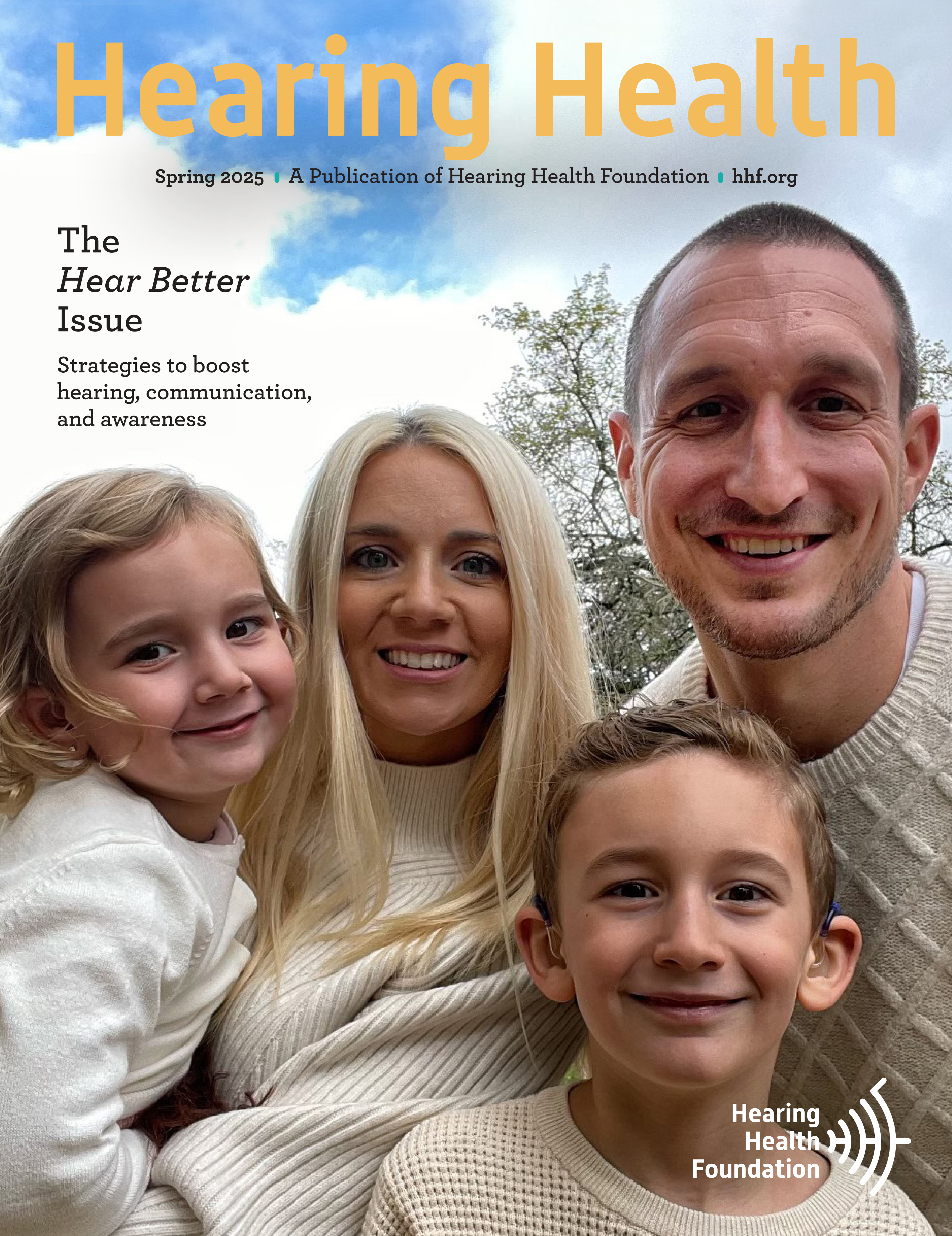

Hearing Health

Spring 2025 • A Publication of Hearing Health Foundation • hhf.org

The *Hear Better* Issue

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Hearing Health Foundation

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The mission of Hearing Health Foundation (HHF) is to prevent, research, and cure hearing loss and tinnitus through groundbreaking research and to promote hearing health. As the largest nonprofit funder of hearing and balance research in the U.S., we are a leader in driving scientific innovation and finding better treatments.

Hearing connects us—to our loved ones, our communities, and the world around us. But when hearing loss becomes part of the journey, whether for ourselves or someone we care about, it can feel overwhelming. This issue's theme, "Hear Better," offers support, inspiration, and advice for navigating life with hearing challenges.

Here you'll find personal stories of resilience, whether it's families learning to support loved ones with hearing loss, who themselves are learning to self-advocate, or individuals facing communication challenges. Not coincidentally, hearing loss journeys often inspire aspiring writers to share their experiences, and in this issue we have three children's book authors who share lessons from living with hearing loss.

Hearing loss is not just about what's missing. It's about discovering new ways to connect and thrive. No matter where we are on this journey, together we can navigate the challenges and celebrate the victories, one story at a time. We hope you enjoy the magazine and share it with family and friends. Thank you, as always, for your support and being a valued part of our community.

Timothy Higdon
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Hearing Health

The *Hear Better* Issue

Spring 2025, Volume 41, Number 2

Features

Departments

Sponsored

Cover Ohio resident Stephanie Kravitz and her family share their journey and advice for navigating the diagnosis of pediatric hearing loss.

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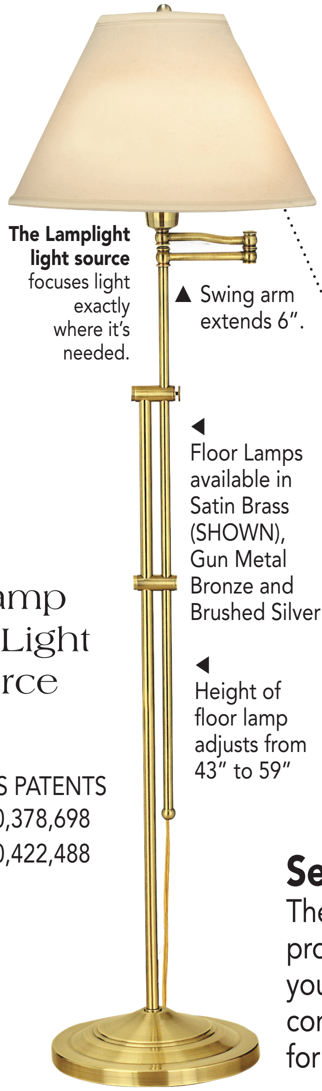

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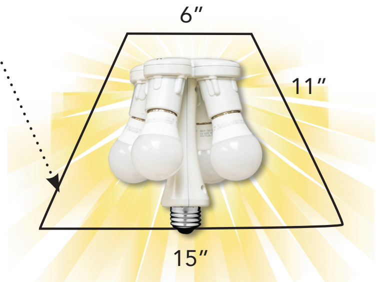

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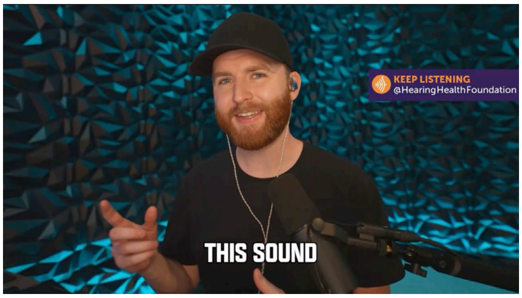
Gaming Creators Amplify the Message of Safe Listening



For World Hearing Day March 3, an annual awareness day organized by the World Health Organization (WHO), Hearing Health Foundation (HHF) again teamed up with key gaming creators to spread the message of healthy listening, reaching collectively over two million of their followers. We were glad to welcome back musician Lunity (left, top) and Fortnite creator Prospering, who were joined by IceManIsaac (left, bottom), a former U.S. Air Force pilot, and Cheebs, a gamer who has tinnitus from metal concerts.

These creators all shared messaging from our Keep Listening prevention campaign during their live streams on March 3, supported by their social media. The WHO has in recent years underscored the importance of safe hearing practices for this population segment. “About 3 billion people play video games on devices such as personal computers, video game consoles, and mobile phones, yet most devices and games lack safe listening features to protect users from harmful noise,” says the WHO, in announcing the first global standard for safe listening in video gameplay and esport activities, in collaboration with the International Telecommunication Union.

The software and hardware recommendations include sound allowance tracking to measure the player’s sound exposure, a user-friendly volume control system that can be easily adjusted, and a “headphone safety mode” that is capable of detecting a switch of audio output between headphones and speakers and automatically reduces the volume. For references, see hhf.org/references.

Hearing Device Resources for Those Affected by the L.A. Wildfires

When the wildfires hit Los Angeles this January, HHF had an especially personal connection because of a board member who lives there with his son, both of whom live with hearing loss. His son, a high school student, was inspired to set up a website to help residents with hearing loss who found themselves having to navigate the chaos of evacuation orders and relocation to temporary housing.

On the website he created, Palisades Fire Hearing Resource, his son writes: “I left behind my hearing aid charger and some other hearing equipment during the evacuation. I was lucky enough to have a community of support who got me the equipment I needed within 24 hours so that my hearing aids would not lose their battery life. I realized how essential this equipment is to me and to our community, and I wanted to create this resource to help others who might be in a similar situation and need hearing support.”

The website offers advice for replacing hearing aids, cochlear implants, and other equipment along with contact information for all the major manufacturers and other tips. For more, see palisadesfirehearingresource.com.

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Confusion, Then Clarity

A family navigates hearing loss through education, advocacy, technology, and grace.

By Stephanie Kravitz

When we learned that our son failed his newborn hearing test, the bedside manner we experienced at the hospital was not great. The healthcare professional was emotional—crying and vague. No information was given, which left us with a lot of unknowns.

The uncertainty made the journey ahead terrifying and rocky. The information we received about our son's hearing was inconsistent, making it hard to understand the severity of the hearing loss or what steps to take next. It was unclear if hearing loss was the only issue or if there were additional challenges.

We live in Cleveland so we sought a second opinion from another health system in the area. That system gave us a different diagnosis. The lack of clarity and answers was overwhelming.

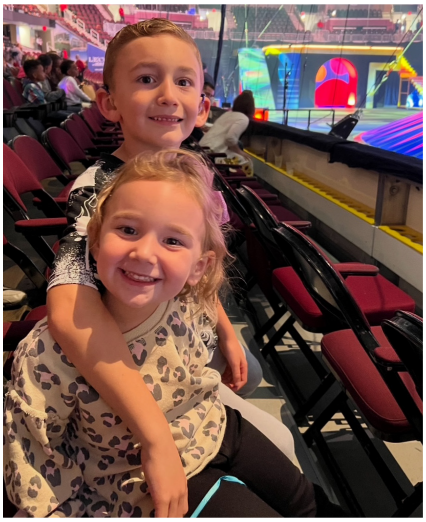
So, we took a breath, and for our son's first year we decided to monitor his hearing and commit to regular hearing tests to see if it changed or stayed the same. We went this route because providers in one health system told us our son needed a cochlear implant because he was deaf in one ear, but doctors in the other healthcare system said he needed ear tubes because it was just mild hearing loss.

We didn't understand anything, and as is always true, you don't know what you don't know. Feeling overwhelmed, we quickly started learning which tests were being done, and what everything meant on the audiograms.

We met with an ENT, a cardiologist, speech-language pathologists, and audiologists to find the right team of professionals and to understand what was actually going on.

Regular testing over that first year finally gave us a consistent diagnosis of mild to moderate sensorineural hearing loss in both ears. Around his first birthday, our son was fitted with hearing aids, and we've been on a great path since.

Three years later, when our daughter also failed her newborn hearing test, we realized the cause must be genetic. But this time, we knew what to do.



