“Hear and Now” with Frank Lin, M.D., Ph.D.

Transcript of Cerebrum Podcast

Guest: Frank R. Lin, M.D., Ph.D., is professor and director of the Cochlear Center for Hearing and Public Health at Johns Hopkins University. As an otologic surgeon and epidemiologist, he has translated his experiences caring for older adults with hearing loss into foundational public health research and federal policy. His research established the association of hearing loss with cognitive decline and dementia, and he now leads two ongoing, National Institutes of Health-funded randomized trials that are evaluating the efficacy of hearing interventions. In parallel, Lin has collaborated with the National Academies, the White House, and Congress to develop policies to ensure hearing loss can be effectively and sustainably addressed in society.

Host: Bill Glovin serves as editor of Cerebrum magazine and as executive editor of the Dana Foundation. He was formerly senior editor of Rutgers Magazine, managing editor of New Jersey Success, editor of New Jersey Business magazine, and a staff writer at The Record newspaper in Hackensack, NJ. Glovin has won 20 writing awards from the Society of Professional Journalists of New Jersey and the Council for Advancement and Support of Education. He has a B.A. in Journalism from George Washington University.

[Intro] Frank Lin: So, I think we're just beginning our understanding now of how hearing loss over time ... how it may affect the aging brain...It's very poorly studied because, well, no one really studies it... We see, on average, those with greater hearing loss are much more likely to develop dementia over time than those with less hearing loss or no hearing loss...

A hearing aid is one of those things that ... You can't go to the store and buy one. You have to buy it through a licensed provider, which made sense many, many years ago. But it doesn't make so much sense now when hearing aids ... With technology advances, you can make one that's safe and effective that you can buy over the counter. So, all of us are trained to lip read, whether you know it or not.

Bill Glovin: That's the voice of Frank Lin, director of the Cochlear Center for Hearing and Public Health at Johns Hopkins University. Dr. Lin is a surgeon, professor, and epidemiologist who conducts research on the link between hearing loss, cognitive decline, and dementia. In this podcast, he'll talk about a field that is just now starting to get the funding and attention it deserves, and how he's advocated in front of Congress on this issue.

Did you know, for example, that five manufacturers control 90 percent of the world's hearing aid market? And that the average $4,000 cost of hearing aids could probably be produced for about the price of Apple AirPods Pro, which cost $249. Or how his center at Hopkins is sadly one of a kind? Or that we all suffer some form of hearing loss as we age for any number of reasons?
You're listening to the Cerebrum podcast, brought to you by the Dana Foundation in New York City. I'm Executive Editor Bill Glovin, and we are very fortunate to have Dr. Lin on the phone with us. He's the author of a recent Cerebrum magazine article, “Here and Now,” which examines hearing loss as a potent risk factor for dementia. You can find Dr. Lin's article and all our Cerebrum Magazine content at Dana.org.

Welcome to Cerebrum Podcast, Dr. Lin. How is COVID affecting your work?

Frank Lin: Oh, boy. Bill, first of all, thanks for having me. So COVID is challenging in a sense, for all of us, but particularly for people who are leading human clinical trials and human studies, it makes it doubly more difficult. Because not only do you have to worry about the staff in terms of interaction with participants, but you also worry about the participants, many of whom are older adults, minimizing their risk in coming in contact with clinical sites and field sites where we do these studies.

Bill Glovin: Let's begin with your interest in the field. What sparked it?

Frank Lin: So like many things, it comes from a personal story. I grew up with my grandmother who ... My entire life, I remember she had pretty moderate to severe loss, always used hearing aids as far as I remember. It's just ... It's one of those things that I recognize the impact it had on her life. And she was less engaged in conversations, and things like that. It was commonly known in our family that it was just harder for her to engage.

