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HOUSE CALLS

A PUBLICATION ON RESEARCH, EDUCATION & GLOBAL HEARING HEALTH

THE TECH ISSUE: CELEBRATING PAST INNOVATIONS AND FUTURE DIRECTIONS

75 YEARS
THE HOUSE INSTITUTE FOUNDATION
Elevating Hearing Science to an Art.

The House Institute Foundation is celebrating 75 years of our commitment to advancing hearing and neuroscience research, education, and global hearing health. In honor of this diamond jubilee, all donations will be matched by two grateful patients up to $325,000. Double your impact and invest in the future of hearing technology today.
HIFLA.org/75

75 YEARS
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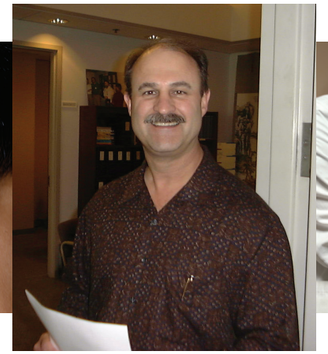


IN THIS ISSUE

WELCOME

Dear Friends,

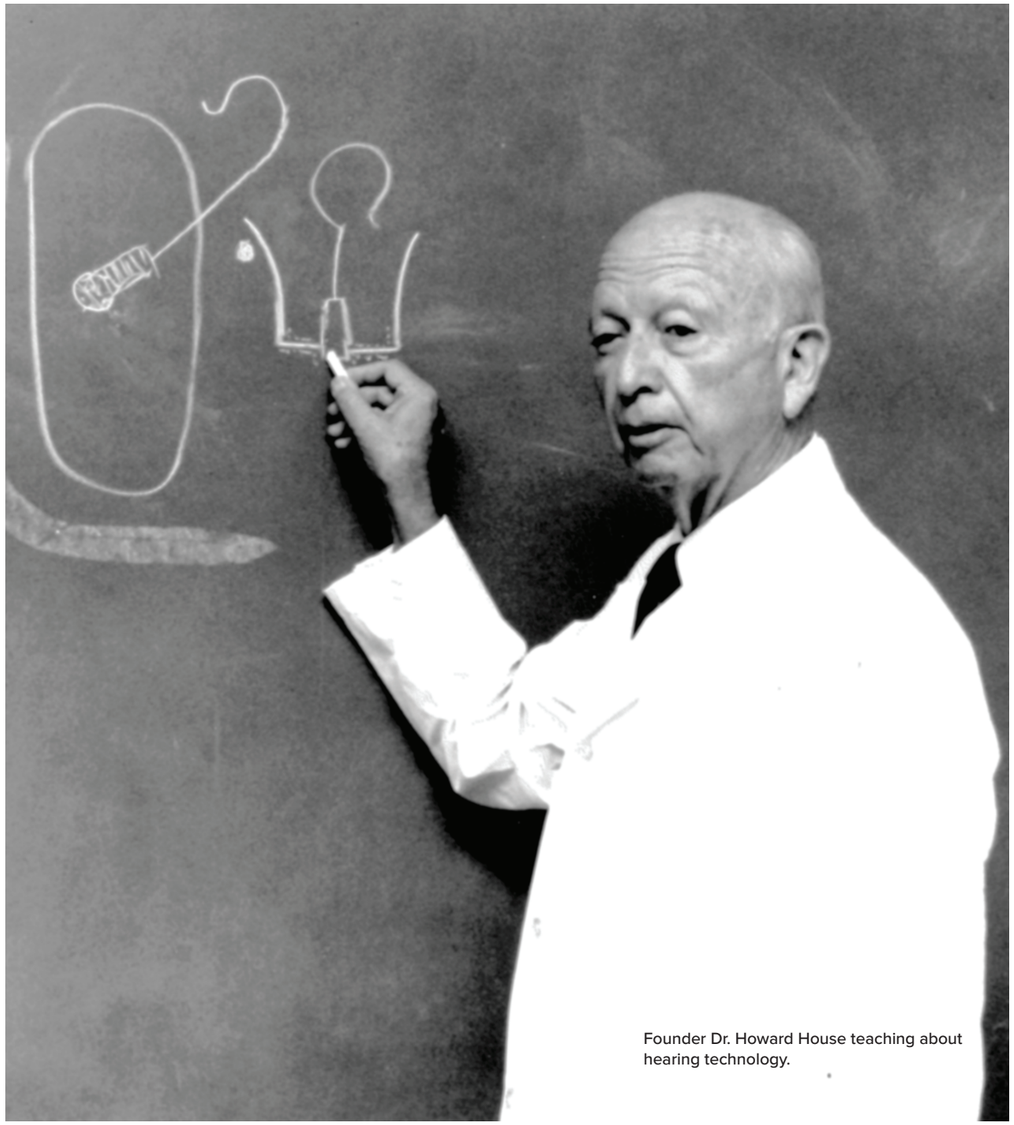
2021 is a big year for the House Institute. This year marks several anniversaries and milestones throughout our history and the history of hearing science. Seventy-five years ago, Dr. Howard House founded what would eventually become the House Institute and put forth his vision of a world "Where All May Hear." In 1961, Dr. Howard House's brother, Dr. William House, implanted a patient with the first cochlear implant for long-term use. He implanted the first pre-school-age child twenty years later in 1981. Other significant milestones that came out of the House Institute included the auditory brainstem implant (ABI), the first digital hearing aid, and the widely used Hearing in Noise Test (HINT).

