

[MUSIC PLAYING]

**CATHERINE PALMER:** I'm going to talk about untreated hearing loss, as Lonnie said, and this relationship to social participation and health outcomes. And perhaps even more to the point, the relationship of treating hearing loss to social participation and health outcomes.

So a study back in 2010 looked at 300,000 people for about seven years. And what was interesting is they found that people who had social relationships had a 50% greater likelihood of survival, of literally surviving. This was comparable to if this group had quit smoking, just to give you a sense of that impact.

And then we had some research in 2017, more recently, that looked at social participation and the direct link it has to improved health outcomes or, even more specifically, to what we call successful aging. So the focus on social participation has largely been on older adults, although social participation is important at all ages and is a predictor of health at all different ages. Our particular research program happens to be interested in aging adults, so I'll kind of focus on them today. This relationship has gotten the interest of health systems in that the thought would be if you can impact social participation, if there are ways to impact that, and that leads to health outcomes, not only is that positive for patients, but it's potentially a fairly large cost savings for health systems.

So what would those factors be? And when you think of a health system, you don't really think of them worrying about social participation very much. But indeed, that focus has shifted, and it's really interesting to try to pull apart what goes into social participation.

So many things most likely go into social participation, but there are a few things where we have pretty compelling research to talk about that relationship. And quite a bit of this was done really in the last five or six years. One is the relationship between depression and social participation. So if a person is depressed, they tend to be socially isolated. They don't participate.

And we know that untreated hearing loss is related to depression and social isolation. So this graphic just points out that we don't fully understand all of these relationships. So for instance, it might be that having untreated hearing loss contributes to depression, and depression contributes to social isolation. But it could be that untreated hearing loss is directly contributing to social isolation, and that actually contributes to depression. So in terms of academically, that's interesting to know which things are affecting which pieces directly.

In terms of health care, it's in a sense not as important to know exactly which order this goes in. Because these are things we can do something about. And specific to audiology, we can certainly do something about hearing loss.

And when you think of all the things that might contribute to social isolation, we often say that hearing loss is the low hanging fruit. And what we mean by that is it's something, if we provided people with access to care, is something we can do about pretty simply, actually. And pretty immediately.

So I'm talking about hearing loss, but the goal is really communication. So we're treating hearing loss specifically to improve communication, because that's what impacts social participation. You have to have adequate communication to participate socially and to actually engage socially.

If someone has untreated hearing loss, they typically do one of two things. They either withdraw from situations, so they may have had a couple instances where their hearing loss embarrassed them or they weren't sure what was going on, and their solution is to remove themselves from those situations, which obviously is negative. That's clearly-- you become more socially isolated if you don't participate.

The other thing people do if they don't withdraw, is they use extra cognitive resources to, in essence, fill in the blanks. So if you're communicating, and you're not hearing well, you're using a lot more energy to use context to figure out what people are saying. So the negative of this is, one, it's exhausting.

And you'll often hear people with untreated hearing loss tell you that they are more tired at the end of the day than other people. And in fact, when we treat hearing loss, patients will often say to us not that they hear better but that they have so much more energy. And this is exactly why.

The other problem for aging adults is our cognitive resources are limited. And so if we're using more to just make sure we can hear, we don't have leftover resources really to engage and comprehend and participate in what's going on around us. So both withdrawal or using extra resources are negative.

So let's think about this population for a minute. About 60% of people over 65 have impactful hearing loss. And when you're about 80 years old, you have almost 100% chance of having hearing loss, about a 90% chance. Now if all of these people receive treatment for their hearing loss, this actually wouldn't be that interesting a talk or a topic for us to focus on.

But the reality is, only 18% of individuals who would benefit from hearing aids actually use them. And there are a whole bunch of reasons why this is the case. But importantly, it means we have this really very large population of aging adults who don't receive the treatment they need to improve their hearing, which improves their communication that lets them engage socially at the level that would provide good health outcomes.

