exact same thing. So they would be able to access this in the native iPhone hearing control menu, which can also be accessed from the control panel as well. Anything specific to hearing needs that you think would be important, that would be different from AirPods?

- No, not different. I think the one thing that I did identify with the people who we were working with is, you know, someone who already has hearing aids, who already knows how to use the compatibility with their phone is obviously gonna be a great user of Live Listen, you just have to show it to them. But, you know, unfortunately that's not, that doesn't work for everyone. So, you know, there's a group of people who can't access this solution. And it's really tough, because this is a really nice one to have, to your point to hearing in noise.

- I like it too. I have a lot of patients who really like it. something that always trips me up the first time I try to use it is when you hit the button, there's a little bit of a delay. So

then what I always, my first instinct is then to hit it multiple times and then it's going on and off, on and off.

- You turn it off, yeah.

- So, when you hit that button, just give it a second to turn on, and then let it do its thing.

- Absolutely.

- Yeah. And I'll just also, one other thing I wanted to note, to control the volume of the sound that's streaming to the devices, how would they do that?

- So, it's just with the media controls on your phone as you'd expect them to be.

- Yeah. So while you're streaming, if you're using the buttons on the side of your phone to increase or decrease, it's gonna increase or decrease hat's streaming to their hearing aids.

- Yeah, and you can change the settings on your phone to make that not possible as well, and then you can change it within that Control Center.

- That seems like a pretty easy way to do it. I have a patient who loves using Live Listen with his hearing aids because he likes to watch live television, he's not someone who subscribes to streaming services, and he is, he doesn't want to miss anything. So when he has to get up and go to the bathroom, he leaves his phone by the TV, and he gets up and he does his thing, and he comes back and he knows exactly what's going on because he's been following it the whole time, even though he cannot pause it. So this is a good solution for that.

All right, we're gonna move to video call apps. So these are apps that facilitate a video call that can be useful for people with hearing loss, because it allows them to use those facial cues that we're all missing on regular telephone calls, or when, during face-to-face communication, if people are wearing masks. So it gives us those facial cues, in addition to the audio, in order just to facilitate more effective communication, what would you like us to know about FaceTime?

- So here, I think it's really important not to assume that all of your patients have thought of this. You know, even the savviest folks who are already using FaceTime to communicate with friends or family, or, you know, their grandchildren, might not be picking up on the fact that it is the visual cues coming from the FaceTime call that are making those calls so much easier for them. So, you know, and the same goes for Zoom, right? Which to the point that you made earlier, so many people have had to adapt to in the pandemic, which, you know, Zoom even can capture things for you. So, helping people realize that even things that they're already using can, you can FaceTime anyone in your contacts who has an iPhone, and there are other apps you can use to go across platforms too. It can really be helpful for someone. So, trying not to make that assumption, I think is important here.

- Yeah, absolutely. And FaceTime, as you said, is specific to Apple users. There are a lot of other video call apps that you could use if you have a friend with an Android phone or two Android users. So I just, I was thinking about what you said about your patients not necessarily thinking of it, even if they're savvy, and my mind went to my family members who FaceTime with my kids every day, but I'm sure have never once thought about using this in their own personal activities outside of talking to my kids, even though it would probably help them to communicate with their friends, it has not once occurred to them, and I'm sure of it. So now that you have mentioned this, I'm gonna tell them, and I think it will make things easier for them. So thank you.

- Of course, that's great.

- All right, next is speech-to-text apps. So these are among some of my favorite groups of apps, actually, because I have so many patients who find them so helpful. And these apps allow users to follow conversations by providing live, real-time transcriptions of the interactions. So, I think it's worth noting that the specific app that we're, and method that we're gonna talk about here, Google Live Transcribe is not HIPAA compliant. So I think that's just something that we'll all need to be thinking about if and when we decide to use it. I haven't used all of the apps that we're talking about today, but I have used this one specifically and shared it with several patients who have found it to be very, very helpful. So Grant, what are we gonna love about Google Live Transcribe?

