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HEARING HEALTH

Summer 2009



Showstoppers!

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HEARING HEALTH

Volume 25 Number 3, Summer 2009

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Do you need a hearing aid but don't know where to begin? Does the cost of a hearing aid seem unaffordable? Whatever your objection might be to getting one, we likely have addressed it in this issue of *Hearing Health*.

Check out "Hearing Aids: Available, Affordable, Accessible" (p. 36), in which Nannette Nicholson, Ph.D., comprehensively reviews the government and nonprofit programs that assist in the purchase of a hearing aid, as well as the many insurance and savings plans that make them more affordable.

With the cost addressed, you may want to check out the many ways a person can purchase a hearing aid in Trends (p. 12). And you'll learn what's new and hot in hearing technology in "Showstoppers!" (p. 16), our annual coverage of AudiologyNOW!

Not in need of a hearing aid? That's great news! And if you heed the advice of the National Institute on Deafness and Other Communication Disorders (NIDCD), you may never need one. Deafness Research Foundation (DRF) has partnered with NIDCD in its new campaign called "It's a Noisy Planet. Protect Their Hearing," targeted at tweens and their parents (p. 6). Noise-induced hearing loss affects 27 million American adults and is preventable with simple measures to protect hearing.

Whereas it just makes good sense to protect your hearing, research suggests that there may be a genetic predisposition for noise-induced hearing loss. Is there such a thing as "fragile ears" and "tough ears"? The answer to this question and more may be found in the most unusual of places – an aquarium. Read "Zebrafish: A Serendipitous Solution" (p. 28) to learn how researchers from the audiology and neuroscience departments at the University of Washington "reached across the aisle" to develop a new line of research that holds promise for the prevention of hearing loss caused by noise and other toxins. While we eagerly await the advances in prevention, and possibly treatment, of noise-induced hearing loss, please remember to wear your earplugs to those noisy summer stock car races, concerts and ball games. Have a wonderful summer!

Warm regards,
Rebecca Ginzburg
Rebecca Ginzburg
Deafness Research Foundation
Chair, Board of Directors

HEARING HEALTH

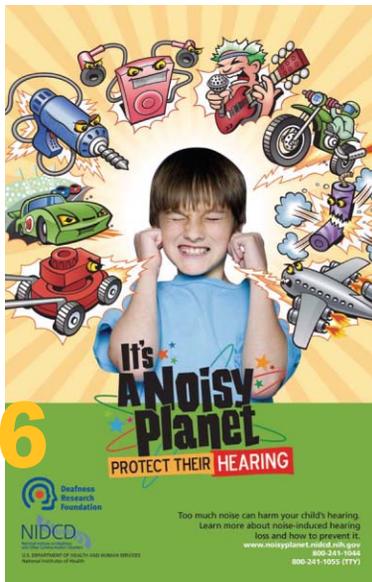
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Cover photo and photo below courtesy of NIDCD



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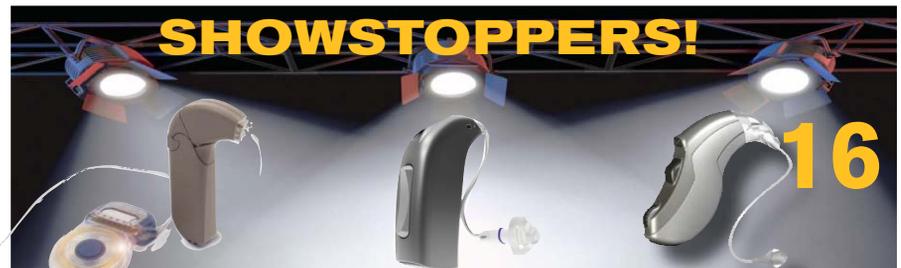
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HEARING HEALTH

New Ho Cam and



It's A Noisy Planet

PROTECT THEIR HEARING

DRF and NIDCD Part

Deafness Research Foundation (DRF) and the National Institute on Deafness and Other Communication Disorders recognize the importance of the prevention of noise-induced hearing loss. In this program, DRF will help spread the word about noise-induced hearing loss. DRF provides information about "It's a Noisy Planet" conferences and conventions at which you can learn more about protecting your hearing, and especially about noise-induced hearing loss in this important new program. ■