I would say when I went to medical school, that stayed with me a little bit. And as I was picking between surgical disciplines ... I knew I was interested in surgery at that point. ENT or otolaryngology really stuck out for me as a very functional field to have a lot of functional impact in terms of hearing, and smell, and taste, and things like that. So it drew me towards it.

And in particular from there, then the interest in hearing loss in older adults as a research field sparked my interest, too. Mainly because of observing the impact it had on my grandmother and realizing that there wasn't really much out there. It was always seen as hearing loss is this normal process of aging, and hence must be relatively inconsequential. And yet, that's what I never really witnesses directly in my grandmother, or other people who I knew had hearing loss.

Bill Glovin: Did your grandmother suffer from dementia?

Frank Lin: She's 97, and she is healthy as can be, still sharp as a tack. It's pretty crazy, so fortunately not. Not yet, at least.

Bill Glovin: That's great. You wear two hats. One as a surgeon, and the other as a researcher. Tell me about the balance between the two.
Frank Lin: Oh, so this is interesting. They're almost diametrically opposed, in the sense that when you are a surgeon, there is clearly a sense of immediate accomplishment. I go into the OR, the operating room, for a few hours and I get something done, and it's something measurable.

It's accomplishable. It's very tangible. And yet at the same time, it can be very frustrating in a way, too, because you feel like you just operate on one patient at a time. After a year, how much of an impact have you really had when it's measured, maybe a hundred people that you've helped in terms of the scope of, let's say, the problem of hearing loss?

Research is diametrically opposite in the sense that sometimes the research I do, or the research that anyone does, it's meant to have a much broader impact on society and health. And yet the impact of research can sometimes be very intangible, and abstract to say the least. So I think for me, in a way, it was the research I converged on was sort of the happy medium between the two.

Meaning, I've always liked the immediacy of surgery, but I've always liked the broader public health impact of having a much larger impact on society. So the research I eventually picked, which is obviously this field around hearing loss and aging, but more importantly hearing loss and dementia, clinical trials and policy, was to really focus on a research area which could hopefully have a measurable impact. Not in decades but have a measurable impact on the people around me on a large scale in a matter of, let's say, five to 10 years. So relatively a shorter timeline than most other research in terms of maybe having an immediate impact on people.

Bill Glovin: Can you discuss the field in general? I see you're the head of a center that does research and looks at public health issues. Are there other centers like yours across the country, or is it hit and miss?

Frank Lin: Specifically, ... I mean, there are plenty of public health research centers focused on older adults and dementia, obviously tons. I'm not sure tons, but there are many, many well established ones, fortunately. The intersection of hearing and aging in public health is definitely ... We are one of a kind in that sense, mainly because it bridges certain areas which are necessarily easy to bridge. Namely, if you're focusing on the intersection between hearing loss and aging in public health, you have to draw on people who know the medical aspects of hearing loss, and surgical aspects.

You have to draw on people who know the measurement aspects, audiologists. You have to draw the expertise of geriatricians, who understand older adults and the conditions that afflict them. And you have to draw on public health methodologies to do research at scale. So unfortunately, those silos have not been very well bridged over the last 30, 40 years. Everyone operates in their own silo.
I think that's why there's been so little progress made around hearing loss and aging, that it's something everyone knows is an issue, yet hearing aids are so ridiculously expensive. And it seems like no one can get access to hearing care, and no one really cares about it, and even its impact on broader health and functioning, let's say dementia in particular. My case that I studied is very poorly studied because, well, no one really studies it. Because you really have to make the bridge between different silos to advance the field.

Bill Glovin: I know you discuss this in your article. Maybe you could briefly explain to people why older folks suffer from hearing loss.

Frank Lin: Well, hearing loss is one of those things, again ... which I say it sort of tongue in cheek, but it's a normal process of aging in many ways. What I mean by that is the inner ear, the cochlea, is primarily comprised of cells that are postmitotic, cells that can't regenerate. So the cochlear you're born with is the cochlea that you're going to have the rest of your life. So over time, from a variety of different insults, exposures, we lose hearing. All of us, one of us ... It's from [inaudible 00:07:43] noise exposure, probably some type of free radical oxidative damage, a pre-disposition based on a variety of factors, cardiovascular risk factors.

