



SoundBites Podcast Transcript

Episode: Artificial Intelligence in Hearing Aids

Dave Fabry: Welcome to Starkey Sound Bites. I'm your host, Dave Fabry, Starkey's Chief Hearing Health Officer. I am really excited about today's conversation. We're going to dive into artificial intelligence with a world renowned expert on the topic of AI, who also happens to have a hearing loss. Dr. Seth Dobrin was IBM's first-ever Global Chief AI officer, and in September of last year he founded Qantm AI. Seth, thank you so much for joining us here on the podcast today, on Starkey SoundBites. I'm really excited about our conversation.

Seth Dobrin: Yeah, thanks for having me, Dave. I always enjoy chatting with you.

Dave Fabry: Well, I don't even know where to begin. I've got so much that I want to fit into this time, but let's start with your hearing loss. We've talked about this in the past that your wife, Tabitha, had been telling you for some time that you needed to consider using hearing aids. Why is it that you waited? Because I think you waited almost 10 years, didn't you?

Seth Dobrin: Yeah, I waited quite a while, and probably more than that. We've been married for over 20 years, and more than half our marriage, she's been telling me I needed hearing aids, so it's been a while. Well, it's a stigma. I mean, there is a stigma associated with hearing loss, or hearing aids. I think it's gotten less and less over the years, but it was really the stigma of wearing hearing aids. My great-uncle wore hearing aids, and it was so long ago that he'd take his glasses off and he'd say, "I can't hear you. I have my glasses off," because they were attached to his glasses. But that was who I always saw as people needing hearing aids, so I just resisted.

Dave Fabry: And your journey is not an unusual one. For most people in the US it's about a seven to 10-year period from the time someone either suggests that you get a hearing test or maybe you should go and see someone and talk about it to when they actually get hearing aids, and so it's not uncommon. And like you said, I would agree. I think traditionally the stigma surrounding hearing loss, and especially the use of hearing aids, has really been a big barrier to people in their mindset.

And in many cases now, as hearing aids have gotten smaller, and I think, I'm biased, I think they've gotten a lot cooler, but I think that we've still seen that the traditional generation, those born before World War II, has some of that stigma involved with them. But what we've seen with the baby boomers and younger is that they may be less stigmatized, but they have higher expectations for what hearing aids can do. And I think you fall squarely into that camp.

Seth Dobrin: Yeah, they have higher expectations, and for the most part, they live up to them. And just to be clear, I'm not a baby boomer. I'm a Gen Xer.

Dave Fabry: I know you are. That's why I said I'm the baby boomer and you're definitely a Gen Xer. I know. I've been fortunate to really know you as you've been on the more recent part of your journey, and we've been through several sets of devices that you've been kind enough to provide feedback to me as to where we are and where we're going. The thing I really have to say, first of all is thank you for the radical candor that you provide about where I'm doing well in terms of the way that I'm using the technology and where the technology that Starkey has is going and where we succeed and where we have opportunity to do better. But before that, let's talk about your experience when you first started to use hearing aids. When did you first get them?

Seth Dobrin: Mid-2020. It was right after COVID and the masking started, so it's been a little over three years probably now, and one of the main drivers for it... Well, there are two main drivers for it, or maybe three. The first is we talked about already, my wife has been telling me "You need hearing aids" for a long time. The second was masks. I always knew that I read lips. I just didn't know how well and how important it was for me to "hear" people. And so I really was having trouble hearing people when I was out and about, the mask plus the barrier. The barrier that was between everyone, all the plexiglass and stuff, made it even worse.

And then I spent a lot of time at home. Most of my time, especially when I was at IBM, I was traveling around the world, and so spending a lot more time sitting next to Tabitha on the couch. One day she looks over me and she says, "You're either ignoring me or you're deaf. If you're ignoring me, we're getting a divorce." And so-

Dave Fabry: Thankfully you made the right decision, yes.

Seth Dobrin: Yeah. She didn't quite say it that strongly-

Dave Fabry: I know.