Being Proactive

We take a proactive approach to ensure our kids have the resources to succeed in all aspects of life, whether in the classroom, social settings, or relationships, and to live their lives to the fullest.

Both children wear their hearing aids consistently, undergo regular audiograms, and are learning self-advocacy skills. We monitor their speech and education closely to keep a strong support team in place.

It is not always easy. The kids have days when they are exhausted or tired of hearing aids, and we show grace for those moments. Those feelings are normal and will be a part of life.

Hearing loss has taught us to appreciate simple joys and become better communicators. Each child experiences hearing loss differently because every kid is unique.

Our son is more outgoing and is learning to speak up if he needs someone to repeat something, or makes sure he is in front of the person speaking so he can hear clearly. Our daughter is more shy and will sometimes withdraw socially or speak softly because she is uncertain of the word sounds or a classmate's name.

Both of our kids have high frequency moderate hearing loss, but our daughter also has moderate low frequency hearing loss, while our son has only a mild to moderate high frequency hearing loss.

We are continually learning how to navigate it together and to treat them as individuals. We work to understand that just because one child might have an obstacle doesn't mean the other one will have the same. We have learned that hearing loss is unique but it doesn't define the person, and the environment can have a big impact on the child if they are well supported.

While we can't predict what the future holds for our children's hearing, we don't take it for granted and understand the vital role of hearing in every aspect of a child's life. We are grateful for the ways this journey has shaped us into better communicators and problem-solvers. It has taught us the importance of active listening, clear expression, and removing distraction as much as possible when communicating.

Someone with hearing loss may rely on visual cues, such as facial expressions and body language. This focus on nonverbal cues makes us more attentive and empathetic to others.

Also, realizing how important clarity is for someone with hearing loss, we practice being at eye level, enunciating our words, and rephrasing our message to make sure it's easy to understand. We are always exposing the kids to as

> As parents, the sooner we acknowledge that the situation feels tough or overwhelming—and accept that it's okay not to have all the answers—the sooner we can come to terms with the world of hearing loss and embrace it. The more we learn, the better we'll feel.

many words and meanings as we can.

This has helped my husband and me have better connection with each other and as a family and has improved our communication skills in personal and professional interactions.

Take a Breath

Advice I would give to a family just getting a diagnosis is to first know that it's okay to feel any emotions that come up. Everyone processes the information differently. Some parents feel guilt or are scared of the unknown. Since more than 90 percent of children born with a hearing loss have typical hearing parents, we know feelings of shock have to occur frequently.

As parents, the sooner we acknowledge that the situation feels tough or overwhelming—and accept that it's okay not to have all the answers—the sooner we can come to terms with the world of hearing loss and embrace it. The more we learn, the better we'll feel.

Challenges will arise, like noisy events and auditory bombardment in social settings, but preparation and understanding help. Teach your children to embrace their hearing aids and take breaks in quiet if needed. Have an action plan for common issues, like lost or malfunctioning hearing aids or uncharged hearing aid batteries.

I always share with parents experiencing a new diagnosis of a hearing loss for their child to take a breath and know that it will be okay. There's a supportive community out there—you just need to look. Online forums, social media, and audiologists can connect you with resources.

In fact it is how I learned about Hearing Health Foundation—through seeking more information and researching things online. Reading an issue of Hearing Health magazine, I saw another mother who shared her experience with her child, and that is what encouraged me to reach out to her. And I realized there are families out there who are able to and want to share advice.

Each season brings about new challenges for children with hearing loss—new schools, camps, after school activities, new teachers, or babysitters. As a family we strive to always be communicating, and as parents we are making sure our children have the hearing access they need to feel comfortable and any other accommodations that are necessary.

The kids are growing older, and we'll be reaching new milestones with different things to learn and new experiences. Our hope is by sharing our story it can help another parent feel better and not alone in this journey.

9 Tips for Families Living With Hearing Loss

1. ***Mindset is everything.*** Stay positive and educate yourself so you can help your child succeed and thrive. Educate family members and friends on best communication practices, and try not to get down if they forget or don't follow them. It's a marathon, not a sprint.

   You may also have to be firm with what you are asking or advising. It's a learning process for everyone. Patience is key with children who have hearing loss, as they navigate challenges in listening, understanding conversations, and speech development.

2. ***Place importance on social-emotional well-being and self-advocacy.*** Teach your child to self-advocate so they feel comfortable asking for help or asking someone to repeat something if they missed it. Empower them by explaining what hearing aids are and why they wear them, because other kids and people may ask them.

   Help your child feel comfortable around other kids and repeat names as they meet new friends. It's common for kids with hearing loss to feel uncertain or insecure about what they heard, especially if it's a new name or word. We teach our kids to repeat names when they meet a new friend or teacher, so they are comfortable in social settings.

3. ***Learn communication best practices with your children.*** Face your child when speaking so they can see your lips and expression. Speak clearly and naturally, and don't yell or over-enunciate your words. Kids will pick up on how you treat them

and communicate. Raising your voice to communicate is a common misconception; it can distort sound and overwhelm a child.

When we expose our children to a new environment (e.g., restaurant, play, concert, basketball game, dance, theme park, airport), we go over expectations. We have learned that communication is key in everything we do. The more we communicate, the more successful we are as a family. Our son has let us know how a loud venue makes him feel, so we are working with him to learn to overcome challenges at a noisy event, such as turning his hearing aids down or taking a break in quiet.

4. ***Leverage early intervention and support.*** Work with audiologists, speech therapists, or educators as early as possible. Our motto is to be proactive versus reactive. It's the hardest part about parenting children with hearing loss because we have been told "no" a lot.

Your child will most likely have a 504 or IEP (individualized education program) at school, which will include accommodations such as classroom seating and protocols for test-taking. Ask your audiologist or speech therapist to share information on accommodations to consider.

That said, our school district has told us our children don't need speech or services if they're not behind on any milestone—even though I know the challenges they experience with certain sounds and/or sound deletion (when they don't hear certain speech sounds).

As a result we do a lot of work at home and see a private practice speech therapist that our pediatrician recommended, and she is fantastic. Technology such as hearing aids is great at bridging the hearing loss gap but hearing aids do not equal perfect hearing. There are also other challenges, such as daily cleaning, properly fitting ear molds, keeping the hearing aids dry, feedback issues, etc.

5. ***Keep a binder.*** Yes, for you to stay organized, to house all your paperwork, research, audiograms, and more. Also, one day your children will eventually and gradually take over this organization and will benefit from having a binder of answers to their questions. It's easy to feel overwhelmed with information or appointments, so the binder is my home base and place for all things hearing loss.

I also live by these tips for sports or activities with my kids:

6. ***Connect with the coach*** before the first practice. Communication is key.

7. ***Learn the rules*** of the game prior to the first practice and help set expectations for the practice.

8. ***Practice the vocabulary*** of that sport or activity at home so your child can be up to speed on new words or sounds.

9. ***Introduce new kids on the team*** and practice the coaches' names beforehand. Depending on their age, you can help break the ice with new teammates. Gyms, fields, and swimming pools can be noisy and echoey and make it hard to hear new names or conversations.

Your child will start to advocate on their own but only after you model the behavior and show them strong habits on how to prepare.

Hearing impacts how we process the world happening around us. But hearing loss is invisible and so often easily dismissed.

We can boil down our mantra to these four words: Prepare. Communicate. Practice. Repeat.

Stephanie Kravitz lives with her family in Ohio.

Share your story: *Tell us your hearing loss journey at editor@hhf.org..*

Support our research: hhf.org/donate.

The Challenge I Live With and Want to Share With You

By Sally Roesch Wagner, Ph.D.

Ever notice how older people in a gathering will sometimes just sit smiling quietly? I used to think they were starting to lose it. Now I know the only thing we have lost is our hearing.

My whole life I prided myself on being healthy as a horse. And then the 1960s warnings we scoffed at, about standing too close to the huge speakers during rock concerts, came true. I remember in particular doing this at a Jefferson Airplane concert.

I did lose much of my hearing once I began to age. Now I am reduced to "what?"s and lipreading, and the worst is feeling alone in groups.

I imagine from the outside I look like a stick-in-the-mud because I don't laugh when everyone else does. From the inside it feels like I'm separate, alone, pushed aside. The best jokes, it turns out, are those that people almost mumble under their breath, as an aside.

I find myself exhausted sometimes after spending time with a friend who speaks softly, tired from the strain of trying to understand them. Ever notice how older people in a gathering will sometimes just sit smiling quietly? I used to think they were starting to lose it. Now I know the only thing we have lost is our hearing.

My life feels like it's closing around me. I went to a musical on Broadway recently and, despite the fact that the performers were nearly yelling from the stage, I couldn't understand much of what they were saying. And the musical was "Suffs," about the women's suffrage movement—the area of study for all of my life.

I love teaching, and in my early 80s I feel I'm at the top of my game. Student evaluations show they seem to feel the same. But I may have to stop teaching because I can't hear about a quarter of the 18 students in the seminar—young white women mostly, still culturally trained to use soft, inside voices. I find I am avoiding large groups.

I don't have a solution and I wish I did. I pushed my budget to get the best hearing aids available, but they have a limited ability. I don't feel like I can expect everyone I encounter to speak loud enough for me to hear, nor practice doing a "mic check" each time we meet, or loudly repeat everything said in a group. I remember now with regret how frustrated I got when hearing-challenged acquaintances kept asking me to repeat what they'd said.

I've been learning how to enable live captions on my phone and have tried out different captioning apps for group conversations. It's a work in progress.

I do feel like something is lost when older adults are put into what feels like isolation chambers due to our hearing ability. We have something unique to contribute from the perspective of our years, and I would like us to find a way as a society to allow us to do that.

While this is a new situation for me, I think of the terrible loss from the long history of the separation of the hearing abled and the hearing challenged. My finally understanding and writing about it so late in life may anger them. But I would like now to be part of the ongoing work to find a way culturally to change hearing challenges from an individual problem to a collective solution.

Author and professor Sally Roesch Wagner, Ph.D., was awarded one of the first doctorates in the U.S. for work in women's studies at University of California, Santa Cruz, and was a founder of one of the first college-level women's studies programs in the U.S., at California State University, Sacramento. She has taught women's studies courses for 53 years, currently in Syracuse University's Honors Program. A major historian of the suffrage movement, she was the founding director of the Matilda Joslyn Gage Foundation and sits on the advisory councils of the Women's Suffrage National Monument and the National Women's History Museum.

Share your story: *Tell us your hearing loss journey at editor@hhf.org.*

Support our research: hhf.org/donate.

Seeing My Hearing Loss in a New Light

By Pat Dobbs

Joining a drumming class was an exciting decision. It's all about rhythm, not melody, so my hearing loss wasn't a major obstacle. I quickly became fascinated by one of my classmates, Dana, a young woman who is blind in one eye and legally blind in the other. We often sit next to each other, and I've been intrigued by the similarities and differences in how we navigate our respective challenges.

Dana can hear our instructor's drumming patterns but can't see them, while I can see the patterns but sometimes struggle to hear them. Additionally, in group discussions, I find it difficult to follow conversations when multiple people are speaking at once, whereas Dana has no trouble in that regard.

Despite our different sensory challenges, we both rely on well-lit environments: Dana needs light to see where she's going, and I need it to help me lipread when I can't hear clearly.

We also both exert extra mental energy to function in everyday situations. Poor lighting makes it harder for Dana to move safely, just as background noise makes it harder for me to understand speech. The effort we put into compensating for our impairments means we often feel more exhausted than others.

As I got to know her better, I became more impressed by Dana's resilience. She lives alone, has a successful career as a massage therapist, and is in a committed relationship with a sighted partner. She gets around using a white cane, depending on friends and public transportation for longer trips. Her independence and confidence inspire me.