So it's not one thing that causes hearing loss, for the most part. It's a lot of little things that add up over time. And because of that is why I sort of joke it's universal in many ways, at least among mammalian species where the inner ear can't regenerate, that everyone loses hearing as we age. And at different rates, obviously, but ultimately it's because of a variety of things as opposed to just one single ideologic cause.

Bill Glovin: Can you explain whether the brain actually changes if someone is suffering hearing loss?

Frank Lin: We think it does. I mean, one of the main mechanisms through which we think hearing loss may actually contribute to dementia risk directly is through the effects of auditory deprivation, or a very impoverished auditory [inaudible 00:08:30] in the cochlea, and how it may lead to structural effects on the brain. So in a few different epidemiologic studies now that have followed older adults for many, many years what you, on average, see is that people who have hearing loss have faster rates of brain atrophy based on structural MRI scans, as well as changes in the white matter tracks in the brain.

And I'll tell you, that's just really the tip of the iceberg. I mean, these studies have literally just come out in the last three, four, five years on a broader understanding the impact that, let's say, auditory deprivation, or less of the fidelity of auditory coding because of hearing loss, how that affects brain structural pathways, as well as functional pathways in terms of ... There are ways we can study the networks of the brain using [inaudible 00:09:14] called a default mode network.
I think we’re just beginning to really understand it, and it’s because in the past that it wasn’t really this bridge between the research fields, that people who may study the brain didn’t think much about hearing. I mean, we’re not really sure how to measure it. How do you classify hearing? Oh, hearing loss is like in the brain, so of course it’s going to affect your brain, but it’s not.

Hearing loss is something that affects the inner ear. And yet, the people who are studying the inner ear didn’t really study the brain. So I think we’re just beginning our understanding now of how hearing loss over time may affect the aging brain.

Bill Glovin: So like the case with your grandmother, who has not suffered any type of dementia yet has had hearing loss, how do you actually tell if an older person is developing dementia because of hearing loss?

Frank Lin: That’s a great one. So Bill, the tough one there is there are many risk factors, as you know, for dementia. The microvascular disease, cardiovascular risk factors, low education, hypertension, diabetes. There are a lot of different insults that can affect the brain over time.

So clearly, obviously, if hearing loss, even though we think it’s maybe one of the most dominant risk factors in terms of its prevalence and the potential link with dementia ... Obviously, if you have hearing loss it doesn’t mean you’re going to develop dementia, like if you have hypertension, it doesn’t mean you’re going to have a heart attack or stroke. But in that case, the diagnosis of dementia is the same as it has always been.

I mean, realistically, the vast majority of people with dementia probably have some degree of hearing loss, just by virtue of age. When we look at these large epidemiologic studies, though, we see on average those with greater hearing loss are much more likely to develop dementia over time than those who have less hearing loss or no hearing loss. So the diagnosis of dementia, and the adjudication process, say, for how people classify dementia either in a research study or clinically is really no different than any other patient. Because the majority people, obviously, with older adults actually has ... We have hearing loss. So, there's no differences in terms of the diagnostics, or the adjudication process for classifying someone as dementia, regardless of whether or not they have hearing loss.

Bill Glovin: Interesting. What should someone or a loved one do if they suspect this is happening to them?

Frank Lin: So, hearing loss is ... I wish I had a better answer, in many ways. In a sense that, if you think someone has hearing loss, the standard procedure is you get them tested. You go see an audiologist and things like that. And I think that there is
very much this gold standard level of care for getting hearing addressed. You see an audiologist. You get fitted for hearing aids, etc. The reason why I don’t like that answer in many ways is because that is a gold standard, and it works well, and it’s the model that we’re testing in our clinical trials, it’s not widely accessible or affordable. So in the States right now, the average cost of a pair of hearing aids is around $4,000, for various reasons. And that’s the legislation we worked on recently, and we’ll hopefully change it, hopefully very quickly.