So given all this information, we decided we wanted to look at whether we could have some impact in this area. And what we knew is, there's been very little impact in the uptake of people receiving hearing aids. And again, there are a variety of reasons. Cost is a part of it, access, sometimes the stigma related to using hearing aids. There are all sorts of different things.

So rather than try one more attempt at something that hasn't worked, we thought, let's find a group of aging adults who specifically have the goal of socially interacting, to socially participate. So what we did is we looked at assisted living. So when you think of senior facilities, many adults end up going and pursuing a senior living facility for a few reasons.

And one could be physical access. It may be helpful to them to have a place where things are very physically accessible. They may need some help with care. And the third reason is usually that they or their families want to make sure they are able to socially participate.

And so physical access is part of that. You need to be able to get to the activity. But if you aren't hearing well, even though you've gotten to the activity, you're not necessarily going to really participate in it. So you may sit there and be very left out, or you may stop going to try to participate. So assisted living seemed like a great environment to try to see if we could make some change in social participation through treating communication.

And specifically, we think about hearing. So the way we did this, a few years ago, we did a pilot study that was funded by the Hearst Foundation, and we very much access this money through work with the Eye and Ear Foundation that helped us make this connection. We looked into assisted living building, and we made no change. So typically, there are no hearing services of any kind, and we left that building the way it was. And then we, in another building, had an audiologist go to the building once per month.

This is not an uncommon model. You see this around the country. It's called the consult, or we call it the consult model. It's very helpful for a very limited number of residents who happen to see the audiologist, and that's terrific that they have that care.

And then we created what we call the engage model, which means in a facility, the audiologist still comes once per month, but they are supervising an individual we call a communication facilitator who's there in the building several times a week to actually just make sure everybody's communicating well. And what that could mean is it could be someone needs personalized hearing aids, and that's fine. They would get those from the audiologist. And then the communication facilitator can help them with batteries, with putting in incorrectly, keeping it clean, making sure it's not lost, all those things.

But it could be that they just need a simple amplifier that's easier to use. And the communication facilitator can get them that. Or maybe they actually just need a TV device or a device for their phone so they can keep connected to loved ones, which as you know through COVID-19 has become even more important, these communicating when your family can't get to you.

Or maybe it's group system. So you can watch TV with other residents when you're watching the Steelers game or something like that. Or when you're playing bingo.

So there are all these times when people might be communicating in these facilities, and the goal is to help everybody have more successful communication. And this happens by having someone in the facility, really, a lot of the time and not just kind of popping in once a month. So that was our theory, that this would make a big difference, having that ongoing support.

And so we also thought this would impact not only residents with hearing loss but the other residents. Because if you are part of a communication dyad with two people or even more than two people, anybody with a hearing loss is going to impact the entire group in terms of successful communication. We thought this might impact staff in terms of staff satisfaction. It's easier to work with people who are communicating well and easily with you. And we were also looking at family burden. So if the resident is communicating better and they're happier and they're more engaged, the family may feel happier about the whole situation.

And so these graphics are just describing why we think we would have these impacts. And so when we think about the impact to other residents who don't have hearing loss, again, it's because they are in these communication situations, and it's very frustrating. Some of you may know this or experience this. It's very frustrating if you're communicating with someone who doesn't hear well and you're having to repeat often or sometimes you may give up. So we always talk to people that hearing loss is really a family issue, or in this situation of a residence, it's really an issue for the whole facility.

And then with the family, we also felt like there were a variety of reasons why improved hearing and communication would make a difference. Part of this would be family who get frightened when their loved one doesn't answer the phone, because they didn't hear it ring. And now they would hear it ring, so they'll pick it up.

And that also reduces staff burdens, so the family's not calling the staff saying, can you go check on my mom or dad? This improves phone communication. So it's easier. Things aren't having to be repeated. You feel more comfortable that your loved one is getting the message. The services within the facility also decrease outside trips for adult children to have to take time off and take people to get care.