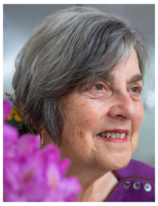
Dana and I have both faced misconceptions. She's been told, "You can't be blind, you're too pretty!"—as if blindness has a certain look. I've heard, "You don't look like the type to have hearing loss." But what does that even mean? Disabilities don't discriminate. They affect people of all backgrounds, appearances, and ages.

Dana often encounters frustrating assumptions. Public venues sometimes offer her a wheelchair just because she's blind. She's even been asked invasive and inappropriate questions about her personal life. These experiences mirror some of my own struggles with how society perceives disabilities. I too have been asked inappropriate questions and offered a wheelchair when I've asked for accommodations.

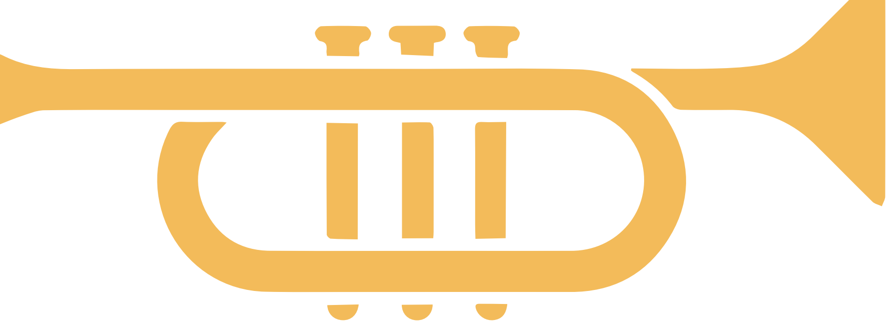
For years, I was reluctant to acknowledge my hearing loss. I hid my hearing aids with my hair, pretended to understand conversations I didn't, and avoided associating with others who had hearing loss.

Dana had a similar experience—she resisted joining vision loss groups, as if doing so would define her solely by her impairment. Over time, we both realized that denying our disabilities only made life harder. We've learned that accepting and advocating for ourselves brings empowerment, not limitation.

We must be kind to ourselves. We will make mistakes. We will have setbacks. And that's okay. When we extend the same kindness and understanding to ourselves that we do to others, we unlock the ability to truly hear better—not just with our ears, but with our hearts.



Staff writer Pat Dobbs has an adult-onset hearing loss and wears bilateral cochlear implants. The past president of Say What Club, an international online hearing loss support group, she is a resident of Deer Isle, Maine, where she formed the DownEast Chapter of the Hearing Loss Association of America. Find her at pat@coachdobbs.com.



My Musical Journey With Hearing Aids

A high school student shares her joy of playing in the band on her chosen instrument. ***By Libby Byxbee***

I have had a bilateral moderate to severe hearing loss since birth. My hearing aids, which I've worn since the age of 4, have sparkled, been pink, and are now small, discreet, and the color of my hair.

My hearing aids are always powerful but they are not perfect. Sometimes sound is fragmented or distorted, sometimes it's too loud or too soft, or too high or too low, and sometimes, in just the right room with the right acoustics, everything aligns and I can hear beautifully.

But in order to be in my school band, music has had to become more than just sound—it has become a physical experience.

The trumpet is my instrument of choice. I loved watching TV shows where soldiers were awakened by "Reveille." I was drawn to the instrument's power despite its short, compact size. Playing the trumpet also allows me to look up frequently and watch my band director, Mr. Tenyson, for visual cues and facial expressions.

That's not to say the trumpet is necessarily the best choice for someone with hearing loss. Practicing can be a challenge. When practicing alone, I can't always tell if I'm playing the right notes, much to the occasional annoyance of my parents and big sister!

Playing the trumpet has been so much more for me than just being in the band. It has pushed me to be uncomfortable, vulnerable, and part of something bigger than myself.

Even though I may not hear every note perfectly, playing in a band has been a powerful experience. I connect with music—not just through the sound of my trumpet but through feeling, vibration, and the very essence of music itself.

And the more I play with others, the more I feel—and hear.

I share my story for other young people with hearing loss, and to say, "Keep trying." Your experience may be different, but it will be perfect in its own way, and just for you.

Libby Byxbee is a 9th grade student in Connecticut. In addition to playing the trumpet, she loves playing water polo.

Share your story: *Tell us your hearing loss journey at editor@hhf.org.*

Support our research: hhf.org/donate.

From Lymphoma Survivor to Hyperacusis Fighter

By David Vance

In 2017 I was diagnosed with lymphoma, a type of blood cancer, and went through chemotherapy and radiation for a duration of six months. Three quarters of the way through radiation, I noticed that my ears started to have a mild ringing and would not go away. When working as a musician for years, rapping, I would leave events with my ears ringing from the loud music. Waking up the next day, it was all gone, but this time it didn't go away.

Following my cancer treatment I went back to work as a server, and after a few weeks in, chatter in the restaurant felt very loud and the clanking of dishes was bothersome. I saw a doctor to check for an ear infection and was told that yes, I had an ear infection.

But it never went away, even with antibiotics. This left me clueless as to what was going on.

I went to see a different doctor and was told that I had no infection, but that maybe the reason why my ears were ringing and I was sensitive to sounds was from having TMJ (temporomandibular joint) dysfunction.

I found a specialist and was assessed. After doing an MRI, the physician told me that my jaw joints were slightly off. He prescribed medication to relax the

Cancer survivor David Vance lives with pain hyperacusis and tinnitus and is committed to raising awareness about the auditory conditions.

Opposite: Vance was diagnosed with lymphoma in his 30s but says that for him, cancer and chemotherapy were easy compared with living with pain hyperacusis and tinnitus.

I was able to 90 percent live my life through lymphoma, but with hyperacusis and tinnitus even the sound of bath water sets me back and potentially creates more damage that is permanent. I'm locked between four walls from sound, and it is no way to live.

I use meditation to cope—to try to keep myself grounded, forget about yesterday, forget about tomorrow, and try to live each moment the best I can. So when my head hits the pillow each night, I can call the day a success.

muscles in my face, to see if it would help. The medication worked, wiping everything away entirely—only for everything to return again two weeks later.

I moved to the quietest part of the restaurant, the host stand, to continue my job. After nine months of pushing through, I could not push anymore, and that (in 2019) was the last time I worked at a physical job.

I still had no clue what I was going through. Doctors said that my auditory symptoms were present because my jaw joints were misaligned and because of chemo.

I looked online and found people going through the same thing. Apparently what I have is pain hyperacusis and reactive tinnitus. I get pain from everyday sounds. The pain can be burning, aching, stabbing, etc.

Almost every sound sets off my tinnitus as well. And then I read that there was no cure for either. I found an organization online, Hyperacusis Research, and started to read some of the patient stories on their website—and finally I found people like me.

My family didn't understand what was happening. I became a recluse and still am to this day. I was looking for more information online, but could not find it. I wanted to relay to everyone around me what I was going through in detail.

So I started my own awareness outreach to help explain. I even had media outlets reach out to me to do interviews. With no hesitation I agreed to partake in order to try to get the conditions better known on a larger scale, such as on the NPR podcast "Audacious With Chion Wolf."

Getting through cancer was difficult. My oncologist assured me that I could still live a healthy life following treatment since I was young, just 35. But through my own personal experience, cancer was a walk in the park compared with hyperacusis and tinnitus.

I was able to 90 percent live my life through lymphoma, but with hyperacusis and tinnitus even the sound of bath water sets me back and potentially creates more damage that is permanent. I'm locked between four walls from sound, and it is no way to live.

I use meditation to cope—to try to keep myself grounded, forget about yesterday, forget about tomorrow, and try to live each moment the best I can. So when my head hits the pillow each night, I can call the day a success.

I do guided meditations on YouTube with subtitles and no sound. These are two favorites: Healing Chronic Pain and Clarity & Guidance. I also do meditation for anxiety in silence with my eyes closed, sitting in a comfortable position. I pinpoint why I am having anxiety ("Ears are sore"). My judgment about it ("It's not fun"). The story around it ("I had a phone call for too long, with sound").

Vance, shown here performing about 10 years ago in a Toronto club, was a rapper. Since his hyperacusis, his creative outlet is writing poetry (far left).

Special Wish

By David Vance

Sound hitting me from all over
Need the four leaf clover
To make the special wish
For a cure to come soon
Number one on the list
Wish people would understand
But you have to fully be in my shoes
I'm just trying to prove
I got so much to lose
Dishes clanking, piercing my ears like a knife
The burning, hot like lava
I feel like I am losing sight
As I pray, and I meditate
Sit and I close my eyes
I wish I could go back
To change my whole life
Right now, need to accept
These are my new cards
Making a new path
Happy to be have my art
Tears of loss
Tears of joy
Tears of love
Tears are hard to avoid
Trying to bring change
With this new way of living
I do it from the heart & soul
Everything I do is God given

The next step ("Rest for the remainder of the day/week/however long it takes me to feel better").

Since I am not able to rap anymore I also write poetry, and this gives me a sense of purpose and helps me to stay creative and release my emotions.

As I work to raise awareness, like with this story, it is positive feedback from fellow sufferers, their families, and friends that helps me to keep the momentum going. To know that I am still doing something good in this world warms my heart, and it goes both ways as speaking with other sufferers also helps me to get by, to know that I am not alone.

I also remind myself that I have gotten through each challenging day over the past six and a half years. It's a reminder that whatever challenge I am dealing with presently I will most likely get through as well. The success rate of getting through difficult days has been 100 percent so far, thank God! Faith and spirituality help me get by.

The journey has not been easy. Having hyperacusis and tinnitus has taught me that every human on earth has a different mission. Some people have things easier, some harder. We are all on our own unique paths. These are the cards I have been dealt, and I try to work with them every day, the best I can.

David Vance lives in Ontario, Canada. For references, see hhf.org/references.

Share your story: *Tell us your hyperacusis journey at editor@hhf.org.*

Support our research: hhf.org/donate.


TV · EARS
Volume
off
on
Tone
TV · EARS®

A Push for Hearing Devices That Are 'ADA-Access-Ready'

By Wynne Whyman

I am a patient with long-time progressive hearing loss, using a cochlear implant and a hearing aid.

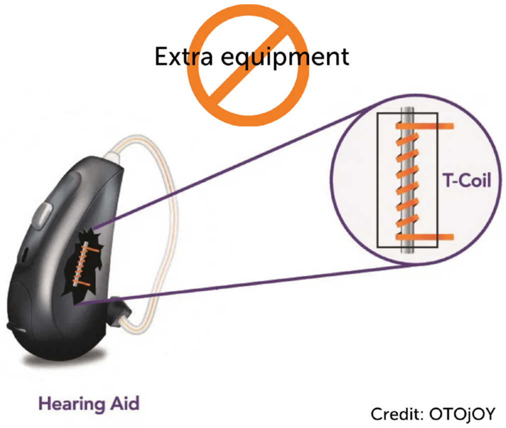
It took 25 years for me to learn about assistive listening systems, which started my individual advocacy—and over the years, evolved into my current role at the Center for Hearing Access, a national advocacy and education nonprofit.

In my various conversations with other users of hearing devices and patients with hearing loss, I have found that the vast majority are shockingly unaware they have the right and option to hear more clearly in public and

Using a Hearing Loop

If you have hearing instruments WITH a telecoil:

Switch on the telecoil program.



Credit: OTOjOY

If you have hearing instruments WITHOUT a telecoil, or if you are WITHOUT hearing instruments:

Borrow a hearing loop receiver and headphones from the facility.

Optional: Bring your own wired headphones or earbuds.

Credit: Contacta

Using FM/RF or Infrared Systems

If you have hearing instruments WITH a telecoil:

Borrow a receiver and neckloop from the facility, and switch to your telecoil program.

If you have hearing instruments WITHOUT a telecoil, or if you are WITHOUT hearing instruments:

Borrow a receiver and headphones from the facility.