- Yeah, you know, I think a lot of people sign up for our sessions at the beginning really excited about a way to hear better in noise, like Live Listen like we talked about, or using their phone as a simple amplifier. But I think actually, probably the most popular one that people left with was either this or the solution that's analogous that's available on iPhone. And you know, I think the reason for that is that the reality is if you have a hearing loss, amplification will help you, but it won't restore your hearing. So if you want the most accurate reading of a conversation that you're having, especially with someone who might be behind a mask, think about, you know, even in a high-stakes scenario like if you're interacting with a provider, or a physician, or an audiologist, you know, if you really want an accurate reading of that conversation, the best way to go is to generate text for yourself. It can help you keep up as the conversation's going on, but can even give you a transcript to return to after you've left. So, and you know, that can benefit someone who doesn't use any amplification at all, but also someone who is using their hearing aid. And you know, so many people by the end of our visits were excited to use this when they went to the doctor the next time. And where, you know,

maybe they used to hope that the doctor was gonna slow down for them or had a transparent mask, or, you know, even the doctor's office was gonna have an interpreter who was gonna be on time to their appointment. Now they could take a step with some agency and guarantee that they were gonna be able to engage in their care the next time that they went to their provider.

- Absolutely. It's totally empowering for them.

- Absolutely.

- Yeah.

- So I want to ask about how to access this for different types of Android phones, maybe based on when the phone was available.

- Certainly. So, you know, the newer Android phones have this Google Live Transcribe feature built in basically as an accessibility feature. You don't have to download anything onto your phone to use it. On some of the older Androids, you just download the Google Live Transcribe app from the App Store, or their Play Store, and it'll work just as well. In iPhone, we actually used the Otter AI that is a great option. It's actually the transcription service that does Zoom transcribe, which is also really powerful. So, and all of them will save a transcript that you can hold on to, to even use as a memory aid if you left the provider and forgot. You know, something that they told you, it's really nice to just be able to look back at your record of what was said, and then you can do that on all of these across platforms.

- Is Otter free?

- Yeah, so Otter has a limit until, you know, beyond which it's no longer free, but I don't think anyone who's using the app in this way is in danger of meeting that limit. So it's effectively free.

- Yeah, I understand. I do have a patient who uses Google Live Transcribe very successfully. He is someone who runs a cash register in a fairly quiet shop, but when he has people or customers coming up to the register, he has difficulty understanding them because of their masks, and there's also a plexiglass in front of him, which dampens the sound further. So what he does is he just keeps his phone on the counter, and he has like a six-foot charging cable that he just runs under the table, and so his phone is just charged all day long, it's not gonna, battery life's not gonna be an issue. And then he uses Google Live Transcribe to follow the interactions that he has with his customers who walk up to the register. And he loves it. It's a perfect solution for him. It works really well.

- That's amazing.

- Yeah. Okay, so now let's move into phone calls, right? So a lot of my patients have difficulty following phone calls when it's only the audio that's available. And we talked about one possible solution, which would be to use a video call to provide those facial cues. There are a bunch of other apps that can provide a different solution, and that would be in the way of providing real-time captioned captions for the phone call itself. So they can provide a transcription of the call, and help them to follow it in real time. So I know there are potentially some things to think about related to this type of app. Grant, can you give us some?

- Yeah, absolutely. You know, so these are really powerful programs. This particular one, Innocaption, is actually a federally-sponsored program, that's aimed specifically at people who need some help communicating over the phone. You know, so to unlock

that service for everyone around the country who needs it. And so, but because it's federally funded, the registration process really isn't simple. And you actually need to input, you know, the last four of your social security number to get the service. And you have to attest that you need it. And so that can be off putting for folks, right? So even, speaks to another reason why it might be important for a provider or provider's assistant to introduce this kind of a solution to someone because they're gonna trust that you're setting them up with something that isn't a scam. You know, all of a sudden they're downloading an app and putting the social security number into it. I understand why that, you know, that that's a pretty big barrier. That's not exciting to do. And then the other thing here that's important to consider is that this solution is only useful if you can consistently use it. And so you may have to even go through your service provider to make sure that incoming calls to your normal phone numbers, your normal phone number, excuse me, get forwarded to the Innocaption number that is generated for you when you register for this service.