Seth Dobrin: ... but I think that's what she meant. I went to my audiologist and did my test, and when Frank came back and gave me the results, at first I turned to Tabitha. I'm like, "See, I told you so." And then I'm like, "Oh, shit, I need hearing aids." Oh, can I say that? "I need hearing aids." It was kind of mixed emotions. I mean, I didn't think I was ignoring her, but sometimes you do things subconsciously.

And I tell you, I got hearing aids and a friend of ours owns a restaurant and he was having a birthday party for his girlfriend. And we're sitting at a table, most everyone's wearing masks, like 12 people. I'm in the middle of the table and I turn to Tabitha and I'm like, "Oh, my God, I can hear everyone." And she says, "Yeah, I know." And I'm like, "No, I can hear exactly what they're saying." And she goes, "Yeah, that's what you're supposed to do." That was the night I got them and it was almost life-changing, instantaneously. Over the last three years it's definitely been life-changing, and you and I have spent quite a bit of time talking about that.

Dave Fabry: We have. What would you say has been the biggest impact, maybe that social situation where you're in a restaurant and able to hear? That's certainly one of the top drivers is performance in background noise. But is that the biggest success that you would say over the last roughly three years?

Seth Dobrin: I would actually say no. I would actually say the way I function overall is better. I mean, exhausted mentally at the end of the day the same way I used to be. And I attribute that a lot to really spending a lot of time, especially when I was out with customers or my team talking to people, it was very exhausting for me. I don't really have that anymore. I mean, it's still tiring when I'm six time zones off or something like that, but not the same level it was, so that's probably the biggest impact.

And then I've seen some little things that were surprising for me. I think I talked to you about this and I thought it was kind of off the wall. I used to have trouble driving at night because I couldn't see. And about six months ago, I'm like, "I can see at night now. I can drive at night," which I wouldn't even attribute to that but you said that's fairly... or not uncommon, I guess. I don't know about fairly uncommon or not common.

Dave Fabry: We talk about the top drivers for people that are considering getting hearing aids for the first time, and it's certainly hearing soft sounds and hearing speech in noise, making sure loud sounds are never uncomfortable and spatial awareness. I think that's really what I attribute your observation to is that now you're hearing in that automotive environment and you're hearing more completely as you're driving and you're integrating in the same way that you mentioned vision and hearing is important for your lip-reading without even...

People will sometimes say, "Oh, I'm losing my hearing. I need to learn to lip-read." And I said, "You've been doing it your whole life," but now it's just been more important to that. But I think, similarly, the spatial awareness, we say you don't hear with your ears, you hear with your brain, and it's that integration of multiple modes, if you will, that's contributing to that sensation that you're seeing better at night because of the spatial awareness.

Seth Dobrin: That's interesting, yeah.

Dave Fabry: What hearing aids do you have now?

Seth Dobrin: Well, I have the new ones in right now, the Genesis. And then right here on my desk, and not just for this call. I have the previous, the Evolve, and if you notice, they're both colored.

Dave Fabry: Yeah. And that's what I wanted to go to.

Seth Dobrin: And I do that... whoops, there we go.



Dave Fabry: There it is.

Seth Dobrin: We talk about me traveling. About half the time I'm traveling, I'm on stage giving presentations, and I almost always start out the presentation talking about AI and I start off by saying, "This is very personal for me. I wear hearing aids." And most of the time I pull them out and they're filled with AI. And I talk about a lot of the ways that Achin and I have talked, and you and I have talked about all the AI that's in them, sampling the environment every six milliseconds and adjusting and some of the translation that it can do, albeit slowly now, but hopefully eventually faster. I talk about that, and this is personal and why it's important that I trust the company who's doing my hearing aids because they hear everything.

They hear my personal conversation, they hear proprietary conversations I have internally with my company and with my customers. And so I talk about it all the time. Plus, because they're colored and they're not normal ones that go behind the ears, every time I go through security or every other time, they're like, "Take your AirPods out." I'm like, "Well, they're not hearing aids. I mean, they're not AirPods. They're hearing aids." And then they get all apologetic and I'm like, "Don't worry about it."