Today, some of the same pioneering doctors who served and learned with Howard House and William House collaborate with the next generation of groundbreaking physician-scientists to carry on the House legacy. We continue to integrate technology into every aspect of our work. We have several ongoing projects using cutting-edge technology that turn theoretical science into treatments and cures for patients. In order to meet the challenges of the pandemic, we continue to create various online seminars that educate physicians and consumers. The House Institute also provides access to hearing tech for those who need it. We are actively engaged in global hearing health initiatives, including a project right here at home that seeks to match underserved patients with critical hearing technology and care they might otherwise not be able to access. There are many new technologies and treatments that lie ahead.

With your support, the House Institute continues to look forward to future program advances that will positively impact those with hearing loss, those with neurological disorders, and those throughout the world in need of hearing care. Please join us during this exciting time as we commemorate all that has brought us to this exciting moment in the House Institute's history.

In Solidarity,

Jeremy Sidell
EXECUTIVE DIRECTOR, The House Institute Foundation



Founder Dr. Howard House teaching about hearing technology.

CONTACT
The House Institute Foundation
2100 W. 3rd Street, Suite 111
Los Angeles, CA 90057
Email: hello@hifla.org
Phone: 213.770.2187

CONNECT
/HouseInstituteLA
@HouseInstituteLA
@HouseInstitute
/HouseInstitute
/HouseInstitute

CONNECT THROUGH TECH: THE HEARING AID EXPERIENCE

BY JAVIA HEADLEY, MARKETING COMMUNICATIONS MANAGER

Hearing aids can improve quality of life, self-esteem, and overall health for those experiencing hearing loss.

"Sometimes hearing aid technology means whistling feedback sounds when someone hugs me too close. It also means discovering new songs on Spotify and finally appreciating the high frequency notes interwoven in slow R&B songs. Hearing aid technology means less "what did you say" and "can you repeat that" and more confidence following conversations, especially in noisy environments. Hearing aid technology means experiencing the world more fully—a world where a bird chirping is appreciated, wind rustling through tree leaves are heard, and the ocean waves are truly experienced. Hearing aids allow me to catch sounds related to my safety—like water overflowing, fire alarms beeping, and shouts in the distance. With hearing aid technology, I hear and process my little 4-year-old cousin's voice when he shares an exciting story about school with more ease. Hearing aids connect me to my environment and loved ones. Hearing aids connect me to life."

- Krystle "Kay" Shakespeare, @kay.shakespeare on Instagram

The House Institute has long been at the forefront of hearing aid technology. In the mid to late 90s, House researchers worked on the first digital hearing aid. Over time, the Institute expanded to include several Hearing Aid Centers and a Global Hearing Health initiative partly focused on providing hearing aids to low-income individuals who could benefit from access to this technology.

Hearing aid technology has significantly advanced since the 90s and offers many features that can help a wearer communicate in various listening situations. Here are some amazing technology features in newer hearing aids.

Artificial Intelligence (AI)

Some hearing aids come with sophisticated artificial intelligence algorithms to detect changes in an environment and automatically control volume and program settings to maximize the user's hearing experience.

Smartphone Apps

Most hearing aids today come with smartphone apps that allow complete remote control and monitoring of their device. Through apps like these, users can customize everything from volume to clarity, depending on the setting.

Noise Reduction

There are a variety of noise reduction features that hearing aids could utilize to remove unwanted noise and short bursts of loud noises such as the sound of keys or wind.

Bluetooth Streaming

Allows phone calls, videos, music, and more to be streamed from smartphones, computers, or television directly into hearing aids.

Tinnitus Masking Features

Hearing aids with this feature will emit sounds that can mask tinnitus (ringing in the ears).

Fitness Tracker

Some hearing aids give users the option of using the device like a smartwatch or pedometer, tracking movement and heart rate, and communicating this information with a smartphone.

If you or a loved one are considering getting a new hearing aid or upgrading an old one, there are many choices, which can feel overwhelming at first. Visit your House Institute audiologist to help you find the appropriate make and model to suit your hearing needs.