So, setting up that kind of backend stuff is not necessarily easy, it's not necessarily straightforward, but really once it is set up, this is an incredibly powerful tool. Outgoing and incoming calls can both be routed through this app and you can have a live transcript immediately every time you're on the phone.

- So I just wanna make sure I understand. When you register for this app, you are assigned a different cell phone number that you have to then provide to people who want to call you so that when they dial that number, it's an incoming call to me, and Innocaption will automatically be involved. Right?

- Yeah, absolutely, you got it 100% right in one case. Unless you want to set it up so that cost of your normal phone number are gonna get forwarded to your Innocaption number. So, and that's what we recommend to people, right? Because, you know, unless you literally wanna tell everybody in your contact book that you have a new

phone number, you're gonna want to use that forwarding function so that you can have all the incoming calls just really seamlessly captioned with the app that you're using. But otherwise, you're absolutely right. You would need to give people a different phone number.

- Okay, so then for example for myself, I would call AT&T and say, hey, I wanna set up this call forwarding service. This is the number that I have, this is the number that I want to forward to.

- Yes, and I think to be completely honest, the procedure that you have to do depends on the provider that you have, and it might even, you know, we've helped people set this up and it's been easier for some people than others. So I think there's some heterogeneity in the actual process that people have to go to to get that seamless forwarding function working for them.

- But important to know that it is something that can be done if someone wants to go that route, yeah. You mentioned that you have to attest that you need it, and that is a barrier that I ran into once when I was trying to, I got on a kick where I was gonna download all these apps on my phone and be able to show everybody how to do everything, and then I got to the point where I had to say, I am someone with hearing loss and I need this. And I'm a rule follower, Grant, so I don't like, so I ran into a roadblock there. So that might be something for people to think about as they're trying to figure out how to teach people how to use this. So handouts, step-by-step instructions with pictures might be a good route to go if you're not able to have it for yourself on your own personal device to show them.

- Just to tell you, I actually think, if I'm remembering correctly, it's been a while since I registered for Innocaption, but I have it. Because I think there is actually a box that checks that you are a provider helping other people set this up. So, a lot of these

built-in situations, so you can go through the process so that you can help other people do it, which is really important.

- Thank you. So then moving on to television apps. There are some apps that will allow users to stream audio from tele television to their devices. One app like this is called Tunity. I actually used this one time when I was in the airport, I was in a restaurant, and the television was across the restaurant for me, so I used it so that I could hear the TV \because I was bored of waiting for a delayed flight. I would've liked to change the channel, but that exceeds the limit of what Tunity could have done for me. So Grant, what do we need to know about this type of app?

- Yeah, so, you know, the challenge with this one is like you said, it's designed for people who are at bars or airports who want to hear, you know, the muted news or the muted sports event that's on the TV. It actually might not be the best solution for a person who's looking to use their phone to help them hear the TV. The app is only really useful for regular large networks, it doesn't work as well for the local stations in someone's market. Moreover, it actually doesn't always consistently scan your TV, even when it is a larger network. And when you are using it successfully, it has ads. So, you know, all three of those things make this, not the most effective effective tool to hear the TV better. Instead, by the end of the most recent set of sessions that we had in New Orleans, we were recommending to people, you know, can we set up the amplifier on your phone so you can have a boost when you're listening to the TV? Are you using captions on your TV, right? Another great option for someone. And then even for some people who really like Google Live Transcribe and other settings, we were saying, you know, if the TV's loud enough, your phone or tablet's gonna pick up that live transcribe, you can have a transcription right in your lap as you're watching TV. Som I'd say, this might not be first-line for someone who's looking to have a little bit of help watching the TV at home.

- It's good to have options, though. I like thinking about how some of those other ones we talked about can be applicable in all these different situations.

- Yeah.