Too much noise can harm your child's hearing. Learn more about noise-induced hearing loss and how to prevent it.

www.noisyplanet.nidcd.nih.gov
800-241-1044
800-241-1055 (TTY)

Hearing Protection Campaign Targets Tweens and Their Parents

BY CHARLOTTE BALL, NIDCD INFORMATION CLEARINGHOUSE AND JENNIFER WENGER, OFFICE OF HEALTH COMMUNICATION AND PUBLIC LIAISON, NIDCD

Duncan Lint is an expert on reducing noise in his workplace. Before he fires up his 22-horsepower riding mower, he makes sure to put his earmuffs on. “Without them, the engine noise is really loud and annoying,” explains Lint, who has managed his own lawn care business for two years. He adds with a smile, “So I asked my parents to please buy them for me.”

Lint, who is 14, may not have realized that the earmuffs he requested would be blocking noises that are harmful as well as annoying. During peak season, he mows lawns up to four hours a day, several days a week. The noise from his riding mower is in the mid-90-decibel range. According to workplace guidelines set by the National Institute for Occupational Safety and Health (NIOSH), noise at this level can damage unprotected hearing permanently if a person is exposed to it for a prolonged period of time.

“I’m embarrassed that Duncan had to ask,” said his father, Larry Lint. “I should have thought of hearing protectors myself.” Duncan’s dad is well acquainted with noise-induced hearing loss

(NIHL), having already experienced significant hearing loss himself over the years. A car enthusiast, he admits to being around “too many hotrods and car races without protection,” with harmful consequences. “There are sounds I can’t hear,” he laments. “My kids seem to mumble a lot.”

The Lints’ experiences illustrate a concern expressed by James F. Battey, Jr., M.D., Ph.D., director of the National Institute on Deafness and Other Communication Disorders (NIDCD), one of the National Institutes of Health, in Bethesda, Md. “Noise is everywhere,” says Battey, “and kids as well as adults are in danger of losing their hearing.” Currently, more than 26 million adults in the United States have hearing loss related to excessive noise at work or from leisure time activities.

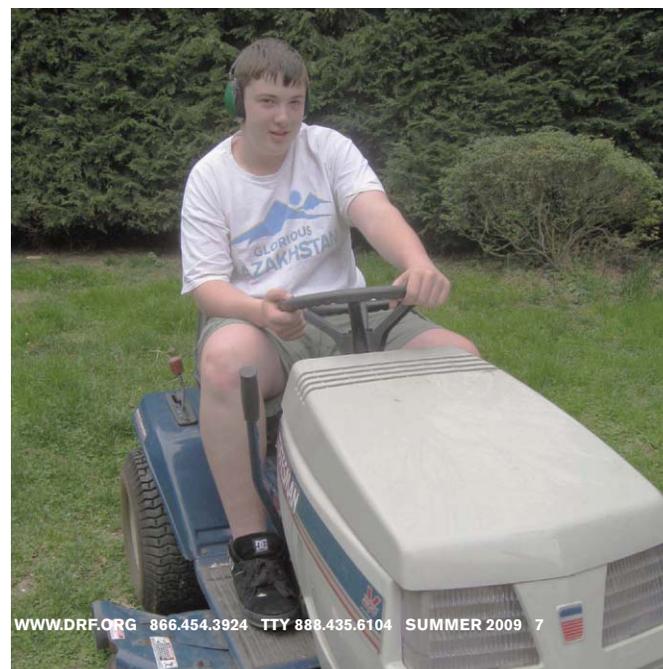
“With most injuries, you know you’re hurt because there is pain or blood or bruising,” explains Amy Donahue, Ph.D., deputy director of the NIDCD Division of Scientific Programs and an expert on hearing and NIHL. “There is some sort of sign that damage is occurring. But with noise-induced hearing loss, you frequently have no knowledge that you are damaging your hearing. This is why we need to teach people how to protect their hearing while they are young – before any damage can occur.”

Partner to Take on Noisy Planet

DRF and the National Institute on Deafness and Other Communication Disorders (NIDCD) emphasize the importance of raising awareness of the causes and consequences of hearing loss. By partnering with the NIDCD’s “It’s a Noisy Planet” campaign, DRF works to protect your hearing and the hearing of your children. Visit “It’s a Noisy Planet” on its Web site, www.drf.org, at the many exhibits and through regular public service announcements in *Hearing Health* magazine. DRF knows the importance of protecting your children’s hearing, and is very proud to be a partner

Duncan Lint wears hearing protectors to shield his ears from the damaging noise of his riding mower.