To learn more about the House Institute Hearing Aid Centers, visit **HouseInstitute.com/hearing-aid-center**

HEARING AIDS: HERE, THERE, AND EVERYWHERE

Young patient awaiting hearing screening and evaluation on a service trip to Nicaragua in 2019.

BY ERIN O'DONNELL, ASSOCIATE DIRECTOR OF EDUCATION AND GLOBAL HEALTH

BUILDING A FUTURE OF GLOBAL ACCESS

466 million is a number that is emerging everywhere, slapped onto hearing-related websites, and thrown into urgent policy briefs. This is the estimated number of people living with disabling hearing loss, and it represents 6.1% of the world's population. By 2050, the prevalence is projected to increase to over 900 million worldwide. That is 1 in every 10 people.

Hearing loss is the most common sensory disability. It disproportionately affects people in low- to middle-income countries (LMICs), with nearly 80% of severe to profound hearing loss affecting individuals in these regions. While 94% of people living with hearing loss can be helped with hearing aids, the World Health Organization (WHO) estimates that only 3% of the need in LMICs is met, constituting a global hearing crisis.

The combination of quality professional training, a community-based model of delivery, and hearing aids at an affordable cost provide hope for a future of access.

The reasons for this discrepancy are numerous. The most obvious reason is that hearing aids are unaffordable given their high cost relative to income. Consider an annual income of US $2,250—the GDP per capita in Nigeria. The most basic hearing aids, let alone a year-long supply of hearing aid batteries, are largely unattainable for the average person.

Even with initial access and fittings, routine and reliable follow-up care are not always possible. Many healthcare delivery systems in LMICs face significant challenges from resource and personnel shortages to disruptive environmental and sociopolitical factors. One growing approach is to train community health workers and medical professionals at the primary care level to

provide essential audiological screening and care, which is administered at a secondary level in countries like the United States. This less restrictive model may help to increase access to hearing aid fittings, education around their use and maintenance, and rehabilitative services. By incorporating hearing health into routine care, this model also helps raise public awareness about hearing loss and its solutions which is essential for the demand and uptake of services, especially in areas where there is little pre-existing knowledge around hearing health.

The global hearing aid market is dominated by European and North American manufacturers whose primary consumer base has traditionally been relatively affluent, with key selling points tailored to a tech-savvy lifestyle. While many advanced features provide excellent rehabilitation, they are not necessarily supportive nor practical for patients in LMICs. Many manufacturers have large philanthropic initiatives and are shifting focus to incorporate new considerations. Innovations that allow the hearing aid to better resist heat, humidity, or dusty environments, that are solar-powered or function on a readily available power source such as watch batteries, or that can be programmed with open-source software, are a few examples of features that may be more adapted to the actual needs of some populations. The WHO has produced a document recommending evidence-based design features and functions that may offer the greatest benefit in low-resource settings. The combination of quality professional training, a community-based model of delivery, and hearing aids at an affordable cost provide hope for a future of access.

ONE HEARING AID AT A TIME: HEARING AID ACCESS PROJECT

While the House Institute will continue to facilitate service project trips to provide hearing aids and surgical interventions in LMICs, we cannot in good conscience do so without offering the same degree of care and compassion to those in need locally. In the House Institute's home city of Los Angeles, the lack of access to hearing aids and hearing care may be less pronounced than in LMICs yet remains a persistent health disparity. With the House Institute's hearing aid dispensary in proximity to underserved populations, we are well-positioned to reach many people experiencing financial hardship, and whose health insurance does not cover hearing aids. We are excited to announce our commitment to partner with no-cost primary healthcare clinics to offer quality, pro bono hearing aids and audiological services for Los Angeles residents who meet eligibility requirements.

HEARING TECH ADVANCES

Three areas of ongoing research from around the world.

Hearing Aids of the Future Uses Brainwaves to Isolate a Single Speaker

Current hearing aid technology lacks the precision to isolate the voice of the individual speaking directly to the hearing aid user. At best, it can suppress background noise or amplify the voice of the loudest person in the room. Scientists at the Dutch research university KU Leuven are using electroencephalograms (EEGs) to try and change that. Using brainwaves from an EEG, artificial intelligence software can read the brain's electrical impulses and determine the individual's listening direction. This technology is still in its infancy; it will take years to develop hearing aids with the technology to read brainwaves.

Geirnaert S, Francart T, & Bertrand A. (2021). Fast EEG-based decoding of the directional focus of auditory attention using common spatial patterns. IEE Transactions on Biomedical Engineering, 68(5), 1557-1558. https://doi.org/10.1109/TBME.2020.3033446

Machine Learning and Non-Invasive Brain Imaging Quantifies Tinnitus Severity

A non-invasive, non-radioactive imaging technique known as functional near-infrared spectroscopy (fNIRS) can be used to track activity in areas of the brain previously linked to tinnitus. Through this technique, researchers have noted a difference between the neural activity of individuals with and without tinnitus. Using machine learning, scientists in Melbourne can now differentiate patients with slight to moderate tinnitus from those with moderate to severe tinnitus with 87.32% accuracy. This could help clinicians develop new treatments in the future.