- So you mentioned captions, which is a perfect segue to talking about the next type of app, or the next type of capability, really, which is to allow captions for videos that are being watched on a device. So there are some recorded videos that can be watched with closed captions. And as you can see on the screen here, on Apple devices, there are some videos in the iTunes Store that have this capability available, you just have to essentially turn it on. What do you think we need to know about this, Grant?

- You know, I think that the two things to revisit here are that like we saw with transcription at the doctor's office, and you know, the backdoor way into doing it with TV, texts can really play a huge role for folks. And you know, it's just important to be able to turn this on. And like we saw with FaceTime, we talked about, you know, don't assume folks are necessarily using all the accessibility features that exist for the apps that they actually do use to stream media, to talk with friends. And then again, you know, if the TV is loud enough to hear, like we said, there are a couple of different ways that you can probably go about helping yourself hear media specifically, that aren't just captioning, that aren't just amplification, that aren't just Tunity as well. So, you know, but I think that, don't make the assumption that everyone's always using the accessibility features that are even in the apps that they're using, is the important one here.

- I'm someone who likes captions, so I, honestly before we did this, I did not know that this was an option. So I like learning about it too. And this capability is also available for Android devices as well. You just kind of access it in a different way, right?

- So you know, Apple, typically you're downloading apps that themselves have captioning. You know, they've captured the media, maybe you're watching a Disney+ show and Disney has captioned it. Android actually basically has their Live Transcribe function built into their operating system, so that no matter what you're watching, Android can caption it for you in real time. So, just different ways to get to captioning on the things that you're watching.

- Different ways to get to the same, to achieve the same thing.

- Exactly, yeah.

- Good. So the next category is related to alerting apps. So these are apps that are gonna be able to warn or alert people when certain sounds are detected. So that could be a doorbell, smoke alarm, alarm clock, It could be the sound of the phone ringing. What are some considerations related to this, Grant?

- you know, I wouldn't present these solutions to a patient or a patient's family as a life-saving tool. And I wouldn't depend on them that way either. I think there's a real potential liability issue there. But these solutions, and a conversation about these solutions can start another conversation, I think, about, you know, what it means to mitigate risks while living independently especially as you're getting older. So, and really, really, especially if that conversation is being driven in a provider setting. You know, if the audiologist or an audiologist's assistant is driving that conversation, I think it's a lot more powerful than if a student volunteer is. But I think, you know, these learning apps can be helpful, but really they can start a conversation about really, what's the plan that we have for someone to hear a fire alarm or to hear a knock on the door, whatever it may be.

- Yeah, I think that's really important. And I think what you said about potential liabilities is important too. I mean, all of the capabilities of our phones and our apps related to health-related things all say, you know, this is not intended to be used as a medical device, so, you know, use it appropriately. So that's definitely something to be thinking about. And our last category of apps is related to using data to determine when public places may be most easily accessible for people with hearing loss. So the first step that we're gonna look at is a crowdsourced app, it's called Soundprint. So in this case, the more people who are using this app, the better, because when people use this app, they submit information that other people can then use to determine what they wanna do, and they can use those data. So for this app, each place that's available on the app is gonna be assigned a rating to indicate whether it may be good or bad, or, you know, loud or quiet, depending on what time of day, and who has rated it before. So what do you feel like you want us to know about this?

- Yeah, so like you said, the more people who use this, the better, right? In every city across the country. I'd like to think that in New Orleans, we got more people using it than in the past. I hope so. And a lot of people were excited about this. Because they really are already on this app, depending on where you are, and especially in larger urban centers, just enough ratings to make the platform really helpful. You know, you can see places that are loud, or you can see places that are quiet, and you can either confirm or reject the hypothesis that you have about the places that you've visited, which is kind of a fun game to play with people too, right? That just sort of helps them understand how they can structure an evening out with friends. Especially now in a pandemic, it's gonna be helpful to everyone who needs to be able to communicate.

