

Facebook AMA with Dr. Jace Wolfe

Dr. T. Caraway: Hi there, I'm Dr. Teresa Caraway with Hearing First. Welcome to our Facebook Live AMA. We're broadcasting live from Denver, Colorado. I think it important for you to realize that at Hearing First, we believe every baby who is deaf or hard of hearing should reach their full potential. We do that through raising awareness of the importance of newborn hearing screening, of knowing the status of your baby's hearing first. We provide educational opportunities for parents as well as professionals. We do that through also our two online communities. One, the Family to Family Support Community. The other one, our Professional Learning Community online.

Dr. T. Caraway: I'm here today with a good friend and colleague, Dr. Jace Wolfe. He is the Director of Audiology and Research at Hearts for Hearing in Oklahoma City. Welcome Jace. I'm glad you're here. But I think it's important that you tell us a little bit about Hearts for Hearing.

Dr. Jace Wolfe: Well, Thank you Dr. Caraway. I work at Hearts for Hearing. It's a nonprofit speech and hearing center in Oklahoma City. Our mission is to maximize the opportunity for children and adults with hearing loss to listen and talk for a lifetime.

Dr. T. Caraway: That is terrific. That's exactly why we're here today because one of the questions I think that I get all the time, and I think you probably get all the time, is, "How in the world do you test a baby's hearing? How can you do that? And what does it mean to provide access to the brain, sound to the brain? What's some of the technology and some of the things that parents and professionals should know?" I think we're going to talk about getting technology early and right and what that means.

Dr. T. Caraway: You're invited to submit your questions by posting your comments in the section below. We look forward to answering your questions today. Let's start out with the first one, and that is, "How in the world do you test a baby's hearing?"

Dr. Jace Wolfe: Well, that's a great question. We have really advanced technology that allows us to really accurately evaluate a child's hearing and, with a high level of certainty, estimate how much hearing loss they might have if they have hearing loss or whether they have normal hearing.

Dr. Jace Wolfe: The primary test that we use is called an ABR test or an Auditory Brainstem Response. Everybody has probably seen the measures or tests that are done where we tape wires to somebody's head, and we read their brain waves with those wires.

Dr. Jace Wolfe: That's essentially what a Auditory Brainstem Response is. We're reading brainwaves that are produced by the brainstem by brain cells or neurons that respond to sound.

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We place tiny earphones in the baby's ears. We can play low pitch sounds like bass notes, middle pitch or high pitch sounds like treble notes. We can adjust the volume level of those sounds.

Dr. Jace Wolfe: We can see how the brainwaves change. When there's a response, there's a really characteristic shape of the brainwave response so that we can tell that the child is likely hearing that sound. If there's no response, then typically we have a flat line indicating the child is likely not hearing that sound. What research has shown is that we can typically estimate for the majority of children within 10 decibels their hearing thresholds.

Dr. T. Caraway: So it's really a great a science that pediatric audiologists use. Like how old can you do that with a baby? How old do they have to be?

Dr. Jace Wolfe: We routinely evaluate babies' hearing with Auditory Brainstem Response test in the first week or two of life at Hearts for Hearing.

Dr. T. Caraway: Wow. So you can find out very early, identify babies with hearing loss and diagnose them. But are there other tools and resources that you use in that diagnostic appointment or that diagnostic evaluation?

Dr. Jace Wolfe: There are. A good test of a baby's hearing should include a battery of tests. It should include several tests. The ABR test is always the backbone of that battery of tests. That's the one that gives us the best estimate of a baby's hearing.

Dr. Jace Wolfe: But also Otoacoustic Emission test should always be completed as well. The Otoacoustic Emission test evaluates the hair cells in the ear that help us hear soft sounds. If those responses, the Otoacoustic Emission response if it's absent and middle ear function is normal, then that suggests that there's a problem in the cochlea and there's at least a mild hearing loss.

Dr. Jace Wolfe: Another really important series of tests to do are middle ear measurements. One most families are probably familiar with, the tympanogram or tympanometry that evaluates how the eardrum moves, that there's fluid behind the eardrum like you might have with an ear infection. We can identify that and determine if middle ear function is abnormal and might influence the results of the Otoacoustic Emission or ABR test.

Dr. Jace Wolfe: Then another really important test is what's called an Acoustic Reflex test. There's a tiny little muscle in the middle ear that will contract to sounds that are loud but not uncomfortable. That can also tell us about not only cochlear function and cochlear nerve function, but middle ear function as well.

Dr. Jace Wolfe: Really, all those tests should be done to evaluate the auditory system.