And then we were looking at staff thinking that there'd be an increased satisfaction because really for the same reasons of people participating better and understanding what's been said to them and things like that. So we're looking at all these different variables.

So we found lots of positive findings, and the one I'll kind of point out here is the group with hearing loss had a decrease in perceived hearing handicap. So that was a good finding. So as the communication facilitator helped people who actually had hearing loss, they felt less handicapped by this hearing loss.

And there was an increase in satisfaction with social participation of all residents in the facility, just like we had guessed there might be, because they're just communicating better. And so these positive findings were different in the facility with a communication facilitator versus just having an audiologist once a month or having no care. So that model that we call the engage model did appear to really have some positive benefits for everybody in the facility and staff and families.

So if you think of why this may be kind of the underlying mechanism that we talk about, is if we're treating hearing loss for the individual with hearing loss, you have a decreased cognitive load. Which means it's simply easier to hear. Which sounds simple, but it has this really large impact.

This increases that ease of communication. And now that increases participation, literally because it is just easier, and you are more successful. And it's not feeling exhausting or like a burden to go interact with people. And then you start to interact, and you get positive feelings from the interaction and then that continues for you.

So this is a complicated slide just to say that we've taken this model now, the engage model, which again is the audiologist once a month along with the communication facilitator several times a week. And we are comparing that to the consult model alone, which is the audiologist once a week in a much larger study. So thanks to the work from the Eye and Ear Foundation that led us to the Hearst Foundation to get that pilot data, we're now just starting a three-year study that's going to look at this a lot more carefully and try to get the kind of data needed to move this model forward all over the country.

It's interesting. We have collaborators in Great Britain where they have created the engage model in one of their systems, and they're having great success with it. So we're excited about this study. It's just starting, and as I said, it'll be a large study. It'll engage eight of our UPMC assisted living facilities.

So we have the one that we used in the Hearst Foundation study, and that continues to this day. We continue to have our communication facilitator, which is supported by the Department of Otolaryngology. And now we'll move this into eight more facilities with support from the larger UPMC system. So we're excited about that, so I'll have to come back in three years and talk about those data with you.

I thought you just might be interested in what's happening during COVID-19, because although these are research studies, this is also very much clinical care. What we do in audiology is always a mixed model of our clinical care and also collecting data. This is the back of Amanda Cassidy's car. She's our lead audiologist who is in our facilities once a month. And so she has provided curbside care this entire time.

As you may know, the UPMC senior living facilities were locked down when COVID started. I think we're feeling very, very good in the system that we have not had any cases of COVID-19 in our senior facilities. So we're still being very protective of them.

So our audiologist literally goes to the curb, and the medical assistants in the facility bring out hearing aids for us to repair right in the back of her car, and we use all the same kind of safety precautions that we would use in facilities in wiping things down and wearing masks, and all of that. So we've been able to continue to support patients through this time, and we'll continue to do that.

So I talked about social isolation. Untreated hearing loss is related to all sorts of bad things, including an increased risk of falling associated with increased cognitive decline, higher rates of hospitalization, increased risk of medical adverse events. So there are a lot of negatives to having untreated hearing loss.

And I mention these to just think a little bit larger than the specific study I was just talking about. So if we think about the negative consequences of untreated hearing loss, clearly, there are consequences to people, which I was talking about. There are consequences to health care providers who are trying to communicate well with patients, and then there are consequences actually to health systems. So there is increased hospitalization. People with untreated hearing loss are more likely to have preventable adverse events, and they're more likely to be readmitted to the hospital, which is never good.

And altogether, it's estimated that this costs the system in the United States about \$3.3 billion in excess medical expenditures. So needless to say, that number gets the attention of policymakers of wanting to do something about this. People also have decreased satisfaction with their care when they have untreated hearing loss. And that's part of how we are reimbursed, by people's satisfaction. So a lot of these get the attention, then, of health care systems.