The other kind of interesting thing here is, you know, when you give this to someone, and you help someone set this up, they then feel like they can contribute to a solution that other people are benefiting from as well, which is really empowering. And the last thing I'd add is, this, it's not, you don't just rate something as loud or quiet

subjectively. You actually do use the sound level meter that is built into this app that resembles the NIOSH one that a lot of us use kind of just day to day, which we also come sometimes set people up with in our one-on-ones. And that helped me set up a conversation with a lot of people about, you know, it's never too late to preserve the hearing that you do have. Maybe avoiding a noisy environment like this, or just having a sound level meter that you can use and deployed it, you see if the environment that you're in is safe for your hearing longterm. And we even set some people up with hearing protection, because of that conversation. So, you know, another route into that was this app, which is itself powerful for helping people understand how they can structure a social event.

- That's a great way to tie that in. I think that's a really good way to do that, and I think it's cool that you guys are doing that.

- Thanks.

- So the last app we're gonna talk about today is Google Maps. And it's really about doing a similar thing in a different way. So Google Maps will provide an attendance pattern for a public place for each day of the week. And if you think of it logically, the times when the place is the least busy or the least attended, it is likely the most quiet. So, it's not a direct measurement. There's no sound level meter incorporated into this, but you can kind of infer that if it's a less crowded or busy time, it probably will be quieter. So people can look at these data and say, oh, it's nine o'clock on a Saturday, it's usually very, very busy. Maybe let's wait another couple of hours until it dies down a little bit, and then maybe we can go and it'll be a little bit easier. What do you think about this, Grant?

- Yeah, people wanna go out, but the steps that someone has to take to structure, you know, a social experience for themselves where they're gonna be able to hear and

engage with the people who they're out with, really aren't intuitive. They aren't intuitive steps to take. So, we hosted group sessions actually, at the beginning of our year, where we were gonna introduce people to the full spectrum of the solutions that we were gonna offer, but also where we just talked about the practical steps that someone can take to ensure that they're having a nice time in a noisy environment or to mitigate the noise that that's gonna be around them when they go to a restaurant, say. And you know, we had so many followups with people confirming or asking, you know, just where should I sit in the restaurant? Should I be in a booth? Should I be in the middle of my group, should I be on the end? Should my back be to the wall, or to the noise? So that's all to say that there really is, you know, an audience for practical solutions like this one that you can use to structure a night out, or, you know, a day out, or whatever it may be, you know?

Okay, let's talk about all the things you can do on the front end before you go. And we even set up some kind of like, you know, fun, theoretical experiments with people where we say, okay, you've decided the time you wanna go and the place you wanna go using Soundprint and Google. All right, now let's call a friend on Innocaption to invite them to this meal, right? And you can use the solutions all the way through, you know, including the remote mic, the Live Listen, when you're at the restaurant as well. So, but yeah, really, really important, just practical thing that you can, practical steps that you can take to ensure that you're gonna be able to communicate with the people who you care about.

- So you give them homework.

- Yeah, we do oftentimes, yeah.

- I love that, yeah. Pick a friend that you know is gonna understand, or maybe another friend with hearing loss, you guys can figure this out together, go out for dinner, come back and tell us all about it.

- We're in New Orleans, so we can still go to dinner outside.

- Yeah, that's a good point. I love how you can use all of these apps and allow them to open these other conversations about things that aren't necessarily related but are totally related. I love that you're following these threads.

- Thanks.

- So lastly, we have a couple of considerations that are applicable to all of the things that we've talked about today, and Grant is gonna talk us through some of those.

- Yeah, so, you know, at the beginning of our program, we really wanted to gauge whether or not the people who we were trying to help wanted to pursue the solutions that we were offering to them. And I think it's really important if you're setting up a program like this anywhere to gauge the interest in the menu of solutions and in the solutions that people want the most, to equip yourself to be able to help other people use them. And then the other really important piece to do at the front of an intervention like this with one person or with many people, is to not only gauge the interest in the solutions, but also to make sure that everyone understands the equipment they have and what that equipment means for the solutions that they want to be able to access.