Shoushtarian M, Alizadehsani R, Khosravi A, Acevedo N, McKay CM, Nahavandi S, Fallon JB. (2020) Objective measurement of tinnitus using functional near-infrared spectroscopy and machine learning. PLoS ONE, 15(11). https://doi.org/10.1371/journal.pone.0241695

Synchrotron System Reveals What It Looks Like Deep in Our Ears

It has proven historically difficult to study the micro-anatomy of the inner ear. However, researchers in Saskatchewan, Canada, are using new technology to depict this structure three-dimensionally. Using a synchrotron system, one of eight worldwide, it is possible to create pictures of even the tiniest parts of inner ear anatomy. By understanding these auditory organs, we can gain clarity on diseases such as Meniere's disease, sudden hearing loss, tinnitus, and more. However, it is not yet possible to use this technology on living patients as the radiation levels are too high.

Mei X, Glueckert R, Schrott-Fischer A, Li H, Ladak HM, Agrawak SK, Rask-Anderson H (2020). Vascular supply of the human spiral ganglion: Novel three-dimensional analysis using synchrotron phase-contrast imaging and histology. Scientific Reports, 10, 5877. https://doi.org/10.1038/s41598-020-62653-0

"Having these devices is really a blessing."

- JASON, OSIA SYSTEM RECIPIENT

THE OSIA SYSTEM: A GAME CHANGER

BY JAVIA HEADLEY, MARKETING COMMUNICATIONS MANAGER

Jason Jacobs was the first patient at the House Institute to receive the new Cochlear™ Osia® System, an active osseointegrated steady state implant system using digital piezoelectric stimulation. The Osia Implant is designed to be placed under the skin with minimally invasive surgery. It works by bypassing damaged areas of the outer and middle ear, sending sounds directly to the cochlea. It is the first and only implant system of its kind.

"The Cochlear Osia System is a game-changer," says Kimberli Davenport, AuD, a Clinical Territory Manager for Cochlear Americas. "Not only in terms of cosmetics but also in terms of hearing performance." The Osia can address a wide range of hearing loss levels and provide patients with better speech understanding and general sound quality, even in challenging listening environments.

Jason first started losing his hearing at 30 years old. He turned to bilateral hearing aids, which then caused several rounds of infections and antibiotics. "In the past, I had maybe five surgeries to correct my hearing loss. All the bones had deteriorated on both sides, so prosthetic bones were placed, and the eardrums were reconstructed. Now, here I am with this amazing product and loving it. With hearing aids, the sound is so artificial. I'm grateful for the sound I got out of them, but when I compare it to something like this, it blows them away; it's so natural."

When asked what part of the technology excited him the most, Jason mentions that the Osia System is a hearing device and a pair of headphones all in one. The Osia allows Jason to stream music, phone calls, and videos directly from his phone to the implant system.

"You can't hear this?" Jason asks his audiologists with glee as he calls his wife for the first time to hear what phone calls sound like streamed through this new system. "It sounds like I'm on speaker, and everyone else can hear what's going on."

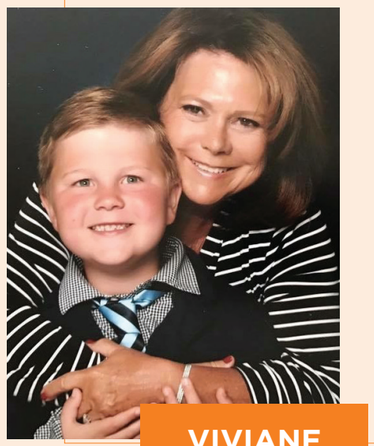
Dr. Davenport, who has been working in the industry for 17 years, is astounded at how far hearing technology has taken us. "I never dreamed that people with significant hearing loss would be talking on cellphones and that Cochlear would be able to provide this level of productivity to its recipients."

The future of hearing technology is exciting. From Dr. William House's first cochlear implant at the House Institute in 1961 to the Osia System now and beyond, research will continue to improve hearing technology for patients worldwide.

"Having these devices," says Jason, "Is really a blessing."

