

ROUGH EDITED COPY

NCHAM  
FM AND WIRELESS TECHNOLOGIES  
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Note From Captioner: Please stand by for captions.

>> Welcome, everybody. My name is Alex. I would like to invite you to this meeting at hear to learn. Entitled FM systems and wireless technology that will be presented by Dr. Ana Caballero who is an audiologist and Ph.D. student at Utah State. I will be opening a text field for you to submit questions you have. We look forward to what you share today.

>> Thank you, everyone. Thank you for taking the time to join us today. This month we will be talking about FM systems and wireless technology. Let's start by talking a little bit about how we all know we know what professionals as parent that children can hear better with FM systems and wireless technology. This type of information is limit to do families and teachers and children who are deaf or hard-of-hearing. Hard to understand their words when there is competing or too much background noise. Aware of that most classroom settings do not have right acoustics to help with echo or reverberation that is common to happen in today's classrooms that makes it harder for children to hear clearly in a classroom.

However, FM systems or wireless technology can be an answer or might be an expensive options. We will talk about different situations in which we can find funding or learn the existence of these devices and then advocate for our kids. In our webinar, we will be presenting the information needed to empower parents and teachers to explore options for accessing these devices for audiologists for through school districts.

At end of this webinar, participants will be able to learn what an FM system is who you it -- how it works. Learn how wireless hearing technology works and discuss common wireless devices used among children with hearing loss.

What are research studies saying. Some of the studies that I looked and read, parents tend to talk more with their children when wearing an FM systems and children will imitate sounds more often as well as some children wearing FM systems regularly at home show improvement in speech and language development.

Let's jump now in and talk more specific about FM systems. What is an FM system? Wireless system designed to help someone better identify and understand speech in noisy situations and over distances of up to 50-meters. Some systems work together with hearing aids while others are designed with those with normal hearing or attention deficit disorders.

So who can benefit from using an FM system -- any child in group situation or background Illinois or receiving new information where the speaker moves around the room, any child who has any distortion in their hearing and poorly developed language structure.

Fact that FM systems and wireless technology can help to have access to speech sounds for these devices for the child to hear. We

need to remember that our regularly visits to audiologists and making sure hearing aids are programmed to hearing levels is very important. Need to be programs or cochlear implants need to be mapped according to child's hearing loss.

Now let's talk about what are parts. Which are parts of FM system. We have speaker and receiver. Speaker is one -- hanging that black device. Speaker is one that has the transmitter and the microphone and then we have the receiver that is basically the child wearing the cochlear implant or hearing aid or Baha. FM receiver are specific to each model so that each FM systems are compatible to specific to child's hearing aids model.

There is an adaptor to attach to cochlear implant or hearing aid, now with more sophisticated hearing aids, we have integrator receivers. Becomes part of hearing aid or cochlear implant and does not require an adaptor. Something to remember as well, it's a little complex to address. Every model of hearing aids or cochlear implants and own compatibility depending on what we use, I recommend that you need to keep in touch with audiologist and make sure you are on the same page and based on your needs, audiologist will be able to help you get the best hearing aids or FM systems as well.

FM transmitter weeks up -- picks up the signal and sends by radio waves to FM receiver. Receiver that can be connected to hearing aid or cochlear implant receives signal from transmitter when severe and transmitter is on same channel. These are devices, hard to say that you can buy them online because you might need help from audiologist to make sure programmed and transmitting on same channel. When sound is delivered to child's ear, he or she will be able to hear the desired signal as talking speaking right there next to him or her. Basically making sure that getting rid of background noise and helping signal get directly to child's ears.

Types of FM systems. We have personal FM systems that are ones that pick up desired signal from microphone and sends the signal by radio waves to FM receiver as I mentioned before and then the Soundfield FM systems where teacher wears microphone and displayed in classroom. Teacher's voice is louder and above the noise room of classroom throughout the whole room. Soundfield system will improve the environment for all students in the classroom. Designed for children with normal hearing and no auditory function disorder as well.

Something to remember is that personal FM systems are recommended over Soundfield for people that have hearing loss or auditory disorders. I was reading in the articles. They use an FM system combined with Soundfield FM system could cause a distortion. Depends on models and brands. Something you want to talk and investigate with your child's school district or your child's teacher to go into more detail what type they use and see if compatible with child's FM system.