So, you can go to the next slide, if you want to, Dr. Zitelli. But, you know, recently headphone jacks have changed, right? So if someone has an iPhone, they might actually think they have headphones that'll help them use their phone as an amplifier that don't actually fit with their phone. So you're gonna want to address that

before you're sitting down with someone to help them set up the actual amplifier. But if they just wanna use Live Transcribe, or if they just wanna use the, you know, speech texting, that's gonna be fine, they don't need headphones. So an important consideration for an encounter.

The other ones that are important and that are practical, that don't even really have to do with the actual hardware that they're using is, you know, okay, we have to make sure that someone's operating systems up-to-date so they can download new solutions onto their phone, make sure that they either have a data plan, or that they can get on your wifi and they're comfortable doing that in your clinic or wherever you're meeting them to set these up. And then the other piece is, you know, if we're downloading things off the App Store, they need a password, right? To download something from the Apple App Store and the Google Play Store, their phone needs charge.

And then the other thing that I think is really important is, you know, engaging someone's interest in these solutions and then also gauging the hardware that they have that can maybe help them set up some of these solutions, which themselves are all free. You might realize that, you know, maybe the phone amplifier isn't gonna work for someone. Maybe speech-to-text isn't gonna work for someone, and that's where it can be really, really helpful if you can have access to them, to just have some non-custom amplifiers that are just plug and play, you know, anytime you're meeting with someone, number one, to maybe communicate with them while you're setting up a solution for them, but also if they just need to take it regular, maybe that's the solution that's gonna help them more than anything that they're gonna put on their phone. And we found that with several people who got back in touch with us later and said that the non-custom amplifier was really, really powerful for them in communicating with other people, but the phones weren't going to be.

- Yeah, that makes a lot of sense. I mean, really our goal is to improve communication challenges, right? And that can be done in a variety of ways, and I think it's really good to have all of these tools in our toolbox. You mentioned, making sure that they have their password. And I think that's something that I encounter it all the time, and it never occurs to me to tell people about it ahead of time. So, do you have materials that you provide to people or do you talk to them ahead of time about what they're gonna need to do and like kind of prep them for this?

- Thanks for the question. It's really, so at the beginning of the year, we tried to just send out flyers basically to all the people, we send out some registration materials basically when someone signed up for a one-on-one consult with all the instructions of, you know, how to update your operating system, how to make sure that you have a data plan or wifi that you're comfortable using when we're gonna download things. And then, you know, the passwords that you have as well. And those were helpful for some people. But we really realized that a screening visit was gonna be the best. Because some things were falling through the cracks. You know, the materials are attached to an email, right? Not everyone's looking at their attachments, right? That's no fault of anyone except for maybe the person who sent the attachment.

So, you know, we found that just a 20, 15 minute meeting with someone. Where not only did we make sure that they had all these things done by the time that we were gonna meet with them, but also that we could prioritize the solutions that they wanted to pursue. You know, we've talked about a whole menu today. You know, maybe someone's interested in five solutions, well, they might fatigue really in a one-on-one meeting, just kind of learning and practicing with two of them. So, you know, okay, we can set up more meetings in the future, but what do you want to accomplish right now? Do you have a doctor's appointment coming up? Do you have a wedding that you're going to, right? You know, which thing are you most excited about, and most

eager to learn how to use, it's also important. We could get that kind of information in the screening visit too. So not just a flyer, a screening visit was really helpful for us.

- I think that's so awesome. I really, really hope that Schweitzer programs across the country and other organizations and people start thinking about implementing something like this. It sounds like you've had a lot of success and I think it's really great.

- Thanks, Dr. Zitelli, that means a lot.

- Thank you for sharing all of the things that you've learned with us today. Hopefully we've given people some things to think about. And we weren't able to cover everything, but hopefully just enough that you can think about what you need to consider if you're doing this for each of these categories. So these are the references related to the information that we discussed in the first part of the presentation. And then lastly, just a reminder, don't forget to access the handout, which is available to download in the chat, and it should also be available under your course registration and AudiologyOnline. So if you have fun stories that you want to tell us, here's our information, you can feel free to reach out to us. Or if you have questions, we would be glad to hear from you. And it looks like there are a few now. So, thank you everyone for listening, and we would be glad to take a couple of questions if we have time.