So for me, I'm trying to reduce the stigma by letting people know, first, that I wear them and I'm not old, but I'm not young either. And sharing some of the cool things they do and how they leverage technology, like streaming directly from phone calls from them, watching videos. I don't even acknowledge half the things I do anymore.

Dave Fabry: Well, first of all, for those who are listening to this rather than watching it on our YouTube channel, Seth showed me that he's got a pair of black ITC custom rechargeable Genesis AI devices that he's wearing. And then he has another set that is all white. And it was where I was going next. I'm glad you brought it up because I really appreciate and love the fact that you wear the ones that are not matched to your skin tone because you're not trying to hide it. You're wearing custom devices, which many people assume people want to hide the devices, but you're sort of celebrating it in the way that... your hearables, by drawing attention to it. So that then I would imagine, like me, you then nerd-jack the conversation with some millennial and tell them about all of the features that they have.

Seth Dobrin: Yeah. And all fairness, though, the first pair I had were skin tone, and I still have those. They're my backup-backup pair. But I think you and I had a conversation and you said, "With the white pair, would you mind being more... You're already talking about them. Would you mind a pair of white ones or something?" I said, "Sure, I probably wouldn't do red, but I'll do other colors."

Dave Fabry: No, I love it. So then let's talk a little bit about some of the features that you like best on the latest product. We've talked about the fact that you travel



constantly and with the Genesis AIs, we're in the second generation of rechargeable devices. The first generation, I think in our industry, miniaturizing these batteries, transitioning from replaceable zinc-air batteries where the end user is in control of replacing the batteries.

But you think about older people or people who have manual dexterity issues or arthritis, rechargeable is easier. But then in that first generation, we can sometimes see people develop range anxiety where, especially for someone who's flying across the ocean or traveling long distances, would run out of a battery at the end of the day.

Seth Dobrin: I think a couple of things. The other thing, the type of person that doesn't want the battery or lazy people like me, I don't want to have to worry about it. So I look at it the other way, if it's battery, I have to worry about it. I think the Evolve would last me somewhere around 18 to 24 hours nonstop. And fortunately, pre-pandemic, pre-supply chain, the cases had battery in them. And so when I got on a plane, I would just take the case out and set it down next to me and could recharge them. But there's some times where I'm working through the flight and I've been up all day and I've had them last 40 hours.

Dave Fabry: On the Genesis, yeah. Yeah.

Seth Dobrin: The Genesis, and that's not just in my ear, that's taking phone calls, that's listening to music. So I think that is completely amazing when you consider that a pair of AirPods can't even last eight hours. And then the other thing that I find very interesting that most people who wear hearing aids probably don't know is the technology in how you pass the hearing aids over your head and not through your head. Because water, which is 90% of your brain, slows down, and the fat in there is even worse, slows down any kind of waveforms going through your head. Plus it might not be healthy. So the technology to actually pass it over your head is completely amazing for me, and really-

Dave Fabry: How does that impact you, for people that aren't familiar with it? So when you have user controls on these devices, for one thing.

Seth Dobrin: Yeah. I have user controls on them, so I can turn the sound up and down. If you're watching the YouTube, I accidentally turned it down so I turned it back up. I can start and stop music and phone calls by tapping. That's some of the things that the user controls on these in-the-ear custom devices have. In terms of how the over-the-head works, the Genesis are better than the Evolve in that. And I can tell because when I use the Evolve, if I have my phone in one pocket and then I move it to the other pocket, it breaks up a little bit and you can tell there's something wrong. That doesn't happen as often with these new ones, so that's one thing that's gotten better.

The other thing that I like is that there's a mic that I can take when I talk, take phone calls, I can use the mic in the hearing aid. So if I'm in an airport, I can keep



my phone in my pocket and still talk to my wife or whomever. So that's one thing I like. The other thing that when you first sent me these pair and you said you wouldn't tell me what was different and you said, "Tell me what you said to me," turn it around and said, "Tell me what's different after a week."