60 Years of **Cochlear Implants**

At the House Institute, we have seen firsthand the powerful ways in which hearing technology can change lives. This year, as we celebrate the 60th anniversary of William House, MD, restoring hearing to the profoundly deaf, we also celebrate the lives that have been forever touched by this remarkable technology. To date, over 737,000 individuals have been implanted worldwide. **These are just a few of their stories:**



VIVIANE

I feel so privileged to be the recipient of a cochlear implant that I received in 2015, implanted by Dr. Derald Brackmann, who gave me back a major part of my life. I was working when I knew my hearing loss was impairing my ability to do my best. I managed two large medical practices. My husband also became terminally ill. I knew I had no other option but to get a cochlear implant. I needed to do my best at work, communicate with my husband's physicians, and I wanted to hear my husband's last words. Hearing aids no longer benefited me. My right ear was implanted, which was completely deaf. Now I'm considering going bilateral since my left ear is nearly deaf. I am grateful for Dr. William House's brilliance and his willingness to educate others. Because of him and his pupils, many can now communicate with employers and loved ones and get around town independently. The photo to the left is my grandson and I, another major factor for getting the CI.

RICHARD

It's a given that I will never be a normal-hearing person, but with this implant, I will never be completely deaf. My hiking buddies marvel that I can hear them through COVID masks (something that would be nearly impossible pre-cochlear implant). It's a new world, unhushed and lush with sound, and I highly recommend this Medicare-covered "miracle" of scientific diligence to anyone who needs to break their own sound barriers. As I said to my friends on January 1st … "Happy New Ear!" *(Taken from Ojai Quarterly, Spring 2021, p. 110 -112)*

WILLIAM

William did not pass his newborn screening test, but, as babies born by cesarean section often fail due to fluid in the ear, it was not an immediate cause for concern. However, after three and a half hours of testing in the sound booth, their family learned that William was bilaterally profoundly deaf in both ears.

The CDC recommends that an infant be 12 months old before their cochlear implantation. William's mom Erica and her family proved that the waiting period would not change circumstances for William and made strong arguments to their insurance provider to approve the surgery prior to 12 months. As we know that early intervention makes for the best results.

William had just turned 7 months old when he was able to undergo bilateral cochlear implant surgery conducted by former House Clinic Physician, Eric Wilkinson, MD. "William was so excited to hear. He smiled and cooed and laughed," Erica said, reminiscing on his activation at 8 months.

William is now two and a half years old. He is undergoing auditory verbal speech therapy to learn how to listen. After not hearing in the womb or for the first eight months of his life, he is subject to being behind the curve and prone to listening fatigue. Noisy environments are a struggle for anyone listening through a cochlear implant. However, William is a trail blazer and has already caught up and is in some ways more advanced when compared to his hearing aged peers, which are incredible results within such a short amount of time.

"We are so thankful that he gets to hear and experience the gift of sounds. Hearing my voice and my husband's voice for the first time is something we will never forget nor take for granted," says Erica. "William loves to communicate and listens so well. One of his favorite things is to listen and dance and sing to music. He loves it!"

SHARE YOUR STORY WITH US!
Whether a patient, donor, or hearing care advocate, we want to hear from you. Your story is powerful and can help bring awareness to the importance of hearing health. Email **yourstory@hifla.org.**

MICHELLE

Words can't begin to describe how much my cochlear implant has improved the quality of my life. I can now hear clearly the sweet words my grandchildren speak! I can hear the breeze blowing through the palm trees, birds chattering away, and so many environmental sounds that make life more enjoyable. I love the direct streaming from the TV! The ability to understand people on the phone is a godsend, especially when it involves technical and other information critical to my needs. I continue to work on music appreciation, and those situations where sorting out conversation is more challenging, such as parties and restaurants. Still, I am amazed at how quickly I've adapted to hearing in this new way! I can't thank you enough, House Institute, for this life-changing cochlear implant! Can't wait to try out the Nucleus 7 Aqua device in the pool with the grandkids this summer!

I have been a patient at The House Institute for 48 years. I started to lose hearing, and it was thought to be from a virus. As the years went on, the right ear went deaf. I had the implant and was fortunate to hear immediately and need no further therapy. What a delight as I could literally hear the birds sing as promised! It was shocking how much I really could not hear before.

A year later, my left ear had a sudden hearing loss. I am totally deaf. Without the cochlear miracle, I would not be able to hear at all. I cannot begin to tell anyone interested how grateful I am that this was invented, and I was able to have the implant. It has been almost 6 years since I had the surgery. At the time, I was asked why I wanted it. Here is a photo of my 75th birthday (I am in the middle of the back row.) I think you will see why I wanted to hear! It allows me to be a part of my family.

NANCY

Thank you, Dr. William House, for pioneering and inventing this life-changing technology.

You can play a role in the future of the cochlear implant and the Institute's cutting-edge scientific programs by investing in our research, education, and global hearing health efforts for the countless deserving patients still to come. **HIFLA.org/75.**

The Future is Hear: Looking Ahead at Cochlear Implant Technology

BY JOHN GALVIN, PhD AND JAVIA HEADLEY, MARKETING COMMUNICATIONS MANAGER

Cochlear implant research at The House Institute started in 1957 when a patient alerted William House, MD, to the work of Andre Djourno. Djourno was a neurophysicist who implanted an electrode into the ear of a patient living with severe ear disease and found the potential to bring sound to the inner ear through electrical stimulation. In 1960, Dr. William House tried to replicate the work of Djourno with several patients undergoing surgery with great success. Soon after, Dr. House implanted his first cochlear implant system for long-term use. Surgical procedures and implant technology have continued to evolve ever since.