Credit: Williams AV

private places. And why is that?

The answer is complex with many interrelated pieces—with the manufacturers and providers of devices being two of the key pieces.

We at the Center for Hearing Access are deeply concerned about users/patients being able to easily connect their hearing devices to *all* assistive listening systems. These include current and future technologies: hearing loops, FM/RF, infrared, and Auracast.

In the United States, assistive listening systems are mandated by the Americans with Disabilities Act (ADA) to give people with hearing loss the clarity that is impossible to receive with hearing instruments alone.

However, there are multiple challenges for users to access these assistive listening systems. We consistently find that once users learn about the benefits of telecoils, they are frustrated when they learn their hearing aids do not have telecoils, and as a result they cannot access the hearing loops, FM systems, and infrared assistive listening systems to which they are entitled under the ADA. They do not understand why they cannot "have it all" in their

We at the Center for Hearing Access are deeply concerned about users/patients being able to easily connect their hearing devices to *all* assistive listening systems. These include current and future technologies: hearing loops, FM/RF, infrared, and Auracast.

Using the Auracast Streamed Assistive System

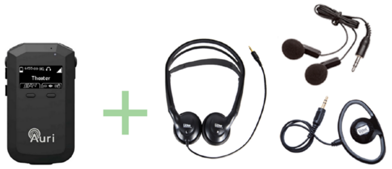
If you have hearing instruments WITH a telecoil:

Borrow a receiver and neckloop from the facility, and switch to your telecoil program.

Receiver Neckloop

If you have hearing instruments WITHOUT a telecoil, or if you are WITHOUT hearing instruments:

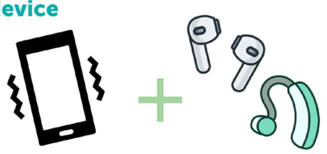
Borrow a receiver and headphones from the facility.



Receiver Headphone options

If you have hearing instruments or earbuds WITH Auracast:*

Use your smartphone or borrowed intermediary device to select Auracast stream; and switch to Auracast stream in your hearing device



Intermediary device Auracast hearing device

Credits: ListenTechologies/Ampetronic

NOTES:

- *Currently, there is no easy, single-push button on a hearing instrument to connect to Auracast.
- The first two options will be the most common for several years.
- At the time of this printing, a) extremely few locations in the United States have Auracast streamed ALS installed and b) very few patients using prescription hearing instruments have Auracast in their devices
- Auracast streamed ALS can be installed alongside a hearing loop, FM/RF, or infrared system.
- Without international standards (scheduled for late 2027) and practical, reputable third-party proof of concept testing, site and user equipment may be incompatible, may not fully work, users may need to use equipment differently, and other unforeseen problems may present themselves during this time.
- Regulatory disability compliance. It is unknown if and when various Auracast streamed ALS will be compliant with disability regulations (in the United States, ADA). Buyer beware.
- For references, see hhf.org/references.

Source: Center for Hearing Access, as of March 2025

hearing aids or cochlear implants.

Users want and need Bluetooth, telecoils, and Auracast (when it is available in the future)—and many would also like rechargeable batteries and other features. We wonder why decisions are made that preclude having all these options for patients who want them.

When Auracast was first announced we were promised direct-to-hearing instrument connectivity without an intermediary device. We were thrilled because this is the capability that a telecoil provides.

But recently, we are seeing more and more mention of an intermediary device. Intermediary devices add complexity and barriers for individuals with limited dexterity, limited cognitive abilities, or limited tech familiarity. An intermediary device is just one more thing to remember, charge, and troubleshoot. The need to borrow equipment adds to the stigma of hearing loss.

We request that manufacturers produce—and hearing care providers fit—what we are terming “ADA-Access-Ready” hearing instruments that connect to ADA assistive listening systems via telecoil (hearing loops, FM, and infrared), and future Auracast and other technologies.

A list of “ADA-Access-Ready” hearing instruments is available at centerforhearingaccess.org/wp-content/uploads/ADA-Access-Ready-Hearing-Instruments-List.pdf.

These fully “ADA-Access-Ready” hearing instruments will require:

- » Both telecoil and Auracast connectivity embedded in the hearing instruments, and not merely offered in an accessory device.
- » Direct-to-hearing instrument connections for both telecoils and Auracast. No intermediary device to be required, at least for connection to the dedicated assistive listening stream.

Ensuring equal access to sound is not a luxury—it’s a right. Together, we can push for hearing devices that truly meet the needs of all users, without unnecessary barriers.

Let’s make “ADA-Access-Ready” the standard for hearing instruments.

Comparison Chart	Hearing loop	FM/RF	Infrared (IR)	Wi-Fi	Auracast as ALS*
Easy to use, with one push button on hearing aids or cochlear implants	✓				Yet to be solved
User needs no extra equipment from facility	✓†				Extremely few hearing aid users have Auracast; receivers required for foreseeable future and for those without devices
Does not need a smartphone or app	✓	✓	✓	If receivers provided	If receivers provided
Minimal latency (end-to-end sound delay)	✓	✓	✓		Latency varies depending on transmitter model, settings, and receiving device. Typically > 30 ms.
Meets ADA standard	✓	✓	✓		Under investigation
Hearing instruments can connect using built-in telecoils (systems are required to be hearing aid compatible)	✓	✓††	✓††		When used with receiver and neckloop, needed for foreseeable future
Installed in facilities, in 30+ countries	✓	✓	✓	Limited	Extremely few but should increase over next 5 to 7 years

**Auracast streamed assistive listening is an emerging technology. The full technical name is "Auracast Broadcast Audio used as part of an Assistive Listening System (ALS)." It can be installed alongside an existing ALS. See centerforhearingaccess.org/auracast for more information.*

†For ADA-access hearing instruments with telecoil-enabled hearing instruments (hearing aids, cochlear implants, and bone conductive devices).

††When used with a neckloop.

The full document is online at: centerforhearingaccess.org/wp-content/uploads/Assistive-Listening-Systems-Quick-Guide.pdf.

For additional references, see hhf.org/references.

Center for
Hearing Access
at The Shedd Institute

Wynne Whyman is the director of communication and advocacy for the nonprofit Center for Hearing Access at The Shedd Institute. For more, see centerforhearingaccess.org. For references, see hhf.org/references.

***Share your story:** Tell us your hearing loss journey at editor@hhf.org.*

Support our research: hhf.org/donate.

The Formula for Better Hearing in Noisy Places

By Kathleen Wallace, Au.D.

Despite an explosion of technological advances in hearing devices over the past decade, one challenge persists for those who use hearing aids: hearing well in background noise.

Unfortunately, it is the most common complaint and challenging problem to address effectively. This is due to how hearing loss affects the auditory system's mechanism to filter out background noise, and the challenge of social events where the background noise and what you want to hear can be acoustically very similar.

Simply put, your brain has to figure out what voice you should be paying attention to and what conversations you should ignore.

In audiology, we describe listening environments using the signal-to-noise ratio (SNR). The signal is what you want to hear—like your conversation partner—and noise is everything you don't want to hear.

A positive SNR means the signal is louder than the background noise; an SNR of around 0 decibels (dB) indicates that the signal and noise are equal; and a negative SNR reflects that the background noise is louder than the signal.

People with hearing loss often require at least a +10 dB SNR to perform adequately in noisy settings.

Continued on page 27.

RESTAURANTS

71 PERCENT **are too loud for conversation**

31 PERCENT **endanger hearing health**

BARS

90 PERCENT **are too loud for conversation**

60 PERCENT **endanger hearing health**

Source: SoundPrint

Please Help Us With This Brief Survey

Hearing Health Foundation would like to hear your opinion to better serve your needs. Please fill out this survey and use the envelope provided to mail it back, or answer online by scanning the QR code at left or visiting hhf.org/2025-survey. Thank you.

How important to you is HHF's mission to prevent and cure hearing loss and tinnitus through groundbreaking research and to promote hearing health? (Select one.)

○ Very important
○ Somewhat important
○ Somewhat unimportant
○ Not important at all

How do you engage with HHF? (Select all that apply.)

○ I read Hearing Health magazine
○ I attend HHF's webinars
○ I read HHF's email newsletter
○ I follow HHF on social media (Instagram, Facebook, Threads, Bluesky, YouTube, LinkedIn)
○ I read HHF's blog
○ I visit HHF's website
○ I donate to HHF
○ I have left a legacy gift to HHF (such as a bequest or beneficiary designation of life insurance or retirement fund)
○ Other (please describe)

____

____

Who in your life has experienced hearing loss, tinnitus, or another hearing or balance condition? (Select all that apply.)

○ Self
○ Parent
○ Spouse
○ Child
○ Sibling
○ Other (Please specify relationship.) ________________

How important to you are the following HHF funding priorities?	Very important	Somewhat important	Somewhat unimportant	Not important at all
Hearing Restoration Project: The HHF-funded international research consortium working to regenerate sensory cells in the ear (hair cells) as a cure for hearing loss and tinnitus.	○	○	○	○
Emerging Research Grants: HHF seed funding for researchers working across the entire spectrum of hearing research and balance research, including many underfunded areas of otology.	○	○	○	○
Keep Listening: HHF's hearing loss prevention media campaign.	○	○	○	○

How important to you are the following Emerging Research Grants funding priorities?	Very important	Somewhat important	Somewhat unimportant	Not important at all
Age-related hearing loss	○	○	○	○
Balance disorders	○	○	○	○
Central auditory processing disorders	○	○	○	○
General hearing health	○	○	○	○
Hearing loss in children	○	○	○	○
Hyperacusis (loudness intolerance or increased sensitivity to noise)	○	○	○	○
Ménière's disease (a chronic inner ear disorder affecting balance and hearing)	○	○	○	○
Otosclerosis (abnormal bone growth inside the ear)	○	○	○	○
Supporting researchers early in their career	○	○	○	○
Tinnitus (ringing in the ear)	○	○	○	○
Usher syndrome (an inherited condition causing deafness and blindness)	○	○	○	○
Veteran-related hearing and balance conditions	○	○	○	○
I don't know	○	○	○	○

COMPLETE THE SURVEY ONLINE AT HHF.ORG/2025-SURVEY

How did you first learn about HHF?

____
____
____

How important is it to you that HHF received a 100% rating, 4 out of 4 stars, on Charity Navigator?

○ Very important
○ Somewhat important
○ Somewhat unimportant
○ Not important at all

Where does HHF fit within your philanthropic priorities? (Select one.)

○ HHF is my top charity of choice
○ HHF is one of the top charities I support
○ HHF is in the middle of the list of the charities I support
○ HHF is near the bottom of the list of the charities I support
○ HHF is at the bottom of the list of charities I support
○ I do not donate to HHF

Many people choose to make a "legacy" or "estate" gift to a charity in their will or by beneficiary designation of part of a life insurance policy or retirement fund. If you have not already made a legacy gift to HHF, would you considering doing so to help HHF's mission to prevent, research, and cure hearing and balance conditions?

○ I have already included a legacy gift to HHF in my will, trust, or by beneficiary designation
○ I am interested in making a legacy gift to HHF
○ I am not interested in making a legacy gift to HHF
○ Other ______________________

○ Please have a planned giving officer send me information on legacy giving. I have filled in my contact information to the right.

Would you consider supporting HHF's important work in any of the following ways?	I already have	I am likely	I am somewhat likely	I am not likely
Donating online with a credit card	○	○	○	○
Writing a check	○	○	○	○
Making a monthly donation	○	○	○	○
Speaking with a gift officer about making a significant impact	○	○	○	○
Donating from my donor advised fund or family foundation	○	○	○	○
Giving appreciated assets (such as stocks or bonds)	○	○	○	○
Making a gift via charitable IRA rollover/ qualified charitable distribution	○	○	○	○

Please indicate your age.