There was studdie caring the equipment. This was taken from

Australian hearing. And we all know -- well, for some of us might be new, debate from Soundfield and FM. When Soundfield amplification began to appear in increasing number of classrooms throughout the U.S. Soundfield amplification providing audibility of teacher's voice for all children not just the child with hearing loss at half the cost. So the child is not singled one to benefit from amplification of teacher's voice. From school budget standpoint, not surprised that purchase of that system is preferred over a personal Soundfield system. Question is whether will provide the same benefit in allowing the student to access verbal instruction equal to class peers.

This study, showing that this is summary of the research. Shows how you can see how desktop FM and personal FM systems 28 -- analyzing 28 children with hearing loss. Percentage of correct scores of work in sentences was higher compared to just using the classroom Soundfield system. So that's another kind of proof that shows how that Soundfield system is not completely the best option for child with hearing loss in the classroom. So when do we want to use an FM system? Each environment can be assessed of noise or echo or any kind of system affects the sound. Decision can be made to used FM system. This is something that your audiologist can help to discover different environment that is your child is. If we have a child with noisy environments such as restaurant or subway stations or train, when we have a child in -- environment like subway station or church or child further distance from the speaker.

>> When we are in a car or walking down the street. If we have therapy sessions where we know it's a noisy environment or any type of group environment.

So we're going to watch, we are going to take some time to watch this short video to give you a better perspective and bits offer when an FM system in classroom and take into consideration that you want to talk with your child's teacher. Take some time and we will get back when we are done with the video. (captioned video playing).

>> Okay. Now that we are done watching the video. We are going to keep going. Now we are going to be talking about going back to that video really quick comments. That's something that you can share with your teacher, your child's teacher, sometimes they are not aware of importance of use of FM systems. This is resources you can share with them as well. Just to make them realize why important for them to commit to use of FM systems or in the classroom.

There are two different, let's see we can say it, this is more technical for you to know. Difference between dynamic FM and frequently modulation, type of technology, the dynamic FM is advanced FM platform and reshaped the face of FM technology and dynamic FM systems are not merely pieces of hardware transmitting from one to another. Masterpieces of that wireless technology and they are capable of adapting themselves continuously to actually surrounding. You can see the comparison between those two types of technology. We have how

the -- sorry, dynamic FM has a stronger and steady signal, wider bandwidth and uses instructions and guidelines to replicate the signal. FM, tend to drop more often, interference with channels, less bandwidth. We see the distortions or replications that are not good copies.

This is too technical, if you want to learn more about differences in this type of technology, I have added the link where this information came from so you can learn a little bit more in detail about that.

So, again, going back to what I was mentioning digital modulation versus frequency, they were mentioning noise for recipients of cochlear implants. You can see that different noise levels. 65, 70, 75 that is louder, you can see how using that dynamic type of FM system helps to get higher percentages compared to classic FM.

This is just to give you an idea how that can make a difference.

Now let's talk about benefits of using an FM system. Really quick. Helps to reduce the background noise. Improves communication. Children with more severe hearing loss can only understand speech when lip-read at the same time.

When having FM system bridges the gap bringing the speech sound into their ears and helping out with lip-reading when that's not possible. So you can see moms playing with their kids and even when child cannot have that facial kind of clue that still hear what mom is saying. And then also can help to increase the sports participation. Children with hearing issue will know how it's harder for them to respond to coach's instructions when they hear this commands direct. They can have a better performance. Same thing at school. They can hear better what teacher is saying and even when riding -- baby in the car, helps that child to respond to noise and hear.

A little bit what factors affect the child's hearing. Reminder how background noise distant from the source. Reverberation or echo and how FM systems can help reducing that background noise, decreases distance from that speaker and decreasing echo in the classroom.

Benefits or advantages of using FM systems, increases access to speech, eliminates feedback from the hearing aids. Provides full access to the caregivers voice. And increases participation in school and extracurricular activities and increases incidental learning. That's what they hear from environment. That's here to show you the two big brands here. We have the Oticon and Phonak. It's important for you to talk to your audiologist and make sure you have right device for child's hearing aids. Sometimes school can help to get FM systems in the school. If it's written in individualized educational program in that meeting, has to be mandatory for school to provide it for the child.