So this has made us be interested in interventional audiology. And so what we mean by interventional audiology is that we are going to treat hearing loss when hearing loss is not the primary problem. So this means something like, on the inpatient side, someone's come into the hospital-- it's not common to come into the hospital because of hearing loss unless maybe you've had a sudden hearing loss or some kind of trauma. So typically, an older adult maybe come into the hospital because they have had a heart attack or stroke or maybe flu or something like that. But the fact that they have untreated hearing loss could negatively impact their care.

So we have programs in place across the UPMC system to provide simple amplifiers. And I've shown you a picture of this on the side for people to use at that time when they are in our hospitals so they can communicate well. They take these devices home with them or to rehab, wherever they're going next, so they can continue that good communication. For some of these people, they'll end up wanting more personalized solutions, but for some of our patients, this solution works just fine for them, and they'll keep using this.

So we've also integrated into our two geriatric outpatient clinics. So we provide audiology services at those clinics, but part of what we do, again, is the minute the patient arrives, this is true in our interprofessional clinics too, we screen hearing, and we provide an amplifier for the time of the visit so they can communicate well. One of our interprofessional clinics, our survivorship clinic headed up by Dr. Johnson, who's the chair of our department, we do this in that clinic. And in that clinic, patients are going to see Dr. Johnson, they're going to see a nurse and maybe a PT and a dentist, a speech language pathologist. So this big day of great coordinated care, which is going to be much more productive for them if they actually can hear easily as they go through these interactions.

And we've also most recently teamed up with home health. So for our home health care providers, PTs, OTs, and SLPs, they have these simple amplifiers with them. So again, they can make the whole interaction with the patient easier right in that moment in time when that person can hear.

So part of why I'm telling you this leads to the other big part of our research, which has to do with some device development. Because one of the challenges is identifying who needs hearing assistance. So when you think of our inpatient program, either the patient self-identifies or maybe a nurse or PT or physician working with them thinks, oh, I don't think they're hearing that well. I'll consult audiology and we bring the device. But the problem with this is we actually miss the majority of people who could use our help.

And so to think about this for a minute, I'm going to just show you a little bit of data here. So on the vertical axis is percent of the hearing loss prevalence of a certain age group or the percent of how often we screen their hearing, the percent of people we screen hearing in. And on the horizontal axis are age groups. So we go from birth, that's our zero there, all the way up to an aging adult.

And so if you look at my zero, 0 to 11 there, so babies and very young people, they have a very low prevalence of hearing loss. Very few newborn babies have hearing loss. Yet my blue bar shows that we screen the hearing of almost 100% of newborns. It's called universal newborn screening, and our group heads up that program at Magee-Womens Hospital.

So although there are very few babies, we know that if we miss hearing loss, their whole life will be different in terms of their speech and language development, their education, their ability to be employed. So catching these children is essential. And we do this now at birth. And so we've had this huge impact on care for young children with hearing loss.

But if you go up to the other end, we have much more prevalence in older adults, yet the blue bars show us that we rarely screen any older adults for hearing loss. So I think Lori Zitelli is actually on this call, and she created this phrase that I use all the time, that hearing loss is expected but not benign. And so I think sometimes we can get lazy about thinking about hearing loss in older adults, because we think, oh, well, they're old, they don't hear that well. But we know now from everything I've been talking about that it's really serious that they don't hear well.

So this wouldn't matter if everybody self-identified that they have hearing loss. But the reality from data from Elaine Mormer here at Pitt is only about 40% of older adults accurately identify that they have hearing loss. And only about 50% of health care providers identify it. So that's one of the barriers to identification, and we think with older adults it's because it comes on so gradually that they don't realize they have hearing loss.