But still, the model of hearing care is very, very expensive. It’s difficult to access. So while that is the party answer is, “Yes, get your hearing checked and see if you can do something about it,” and that should still be the party answer, I just hate giving it. Because sometimes for many people, it may not be an accessible or an affordable option. The good news … I think that is beginning to change, though. And I feel will continue to change over the next five years, probably quite dramatically, which I think is encouraging.

Bill Glovin: Is this policy tied to Medicare covering these costs?

Frank Lin: Yeah, so there are two things. Medicare, very importantly and probably many people realize, does not cover hearing aids at all. It was a statutory exclusion when Medicare came into being in 1965. So there are two big pieces of legislation. One is already passed; we got it passed three years ago. And another one, which may hopefully come about in the next few years that would change a lot of things in the works.

The first one is in 2017, working with the White House, Congress, and the National Academies, we got something called the Over the Counter Hearing Aid Act of 2017 passed and signed into law. And what that basically does right now is … A hearing aid is one of those things that you can’t go to the store and buy one. You have to buy it through a licensed provider, which made sense many, many years ago, but it doesn’t make so much sense now when hearing aids … With technology advances, you can make one that’s safe and effective that you could buy over the counter.

But right now, you can’t yet buy one over the counter. That law will change that. That law instructs the FDA that within three years … It would have been, actually, last month. The FDA would have to issue regulations so that companies like Bose, Samsung, Apple, Sony could manufacture and would be allowed to sell a hearing that you know will be safe and effective because they’re regulated, and you go to buy that anywhere.

And you can imagine that dramatically changes the cost calculus and how easy it is to access. So that’s a piece of legislation that we got passed already. The regulations should have come out last month, like I mentioned, but there’s been a delay at the FDA, the Food and Drug Administration, because of COVID, not surprisingly. So there is some delay with them releasing the regulations.
There are other priorities, but that should hopefully come soon. And when that happens, they quickly change the calculus then of how easy it is to get a pair of hearing aids you know will be safe and effective. The second piece of legislation, which we've been working on for the last almost a year now with Congress ... And there's several pieces of legislation now that would propose that Medicare begin covering hearing care services, hearing aids, and the services in audiology that help someone learn how to use a hearing aid.

That legislation we actually got advanced. It was written into House Resolution Three, the Elijah Cummings Lower Drug Costs Now Act. That was passed in the House. It's not going to pass in the Senate for various reasons, as there are competing issues in Congress right now. But when and if we're able to get that legislation passed, or maybe just the hearing part of that, Medicare would then be covering hearing care services.

So you would be able to see an audiologist. You could buy your own, say, Apple hearing aid, tongue in cheek, or your own Sony hearing aid. And the audiologist would work with you, or your parent, or loved one, to learn how to use it, to help them adjust it, to help optimize it so they can hear and communicate effectively in all settings. That's really the goal.

So that legislation is in progress. I don't see it being passed anytime in the next year or two because of a lot of competing priorities in Congress. But we are guardedly optimistic in the next few years, especially once the results of a clinical trial that we're working on are done, and when there's a very robust over the counter hearing aid market, which shows that hearing aids can be very affordable, that legislation is potentially feasible to be passed. Which will go a long ways to providing seniors everywhere access to services and devices that are affordable and accessible to help you communicate better.

Bill Glovin: In terms of getting the legislation passed, you say you're involved. But how does it manifest itself? Do you meet with legislators? Do you have people on your staff that do that?

Frank Lin: Yeah, it's different for every piece of legislation. For Over the Counter Hearing Act of 2017, that was a consensus process. I served on the national academies for a report that came out advising that.