Researchers at the House Institute currently have several ongoing projects designed to optimize the cochlear implant for various patient groups. For our cochlear implant research scientist, John Galvin, PhD, one area of promising research is combining acoustic hearing and electric hearing with the cochlear implant in patients that have substantial acoustic hearing in the ear to be implanted or in the contralateral ear. Dr. Galvin also collaborates with researchers worldwide on various cochlear implant projects, including computer-based auditory training at home, emotion communication, and music perception.

When asked about the future directions of the cochlear implant, Dr. Galvin pointed out some near-future technologies that may benefit patients with hearing loss.

Optical cochlear implant

For present cochlear implants, individuals are able to perceive sound due to electric current from electrodes implanted in the cochlea. This method does not provide very good sound resolution. Researchers are studying the feasibility of using light to activate the surviving neurons in the cochlea. Infrared light has been shown to offer greater sound resolution, but much work remains to optimize the technology.

Adaptive signal processing

Researchers are developing signal processing to optimize the sound and reduce noise before the sound reaches the cochlear implant. Artificial Intelligence and cloud computing allows for better analysis of the auditory scene and improves speech understanding for various listening environments.

Utilizing the cochlear implant as a drug delivery system

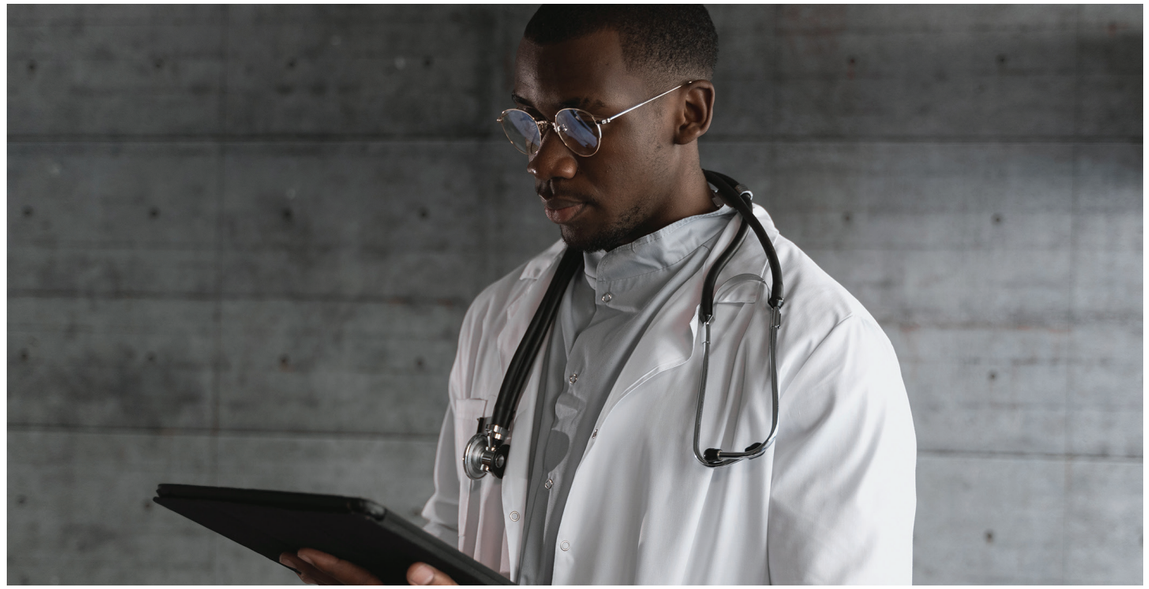
When electrodes are implanted into the inner ear, insertion trauma may occur, leading to an inflammatory response. Researchers continue to develop “drug-eluting” electrodes that can deliver drugs to reduce implantation and fibrotic growth and better preserve cochlea health after implantation.

Penetrating electrodes

In present cochlear implant devices, electrodes are positioned within the cochlea, often at a distance from the surviving neurons that require substantial electric current. As current spreads over this distance, this greatly limits the sound resolution, which is problematic for challenging listening tasks such as speech in noisy environments, music perception, etc. Researchers are developing electrodes to penetrate the auditory nerve. If successful, penetrating electrodes could dramatically reduce the current spread and increase sound quality.