○ Under 30
○ 30 to 39
○ 40 to 49
○ 50 to 59
○ 60 to 69
○ 70 to 79
○ 80 to 89
○ 90 or older

Gender

○ Female
○ Male
○ Other
○ Prefer not to specify

Are you an active miltary service member or veteran?

○ Yes
○ No

Is there anything else you would like to share with us? Perhaps your experience with hearing loss, tinnitus, or other hearing or balance conditions? If you would like to be contacted, please use the form at the bottom of this page.

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Name ______________________________
Email ______________________________
Phone ______________________________
Address ______________________________
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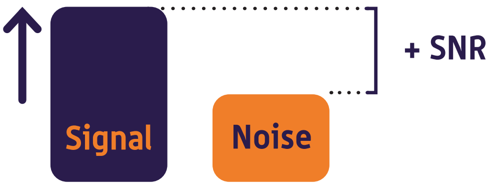
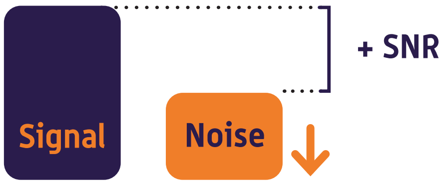
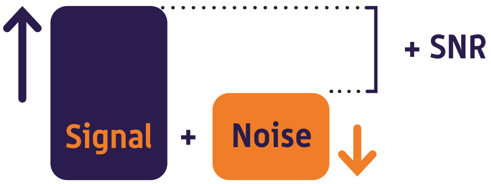


1. **Increase the signal.** This is the natural reaction in a noisy setting—you raise your voice over the crowd's noise, or a speaker uses a microphone onstage. If you increase the signal, even if you leave the background noise untouched, you will get a better signal-to-noise ratio and, therefore, a higher likelihood of comprehending what is being said.



2. **Reduce the noise.** Rooms can be treated with sound-absorbing materials to optimize the acoustic environment of a restaurant or auditorium. Alternatively, more active mechanisms, such as noise reduction technology or active noise cancellation, can also reduce the background noise. By lowering the background noise, you can achieve a better signal-to-noise ratio, even if the signal is not altered.



3. **Increase the signal *and* reduce the noise.** Amplifying the signal and reducing the background noise will lead to the highest signal-to-noise ratio and provide the best opportunity to hear in noisy places. Hearing aids that amplify the signal according to your specific hearing loss and use advanced algorithms to reduce extraneous noise and competing signals achieve this. For further benefit, consider a remote microphone in addition to hearing aids.

The next time you struggle to hear in a noisy setting, think through this formula to see if there is an actionable way to improve your listening performance. Whether by simply moving to a quieter table or using a remote microphone, little listening hacks can go a long way toward better comprehension in background noise.

Hearing Health editorial committee member Kathleen Wallace, Au.D., is at tiktok.com/@eardocoftiktok and instagram.com/kathleenwallaceaud. She sees patients with Tuned Care at tunedcare.com and does in-home visits in New York City through Anywhere Audiology, anywhereaudiology.com. For references, see hhf.org/references.

Those Sour Notes May Be Your Hearing Aids

Digital hearing aids can indeed change some sounds, making them slightly sharp or flat. Here's how to fix it.

By Stephen O. Frazier

With my electronic piano I can play Chopin's "Polonaise" or Beethoven's "Appassionata" with wrong notes, just like Vladimir Horowitz did. He was forgiven those occasional wrong notes because of his astonishing technique and the unparalleled beauty of his sound.

In my case there are also occasional wrong notes, but often they're the right ones that only sound wrong. I also hear "wrong" notes when attending New Mexico Philharmonic concerts, especially when they perform a piano concerto, which is my favorite musical form.

Curious as to what was causing these obviously errant sounds, and suspecting that it might be my hearing aids, I set out to solve this problem.

My research found that digital hearing aids can indeed change some sounds, making them slightly sharp or flat. Musicians' Clinics of Canada reports that the hearing aid industry calls this phenomenon "frequency transposition" or "frequency shifting."

It is especially common in the higher frequencies. Musicians' Clinics of Canada says hearing aids now have a setting called "frequency compression" that can be turned on or off. This is relevant when amplification settings are not optimized for music.

Hearing aids are primarily designed to enhance speech, not music, which has a much wider range of frequencies. When hearing aids compress these sounds, it can alter how music is perceived, making some notes sound "off."

Hearing Review says that such frequency compression can cause high notes to sound lower and low notes to sound higher. Even amplification across different frequencies can lead to pitch distortions.

Exacerbating the problem, digital hearing aids may not only distort or alter the sound of music but also lower the intensity more than necessary, making some notes inaudible or even unpleasant.

Hearing aids are primarily designed to enhance speech, not music, which has a much wider range of frequencies. When hearing aids compress these sounds, it can alter how music is perceived, making some notes sound "off."

For many hearing aids, this problem can be addressed by a visit to an audiologist, especially if the devices can have an optional "music" setting. Hearing Tracker reports that some hearing aids, aided with AI (such as Phonak's AutoSense 5.0), "are smart enough to adjust settings based on the environment—even including a music setting."

The article does recommend having a dedicated setting specifically for music. This setting may minimize distorted frequencies and can also amplify frequencies important in music that are above or below those used in speech.

In addition, frequency shifting may occur more frequently in recorded music as opposed to live performances because the compression applied to recorded music—already compressed during production—can further distort the sound.

The University of Iowa published a paper addressing some of the problems encountered when listening to music using hearing aids.

Their tips for listening to recorded music are:

» Use an equalizer to increase or decrease the volume of higher and lower frequencies.

» Turn down the volume on the music player and turn up the volume of your hearing aids.

» Use Bluetooth and stream music to your hearing aids rather than relying on the hearing aids mics.

» Listen to recorded music without hearing aids, using high-quality headphones instead.

For live music they recommend that listeners:

» Borrow and use an assistive listening device so the volume setting on the hearing aids isn't too high, resulting in distortion.

» Have a remote control for your hearing aids and adjust the volume when the music is too loud, in order to avoid distortion.

» Try a different setting on your hearing aids to see if the music sounds better.

Now with a better understanding of how digital hearing aids can alter music and knowing how to address those issues, you can enhance your listening experience. By optimizing settings and seeking professional advice, we can enjoy the beauty of music with fewer or maybe even no sour notes.

Staff writer Stephen O. Frazier was trained as a hearing loss support specialist by the Hearing Loss Association of America. He has held local, state, and national positions in HLAA and has presented on a variety of hearing loss issues to groups and organizations throughout the U.S. His advocacy work has resulted in new laws and regulations in New Mexico and elsewhere. Previous writings can be read on our blog or on his website sofnabq.com, and he can be reached at hlaanm@juno.com.

For references, see hhf.org/references.

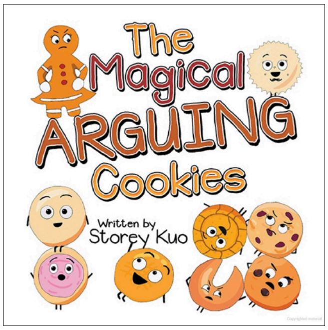
***Share your story:** Tell us your hearing loss journey at editor@hhf.org.*

Support our research: hhf.org/donate.

Books That Caught Our Ears

Turning Sudden Hearing Loss Into Magical Cookies

By Storey Kuo



My children's picture book was born from a life-altering personal experience. It was January 2022 at 9 p.m. when I began to hear a loud ringing in my left ear. I quickly came to learn that this ringing would never leave me.

After visiting several doctors, I learned that I had developed sudden hearing loss in my left ear due to COVID—something I didn't even know was possible. This happened while I was in middle school, 8th grade. Afraid of judgment, I hid this fact from my friends and began to miss more and more school as I attempted various treatments to revive my hearing. Nothing worked.

Growing up, my house was filled with picture books, and I read one before bed each night without fail. To this day, many of the life lessons I live by came from the messages and morals of those books.

One of my favorite picture books was "The Day the Crayons Quit" by Drew Daywalt. It made me laugh on every page, but it also taught me about compassion and empathy. That mix of humor and heart has stuck with me, and it's something I hope shines through in my book as well.

These picture books left a large impact on me. While learning to accept and live with my sudden hearing loss, I started to write a children's picture book of my own, taking inspiration from the lessons I learned while going through this experience. Excited about sharing my message, I spent hours writing the perfect rhymes and drawing the pages by hand.

My book, "The Magical Arguing Cookies," is a silly, fun tale with a meaningful message: Everyone is special and unique in their own way, and that's a wonderful thing. The story follows nine cookies who come alive and argue over which one of them is the "best."

Is it Chocolate Chip, who is very sweet? Or perhaps Fortune Cookie, who comes with a special surprise? When Oliver, the main character (inspired by my little brother, Brad), must decide which cookie deserves the title, he discovers that all of the cookies are special in their own ways.

Eventually, the cookies realize this for themselves, too. But the story doesn't end there. When Oliver's sister discovers the cookies are alive,

High school student Storey Kuo credits her younger brother Brad for being supportive through her sudden hearing loss and creation of the book. Growing up, they both loved picture books.

Opposite page: Storey wrote the rhyming text and drew the illustrations for her picture book, "The Magical Arguing Cookies." She has been sharing her book at schools and libraries.

it's their turn to teach her an important lesson about self-worth and kindness.

I included my 14-year-old brother in the story because he's been such a big part of my journey. We grew up reading picture books together, sharing our favorites, and bonding over bedtime stories. My brother has always supported me—through my hearing loss and the process of writing this book—and I wanted to include a piece of our connection in the story as a way to show how much he means to me.

Why cookies, you might wonder? While writing my book, I spent hours deciding the characters, including the decision to model the characters after my brother and me. I chose to make my characters cookies because they are familiar, comforting, and loved by almost everyone.

Each cookie can be made with different ingredients, but they all bring something enjoyable to the table. I felt like cookies would be a fun, relatable way to show that even though we're different, we all have value.

I've had the chance to read my book aloud at schools, libraries, and community events, as well as donate copies to special education schools across the country. It's been amazing to see kids connect with the story and even feel inspired to write books of their own.

For me, this book has been more than a creative project; it's been a journey of resilience, inclusivity, and the power of storytelling. Whether it inspires someone to overcome a challenge or simply brings a smile, I'm grateful for the impact it's had and for the chance to share my story with others.

Storey Kuo is a sophomore in high school in Southern California. Please send us a message at editor@hhf.org if you'd like to get in touch with her to collaborate on a reading, fundraiser, or other event. Find "The Magical Arguing Cookies" on Amazon and Barnes & Noble.

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Books That Caught Our Ears

A longtime hearing loss educator and advocate, Brenda Schmidt wrote a children's book about growing up with a hearing loss, based on her own experiences—and including her red hair.

I Heard My Footsteps

By Brenda Schmidt

As a child I have no real memories of not being able to hear things, because after all, you can't know what you don't know.

In my early years my family began to suspect that I was missing things, and since I had not started talking much yet they took me for a hearing test when I was about 4 years old. The audiologist concluded that I had a possible profound hearing loss, but that I was an unreliable test subject.

My parents took me home confused and doubtful because I would "appear" to respond to people talking to me and to some sounds. My mother began to teach me speechreading without even knowing she was doing so. I began school in kindergarten and moved on with life.

I began to talk more and was a happy child. I think the schools must have informed my parents they suspected something was going on because my parents took me back to an audiologist and, at the age of 7, I got my first hearing aid. I was diagnosed with a moderate hearing loss in both ears.

After receiving that first hearing aid, I was immediately amazed that things made sounds I had never known before. I spent a lot of time asking, "What's that sound?"

I have vivid memories of the first sounds I heard—my footsteps. I was amazed that my feet made noise when I was walking. Life began to open much more for me! I began discovering more and more things that made sounds such as birds, crickets, the wind, and many others.