We also have either very, very inexpensive screeners, which are not accurate for hearing, or very expensive screeners for hearing. So that's not likely to be something available in doctor's offices and senior living places and things like that. And the other problem we have is we don't have this urgency to action the way we do with eyes and dental to actually do something about our hearing, although we are seeing that change as more and more in the popular press talks about the impact of untreated hearing loss on cognition and health outcomes.

So in terms of screening older adults, we have all the elements that would make us want to screen them. But the thing we're missing is an affordable way to do it. And so I'll leave you with just another exciting project that we've been involved in for a couple of years is a device we're developing here at UPMC and Pitt called LIDIA, Listening, Identification and Instant Amplification. This is a device. This is just a prototype you're seeing here.

So it'll be kind of smaller and sleeker when it's done, but it's a working prototype that allows us to have a device for like when you are at the doctor's office and the medical assistant comes in, they can put this simple set of headset, push a button and screen your hearing right then and there. And then if you don't pass the screening, they can leave the headset on, and this becomes the amplifier during that appointment so you can hear better as you're trying to access your health. And what's innovative about this one is to have both devices in one, but what's far more innovative is this can be a very, very inexpensive device with inexpensive headsets because of work with what we're doing with our engineering colleagues to be able to do this kind of testing even in noisier environments. So we're excited about this, and once we're a little bit further beyond COVID-19, we're going to do some more testing with this device in the medical center and then hopefully move it into production and the ability to use it in the near future.

So let me stop there, Lonnie, and see if there are any questions, if we have time for a couple of questions.

**LONNIE:** OK, well, we definitely have time, and we certainly welcome questions. So the bar is open. And thank you, Dr. Palmer. I always find this topic extremely interesting, just, again, in the prevalence of this condition and how often we see this problem. But unfortunately, so many people have untreated hearing loss.

And again, we see the outcomes of that and it encourages people-- I hope this encourages people who haven't gotten their hearing tested to do so. But we do have some questions here. So what is the best venue to get your hearing tested on an annual basis? Like is it the PCP office?

**CATHERINE PALMER:** So most PCP offices are not set up for hearing tests. Some of them are set up to do a screening, and there's nothing wrong with that. If you want a baseline test, which I would recommend. So really, somewhere in your 50s before you turn 60, it would be great to have a baseline hearing test to know where you are at that point. Now, of course, if you think you have a hearing problem, you should come sooner. But otherwise, a hearing test sometime during that decade to get a baseline. I would say through your 60s, a test every two years is fine unless you know you're having a problem. If you think your hearing is worse you should come sooner. And then once you're 70, it would be good to move that to every year, because we're pretty expecting hearing loss at that point.

**LONNIE:** All right, thank you. And here's another one. I think this is interesting. Is there a role for early use of hearing amplification for adults in their 70s, sort of like spring training to prepare for the baseball season?

**CATHERINE PALMER:**

That's a great question. I also realize, I'm not sure I fully answered the last question, saying you should go to an audiologist. So that is where you can have a full test. So that's a great question. There are data actually to suggest that you really want to do something sooner rather than later. I've never used the baseball analogy, but I love it, and I am going to steal that.

And the idea is, the younger we start on this, you adapt to it, it's easier to adapt to things than as we get older. So that doesn't mean we can't help you in your 80s or 90s. We help people all the time who don't pursue amplification till then. But again, if you start getting your hearing tested by the time you're 60, hopefully sometimes in your 50s, you'll catch it sooner, and you'll do something sooner. And I highly recommend that you do that, and then you're used to it, and it's become second nature.

You know, one of the things with getting hearing aids is that most typical hearing loss in aging is a sensory hearing loss. And that's a permanent hearing loss. And so people often think hearing aids will be like glasses, and they're not. Because when you think of the typical person who wears glasses, they have a loss that once you put the glasses on, a completely accurate signal goes to your brain. And sensory hearing loss means the sensory system actually is damaged.