Dr. T. Caraway: Yeah, it's wonderful that we have that today. It's amazing because we know that little babies are learners from day one. Every single day babies need access to sound and the language around them so that that little brain can grow and they can develop listening and spoken language just like a typical or a normal hearing baby.

Dr. Jace Wolfe: You're exactly right. Like I said, we can estimate where the hearing loss is across the pitch range. The great thing about that is, is then that allows us to really accurately fit hearing aids. Hearing aids are really high tech today. They have digital signal processing and there's essentially an equalizer in the hearing aid that allows us to adjust the volume or the output level of the hearing aid and each individual pitch or frequency range.

Dr. Jace Wolfe: If we know what the hearing loss looks like across the pitch range, then we can fit hearing aids and even in spite of the hearing loss, we can make sound audible. We can give children access to sound through hearing aids that are programmed specifically for the child's hearing needs.

Dr. T. Caraway: Yeah, it really becomes very individualized, customized, specific. You have to understand the hearing loss of the baby, and then it's fitting the appropriate technology to provide access to all the sounds of speech.

Dr. Jace Wolfe: That's exactly right.

Dr. T. Caraway: That's amazing. It's amazing we can do that today isn't it?

Dr. Jace Wolfe: It is, yeah, we're living in a great time for sure.

Dr. T. Caraway: It is. It's a great time in terms of if you are a baby, happen to be born deaf or hard of hearing, and the opportunities that are today.

Dr. Jace Wolfe: The sky is the limit.

Dr. T. Caraway: It really is. But what are other things that families should maybe consider when they're pursuing a hearing test for their baby? What are those kinds of things?

Dr. Jace Wolfe: That's a really great question. There are evidence-based research supported methods to complete testing with babies. The family should really make certain that they're going to a clinic where the audiologists that are doing the testing are highly experienced and they're following evidence-based protocol. So, a good question to ask is, "How often do you do this type of testing with babies, the ABR test?"

Dr. Jace Wolfe: it's an important measure to do at such a young age when a child's developing their auditory and speech and language skills. It's really important that it be done accurately. That's going to be more likely if it's done in the hands of an experienced audiologist.

Dr. T. Caraway: Yeah. Someone, a pediatric audiologist who's done a lot of those. That's what I hear you say.

Dr. Jace Wolfe: That's exactly right. Yeah, you're exactly right.

Dr. T. Caraway: Yeah, and then asking them how often do they conduct that test, what's their experience being. Also then, what's been their experience in fitting babies.

Dr. Jace Wolfe: That's exactly right, yeah. All good questions to ask.

Dr. T. Caraway: Are there particular questions when they talk about, when you talk about fitting hearing technology? Any questions that a parent should be asking as that moves forward?

Dr. Jace Wolfe: Without a doubt. I mean, there are a number of different features on the hearing aid that should be selected so that they're pediatric or child-friendly like tamper proof battery doors and that sort of thing. It's really critical or vital that their appropriate hearing aid is selected.

Dr. Jace Wolfe: But then it should be fitted appropriately as well. Now we have technology that allows us to place a tiny little microphone in the ear canal and evaluate or determine the volume level of the hearing aid while it sits in the ear. That's critical to do. That's vital because we can ensure that the hearing aid is providing audibility for the child and that the volume level is also safe and should be comfortable for the child as well.

Dr. Jace Wolfe: If that type of measurement, the probe-mic, the real-ear probe-mic measurement is not done, then it's fairly likely that the hearing aid will not be set appropriately for the child. If it is done, it's all based on research and we can be really likely, or we can be very confident that the hearing aid is fitted appropriately for the child.

Dr. T. Caraway: As a listening and spoken language specialist, that's important to me, as I work collaboratively with the pediatric audiologist because kids talk like they hear.

Dr. Jace Wolfe: Exactly right.

Dr. T. Caraway: If they have access to all the sounds of speech, they're going to ... Their speech will indicate that.

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Dr. Jace Wolfe: Yeah, that's exactly right. It's all about providing access to the auditory areas of the brain. We can do that now with existing technology. We need to know that hearing aids are fitted appropriately to make sure we're optimizing access to the brain.

Dr. Jace Wolfe: But also too, if the child doesn't have access that we want, if they're not making the progress that we want, we need to know that hearing aids are fitted appropriately, so then we can make the next decision and move forward with a cochlear implant.

Dr. T. Caraway: Yeah, so in terms of as a family might get started wearing hearing aids, what's your recommendation about hearing aid wear time, about the age of fitting, and wear time? What's your best recommendation?

Dr. Jace Wolfe: Well, to start out, as soon as the hearing loss is identified, a hearing aid should be fitted as soon as possible after that. Ear impressions can be made to make custom ear molds. And then hearing aids really should ideally be fitted one to two days after that.