A funny memory is when I was in 1st grade and got a spelling test back with a big question mark on one word—I had misspelled "ship" with a swear word! I guess speechreading didn't help me then.

This is back in the days when hearing aids were analog. The audiologist recommended I wear the hearing aid at three-quarters volume, but I wanted to hear all that I could possibly hear. I of course did not hear everything perfectly, as I had only one hearing aid, and the other ear still had a moderate loss. And hearing aids are not hearing correctors. They are aids. I often must still remind people of this.

Wearing hearing aids as a kid was both a blessing and a challenge. On the one hand, they showed me a new world of sound, allowing me to hear things I had never heard before. On the other, they made me feel different.

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As I sat in classrooms, listening intently to my teachers while adjusting and hiding the device behind my ear, I often wondered how my peers perceived me. Would they see me as the girl who struggled to hear, or would they see me for who I truly was?

Amid these thoughts and feelings, I found solace in reading. Reading became my escape—a way to expand my world and experiences. I began reading voraciously, often finishing novels in one or two days.

Little did I know that my love for reading would eventually lead me to create a children’s book that would resonate with kids like me. The inspiration for my book came from the very experiences that shaped my childhood—including the title, “She Heard Her Footsteps.”

I wanted to create a story that not only celebrated the beauty of differences but also conveyed the importance of empathy and understanding. My heart was set on crafting a tale that could empower children with hearing loss while also educating their peers about the significance of inclusivity.

As I embarked on this journey, I immersed myself in the world of children’s literature. I read countless books, studied writing styles, and explored the art of storytelling. I wanted to create a character that young readers could relate to, someone who faced challenges yet overcame them with resilience and courage.

Through this character, I hoped to convey the message that hearing loss is just one part of a person’s identity and that it doesn’t define their abilities or dreams.

The writing process was both exhilarating and daunting. I was introduced to a beautiful illustrator through a mutual friend. She and I poured our hearts into every page, remembering experiences while also considering how this story could inspire others. I was a redhead, and this book is based on my life experiences growing up.

Finally, after months of hard work, my children’s book was ready. It was a culmination of experiences with hearing loss, the support of my family, and the belief that stories have the power to change perceptions.

As I held the finished book in my hands, I felt a sense of pride and fulfillment. I was no longer just a girl with hearing aids; I was an author with a story to tell. In sharing my book with children, I hope to spark conversations about hearing loss and the importance of acceptance. I want young readers to understand that everyone has their own unique challenges and that it’s our differences that make us special.

My journey with hearing loss and hearing aids has shaped me in ways I never imagined, and I am grateful for the opportunity to inspire others through storytelling. As I continue to write and share my experiences, I am reminded of the power of words and the importance of finding one’s voice.

My hearing loss may have been a challenge, but it also led me to discover my passion for writing—a passion that I hope will resonate with children and families everywhere. Whether through books or personal connections, I believe that stories can bridge gaps, foster understanding, and ultimately bring us closer together.

An Illinois resident, Brenda Schmidt has been a teacher of the deaf and hard of hearing and an adjunct professor of special education. Find “She Heard Her Footsteps” on Amazon. She is donating a portion of her book sales to nonprofits including Hearing Health Foundation, Hands & Voices, and Sertoma.

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Books That Caught Our Ears

Writing the Book My Kids Needed

By Terri Clemmons

Our whole family had our hearing tested when our oldest son was diagnosed with a sensorineural hearing loss at 4 years old. A few months later, we learned his younger twin siblings also have hearing loss.

My own hearing test revealed mild to moderate hearing loss that gradually worsened as I aged. The doctor's theory was that I had mild hearing loss as a child and compensated enough to mask the hearing loss. I've worn hearing aids for over 20 years and am thankful the technology has dramatically improved since those early days.

As a young mom, I read many picture books with my children and fell in love with them. And as an elementary school teacher for 25 years, I used picture

Above center: A teacher for 25 years, Terri Clemmons enjoys sharing her own children's book with students.

Above right: In this photo of her children when they were young, Clemmons says, "If you look closely, you can see some colorful hearing aids like the ones mentioned in my book."

books at every level because they are truly for everyone. Even as I was reading these books with students, I'd get my own ideas and write stories, then tuck them away because the publishing process felt daunting.

But it was always something I thought I would eventually pursue, and when I realized it was time to get serious, I joined the Society of Children's Book Writers and Illustrators, a children's writing organization that helps with networking and advice, and the journey to publication began.

Published by Beaming Books, "Mara Hears in Style" is the book I wish my three children had when they were young. I wrote the book so that children who wear hearing aids will see themselves in a book and be seen, but I also wanted Mara's character to be relatable to all children. Any child who feels different and worries about making friends—especially at the beginning of a school year with new classmates—will connect with Mara's story.

Mara's first day at her new school is filled with ups and downs surrounding her hearing aids: Her teacher doesn't remember to turn on her microphone, the lunchroom is too chaotic for speechreading (lipreading), and she keeps reading the same question over and over on her classmates' lips: "What's in her ears?"

But after a morning spent navigating these challenges, Mara makes a connection on the playground and finds that her hearing aid superpowers are perfect for making new friends.

I worked with Lucy Rogers, a deaf illustrator based in Oxfordshire in the United Kingdom, who created a gorgeous cover and beautiful illustrations that bring all the characters to life. Lucy's ability to show emotions is phenomenal, and the way she is able to illustrate sign language is fantastic and accessible. I hope as a result that children will develop an interest in learning sign language.

A line in the story reads, "My hearing aids help me hear like your glasses help you see." Normalizing wearing hearing aids is important in the book, so I hope more teachers, librarians, and families will discover Mara's story.

Terri Clemmons lives in the Midwest. For more about "Mara Hears in Style," including resources for caregivers, educators, and children, see terriclemmons.com.

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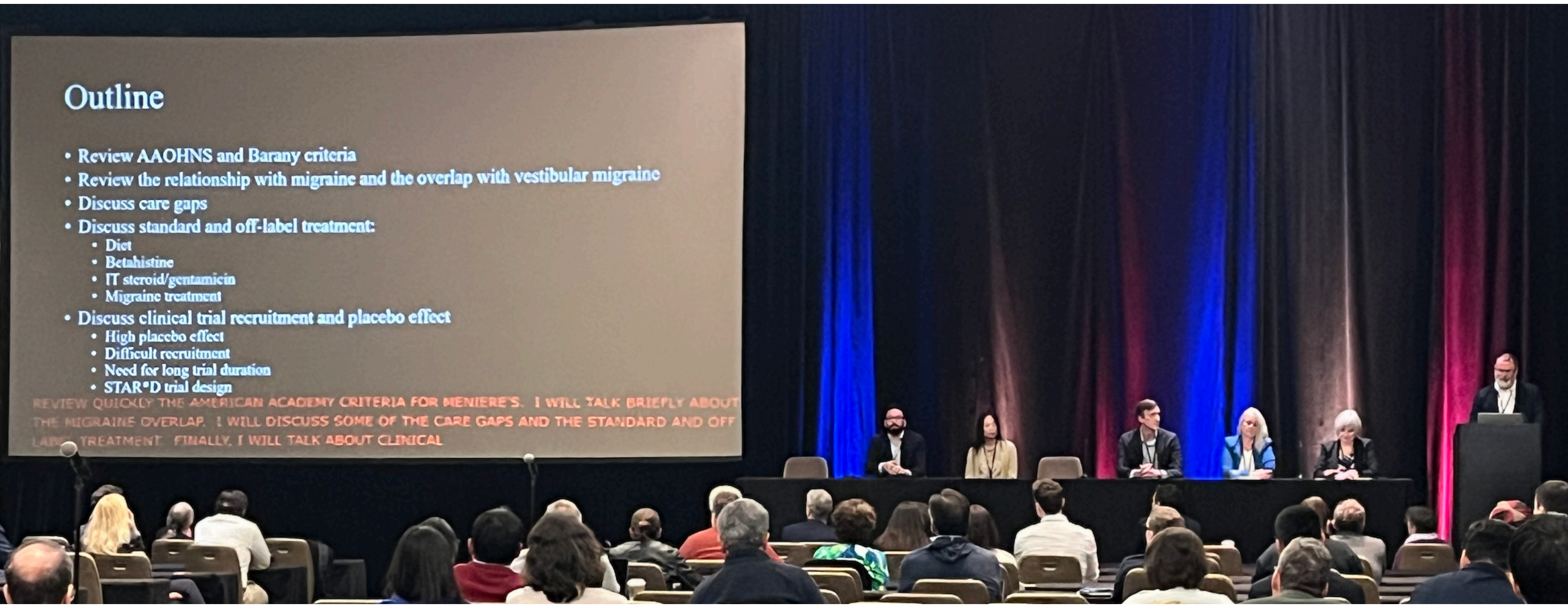
Advancing Research and Treatment for Ménière's Disease



Outline

- Review AAOHNS and Barany criteria
- Review the relationship with migraine and the overlap with vestibular migraine
- Discuss care gaps
- Discuss standard and off-label treatment:
  - Diet
  - Betahistine
  - IT steroid/gentamicin
  - Migraine treatment
- Discuss clinical trial recruitment and placebo effect
  - High placebo effect
  - Difficult recruitment
  - Need for long trial duration
  - STAR*D trial design

REVIEW QUICKLY THE AMERICAN ACADEMY CRITERIA FOR MENIERE'S. I WILL TALK BRIEFLY ABOUT THE MIGRAINE OVERLAP. I WILL DISCUSS SOME OF THE CARE GAPS AND THE STANDARD AND OFF LA[illegible] TREATMENT. FINALLY, I WILL TALK ABOUT CLINICAL

Ménière's disease remains a complex and often debilitating condition, affecting balance and hearing through symptoms such as vertigo, tinnitus, and fluctuating hearing loss. The Ménière's Disease Symposium, held February 21 at the ARO (Association for Research in Otolaryngology) MidWinter Meeting, brought together clinicians and researchers to discuss the latest advancements in diagnosis, treatments, and future investigative directions.

The event opened with a patient's perspective on living with Ménière's disease and how it can drastically affect quality of life. Many of the attendees, who were primarily researchers and clinicians, expressed appreciation that the speaker shared her experience, noting that the patient perspective is too rarely included in research symposia and conferences.

From the individual experience to the long-term picture, the symposium also included a talk that provided an overview of the history of the condition. In 1861 Prosper Ménière first described the disease, notably linking vertigo to the inner ear instead of the brain. The various attempted treatments since then have ranged from bloodletting to surgical interventions in the inner ear.

Clinician-scientists discussed the challenges in diagnosing and treating Ménière's disease. Current clinical care lacks strong evidence-based treatments, with commonly used therapies showing limited scientific support despite observed patient improvements. The range of symptoms that fluctuate may point to the need to define subtypes of the disease and/or redefine it as a syndrome.

Near right: Clare Thibodeaux, Ph.D., of Cures Within Reach, HHF's Timothy Higdon, and Joan Wincentsen of American Hearing Research Foundation. Far right (clockwise from top left): symposium steering committee members and Emerging Research Grants (ERG) scientists Bryan Ward, M.D., and Divya Chari, M.D., along with attendee ERG scientist Robert Raphael, Ph.D.

Because research indicates significant overlap with vestibular migraine, the potential for drugs targeting molecular pathways for migraine-related symptoms was highlighted. However, challenges for clinical trials in this area were noted along with the need for improved future trial designs.

Also presented were advancements in MRI imaging that have enabled the visualization of endolymphatic hydrops in Ménière's disease patients. Modern radiological assessments now provide detailed evaluations of endolymphatic structures, aiding in disease subtyping and treatment planning.

Another advance highlighted is how genetic studies have identified several genes linked to familial Ménière's disease, suggesting a genetic component. Also explored was the role of inflammation and immune system responses in disease progression, which has led to the identification of promising potential treatment targets in early studies.