So even though we do a great job personally fitting hearing aids to you, the signal that goes to your brain is still distorted. We cannot completely change that. So that takes getting used to. And usually you've been walking around with a hearing loss for several years, usually actually the typically seven years before people do something about it, which means your brain has adapted to that filter. So when you get hearing aids, you should expect really three weeks of wearing them full-time, meaning all your waking hours, to let your brain adapt to the new signal.

So we say we work for an hour to correctly fit hearing aids, measuring everything in your ear canal. You really work for three weeks. You go into getting hearing aids. It is a commitment. It's a worthwhile commitment, but it's not a one-stop shop.

**LONNIE:**

OK, well, there are more question, so we'll keep on going here, but thank you. And actually, just a follow up I'll ask related to that, is the digital sound that someone's getting from a hearing aid, has that improved as hearing aids have improved over time?

**CATHERINE PALMER:**

Absolutely. Sound quality has improved very, very much. Everything about hearing aids continues to improve. Now, I think one thing that's important is that you work with your audiologist so you don't find new hearing aids when you don't need them. And what I mean by that is you'll see advertisements every three to four months, and the companies will say there's something new about hearing aids. And it's true. There is something new.

But whether that new thing is going to actually give you more benefit is questionable. And your audiologist can really help you sort that out. But sound quality is excellent from hearing aids now. But the key-- people get very focused on the device. And actually all hearing aids from all six big manufacturers are excellent.

So the key, actually, is how they're fit. So the key to the process is the audiologist. So you're going to expect an audiologist to put a microphone in your ear and measure that hearing aid, so they're tuning it to your ear canal and your hearing loss and taking into account your lifestyle. So there's a lot of personalization. That's really what the audiologist brings to the table is that customization of the technology.



**LONNIE:** Terrific. What questions should I ask a senior living facility when I'm considering it for a loved one? Do they have hearing services and the like?

**CATHERINE PALMER:** That's a great question. Well, we would love for you to ask that. So please do. We're always talking to the UPMC marketing people that we should do more of that with the UPMC facilities, because we are the only facilities in the area that have hearing services, so we're proud of that.

I think that's a great thing to ask, because it's not that they're meaning to ignore hearing. I think it's just that many of us don't think of hearing. And so they create these lovely facilities, and they're very, very focused on physical access, which is wonderful, because it's very important so people can get around. And then they create these great activities, but they have that missing bridge that you can get to the activity, but you can't actually really participate without hearing well.

So I think it would be great to ask about the hearing services when you're looking at rooms, like the room where they might do crafts or bingo, ask about, do they have a sound system in that room that just makes it easier for everybody to hear? So I hope you will ask that question.

**LONNIE:** OK. I think after today they probably-- most people would but-- how do I determine what hearing aids are best? Some expensive aren't as good, and I worry about the cost.

**CATHERINE PALMER:** Yeah, so hearing aids continue to be rarely covered by insurance. There are few insurances that cover some of it. So it's an expensive investment.

So the best way to be careful with your money is to sit down with an audiologist. You're going to have a full hearing evaluation, then they're going to take a lot of time to interview you about what your goals are, what your lifestyle is, what things you do. Do you do things where you wear a helmet? You know, all these things we need to know when we think about the solution.

And then we're matching the technology for your needs. So when people talk about hearing aids, the companies tend to have four levels of technology. So they go from what they call the lowest to the highest. And that's misleading, because when you hear highest, you think, well, that must be the best. But that isn't necessarily the best for you.

So you want to talk to an audiologist. I can give you a rule of thumb right now. Typically, when you think of what we call the mid-level technology is really what everybody needs. The high end technology, in terms of the evidence base, doesn't provide any better communication than the mid-level, assuming it's fit correctly. And it gets back to the person who's fitting it.

**LONNIE:** All right. So why do we have low-cost hearing aids? At present, hearing aids cost much more than cell phones, but they have 10% of the technology in them.