I helped advise the White House, The President's Council of Advisers on Science and Technology. They had a work group that sits around hearing care as well, that I helped advise. And then, from there with those recommendations in place, that's when Senator Warren's office, and Chuck Grassley's office, two very diametrically opposed aisles. They were both interested together.

And they co-sponsored the bill. And then, I worked with their staff on thinking through the language of the bill, and then ultimately a testified before the
House of Representatives. So that was a very active role I had in something like that. It really came out of the consensus bodies I was a part of. And then when the legislation came to push and shove, it had to be had advanced through Congress. Then I was called to testify for it.

With the Medicare bills that we're working on right now, my main role in that has been ... How do you put it? It's sort of advisory, so usually the House staffers who have been drafting this bill, both HR3 and [inaudible 00:16:50] HR4618, which is the hearing bill. Basically, they merged together. That center I direct at Hopkins was called to help draft policy memos for them in terms of advising them for what this legislation should look like.

I'm really happy to say, though, that the hearing parts of this bill really came directly from the memos we produced for Congress. They incorporate a lot of our ideas for how to still encourage innovation by leveraging the Over the Counter Hearing Aid Act while covering services. So not bankrupting the system, in other words, and making it still a very, very innovative approach.

So that act, now that it's been introduced ... I don't do anything now. It just is on the back burner for a lot of things in Congress right now. But we still talk to policy staffers that are interested in this issue. We advise them on it, and give them our insights in terms of evidence, and where it's going, and the industry, and things like that.

And we keep our fingers crossed that continues to move along, hopefully as we get out of the pandemic in, hopefully, the next year. They'll continue to evolve, but there's just so many competing interests in Congress right now. It's hard to make much traction.

Bill Glovin: It's got to be frustrating for you, I would think.

Frank Lin: It is, but there's also ... I find that I'm a public health guy first, though, so there are much broader issues at play right now that we're all worried about and concerned about. So I guess frustrating in a way, but for all of us, we're all in the same boat though.

Bill Glovin: The way of the world, I guess. Now, you're talking to me. It looks like you're using Apple wireless earbuds.

Frank Lin: Yeah.

Bill Glovin: I bet they cost a little under $300, you know?

Frank Lin: Mm-hmm (affirmative).
Bill Glovin: And they work amazingly, and they're common if people are on Zoom, or any which way. It seems like some of the principles that would go into making wireless earbuds would apply to hearing aids.

Frank Lin: Yeah.

Bill Glovin: What do you think good hearing aids should cost?

Frank Lin: I'll give you a first part answer and a second part. The first part is, you may not know this but you're very spot on. I'm using Apple AirPod Pros right now, right?

Bill Glovin: Right.

Frank Lin: Which are great. I use them for meetings all day and things like that. But your question is clearly apropos because literally, I think a week and a half ago, Apple released their newest OS, iOS 14. So if you look, buried in iOS 14 ... Actually, it's not that buried. These AirPods right now, for those of you who use AirPod Pros, there's a thing called the transparency feature, which is basically if you're out for a run, it plays in the sound of everything around you but straight to your ear so you can still hear the traffic. But the way it works, though, it picks up the sound outside and replays it into your ear.

So the question is, why couldn't the AirPod, if it does that ... Why couldn't you just mod the signal a little bit the make it a little louder if I have hearing loss? So that's exactly what iOS 14 does now. You can actually input your audiogram into the operating system now, and it will ... It's not a hearing aid.

They can't call it a hearing yet, but it actually customizes the output of the AirPod to be based on your hearing. So this is actually the first iteration now of, essentially, Apple without "making a hearing aid" has essentially now made a hearing aid. So there's been this convergence in the market now. We have all these hearable devices, things you wear in your ear to track your movement, and play your music, things like that. A lot of those are the same or similar. They have digital transparency modes, where it just puts the sound right through. But for any couple like Apple, or Bose, whatever, to modulate that signal just a little bit to amplify it to essentially become a hearing aid is not, relatively, that hard. And now, we're seeing the companies begin to do it.