Ménière's disease has been viewed as primarily caused by fluid pressure, but it was suggested that endolymphatic hydrops may instead be a compensatory response to inner ear injury. This represents a new disease model similar to chronic organ disorders involving an initial injury, compensatory mechanisms, fluctuating function, and eventual progression to irreversible damage.

Beyond physical symptoms, Ménière's disease can take a significant psychological toll. Cognitive behavioral therapy and mindfulness techniques were recommended to help patients manage stress and anxiety. These strategies, when integrated into a comprehensive treatment plan, may improve overall patient quality of life.

Despite scientific advancements, challenges in Ménière's disease research persist. Some of the needs expressed by the presenters were standardized diagnostic criteria and biomarkers to enhance research consistency; multi-center clinical trials to spur collaboration and improve study reliability and patient diversity; and the development of animal models that accurately reflect human disease mechanisms.

While significant challenges remain, ongoing efforts in genetic research, immunology, and clinical trials offer hope for better management and potential cures in the future.

The symposium's organizational sponsors were American Hearing Research Foundation and Hearing Health Foundation, along with sponsors Spiral Therapeutics and Scott Dorsey and organizational partners Cures Within Reach and the Vestibular Disorders Association.

For more, including the captioned video of the presentations, see hhf.org/menieres-disease-symposium.

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Recent Research by Hearing Health Foundation Scientists, Explained

HRP | Hearing Restoration Project

A New Tool for Targeting Only Supporting Cells in the Inner Ear

All vertebrates, except mammals, can naturally restore their hearing by regenerating lost hair cells. This is done by activating supporting cells to divide and transform into new hair cells following hearing loss.

Mammals including humans have supporting cells, but they cannot divide or produce hair cells in adult animals.

There has therefore been great interest in targeting mammalian supporting cells to try to regenerate hair cells. Hearing Health Foundation's Hearing Restoration Project (HRP) has been studying the feasibility of gene therapy approaches to bring about the conversion of supporting cells into hair cells.

One of the challenges of delivering therapies to any part of the body, including the ear, is to make sure the right cells get the right dose of the therapeutic compound, and to minimize the effects of the compound on other cells.

As part of the HRP's Reprogramming and Gene Delivery Working Group, my lab, along with the lab of fellow HRP member Litao Tao, Ph.D., collaborated to design an approach to deliver gene therapies specifically to supporting cells of the ear.

In our paper in Hearing Research in March 2025, we identified a DNA "switch" (also called an enhancer) from a gene that is normally active in supporting cells but is not active in any other cells in the ear or the brain.

We built this switch into a gene therapy virus (an adeno-associated virus, or AAV) to see if it could switch genes on specifically in supporting cells when the gene therapy virus was delivered to the ear.

We were pleased to see that the virus only activated its genetic cargo in supporting cells, and nowhere else in the ear or brain. Moreover, we found that the virus continued to produce its genetic cargo for weeks after we first introduced it to the ear.

Although this work is very preliminary, it shows that it is possible to design gene therapies for the ear that are carefully targeted to supporting cells. This is an essential first step in applying targeted gene therapies to treat hearing loss in humans. *—Andy Groves, Ph.D.*

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HRP members Andy Groves, Ph.D. (far left) is a professor and the Vivian L. Smith Endowed Chair in Neuroscience in the departments of neuroscience and molecular and human genetics at Baylor College of Medicine, and a 1996–1997 and 2012 Emerging Research Grants (ERG) scientist. Litao Tao, Ph.D. (near left), is an assistant professor in the department of biomedical sciences at Creighton University School of Medicine. In April Groves becomes the head of the department of developmental biology at Washington University School of Medicine in St. Louis.

ERG Emerging Research Grants

Advanced Imaging Sheds Light on Inner Ear Scarring

Cochlear implants (CIs) are advanced hearing devices that restore hearing by sending electrical signals to the auditory nerve. Some implants, called hybrid CIs, combine electrical stimulation with the patient's remaining residual low frequency hearing.

However, scar tissue (fibrosis) can form inside the inner ear after implantation, which may interfere with the residual hearing and reduce the benefits of hybrid CIs over time. There is ample evidence that the scarring is a result of the inner ear's immune response to implantation.

While many strategies are being developed to solve this problem, the way inner ear scarring affects acoustic hearing is not fully described. Identifying how much, where, and what type of scarring exists inside implanted cochleae, and comparing those features to residual hearing function, has implications for device design, surgical approach, patient counseling, stimulation paradigms, and implantation criteria.

To improve outcomes, we are studying how fibrosis forms in an animal model by embracing the power of artificial intelligence to aid in imaging analysis, with our results appearing in the journal IEEE Transactions on Biomedical Engineering in February 2025. We applied a computer vision approach to process optical coherence tomography (OCT) images of chronically implanted rodent cochleae in order to better understand how and when residual hearing loss occurs after implantation.

This is the first project to measure vibrations in chronically implanted cochleae using OCT, and to produce the first OCT imaging dataset of implanted cochleae. OCT can be thought of as ultrasound imaging but using infrared light. Routinely used to image the eye, it has properties that make it an important tool for inner ear mechanics research.

Computer vision aided by machine learning is a powerful tool when scientists want to identify structures in a complicated medical scan, in large numbers, and with consistency. In this work we designed our computer vision model, 2D-OCT-UNET, to process the OCT imaging data from the experiments.

This model is a development of the UNET type of neural network. Named after its U-shaped architecture, UNET allows sharing of image features at different scales, from patterns in neighboring pixels to larger shapes.

A well-known feature of UNET is that it can work well with little training data. This feature is vital because the number of images available to train the network is limited, although it is increasing thanks to the tireless efforts of a group of Oregon Health & Science University medical students (among the study's co-authors) who volunteered to manually annotate a subset of the image database.

We added several modifications to the basic UNET architecture. First, we increased the depth of the network, which facilitates extraction and processing of more semantically coherent visual features and permitted the model to assess higher resolution images.

Then we added more processes within the algorithm designed to extend its robust response to a smaller training dataset. It should be noted that even a "small" training dataset still contains hundreds of images and many thousands in the overall dataset. This is because each OCT scan builds a 3D image of the inner ear, the fibrosis, and the implant, at microns-resolution scale.

Because of the increased network depth, upscaled input resolution, and the ability to perform well in a limited data setting, our 2D-OCT-UNET outperformed state-of-the-art models on our cochlear OCT dataset in tasks such as identifying inner ear scarring, CI electrode track position, and the fluid spaces of the inner ear.

We are continuing with this work by increasing the size of the training dataset and setting the UNET other tasks, such as comparing which structures within the inner ear are afflicted by scarring.

We hope that our findings will advance future studies on exploring the relationship between cochlear fibrosis and residual hearing loss, the development of cochlear implants, and the treatment of patients receiving electric-acoustic stimulation, a treatment for patients who are profoundly deaf in the high frequency region but retain usable low frequency hearing. *—George Burwood, Ph.D., and Julia Dietlmeier, Ph.D.*

A 2023 ERG scientist, George Burwood, Ph.D., is a research instructor at Oregon Hearing Research Center, Oregon Health & Science University. The study's first author Julia Dietlmeier, Ph.D., a computer vision expert, is a senior postdoctoral researcher at the Insight Research Ireland Centre for Data Analytics at Dublin City University in Ireland. Coauthor Lina Reiss, Ph.D., is a 2012–13 ERG scientist.

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ERG Emerging Research Grants

Balance in Older Mice Relies on Specific Brain Cells

The cerebellum is a part of the brain important for producing smooth movements in all vertebrate animals, including humans. The vestibular cerebellum is a region within the cerebellum that processes head movement-related signals and integrates them with signals from other sensory systems.

This part of the cerebellum is essential for balance, posture, eye movements, and to an animal's perception of their body's position in space. When the vestibular cerebellum is damaged by trauma or disease, symptoms result, including instability, nystagmus (a disorder of eye movements), ataxia (a disorder of muscle movements), or vertigo (a disorder of the perception of head movements). All of these impairments can result in falls, which is a leading cause of injury in the elderly.

The vestibular cerebellum has a particularly high density of unipolar brush cells (UBCs), which are neurons that are positioned in the neural circuitry in such a way that suggests that they may be important for the processing and amplification of vestibular signals.

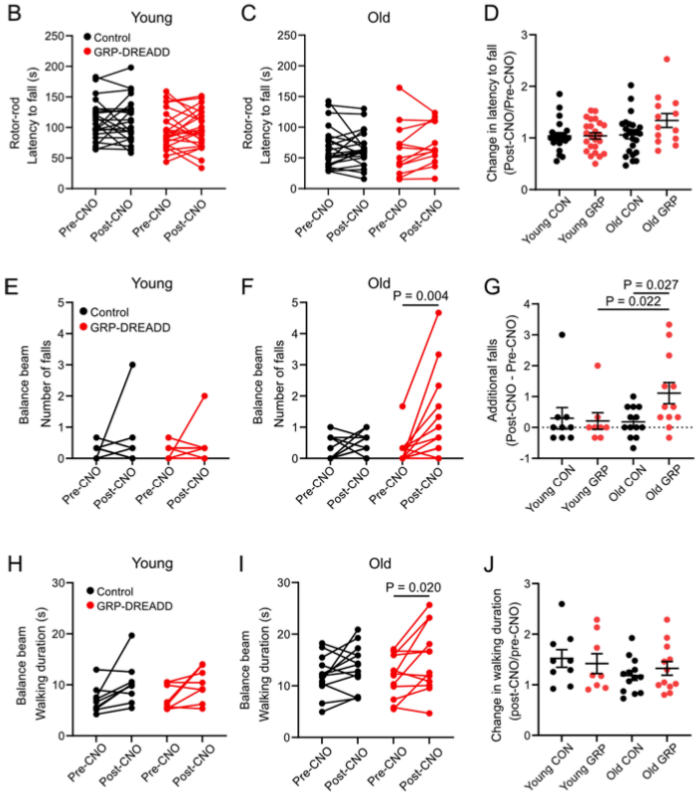
These cells receive vestibular signals from the semicircular canals and from the brainstem, process the information, and expand its representation to downstream neurons. However, despite their number in the vestibular cerebellum, the role of UBCs in behaviors relevant to balance and vestibular function is unclear.

The aim of our study, which was published in The Cerebellum in December 2024, was to test the contribution of UBCs to balance behaviors in mice. We used three behavioral tests to measure balance: a rotating horizontal rod, a narrow balance beam, and a swimming test.

The mice in this study were engineered to allow us to manipulate the electrical activity of UBCs at a specific time during the study. We first measured the mice's balance and swimming behavior, then altered the activity of the UBCs and tested them again to determine the importance of these cells in the performance of these behaviors.

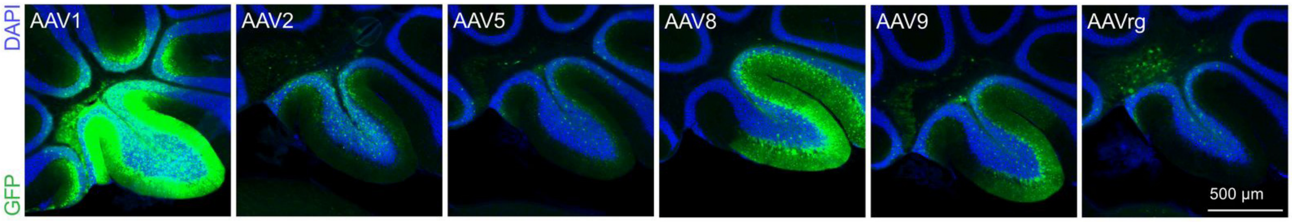
Interestingly, we found that the impairment was only present in older mice that had evidence of age-related balance difficulty, but not in younger mice. This study suggests that this class of neurons may compensate for age-related loss of vestibular function to maintain balance performance in older animals.