The reduction in background noise is amazing and because of the type of hearing loss I have, I didn't really have an echo problem, or at least I didn't think I did in-the-ear devices, but I noticed that actually got better. I was hearing myself less. At first, I was hearing myself more. I told you you made some updates. And then I actually started hearing myself less. I think those were the biggest changes that I noticed in these new ones.

Dave Fabry: The other one that I think we have talked about in the past and a lot of other patients who've switched from, let's say, a previous generation, Livio or Edge or Evolve to Genesis, is how quiet they are. In a low ambient environment, they're very quiet. And I think we've talked about that.

Seth Dobrin: Yeah. Yeah, I don't even think about that now.

Dave Fabry: Yeah, that's cool. Well, the issue with the battery life and the rechargeable, I think providing that option for still having replaceable batteries for those people who want to be in control, but then for those who want the ease of use, and I'm in the same camp, of rechargeability and I think there's a little bit of an environmental benefit. We still have to dispose of those lithium-ion batteries eventually, but during the time, you're not disposing of batteries as frequently.

But I think our real goal, and Achin and I talk about this along with the R&D team, is the best technologies are those that are ubiquitous and they just are part of your life. You just set them and forget and you just put them in and you don't have to think about it. And you don't have to worry at the end of a long day. If you've got 41, 40 hours of use, including streaming time, that's where we are today, but you're still going to have all-day use three to five years from now. And so we want to take the battery life worry, the range anxiety off the table.

Seth Dobrin: Yeah. I'd like to see some more compute-heavy functions, and I'll take half the battery life because not many people are up for 40 hours straight, right?

Dave Fabry: No. And let's transition into that because we've talked about AI and that's where we're going to go into next here a little bit in greater detail because I really want to have the audience be able to be the beneficiary of your expertise in terms of artificial intelligence. But Edge Mode is a feature that we've incorporated that is designed to personalize the devices beyond what the automated processing where we're using machine learning to adapt the devices throughout the day. Edge Mode actually takes advantage of an onboard DNN accelerator to start to look at personalizing to the individual's challenging listening environments, and talk a little bit about... Because even though you are



deeply a tech guy, you also are a person who just wants to put the devices in and just wear them without engaging with them more than you have to.

Seth Dobrin: Yeah. So when I got my first devices, I would use Edge Mode, and I think I complained about having to tap it twice all the time because I wasn't using it right. The underlying problem was actually that my hearing aids weren't set right for what I needed. And so I was using Edge Mode to try and overcompensate for that. Once we got them set right, I don't think I ever use Edge Mode. I don't see any value in it, really, for me at least.

Dave Fabry: If we've got the acoustics set properly, then if it adapts to your world in all of those challenging listening environments, that is really the goal, ubiquitous performance and connectivity and battery life.

Seth Dobrin: And I have tried using it on a plane, but the problem with the plane is that the sounds adjust all the time so I don't think Edge Mode works well for that. So I've adjusted, I use the Crowd Mode for that, and that works pretty well on a plane. So I don't use Edge Mode at all, especially knowing that, like I said, having the conversations with you and Achin about all the sampling, I think last I talked to him it was every six milliseconds, which is just amazing that on this teeny tiny little device, you can have the power to do that and still have 40, 48-hour battery life. That's just mind-boggling.

Dave Fabry: You don't have to engage with the devices, and that's one of the objectives in using machine learning and AI and deep neural networks. But let's pivot then from your experience, and thank you for that feedback, and I appreciate the ongoing feedback, where we get it right and where we can improve. But let's first, before we dive into that, let's talk about your background in AI. What first got you interested in this?

Seth Dobrin: Yeah, I got interested in graduate school. My PhD is actually in human psychiatric genetics, and I was doing it towards the end of the Human Genome Project. We had tremendous amounts of data, and this was in the late '90s, tremendous amounts of data. Even by today, it's large data. So for those of you who understand different sizes of data, my dissertation was about 100 gigabytes of images and numbers. And I had never taken a computer programming class so I had to teach myself how to code in order to analyze all that data because back then Excel was limited to 65,000 columns and 10,000 rows.