When the Over the Counter Hearing Aid Act, the regulations come out ... For example, I say this tongue in cheek, but will Apple almost then market an Apple AirPod Plus with a hearing aid feature for a bit more? They very well could. So that's the exciting thing with that law now being passed, and when the regulations finally come out, it allows for this very, very quick convergence between, "Is that a consumer electronic, or is that a hearing aid that helps someone hear?"
It's already beginning to happen now. It's going to be cementing more when the regulations come out. So again, it's really, really exciting. I mean, for anyone with hearing loss now, you can literally use AirPod Pros as your hearing aids, fundamentally.

Now, in terms of what they should cost, I don't know. I think in terms of fair market value for any type of headphone type devices, I think you probably already know it. I mean, you can probably get a decent pair of in-ear headphones that work well for maybe a couple hundred bucks.

I mean, you pay a premium for Apple, obviously, but many people say that is going to be relatively where these over the counter hearing aids are coming in at. Because we know, say, the component costs of what these devices cost, and some of the R&D involved.

Now, obviously, there's marketing and [inaudible 00:21:31], too, but I think many people predict that over the counter hearing aids are going to be well under a few hundred dollars, or in that range. And that's how much we know these existing hearing devices cost, and the component costs aren't that much different.

Bill Glovin: In terms of the hearing aids that do exist, my mother used hearing aids, and I've heard a lot of complaints about them. That the ambient noise around people sounds like a murmur, and then when you're focusing on one person, it's a lot easier. Do you find that the quality really fluctuates? And do you advise your patients on a particular hearing aid style?

Frank Lin: Yeah, this notion that, "Oh, my hearing aids don't work that well." It's absolutely true, in a way, and not true in a way. And what I mean by that is, a lot of times ... This sounds crazy. People, when they pay $4,000 for a pair of hearing aids, they're expecting that to be perfection, right? $4,000, it's got to be good.

Bill Glovin: Right.

Frank Lin: But like anything else, it's not going to be perfect. I mean, it's not like putting on a pair of glasses, for instance. You put on glasses, it just a refractive error. So if you just bend the light properly, you can see perfectly.

With hearing loss, there's been damage done to the inner ear. And what hearing aids do is it helps amplify the signal and suppress the noise a little bit to make it easier to hear, but it's not going to be perfect. So a lot of times, when people have trouble hearing with hearing aids, there can be several reasons. One is that their expectations are wildly overblown a little bit.

A lot of times that comes with the cost. So much money, it's got to be good. But a lot of if, too, it can come also from just the hearing aids weren't properly programmed or adjusted for their hearing loss, and that's going to be an issue,
too. So there are a lot of reasons why "hearing loss" sometimes ... Or hearing aids are perceived as not being very good.

Another one can be, quite simply, too, is if you wait a long time. You have hearing loss for decades and decades and decades, and then you get a pair of hearing aids when you're really, really having a lot of trouble hearing, it's much harder to address. Like any other "medical issue," if you wait until the very end, it is much harder.

The brain pathways that process sound have already begun to essentially degrade in many ways. It makes it much harder for the brain to relearn to hear again at that point. Whereas, if you nip it in the bud earlier, like any other medical condition, it's much, much easier.

There are a lot of reasons. I'm an ENT surgeon at heart, so actually, I don't even know the different hearing aid models. I get them all on the surgery side if anything needs to be done. Right now, there are five manufacturers that control 90% of the world's marketplace for hearing aids. So usually, the key thing is sending them to a trusted audiologist.

In other words, an audiologist that really has their best interest at heart and will really work with them to figure out what works best for them. So usually, it's referring them to the right sort of person. So there's certain audiologists I know who I really send my more complicated patients to.