**CATHERINE PALMER:** Yeah. That's such a good question. So it's all about being tiny. You know, the reality to have miniature-- it's basically the hearing aid is a computer. The level of processing it's doing is the level of wearing a computer. So to do that in that tiny a space is an expensive activity.

Now, do they need to be as expensive as they are? That's a different question. It's one of the only technologies where you don't see it coming down over time. I don't know if you ever thought about that, but when a computer comes out, over time, that's going to get less expensive. That has not been true in the hearing aid industry.

One of the reasons for that, most likely, is that there-- and actually, I said six big manufacturers. There are only five now. It's a very constrained industry. And so there's concern that that's part of why pricing stays high.

The other thing you have to consider, one is, again, they're these different levels of technology, and you want to make sure you're purchasing the right one. Still, that's going to be several thousand dollars. Typically, the way they're priced is, that is the cost of the devices and all the care for two years. So you do have to consider that's all the fitting and tuning and then the care, usually for two years.

So it's a bundled price, and that can be misleading, in a way. You think it's the price of the device. That's not true. The device is only one part of that cost.

**LONNIE:** Well, we're kind of getting questions related to this now. So are hearing aids getting better at filtering out background noise?

**CATHERINE PALMER:** That's a great question too. So when you think of-- first, let me just say first your brain is the best technology to filter out background noise. There's nothing better than your brain. So what we're going to do with a hearing aid fitting is we're going to make sure sounds are audible to you. So what that means is you can hear them.

So we do that by putting a microphone in your ear and literally playing sounds. It goes through the hearing aid, and then we adjust the hearing aid to map that to be correct so you can hear it. And as I said before, if we do a good job, you won't like it for the first week or so, because your brain is not used to those sounds, especially the low level sounds. But let's assume you wear it full-time like we tell you to, and you adjust to it. And now you have all those sounds.

So the hearing aids all come with technology in them to try to make things better for you. And you'll see advertisements that they miraculously make you hear perfectly a noise. Well, that's a lie. So noise is always going to be difficult. And that goes back to the fact that you have sensory damage in your system.

So we're putting in a fantastic signal, but it's still going through a damaged system. So noise will be difficult. The best thing to do is to have two hearing aids, because that's how the brain stem tries to sort out what you want to hear and what's noise, but this noise that's most problematic is other people talking.

So if you just think about it logically for a minute, there would be no way to have technology that can take out the sounds of other people talking and leave in the sounds of the people that you want talking. That's not possible, because they're the same sounds. So the noise reduction technology in hearing aids actually just makes you more comfortable. It doesn't make you hear better.

So if you're in somewhere that's just terrifically noisy, it will just lower the sound, and you'll be more comfortable. Now, there is microphone technology we use that helps focus the microphone on the signal in front of you and not what's behind you. And then that helps if you are looking at the person you want to talk to, and the majority of noise is behind you. So if you think of a restaurant, you want the person that you want to hear, you want their back against the wall, and you're looking at them. And then the noisy restaurant is behind you.

And the third piece of technology that is the best technology is called a remote microphone, which is an extra piece. And it's a microphone that you put on the person you want to hear, and wirelessly it takes that signal and sends it to your hearing aids. So you have to be comfortable asking someone to use this. But if it's near their mouth, you're going to hear beautifully, because it won't pick up the other noise. So remote microphone technology can be very, very helpful if you're interested in using something like that.

**LONNIE:** OK. Can you touch on the OTC Act, the Over-the-Counter Act.

**CATHERINE** Sure.

**PALMER:**

**LONNIE:** What it means to people with mild to moderate hearing loss.

**CATHERINE** Sure. So this legislation was passed in 2017, and as part of the legislation, it has to be out-- the language has to be out this fall, and it has to go into effect in spring of 2021. So it's coming. And what it's saying is, there's going to be this new category of devices that the FDA will regulate. I think a lot of people thought it was a deregulation. It's actually a new regulation.