If I had to do it in Excel file, it would've been hundreds of Excel files. And so I had to learn how to do programming and how to code and started using machine learning back then. Machine learning is just a type of statistics. Actually, when we think about machine learning, it's just statistics that's applied and continuously learned. So statistics is static, machine learning continuously learns, and it's all the same math literally until you get into things like deep learning or neural networks like you mentioned, or into the new AI, I call it the



old AI pre-2023 and new AI, which it's really all still related, though, but that's just kind of tongue in cheek.

That's getting into net-new math. And so I got into this, I'm getting off course a little bit, got into this in the late '90s, kind of out of need, and been applying it in both startups that I worked at and academic situations, at research institutes and at Fortune 500 companies. And now I've taken that and really focused on the business strategy of AI in my company, Qantm AI.

Dave Fabry: And when we first met you were the first chief AI officer at IBM, and you've talked about a lot on YouTube talks, and I think TED talks, too, you've done on responsible AI and how big tech is transforming AI. For the uninitiated, and maybe even those who are a little wary of AI, can you give us a boiled down explanation of AI and big tech and then even where you're going with responsible AI because we're involved in that company as well.

Seth Dobrin: That's a really good question, especially when we think about most everyone has at least heard of ChatGPT, and these are very, very large models that are trained on essentially the whole of the internet, including some of the worst parts of the internet. So a lot of how these models learn how humans communicate is through Reddit. If you're not familiar with Reddit, it's basically a freeform conversation place for conversation. There's subreddits. Now, the downside to that is you get the worst of humanity on there, too, and they start talking about all sorts of things, misogyny, racism, bias, hate, misinformation, all of these things that you wouldn't want an AI to learn.

But because it was trained on that data as well as other data on the internet, it actually learns this bad behavior. And so the math is not bias. Computer programming is not bias. All the biases comes from the data that these models learn from, machine learning, and all that information comes from us as humans. It's basically a mirror on humanity. And oftentimes when I end talks or podcasts, I often say, "If you don't like what AI is doing, look at yourself because everything that you're doing on the internet is feeding into that."

Dave Fabry: And that's what I find particularly compelling about the way that you describe this and approach it because you talk about really responsible AI as being essentially human-centric. And so, as you said, reflecting humanity for all the good and bad that it is. And you also mentioned ChatGPT. I mean, I will say that I've used ChatGPT to streamline abstracts for papers that I submit where, if they have a 250-word maximum and I'm at 312 words, I will dump in my prose and say, ""Boil that down, get it to 250." And it does a pretty good job of that. But then when I think of human-centric, the gray areas, how do I remain true to myself while using a tool like ChatGPT to solve problems for me? Is that still remaining human-centric?

Seth Dobrin: Well, there's two parts to this. One is our consumer apps, like ChatGPT or similar technologies, and I use it literally every day. In fact, I teach a master's-



level course at a university in New York on how to use this. The topic is AI safety, but throughout the whole course it's how do you use generative AI, and no cheating exists in a class. There's no such thing as cheating. Use every resource at your disposal, including these tools that I in fact had a conversation with the professors at CUNY Baruch, which is where I teach, about how they can use it.

And they were amazed, building curriculums, doing tests, doing all these things, and so encouraging them to let them use their students. So there's these consumer-facing ones. And so when Dave or Seth use ChatGPT, the human-centric is really in the GUI in our perspective. When I'm talking about human-centric, or I've actually started talking about is human focus now, I'm really talking about how businesses use it, so how Starkey would leverage it, for instance.

So when you think about how you're going to use AI, you have to start with the human. So who's the human that's going to be using the AI and who's the human that's going to be impacted by the AI? In the case of hearing aids, they're the same person, but if you look at a mortgage, if I go to Quicken Loans, which is where we've always gotten our mortgage from, or Rocket Mortgage now it's called, and I get a loan, they're going to use AI. So the underwriters and the mortgage brokers are using AI, but ultimately I'm the one that's impacted by the AI.