Photo courtesy of NIDCD



WWW.DRF.ORG 866.454.3924 TTY 888.435.6104 SUMMER 2009 7



Start Them Young, Teach Them Early

Introducing healthy hearing habits while their children are young is also the practice of the Canady family. When the two Canady girls received iPods for Christmas, the MP3 players had a preset volume level well below maximum. “When I was younger,” confessed David Canady, the girls’ father, “I played my music really loud. While I don’t think I hurt my hearing, I don’t want my girls to develop that same habit.” Canady referred to the volume control on the girls’ iPods as “preventive medicine.” Daughter Zola, age 9, says that she doesn’t mind the control. “I don’t like really loud music,” she said. “I can hear the music just fine at medium.”

The NIDCD would like more parents to follow the Canadys’ and Lints’ example in talking to their children about the dangers of too much noise and how to protect their hearing. In October 2008, the NIDCD launched a new national public education campaign to help prevent NIHL in young people, with a focus on tweens (children ages 8 to 12). Called “It’s a Noisy Planet. Protect Their Hearing,” the campaign is designed to educate the parents of tweens about the causes and prevention of NIHL so that they, in turn, can encourage their children to develop listening habits that will help maintain their hearing health for life. At the same time, parents learn how to protect their own hearing.

The effect of loud noise on hearing has been a primary area of focus for the NIDCD. Since 1999, the NIDCD and NIOSH have

collaborated on WISE EARS!®, a national campaign to prevent NIHL among the general public and workers. Noisy Planet is a continuation of the NIDCD’s efforts to draw public attention to the risks of NIHL and how we can better protect ourselves and our families.

The NIDCD is focusing its campaign on tweens because at this stage in life, they are starting to make some of their own choices. These choices include how they spend their off hours, such as listening to music or attending sporting events, and how they help out at home, such as mowing the lawn. They are also developing their own attitudes and habits related to their health, such as how much snacking they do, how often they exercise, and yes, whether or not they pop in a pair of earplugs whenever they find themselves bombarded by noise.

By targeting tweens, the campaign also complements the ongoing efforts of other organizations with an interest in protecting hearing that offer programs that focus on the music listening habits of either very young children or teens and young adults. “Noisy Planet helps fill a gap by keeping the prevention message going as a child grows up,” says Patricia Blessing, chief of NIDCD’s Office of Health Communication and Public Liaison. “It also helps make children and parents aware of the many sources of noise that could potentially damage their hearing.”

Your Daily Decibels

A decibel (dB) is a unit of measurement used to quantify sound levels relative to some zero decibel reference. This reference level is based on the threshold of perception of an average human. The decibel level of sounds is measured using a logarithmic scale.

The tough math can make keeping up with your daily decibel intake a little complicated and who wants to carry a sound meter around all day! And yet taking measures to prevent overexposure to dangerous noise levels prevents noise-induced hearing loss. Prolonged exposure to sound louder than 85 dB increases the chances of hearing damage. And when sound gets as high as 125 dB, even brief exposure can do irreversible damage. That means those awesome seats right in front of the speakers at your favorite group’s rock concert will hurt your hearing if you don’t wear protection. What’s the rest of your day look like in decibels?

						
WHAT'S GOING ON	Annoying alarm clock, right before you throw it against the wall	Stylin' and profilin' with a hair dryer	Baby-smooth legs with an electric shaver	Cat tracked litter through the house – again! Time to vacuum	Landlady wants to know when you're going to pay that overdue rent: normal conversation (at a distance of three to five feet)	If this me doesn't t soon, yo for work (inside c
DB LEVEL	80 dB	80-90 dB	85 dB	80 dB	60 dB	85 dB

Young Ears at Risk

Tweens frequently are exposed to potentially damaging decibel levels as part of their normal, daily lives. This risk comes from activities as common as helping around the home or farm, playing in a band and other activities. For example, workers who are exposed to noise levels at 85 decibels or higher for a prolonged period of time are required to wear hearing protectors, such as earplugs or earmuffs, while they are on the job. However, many devices that children use today have noise levels much higher than 85 decibels. An MP3 player at maximum level is roughly 105 decibels. Likewise, the noise level of a snowmobile or a woodshop can reach 100 decibels and the cheering of fans at major sporting events can reach 120 decibels.