>> We don't have a lot of time. We are going to talk a couple of minutes about wireless technology. As you can see, you will have

access to a lot of resources and links and videos that I use during the PowerPoint during this webinar. So for this one, basically just give you a little bit of information on how Bluetooth technology works now. So we will know how Bluetooth is that form of ultrahigh frequency sound transmission. We use it with phones and use with computers. Just for you to know that there is also a way and to remember that hearing aids work best in quiet communication bubble. Within a social distance at around three feet. Greater distances or whenever there is a background noise, very advanced hearing aids cannot help us much. This Bluetooth technology is less expensive than FM. In some cases Bluetooth may be used with FM to connect with variety of every day communication technology. You can see here we have Oticon and Phonak and how some of these devices to which will connect to Bluetooth, we have remote mics, TV devices, cars, computers tablets. By having -- sometimes you need to have something like a streamer or ComPilot. Helps the child or teenager to have access to all of those devices. Most of the time paired with a phone. Phone has to be a smartphone or phone that has Bluetooth capabilities so they can hear the music, watch TV and do every other activity that they want to do to have access to this technology. Cheaper than FM system might be.

Here we have resources. I added a couple of links that takes you to Phonak and Oticon and there is links here and links with teachers and audiologists you can share with them. Help them to choose best devices for kids needs. For questions or request materials, we have website here to learn. We have different tutorials to access and link to access and free monthly webinars. And if you have more questions that we might not have time today to respond, always feel free to contact so you can go to our website and under contact ask, you can send our questions, we have audiologists and physician and say everyone here that can help respond to your questions on a better way or can even contact me via e-mail. Thank you for your participation in today's webinar. I open -- I don't know if we have time for questions? Thank you.

>> Thank you, Dr. Ana Caballero. I'm going to put up a quick pole for those -- poll for those of you who were not here before. There is one question that someone sent along. I will start. This comes from Nicole. She says technicians where she lives in Italy sometimes have -- combined with Soundfield system at school. Concerns that they are suggesting technology from the school can earn them money rather than helping the children. What do you think about that? And she also mentions her daughter is using a Roger pen at a ratio of 80 to 20. Acoustics are probably really good. What are your thoughts about combining technologies?

>> I think I mentioned because I read that question at beginning. What I was reading is fact of combining a Soundfield system with personal type of technology might interfere with that sound. So maybe cause some kind of distortion in the sound. But if you feel and

like you were saying in a lot of these situations you guys as parents are ones who might. You know your kids. Based on what you are saying, I think she is fine with Roger pen. I think it's amazing the sound quality for that. And benefit that they make for the kids. I think good with that. I don't think you need to connect with sound field system especially if the classroom has good soundproof.

>> Okay. Thank you for that.

>> Next question from Melissa. Hearing loss in classroom video one that you can share with us? I would like to use it in a meeting with daughter's teachers. I find it helpful to have two. So my husband and I can use it. Has mixed hearing loss and profound in one ear and -- FM systems would be much better option for her than Soundfield question. Is that the case.

>> If you want to send me that question to my e-mail or post it on our website, that would be a great question that we can share with other parents that they might also have the same situation and then related to the video, I have already added the link. You can have access to the link and PowerPoint has link to resources in the video that we shared today. That's the goal is to share with whoever you share these materials to help them understand a little bit more about these topics.

Sounds like that will be helpful.

>> I'm looking through. Doesn't look like any other questions go through. We respect your time and respect you for staying over our 30 minute webinar time. At bottom left, you can get access to webinar PDF document and that video, we created a downloadable version of it in the bottom left. If you would like to download those, I will give you another minute to do that. If you can download that PDF, all links are accessible there, there will be a recorded version of this webinar on the website.

>> With webinars, we have those webinars. They are last week of the month. We will make sure to add the website hopefully by next week so you can save the date for future topics or if you would like any topics or might be interested in us working or developing this, send us an e-mail and definitely work on those topics as well.

>> All right. Hopefully you have all had a chance to there anything you need -- download anything you need. If not, be alert on our web site and send us any questions you may have at any time. Thank you for your participation and hope to see you back for the next one. Have a wonderful day.

Note From Captioner: Meeting is over. Thank you.

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