In-House Outreach:
Our Digital Education Initiative for Physicians-In-Training

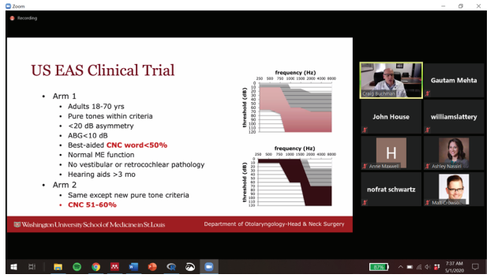
BY JAVIA HEADLEY, MARKETING COMMUNICATIONS MANAGER

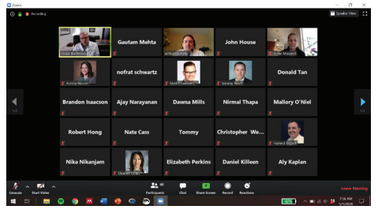


An effective tool in medical education and the provision of top-of-the-line patient care is the grand rounds methodology, which consists of presenting the medical problems of a particular patient to an audience of doctors and physicians-in-training.

Created as a method for junior physicians to review patients, it has since evolved into a way for professionals to stay up to date through the constantly changing nature of medicine. The House Institute has long provided a weekly grand rounds lecture aimed at educating fellows and visiting physicians.

At the start of the pandemic, grand rounds went digital, allowing the program to expand and include physicians worldwide. Sarah Hodge, MD, a first-year neurotology fellow here at the House Institute, says, “The main benefit of a digital grand rounds is the ability to hear from world experts in the field on a wide range of topics relevant





to neurotology without having to travel to attend the meeting physically. Recording and publicizing each lecture digitally also provides a platform for further study if wanting to brush up on particular topics at more flexible hours such as in the evenings or on the weekend.”

As this series continues to adapt and grow, we are excited to provide open access to any hearing health professional who would like to benefit. This platform has drawn many world-renowned speakers in the past, allowing physicians worldwide to stay plugged into the practical applications of new research studies and the ever-improving standard of hearing health care. By creating this digital space, we hope to help foster a culture of excellence for clinicians everywhere.

To sign up for this online lecture series, visit **HIFLA.org/Grand-Rounds**.

IN-HOUSE

TREATMENTS & INNOVATIONS

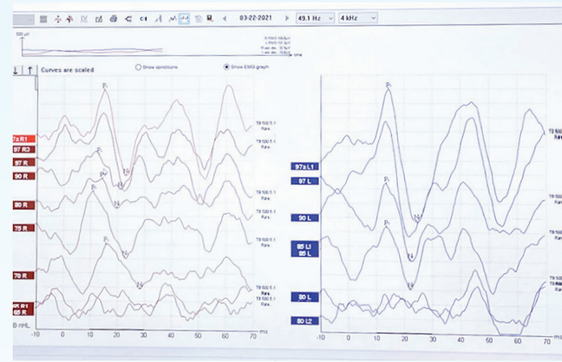
Ensuring the Successful Repair of Superior Semicircular Canal Dehiscence

BY MIA MILLER, MD AND HELENA WICHOVA, MD

In the last two decades, superior semicircular canal dehiscence syndrome has become a more familiar diagnosis. Patients usually complain of sound and pressure-induced dizziness, trouble hearing, ear fullness, and hearing one's heartbeat or breathing. When we suspect this diagnosis, a high-resolution computed tomography (CT) helps identify an area of missing bone overlying the superior semicircular canal, which is responsible for these symptoms. Because some patients may have dehiscence on CT without any symptoms, a clinical test measuring cervical vestibular evoked myogenic potentials (cVEMP) is used. Specifically, signals over the sternocleidomastoid muscle are measured as sound is presented to the ear to gauge the reactivity of the balance system. Abnormal cVEMP readings are only detected on the side of dehiscence with normal findings on the normal ear.

Treatment for symptomatic patients involves surgical resurfacing and/or plugging of the dehiscent superior semicircular canal. Given the variable locations of dehiscence, it can sometimes be challenging to ensure that the entire dehiscence has been covered. Studies looking at revision surgery in patients who remained symptomatic after repair show that, in 74% of the cases, resurfacing material did not entirely cover the area of dehiscence. After successfully resurfacing the superior semicircular canal dehiscence, cVEMP readings return to normal.

This project obtains real-time feedback with intraoperative cVEMP measurements, confirming superior semicircular canal dehiscence repair and normalization of cVEMP readings prior to finishing surgery. Intra-operative cVEMP monitoring allows surgeons to perform superior canal dehiscence repair with much higher precision, ensuring the best chance of successfully repairing and resolving symptoms without adding extra steps or clinic visits.



PARTICIPATE IN OUR

OPEN RESEARCH STUDIES

Your involvement could help change the trajectory of hearing medicine.

Meniere's Disease Drug Trial

This is a double-blind, placebo-controlled, randomized study aimed at proof of concept that montelukast, a previously FDA-approved medication that is known to help with allergy symptoms, may have efficacy in alleviating symptoms in patients with Meniere's disease. For the duration of the study, subjects will be instructed to take one pill at night for 90 days. There will be three monthly follow-up visits to clinic to assess any new, worsening, or alleviated symptoms. Each subject will be given a drug diary to record when the drug was taken and any symptoms they may experience; they will bring this diary and any unused pills to their next clinic visit before obtaining the next 30-day drug supply.