But it's a simpler regulation. So companies will be able to have simpler amplifiers. Some will look a lot like hearing aids in terms of the casing, and the idea is people with mild to moderate hearing loss are the people that could pursue these.

Now, just based on the data I just showed you, what's problematic is people have no idea how much hearing loss they have. So someone could absolutely pursue one of these and really have much more serious hearing loss, but what they'll find is this device won't help them, because the device is regulated to only have so much amplification in it. We already use this type of device through UPMC. Actually, the device I showed that we use on the inpatient side could be thought of something like that. It's also called a personal sound amplification system.

So it's a non-custom system. And that's what these over-the-counter hearing aids will be. They're non-custom. They're just simple amplifiers.

You could do it now with your cell phone. The iPhone and the Android have amplification apps that you could download. And those work really well. And actually, I mentioned Lori Zitelli before, she's created a really nice handout we've used during COVID-19 of different apps that can help people until they can get to their audiologist.

The reality for most people is they don't want to wear earphones and have their phone providing amplification. They'd rather a personalized solution that's pretty discreet. But you could absolutely use your phone that way now.

And when OTCs come out, I personally think you're going to save time and money by coming to an audiologist, going through the process of the evaluation so we can give you a recommendation. And even now, we recommend for people to get simple amplifiers when that's all they need.

**LONNIE:** And that's terrific. And to get referred to an audiologist, the last question we have here, how do you get referred? Do you need to go through a physician, or can you contact the audiology department yourself?

**CATHERINE** No.

**PALMER:**

**LONNIE:** Or how does that work?

**CATHERINE** That's a great question and one I've been spending a lot of time, even just this morning, as I interact with the  
**PALMER:** Center for Medicare and Medicaid Services. If you use Medicare, the rule is a physician needs to order the test. So it's not a referral but an order. And that can be your primary care physician, that can be an ENT. Any physician can order that test.

So you do want to get that order so your hearing test is covered by your Medicare coverage. And then you'll go to the audiologist, and then they can take over from there. Now, at UPMC, we think about total hearing health care, which I personally think is really important. So all of our audiologists and otolaryngologists, or ENTs, we work together as a team. So whether you come in through one of our ENT physicians, or you come in through audiology, we're always working as a team.

So if you're an ENT, and they take a look at everything, and we do the hearing tests, and what you need is an audiologist, then you'll work with audiologists. So if you have permanent hearing loss and the ENT can't do anything to fix that. But if you come into audiology, we are able to recognize if you need an ENT and if there is, medically, something that could be treated. And then we're going to collaborate with our ENTs and make sure you get that care.

So I would recommend, when you look for care, you look for that total hearing health care. So it's one stop. You're getting all the care you need.

**LONNIE:** OK. Well, Catherine, Dr. Palmer, thank you so very much. I think this is always a very interesting topic, and you have so much incredible information. So thank you. We had a lot of people on today's webinar, and I'll thank all of you who joined us today as well.

As I said, you'll be receiving a survey. Please fill that out, and send us your comments. We'd love to hear those.

We did try something new today you may have seen. We had the closed captioning on with the PowerPoint, which obviously we should for people who may be tuning into us who have some difficulty with hearing, but it is something we haven't done before. So let us know how that worked for you. Hopefully it worked well. And we'll keep doing this.

So when we send invitations to you again, please feel free, if you know someone who may be interested in the content that we're providing, you can certainly feel free to share that. Again, this is really informational content. Of course, it is work that's supported by the Eye and Ear Foundation, so we're going to be talking about the things that people can support, but really we're sharing information that we know everybody would benefit from learning and sharing with others.

So thank you again. Look forward to doing this again in a couple weeks, and the next topic is going to be an ophthalmology topic, and actually, the topic is going to be on cornea and cornea research that we're doing at the University of Pittsburgh. So until next time, Dr. Palmer, again, thank you once more.

**CATHERINE** Thank you. Thanks, everybody.

**PALMER:**