- [Moderator] Thank you, Dr. Zitelli, and thank you, Grant. We do have several questions and comments in the queue here. The first one, I believe this is referring back to earlier in the presentation. Would you be able to use the sound amplifier app with a patient's hearing aid, and would this eliminate the need for any accessories?

- Do you wanna take that, Grant, or would you rather I?

- Oh, you can go ahead.

- Okay, so I would, I think this was before we talked about the Live Listen capability, so I would think that would be the thing that you would wanna do if the person has hearing aids that are directly compatible to the phone. And yes, that would eliminate the need for the accessory.

- [Moderator] We had a member here just wanting clarification. The Otter app is spelled just as it is, otter, O-T-T-E-R, is that right?

- Period, AI, yep. Otter AI, it's a really powerful app. And like the next comment says in the chat there, really, 600 minutes per month for free is pretty powerful on 40-minute segments.

- Yeah, it's a lot of minutes.

- [Moderator] And then we have a comment here, a question, actually. Curious to hear the discussion about how to integrate these types of sessions into a clinic. You know, how might you schedule or use assistance? A video visit, or Grant, if you did find being in person was important, just interested in your thoughts on this.

- So, I can take the last part first and then hand back to Lori. We thought being important, as you were, in-person was important for setting up the actual devices and practicing with someone. We found a screening visit that wasn't in-person saved everyone a lot of time at the beginning to make sure that they had their passwords, to make sure that they were comfortable being on your wifi when they came in to prioritize the solutions that they wanted to set up. So, especially if you're trying to integrate this into a clinic schedule and use maybe a combination of providers and provider's assistants, you're gonna want that screen visit for sure, right? And you're gonna want a

survey maybe that's gonna have someone tell you exactly the phone they have. Maybe even take a picture of it and take a picture of the headphones that they're gonna bring to the appointment as well. So you're not gonna spend any time telling them what they need to bring the next time they come. So a screening visit's really important, but then really being in person with people is vital to setting these things up and practicing with them.

- I totally agree with that because, you know, think of all the times that you're trying to walk through something over the phone, you know, changing a wax guard, you know, you both can't see the same thing, some things, I think you just need to do in person. But I love the idea of a screening visit over telemedicine. And if I was doing that, I think I'd probably do something very similar to what you do. I have a checklist in front of me, I'd say, okay, I need to talk to them and make sure that their phone is charged. I need to know what their goals are if they have something specific coming up. I love that idea of having a checklist like that and doing that ahead of time. That will allow you to use the time in the clinic most efficiently. Yeah, it's like very exciting to think about all the things that you can accomplish using all of these different tools.

- [Moderator] Is the listen compatibility, or is the Live Listening compatible with all manufacturers as long as the patient has an iPhone?

- I believe that it is. Grant, do you believe differently?

- I don't believe differently. You know, I think it just depends on the functionality of the device, yeah.

- [Moderator] Thank you, and we have a last question here. Can you use captions when you use Live Listen, or WhatsApp, or any other video call app?

- Oh, this is a good question. Hi, Dr. Thibodeau, thank you for guest editing the wireless connectivity edition that got us here. I don't think captions are available with Live Listen. Grant, are they?

- No. So, you know, Live Listen's using your phone as the remote microphone, so there's no way to caption the sound that's just being streamed in. I'm not sure about WhatsApp. I will say kind of, you know, my favorite live speech-to-text solution is that Otter one, which is the same software in Zoom, that captions Zoom, and you can generate a transcript from that. So, I think a lot of people kind of, as they don't always think about how they can use FaceTime, don't also think about how they can use Zoom. So you can use Zoom socially and if you wanna caption a video call, Zoom might be the best way, the most obvious way to do that for someone.

- Are there any other questions? I don't think so. Okay, thank you everyone so much for attending. Thank you to the AudiologyOnline group. We hope this was helpful to you. Have a great day.