Honestly, if our patients are the bread and butter of hearing loss, and what I mean ... Bread and butter, I mean just a very common age-related hearing loss that's not too severe. Even places like Costco do a great job. Costco actually has hearing aid centers, and all their technicians have to program the hearing aid to a very specific protocol, which is good.

It's the best practices for the protocol. So a lot of times, it's a great [inaudible 00:24:33] with hearing aids for people with just a regular, non-complicated hearing loss. But invariably, usually I try to refer my own patients on to people that I know already, who I know will do a good job, and work with that person. But then, it's crazy to say this, but some of my patients, they don't need to see an audiologist. They'll be the ones who would do well with a good over the counter hearing aid, which I can't quite suggest yet, because there are none on the market yet. But that is coming, and that's going to be very exciting. Because those are the people now who try the Apple AirPods and find that they work great.

Frank Lin: But it wasn't designed to be a hearing aid, so it doesn't last long enough, for instance. So they're the ones who would do great if there was a very, very good robust over the counter hearing aid that is going to be safe and effective, let's say from Bose, for instance, that they could just buy and use themselves. And I
have a lot of patients who are, I'll say, pent up just waiting for that to happen so they can just try some themselves.

Bill Glovin: One of my advisers pointed out that one skill that can be helpful, and allegedly taught, is lip reading. He even said you can google lip reading and find several courses. Is there anything to these courses? And is there any legitimacy to claims that lip reading might provide a valuable avenue of treatment?

Frank Lin: Yeah, it's funny. All of us, whether you know it or not, all of us lip read. From day one, as we're learning language, understanding speech and communication, your brain uses both auditory cues and visual cues. And the way we know this is if any of us have ever watched a movie where the soundtrack is just a little bit off by a few seconds.

It's the most annoying thing in the world to watch, because they don't match up. So all of us are trained to lip read, whether you know it or not. Now, some people are clearly better than other people, people who have progressively developed hearing loss. A lot of times, their brains get better and better at using the visual cues.

I have a friend of the family who was actually born with severe hearing loss, and is essentially functionally deaf. And she can't really hear much at all, but she clearly communicates by lip reading. She does incredibly well. And that was something she literally had to learn when she was younger.

For many of us, let's say adults who have always had hearing, but have lost some over time, you're absolutely right. There are some lip reading courses. I don't know much about them. I know it's something that people could theoretically learn, essentially, to help with the auditory cues.

It's not that common, though, and for a lot of people it can be taught. A lot of people, it just ... Interestingly, the people that are engaged and trying to listen to conversations, the brain just does it by itself for a time. If you're a very attentive listener, and you're really trying to hear what that person's saying, and you've got some hearing loss ... If you focus well, a lot of times your brain just naturally begins developing the rhythms, and learning how to use visual cues, even without formal teaching. Now, that being said, the formal teaching definitely has a role. It's just it's not that common, though.

Bill Glovin: Back to COVID for a minute, has wearing a mask made the issue of early dementia due to hearing loss worse, and are there any other overall effects from COVID?

Frank Lin: Oh, man, immeasurably worse for mask wearing. I mean, for example, the friend of my family who purely relies on lip reading. She was normally someone we'd go out to dinner with, and she's such a good lip reader. A lot of times you
really couldn't even tell. And she has been very, very isolated now because she basically can't lip read anymore.

Everyone's got masks. So masks are doubly handicapped in many ways, because it masks the visual cues. So obviously, you can't see the visual cues from your lips. And actually, some of us rely on it to some degree.

No matter how good your hearing is, all of us rely on visual cues. But it masks visual cues, and also, in some cases too, depending on what type of mask you wear, it can also muffle the auditory output to some extent as well. So it can mask the speaker's voice to some extent, too.

The loss of visual cues is probably the bigger thing for a lot of people, though. And since a lot of my fellow clinicians and I, who ... We see a lot of patients with hearing loss. A lot of times in clinic, we'll use a clear mask. So it's a mask, but it's clear. So it allows the patients to see our lips still. Which it can be a huge help for them, obviously, because otherwise they'd be struggling to here.