Dr. Jace Wolfe: Once the hearing aids are fitted, they're set appropriately, our rule is eyes open, ears on. The hearing aid should be worn during all waking hours. There's plenty of research that shows that speech and language outcomes are better if hearing aids are worn during all waking hours.

Dr. Jace Wolfe: The easy target is to make sure eyes open, ears on. But another target research has shown that children who have hearing aids, they wear them longer than 10 hours a day, have better outcomes than children who don't wear their hearing aids that length of time.

Dr. Jace Wolfe: There's no need, if the hearing aids are set appropriately, to gradually build up wear time. Our recommendation is as soon as the hearing aids are fitted, they stay on all day. If the child shows any aversiveness to use of the hearing aids, then the audiologist needs to reexamine the hearing loss and reexamine the way the hearing aids are fitted.

Dr. T. Caraway: Yeah. It's really important because we know babies are learners from day one, like I said before.

Dr. Jace Wolfe: That's exactly right.

Dr. T. Caraway: We think hearing loss is about the ears, but it's really about accessing the brain and having that little brain having access to all the speech, and language, and knowledge, and information around it so it can grow and develop and become all that those outcomes can be magnified.

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Dr. Jace Wolfe: You said it perfectly. Above and beyond just the type of what we call physiologic tests that we do, the ABR, the OAEs, the tympanometry and the reflexes, the audiologist should really be dialoguing constantly and consistently with the parents going forward about the progress that they see, the observations that they make that the child is doing from a day-to-day basis, and also with the child's listening and spoken language specialist because the key is getting access to the brain so that auditory speech and language skills will develop consistent with a child who has normal or typical hearing.

Dr. T. Caraway: Yeah, so that they can establish those speech and language skills at age appropriate age, appropriate times.

Dr. Jace Wolfe: Yeah, that's exactly right.

Dr. T. Caraway: But you mentioned the parents, you know. Parents are the most important member of this team, aren't they?

Dr. Jace Wolfe: Right. Yeah, Mom and Dad always know best. If parents have concerns about how the child is responding with his or her hearing aids or cochlear implants, or if the parents believe that the child is responding more favorably or less favorably that the hearing test should suggest, that audiologist should take that to heart and consider repeating the hearing test or consider evaluating further to determine what the discrepancy is between test results and the parent report.

Dr. T. Caraway: Yeah, that's really good advice and good points for all of us to keep in mind and remember. You know, based upon your experience and based upon research, what do you think is possible for babies today who are born deaf or hard of hearing?

Dr. Jace Wolfe: Oh goodness, the sky is the limit. I mean, we expect by the time a child is five years of age, even if they're born completely deaf, we expect that child to go to their neighborhood kindergarten and to set the curve in their class. To have age appropriate speech and language that is indistinguishable from his or her peers with normal hearing.

Dr. T. Caraway: Wow, that's incredible isn't it?

Dr. Jace Wolfe: Yeah, oh it is.

Dr. T. Caraway: That we got to do what it takes at the right time and work together.

Dr. Jace Wolfe: Right, that's exactly right.

Dr. T. Caraway: Yeah, that's terrific. Well, Jace, I want to say thank you so much for joining us today.

Dr. Jace Wolfe: You're welcome.

Dr. T. Caraway: It's been great dialoguing. You and I, as always, could go on and on, get so excited about this opportunity.

Dr. Jace Wolfe: Yeah, we're singing the same tune for sure.

Dr. T. Caraway: Exactly. If you'd like to learn more about Jace's work and his team's work at Hearts for Hearing, I encourage you to go to their website and visit their website at www.HeartsforHearing.org and check out those opportunities.

Dr. T. Caraway: Also, if you'd like to continue this type of discussion and learn more and connect with us at Hearing First, I encourage you to join our Families to Families Support Community if you're a parent. Connect with other families across the country who are talking about these kinds of things and sharing ideas and suggestions with one another.

Dr. T. Caraway: Then if you're a professional, come and join our Professional Learning Community, where you can also dialogue with professionals, up level your practice, so that you can support and guide families to reach these amazing outcomes possible today.

Dr. T. Caraway: Also, if you'd like to stay up to date on the latest listening and spoken language information, tools and resources, go to www.HearingFirst.org and sign up for our newsletter. We'd love to stay connected to you in that way as well.

Dr. T. Caraway: We look forward to connecting with you online through our social media platforms as well and our communities and our newsletter. It'll be great to connect with one another in the days ahead. Thank you for being here today.

Dr. Jace Wolfe: Thank you.

Dr. T. Caraway: Thank you guys for joining us today.

Dr. Jace Wolfe: Good evening.