Inclusion Criteria:

- Must be 18 years of age or older.
- Must have experienced 2 or more spontaneous attacks of vertigo that lasted over 20 minutes
- Must have a skin test positive for allergy. If subject does not have this previously documented, they will be asked to undergo allergy testing for skin test confirmation to at least one allergen.
- Must already be a candidate for treatment with montelukast for allergic rhinitis/failed first line over-the-counter allergy treatments.

Exclusion Criteria:

- Had a previous surgical procedure for treatment of vertigo.
- Currently receiving any allergy immunotherapy or taking montelukast or a beta-blocker.
- Pregnant or recently pregnant (< 8 weeks postpartum, or lactation).
- Currently hospitalized for any reason.
- Have any active, acute, or chronic pulmonary disorder other than asthma.
- Have a history of intubation for asthma

If interested, please contact Mahta Marefat, our Clinical Research Coordinator, at: clinicaltrials@hifla.org or 213.770.1808

Do Face Masks Affect Your Communication?

In partnership with the University of Melbourne, the House Institute Foundation is investigating the impact of face masks on communication for adult listeners. The data from this study will help raise public awareness for issues around communication and help provide ideas for how we can improve communication when people are wearing face masks. **All adults with or without hearing difficulties are welcome to participate.**

To take part in the survey, scan the code to the right.

RECENT PUBLICATIONS

Bakhos D, Galvin JJ 3rd, Aoustin JM, Robier M, Kerneis S, Bechet G, Montembault N, Laurent S, Godey B, & Aussedat C. (2020). Training outcomes for audiology students using virtual reality or traditional training methods. PLoS One, 15(12). https://doi.org/10.1371/journal.pone.0243380

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Implants and Impact:
The Legacy of Steven Otto

BY JOHN GALVIN, PhD

Steve was the expert and was perhaps the most experienced ABI audiologist in the world.

As some of you may know, our dear friend and colleague Steven Otto passed away recently after a long battle with leukemia. Steve was a mainstay at the House Institute for more than 30 years. He was vital to the development and success of the Auditory Brainstem Implant (ABI). He was the go-to person for clinical care for ABI patients in the US. Alongside his clinical and research presence, Steve was a wonderful person to work with and encounter daily and was key to the wonderful lab environment that made the Department of Auditory Implants and Prostheses so successful at the House Institute.

Steve grew up in Iowa, which some say contributed to his “pathologically friendly” demeanor. He began his audiology career at the University of Iowa, earning a master’s degree and joining the university’s Speech and Hearing Clinic. He eventually found his way to Los Angeles, where he worked with Dr. Bob Shannon developing the ABI and, later, the penetrating ABI (PABI). Bob and Steve were a great pairing. Bob provided the research and engineering skills, and Steve provided the clinical expertise. During his career, Steve authored or co-authored nearly 30 peer-reviewed publications, many of which provided the initial results of the ABI.

Steve Otto with Darlene Fragale, a Cochlear Implant user and previous House Institute employee.

Steve worked closely with the ABI patients. Clinical fitting of the ABI was much different from fitting a CI. The frequency (pitch) relationship of the electrodes is orderly within the cochlea. With the ABI, the frequency for each electrode is unknown, and it requires much experience and intuition to map these patients successfully. Steve was the expert and was perhaps the most experienced ABI audiologist in the world. His patients loved working with him. He was just as known for his good nature and calm presence as he was for his smiling eyes and trademark mustache, and patients could always trust that working with Dr. Otto meant that they were in the best hands. When ABI patients visited, they would often bring food, such as fresh berries and shortbread, which Steve always shared with the lab.

Steve was also an avid collector of guitars and would sometimes demo his latest find in one of the lab’s sound booths. Surprisingly, he was also a collector of flashlights and always had at least one in his pocket (the origins of this flashlight fascination remain unknown). He was very sociable and, not surprisingly, he was often in the company of famous musicians, which speaks to their excellent taste in friends. All of us who knew him were equally lucky. We send our best wishes and deep condolences to his wife Ramona, the love of his life.

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Travis, Cochlear Implant
Recipient at House Institute

Our little blessing, Travis, was born profoundly deaf in both ears. We were heartbroken. Our oldest son is also deaf, so we knew he had a tough road ahead of him. We were confident knowing we had the House Institute, Dr. Luxford, and all the staff looking after us. Travis is now 3 years old, 21 months post op, and doing great. He's speaking in sentences and he's on track to go into regular pre-school. We are so happy with our decision and wouldn't have done it any other way. Thank you all so much!" - **STACI**

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