Bill Glovin: Tell our listeners about the ACHIEVE trial, which seems like it's a seminal event.

Frank Lin: We hope so. The ACHIEVE trial, the Aging and Cognitive Health Evaluation of Elders randomized trial, or randomized study ... It's a study funded by our tax dollars. It's coming from the National Institute on Aging, which is the primary NI institute which funds dementia research. And this is a trial designed specifically to test if we treat hearing loss in older adults can we, in fact, reduce the risk of cognitive decline, dementia, and brain aging?

So there's a trial that's going on now. From 2018 to 2019, we recruited almost 1,000 older adults. These are people between the ages of 70 and 84 across the country. Four different studies, that's across the United States.

Frank Lin: And these are all 70- to 84-year-old adults, all of whom have a mild to moderate hearing loss, which is the "bread and butter" hearing loss in that age range. But almost half the people in that age range would have that level of hearing loss. And they've been randomized one to one. One half got their hearing addressed with gold standard hearing aids, and meeting with audiologists.

The other group got a successful aging education control, so basically meeting one on one with a health educator, going over critical topics for nutrition, diet, exercise, and key health aging topics. And the reason for this, everyone has the same amount of exposure to study personnel. And now, everyone's being followed for three years across all the study sites.

And after three years, we're going to see if people who had their hearing loss treated versus those who didn't, whether they have slower rates of cognitive decline, and lower risks of dementia, and lower rates of brain aging based on brain MRI over time. After three years, then everyone in both treatment groups
then get the other treatment as well. These are utility interventions. The people in the hearing group will get the one on one session with the health educator. And the people in the health education group at first will all get hearing treatment after three years as well.

Bill Glovin: Finally, let's end with is there enough research going on? And is there enough funding for research in this area?

Frank Lin: So enough research going on specifically around hearing and dementia, not really. It's just really just beginning. I mean, in the dementia space, the idea where hearing comes in is still relatively nascent.

I mean, when the Lancet Commission, which was a commission on dementia formed by the Lancet Journal several years ago ... And they published a major meta-analysis of all the major risk factors for dementia. When that came out in 2017, it identified hearing loss as being the dominant risk factor, one of the strongest risk factors of dementia.

It really caught a lot of people by surprise because at the big dementia meetings I go to, let's say, the Alzheimer's Association International Conference, for instance, there's never been much around hearing. And I think it's really accelerating now. People are realizing that is likely a very important risk factor, which we're just beginning to understand now. So the research is definitely accelerating, which is great.

The hard part, again, has been making the bridge so people understand dementia. They understand how to measure hearing, how to treat hearing, what hearing is. And the same thing on the hearing side, to understand dementia. So it's been building the bridges which has been very key, and that is really beginning to happen now.

Fortunately, in that respect too, in terms of is there enough funding available, right now I've got to say that honestly that the National Center on Aging has done a phenomenally good job of being able to convince Congress of the importance of dementia research. Which is why we've literally seen the NIA budget, essentially, go from one billion to more than three billion in just about six years, which is remarkable. And a lot of the increase was purely to fund Alzheimer's Disease research.

So the pool of resources now for Alzheimer's research is better than it has ever been. And it's continuing to improve, which is great. Hopefully, more and more people will begin thinking about where hearing intersects with it, because it's obviously an important risk factor that could possibly be addressed.

Bill Glovin: Well, I think that's a great place to end, and I can't thank you enough. For our listeners, if you like this topic ... And it's such an important issue. You can find Frank's article called “Here and Now” at www.Dana.org. It'll be a main feature in
our October issue, coming out October 15th. And Frank, thanks so much. You just did a wonderful job, and you provided tremendous insight into this whole topic.

Frank Lin: Absolutely, Bill, thanks so much for having me. And thanks for your interest in this topic, as well.