And so when you're designing an AI system for credit, for lending, you need to understand both humans. You need to understand who's going to be using it because they're not going to start using it unless you're designing it for them. And then you need to understand the specific impacts of the humans that are going to be impacted by it, specific ramifications of it or potential harms. And when you do that upfront, it enables you to understand things like bias.

What are the protective classes is what we call, so groups of people that we don't want to be biased against because you'll never be able to eliminate every bias. In the case of lending, it's age, race, gender, ethnicity. And so you need to keep that upfront and really understand that. What do I need to do to explain the outcome? So explaining the outcome to you or Achin is different than explaining it to my dad or your mom. And so you need to understand what explanation looks like to them. And in the case of bias, and this is something that people don't think about, bias is actually a social construct.

Bias in the Western world is fundamentally different than bias in Asia or the Middle East or Africa or South America. And the example I always use is in the US we worry about racial bias and ethnic bias. If you go to Asia, there is, for the most part, no racial or ethnic bias, so different construct of what bias is over there. I was giving a presentation the other day for a bunch of executives and there was a woman from India and I was talking about this and she said, "Most Westerners don't talk about this, but in India it's gender bias, it's caste bias, and it's what schools you went to."

Those are all driving bias in India and if we design AI without thinking about the human and where that human lives, we may think we're controlling bias, but we're actually not and we're propagating biases that are important for that region. And if we don't do this, we're going to increase what we call the digital divide. Usually it's north of the equator, south of the equator, but there's other things. And also the socioeconomic divide, because we're designing these things for people that are middle class or better. We're not really designing these things for economically-disadvantaged people. So we need to think about these things while we're designing the AI. That's what I mean by human focused.

Dave Fabry: Yeah. So many good points in there. And then I do have to comment, you mentioned at the start that when you're wearing our hearing aids and we're saying we're using machine learning, we're starting to use DNN, and it's learning, but we are a Class II. Most hearing aids are Class II medical devices and so we are required in terms of data privacy and patient confidentiality to... I want to set the stage first that we're not monitoring and recording what you're hearing.

But one of the issues and one of the concerns when you start talking about responsible AI and ensuring the ethics of this is that, with the Class II medical devices versus an over-the-counter type hearable that isn't encumbered by that same degree of certainty that data privacy and you're not recording things and monitoring things. How do we deal with that as we live with a world where there is both prescriptive devices and where there are OTC devices that may not be as restricted in the way that they monitor data?

Seth Dobrin: I think, as a Class II device, you need to adhere to HIPAA, right?

Dave Fabry: Yes, of course. Yes.

Seth Dobrin: Whereas the over-the-counter don't, because they're not considered med devices directly, same kind of level of med device, and most people don't understand how HIPAA applies, but it really only applies to certain devices, providers and insurers, people who are responsible for your healthcare in some way. If you give your health information to someone who doesn't fall into one of those categories, there is no HIPAA protection so they can essentially do whatever they want with your data.

And so I think the first thing we need to do is educate ourselves. How is our data being used? Read terms of service, understand as best you can, use ChatGPT or some other tool to tell you what's... You can put something in there and say, "Hey, Zoom just updated their terms of service. Are there things I should worry about?" And it will tell you. In fact, back in March, Zoom updated their terms of service and you were agreeing when you use Zoom to let them record every single conversation, use it to train their data. They basically took ownership of even proprietary information that was being discussed in Zoom calls.

Dave Fabry: And yet everyone swipes by the EULAs.

Seth Dobrin: Everyone.

Dave Fabry: Do you read the EULA agreements on everything that you enter into?

Seth Dobrin: I scan through them, yes. I think there's a couple of companies I trust. I generally don't do that for Apple. I generally don't do that for Microsoft. I mean, I generally trust that they're doing the right things, but I do have a prompt. The way you interact with these generative-AI systems like ChatGPT is you interact with that through prompts, and I have a prompt that's built to read EULAs and pick out certain things from there, end-user license.

Dave Fabry: End user. I was just going to say, yeah, I use the acronym too, so thank you.