It will be important to test this idea with other complementary approaches, to detail the role of different types of UBCs further, and to determine what caused the impairment that we detected here. Were the mice unable to move appropriately, or did they misunderstand their orientation in space?



These graphs in The Cerebellum show that using CNO (clozapine-N-oxide, a chemogenetic activator), Balmer and team disrupted unipolar brush cell (UBC) activity in mice. Older mice struggled more with balance and movement, showing more falls and slower walking, while younger mice and controls were unaffected. This highlights the importance of UBCs in maintaining balance as mice age.

Moving forward, we would like to test whether balance performance of older animals can be improved by manipulating the activity of these cells. On a more fundamental level, understanding how the vestibular cerebellum functions is essential to develop strategies to overcome age-related balance impairments and other disorders of balance and vestibular function that can lead to injury. —*Timothy Balmer, Ph.D.*



The adeno-associated virus serotype known as AAV1 has the brightest labeling across the broadest types of cells, as shown in this eNeuro image where a fluorescent green protein demonstrates gene expression.

Analysis of Six Gene Delivery Methods in the Mouse Model

Expressing genes in neurons has become an essential technique used to explore the neurophysiological mechanisms of brain function and disease. For example, neuroscientists can control the expression of specific genes to determine how they affect a neuron's development or physiology.

Neuroscientists often express fluorescent proteins in populations of neurons to identify them and to determine where they send their signals. Adeno-associated viruses (AAVs) have become a common tool to deliver genes to neurons in laboratories.

AAVs are also becoming more common in clinical treatments. For example, AAVs have been used to recover hearing in congenitally deaf children by expressing a gene that is rendered dysfunctional by mutation.

AAVs are available in several serotypes that have varying abilities to infect neurons and cause them to produce proteins of interest. The efficacy of AAV transduction in specific cell types depends on many factors and remains difficult to predict, so an empirical approach is often required to determine the best performing serotype in each population of cells.

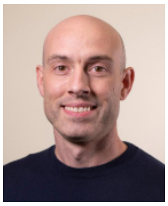
Typically, individual labs may test a few serotypes but the results are not usually shared. In this project we tested the six most commonly available serotypes in the inferior colliculus and cerebellum of the mouse, and we reported our results in eNeuro, an open-access journal, in November 2024, in order to limit redundant experiments and save resources for the numerous labs studying these brain regions.

The AAVs that we used delivered the gene for green fluorescent protein (GFP), a modified version of a gene that is naturally expressed in the jellyfish *Aequorea victoria*. In the inferior colliculus, which is a midbrain auditory region essential for hearing, we found that AAV1 produced the brightest labeling, indicating the highest expression of GFP. AAV1 also labeled more neurons than the five other serotypes.

In the cerebellum we found that AAV1 also produced the best labeling. The cerebellar cortex has several cell types that can be easily identified by their shape and location. This allowed us to test which serotypes labeled each cell type most effectively.

Cerebellar granule cells make up about half of the total neurons in the brain, and they appear more resistant to AAVs than other cell types. While AAV1 labeled most of the cell types better than the other serotypes (more Purkinje cells, unipolar brush cells, and molecular layer interneurons than the others), we found AAV2 labeled more granule cells.

We expect that these results will help guide the use of AAVs as gene delivery tools in these regions of the brain. By understanding which AAV serotype works best for delivering genetic instructions to specific brain cells and sharing this information in an open-access journal, researchers can design better experiments and potentially develop treatments for brain-related conditions.
—Timothy Balmer, Ph.D.



Timothy Balmer, Ph.D., is an assistant professor in the School of Life Sciences at Arizona State University. He is a 2025 ERG scientist generously funded by the Salice Family Foundation. This paper is funded in part by his 2022–2023 ERG grant generously underwritten by an anonymous donor. Balmer is also a 2017 ERG scientist generously funded by the Les Paul Foundation.

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ERG | Emerging Research Grants

Can Machine Learning Predict Who Will Benefit Most From Cochlear Implants?

Cochlear implants (CIs) have the potential to transform lives for those with severe to profound hearing loss, but their success varies from patient to patient. Some individuals regain remarkable speech perception, while others continue to struggle.

Predicting who will benefit the most has long been a challenge, as factors like brain health, prior hearing experience, and social support play a role. Traditional models have struggled to capture this complexity, but machine learning (ML) offers a new approach by analyzing large datasets to uncover patterns that might otherwise go unnoticed.

In our recent systematic review, published in Ear & Hearing in January 2025, we examined how ML has been used to predict CI outcomes, focusing on speech perception and speech production. We screened 1,442 studies and identified 16 that applied ML techniques, covering data from 5,058 patients across different age groups.

Our goal was to assess which approaches were most effective, which factors had the greatest influence, and what challenges remain in integrating ML into clinical practice.

Most studies focused on predicting speech perception, specifically how well patients would understand speech in different environments. The most accurate models reached prediction rates as high as 98.8 percent, identifying key factors such as pre-implant hearing ability and auditory nerve health.

Speech production was another key focus, with studies predicting how well CI users would articulate speech after implantation. Important predictors included the duration of deafness, anatomical features of the cochlear nerve, and even family support.

One clear takeaway was that ML methods generally outperformed traditional statistical models. However, in some cases, simpler approaches produced comparable results, suggesting that while ML is a powerful tool, more complex models are not always advantageous. What makes ML particularly valuable is its ability to integrate multiple predictive factors and recognize patterns that conventional methods might miss.

Despite its potential, ML still faces challenges before it can be fully integrated into clinical decision-making. One major hurdle is data standardization. Studies used different types of patient data, making it difficult to compare models or apply them universally. To make ML-driven predictions clinically useful, standardized measures for audiological, demographic, and device-related factors are likely needed.

Another challenge is ensuring that models perform well beyond their original datasets. Many models showed high accuracy in training but struggled when tested on new patient populations, underscoring the need for better validation.

Beyond technical challenges, ethical considerations must also be addressed. If ML can accurately predict CI success, how should we support patients who are predicted to have poorer outcomes? How would insurance providers use these predictions to determine coverage? These questions need careful consideration before ML can be adopted into clinical decision-making.

Even with these challenges, the potential of ML to improve CI outcomes is clear. By refining models, improving data quality, and addressing ethical concerns, we can move toward a future where CIs are more personalized and effective.

Our review highlights the opportunities ahead, and we hope it encourages further research into how ML can help maximize the benefits of CIs to improve the lives of individuals with hearing loss. *—Jonathan Mo and Nicole T. Jiam, M.D.*

Can This Simple Cost-Saving Method Improve Hearing Healthcare?

Among Organization for Economic Co-operation and Development (OECD) countries, the United States is the greatest spender on healthcare costs, yet its health outcomes are worse than those of its counterparts.

As a response, the American healthcare system has been focusing on how to better provide affordable quality healthcare. A key step in this pursuit is understanding the details and costs of a clinical program.

One cost assessment method that has been increasingly used in medical literature for this purpose is called "time-driven activity-based costing." TDABC allows for a detailed step-by-step analysis of a process and its costs, which helps identify opportunities for reducing unnecessary costs and streamlining the process.

This approach has been successfully used in other industries, such as manufacturing and food services, and it has now been adopted to improve clinical care for patients. The objective of our study was to review how TDABC has been utilized in otolaryngology–head and neck surgery.

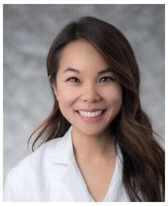
As published in the journal Otolaryngology–Head and Neck Surgery in December 2024, we found that TDABC has been used to study various otolaryngologic conditions, including head and neck cancer, sinus problems, sleep disorders, and swallowing difficulty. The primary aims of TDABC articles included cutting down on unnecessary resources, comparing the costs of different treatments, and evaluating the impact of new programs designed to improve quality of care.

Some of the limitations of TDABC included potential inaccuracies and biases in the data collection and different approaches with which researchers use this methodology. It is still a growing area of research within otolaryngology, with only nine studies identified in our search and none in certain subspecialties within otolaryngology.

For example, TDABC has not been widely utilized to examine hearing care and ear surgery. However, as many otology patients often require multifaceted and resource-intensive care on a longitudinal basis, TDABC holds great potential to enhance patient care for these patients while decreasing the financial burden on the healthcare system.

As one effort to address this gap, we are currently working on a study across two different institutions to conduct TDABC analysis of personnel costs involved in cochlear implantation, with the goal of better understanding how we can make this process more efficient and affordable.

Beyond cochlear implants, we believe TDABC can be harnessed to enhance hearing care and advocate its use to further the paradigms of otology care. *—Eric K. Kim, M.D., and Nicole T. Jiam, M.D.*



Nicole T. Jiam, M.D., a neurotology and skull base surgeon at the University of California, San Francisco (UCSF), is a 2024–2025 ERG recipient of an Elizabeth M. Keithley, Ph.D. Early Stage Investigator Award, generously supported in part by Susan and Steve Kaufman. Her studies' coauthors are, respectively, Jonathan Mo, an M.D./Ph.D. student studying neural engineering at the University of California, Davis, and Eric K. Kim, M.D., a resident in the department of otolaryngology–head and neck surgery at UCSF.

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Meet the Researcher

Ben-Zheng Li, Ph.D.

University of Colorado

Li received his doctorate in electrical and computer engineering from the University of Macau. After being a visiting research scholar at the University of Colorado Denver and the University of Colorado Anschutz Medical Campus, he is now a postdoctoral fellow at the latter institute in the lab of Achim Klug, Ph.D. His 2025 Emerging Research Grant is generously funded by Royal Arch Research Assistance.

Sound localization is a key function of the brain that enables us to detect and focus on specific sound sources in complex acoustic environments. When spatial hearing is impaired, it significantly diminishes the ability to communicate effectively in noisy environments.

We aim to advance our understanding of the neural mechanisms underlying sound localization, focusing on how the brain processes very small differences in the timing of sounds reaching each ear. These differences are processed by a nucleus of the auditory brainstem called the medial superior olive, which integrates excitatory and inhibitory inputs from each ear with exceptional temporal precision, allowing for the detection of microsecond-level differences in the time of arrival of sounds.

By developing a computational model of this process and validating it through optogenetic manipulation of inhibitory inputs in animal models, this project will provide new insights into how alterations in inhibition and myelination affect sound localization.

Ultimately, the goal of this research is to contribute to the development of innovative therapeutic strategies aimed at restoring spatial hearing in individuals with hearing loss, including those with autism or age-related deficits.

I have been interested in science and in creating and building things. Both of my parents are in academia—my father is a mathematician, and my mother is an ecologist. Growing up near a university campus, I was surrounded by science. I attended lectures and visited labs, which sparked my curiosity. I loved learning how things work and doing experiments in school.

My grandfather experienced age-related hearing loss, which made communication difficult for him. My father also has trouble with dizziness, especially in noisy places. These personal connections to hearing difficulties made me more aware of how much hearing problems can impact daily life and steered me toward researching how to restore hearing.

I enjoy art and painting, hobbies I've had since college, where I minored in graphic design. My painting experience has also helped me in my scientific work. It has improved my ability to visualize complex data and reconstruct 3D microscopy images. Plus, it makes it easier to design clear and aesthetically pleasing posters and presentations.

When I was 14, I placed third in a regional taekwondo competition, which qualified me to be registered as a national athlete. I also coached taekwondo sport teams during high school. These experiences helped me develop leadership skills, which I now use in my research career.

Ben-Zheng Li, Ph.D., is generously funded by Royal Arch Research Assistance. We thank them for their support of studies that will increase our understanding of the mechanisms, causes, diagnosis, and treatments of central auditory processing disorders.

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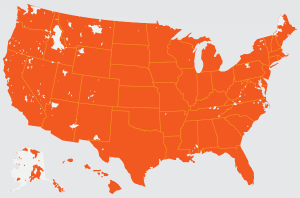

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