Seth Dobrin: So I do use these tools to interpret end-user license agreements for me but that's a good point about the devices. People are often saying, "Well, you're paying all this extra money, you have to go to an audiologist." Well, first of all, I mean most of your listeners know you don't have to go to your audiologist very often. I mean, I go see Frank, my audiologist, because I like him half the time. And, in order to be a med device, a Class II med device, you have to meet certain guidelines beyond just the data privacy, which is important in terms of understanding the different harms, understanding different failure modes, things like that. And so my hunch, and I've never used a pair of OTC over-the-counter hearing devices is that the prescription ones are going to be more reliable, more robust. And certainly from the data perspective, you have no choice. I mean, I say I trust you, but you have no choice, right?

Dave Fabry: Well, we have to confirm the HIPAA and then-

Seth Dobrin: [inaudible 00:33:51] out in business.

Dave Fabry: And then also just closing the loop on the discussion about bias and bias globally, regionally differs in the same way the compliance differs. MDR and EU requirements are different than HIPPA, even more restrictive in many ways. And so, as a global manufacturer, we have to conform to the data privacy and regulatory requirements in all of the areas where we do business. But I think the point you raised very importantly is considering with training for AI models, and it's not the math that's biased, it's the data that's going into it. And also the regional differences is something that we really need to think about, moving forward, how it is that we're optimizing for different locations around the world where we're doing business.

Seth Dobrin: Right. And then on the different geographic data protection, there's 27 different data protection regulations in the US today.

- Dave Fabry: In the US.
- Seth Dobrin: In the US. There'll be 50 by the end of the next two years and so that makes it even more complicated.
- Dave Fabry: And so we have to go to the highest watermark and that's one of the issues. The last question I'll ask on this and then we need to wrap up. I see I've already used more time than I promised I would take of you, but the issue of, you bring up OTC and prescriptive approaches, you're a technology guy who could easily adjust these devices yourself, yet you choose to go see Frank, your audiologist, and then we do telehealth from time to time. Just if there's anything new I want to try out on you. Why is it that you choose to continue to use and go down the prescriptive path rather than an OTC path?
- Seth Dobrin: Well, a few reasons. One is, while I understand the technology probably better than most, I'm not an audiologist. I'm not trained in this. And much like AI can pass the bar exam today, I don't want an AI defending me in court. I want a human attorney defending me in court. Much like an AI can pass the medical exam, I don't want an AI practicing medicine for me. I want to interact with my doctor and I want her and I to make decisions, hopefully based on some AI, but it needs to be a conversation between her and I and my situation and her experience and what's right for me. I'm getting off tangent, but not really.
- Dave Fabry: No, I don't think so.
- Seth Dobrin: Because you and Frank are professionals I trust you to, A, answer some questions as to why certain things might be happening and then, B, make the adjustments that fit that. And plus also if I go into my audiologist, they keep the old record so if I screw something up, they can roll it back.
- Dave Fabry: Yeah, we can undo, if we need to. But, yeah, I really appreciate that. I didn't know what you were going to say, but I was curious about that because, from a technology standpoint, you can certainly handle it, but I've heard you speak before about AI now, AI next and AI never. And one of the things you say, and you just repeated it, with a physician, you want them to use the tools that AI can provide. If they're looking at radiology files and monitoring them over time, AI can do a great job of looking for small spots, but then you still want the plan for how you're going to intervene to be made by a human.
- Seth Dobrin: Exactly. And then to your point about AI plus humans, I think it's anytime, and we can maybe wrap up on this if we're done, anytime AI impacts the health, the wealth or the livelihood of a human, a human needs to be involved in that conversation. And so you shouldn't drive a decision from AI without a human being involved if it impacts one of those three areas.
- Dave Fabry: You just keep dropping these little pearls and so now I can't end it there because one of the questions really relates to predictions for the future, either

what it would be, and here we will wrap up, what are your predictions for the impact of AI in the future? It can be related to hearing aids or the other part that you just mentioned that triggered this for me is the future of AI in the workforce.

When there are jobs that AI can do more accurately, like you just raised with radiology, on that part that's going to eliminate potentially or change a workforce. Are we looking at something in the future where we all have universal basic income and AI is doing the hard work on some of those repetitive tasks? What's your prediction for the future in hearing aids, of what you want, and for AI and the workforce?

Seth Dobrin: I'll start with AI in the workforce. So, net, AI is going to create more jobs. The total number of jobs that'll exist I think are going to go up because of AI. A lot of that's going to be new jobs. The thing we need to be mindful of as a society, and especially as employers, is that there are also going to be a significant amount of jobs that are going to go away and it's our obligation, as employers, to make sure that these people, two things, that we're very upfront with them if we're bringing in an AI to replace them and that we are retraining them or upskilling them so that they can participate in the economy of the future and their children can participate in the economy of the future.

Because typically you see, especially in blue collar jobs, lower skilled jobs, children tend to do the same things that their parents do. And so we need to make sure that these people participate in society, are able to participate. No one wants to not have a job, for the most part. People want to be productive. So we're not going to turn into WALL-E, as long as employers do their part. And that is an obligation, in my mind, that they need to do. So that's my short answer of that. We could have an hour-long podcast on that conversation alone.

In terms of what... I think there's two different things. What I would predict for AI or for hearing aids and what I'd like to see, mine's probably a little bit kind of bespoke top desire because of all the traveling I do. I'd like my hearing aids to translate within half a second in my hearing aids without needing my phone even if I have to preload a certain language. So that's my number one request.

Dave Fabry: Noted.

Seth Dobrin: Noted. You've heard it before. I think in terms of the technology, they do a really good job now. I think getting the smaller form factors to have similar battery life would be really good. I think some things that are nearer term is like now on Apple devices, I can connect my hearing aids to my Mac or my iPad, but I need to do it manually. AirPods, it just automatically goes across. And this is maybe more of a Mac thing than it is a Starkey thing. So something like that where it's more seamless, to your point about not even knowing that I'm using them, and I predict more stuff like that where hearing aids become less and less of something that you think about and just more and more a part of your life

like something else you don't even think about, like your heart beating. And then the other thing that would be really cool is, again, most people probably aren't aware of this, but one of the best places to take medical information, health information about a human is in your ear.

Dave Fabry: Yes.

Seth Dobrin: Blood pressure, heart rate, respiration rate, things like that. So more of that stuff and the hearing aids, and I know you're smiling because you guys are working on this stuff, but then also, my dad has Parkinson's and during COVID and things like that, a lot of diseases or conditions can be predicted better from a device in your ear than they can anywhere else because they hear you. A lot of these things, Parkinson's and COVID and Alzheimer's and other diseases, you can tell by changes in voice patterns that someone's coming down with them much sooner than you could with any other. So, since you're already a Class II medical device, getting more into the predictive and getting earlier interventions because the earlier you're getting intervention for a lot of these things, the better your long-term outcome's going to be.

Dave Fabry: Music to my ears. We're going to have to have you back sometime to talk about the health and wellness aspect or a cast, which is coming and just right around the corner, that will enable that more seamless transition out of Bluetooth low energy as you move from your computer to your phone, even to the hearing aids alone, as you say, with your wish for translation. Can't wait to talk to you more about that and demonstrate some more of that to you as we deliver it to the market. So thank you so much, Seth. I've thoroughly enjoyed our conversation and appreciate so much-

Seth Dobrin: Likewise.

Dave Fabry: ... you took the time today. To our listeners, thank you for listening to this episode of Starkey Sound Bites. And if you enjoyed this conversation, please rate and review us and like us. Share it with your network, your family, your friends, anyone who might be interested in Seth's background with AI, and also the perspective of someone who wears hearing aids.

We'd also like to know what's on your mind. If you have questions for our hearing experts or have ideas for future episodes, send us an email at starkeysoundbites@starkey.com. We'll be featuring your questions and getting some answers from our experts on future episodes. We'll see and hear you again very soon. And thanks again, Seth.