According to Duncan Lint, his first exposure to an NIHL prevention message was related to another family activity – hunting. When Duncan was 10, his father enrolled him in a gun safety class, for which hearing protection was mandatory. “The instructors wouldn’t even let me watch without protectors,” he says.

Unfortunately, many young people aren’t yet aware of NIHL or how they can prevent it. Or worse, the wrong message may be reaching some young people. Catchy slogans such as “If it’s too loud, you’re too old,” and “Pump it up,” are encouraging some kids to adopt attitudes and behaviors that put them at risk for permanent hearing damage. One goal of the NIDCD’s Noisy

Planet campaign is to counter such misinformation by providing easy access to information that is helpful, relevant and scientifically sound.

Noisy Planet Online

The Noisy Planet Web site, www.noisyplanet.nidcd.nih.gov, provides basic information about the causes and prevention of NIHL to parents, tweens, community members, campaign partners and the media. The site also offers tips to parents on how to recognize when a child’s hearing is at risk from exposure to loud noise; how to select hearing protectors and take other steps to reduce noise exposure; and how to make use of the many teachable moments to discuss healthy listening habits with their tween. Parents can also sign up for the Noisy Planet e-bulletin to keep up-to-speed on news about the campaign and available resources.

The Noisy Planet Web site also includes a TweenZone page, with interactive information about noise and hearing loss tailored specifically to tweens. There, kids can access videos, games, an interactive sound ruler and “noise in the news” features. One article offers suggestions on how tweens can respond to their friends’ questions about why they use hearing protectors, such as earplugs, in noisy situations.

The site encourages tweens and their parents to protect their hearing through three simple steps:

Occupational Safety and Health Administration Daily Permissible Noise Level Exposure

Hours per day	8	6	4	3	2	1.5	1	.5	.25 or less
Sound level	90dB	92dB	95dB	97dB	100dB	102dB	105dB	110dB	115dB



...ss
clear up
u'll be late
city traffic
ar)



Yet another acci-
dent? That's it –
you're late to work:
ambulance siren

120 dB



Might as well enjoy
the ride! Average
car stereo

100 dB



There's never a
parking spot in
front of the office:
busy urban street

90 dB



TGIF! Noisy office

80 dB



Good deed
done for the day!
Grandma's lawn
has been mowed.

105 dB



“Everybody's
Working for the
Weekend” Rock
Concert

120-140 dB



The Canady girls, Maya and Zola (right), proudly display their iPods: full of tunes but low on volume.

Photo courtesy of NIDCD

- Blocking the noise by wearing earplugs or earmuffs
- Avoiding the noise by walking away or limiting time spent in noisy environments
- Turning down the sound on the growing number of tools, toys and gadgets that add to the cumulative noise level of daily life.

Parents are enthusiastic about Noisy Planet. As one parent wrote, "I've been increasingly worried about the noise that seems to be everywhere – the movies, the food court, outdoors and from my kids' toys. Now I can use your information to talk with my kids."

Taking NIHL Prevention Beyond the Web

The NIDCD will soon take its prevention message on the road to reach tweens directly. Representatives of the institute plan to visit local schools to talk with tweens and their parents about NIHL prevention and will sponsor exhibits at family-oriented venues. NIDCD is also working with other national organizations to help get the Noisy Planet message out into our schools and communities. Already, Noisy Planet is joining forces with American Speech-Language-Hearing Association and Deafness Research Foundation to expand the campaign's outreach.

Healthy Hearing for Life

The NIDCD hopes that, through Noisy Planet, tweens will learn to protect their hearing from noise as naturally as they brush their teeth to prevent cavities.

Nine-year-old Shannon Blessing is convinced that hearing protection is the way to go in some noisy situations in which you want to hear the good sounds but block out the damaging ones. Shannon and her friend Danielle recently donned a pair of earplugs for a Cheetah Girls concert that they attended with their moms.

"You can actually still hear, but it's just at a level like talking – not yelling or anything," Shannon explains. When asked if she had advice for first-time concert goers on how to maximize their fun, she said, "I would definitely tell them to take along a pair of earplugs – and if anyone is coming along, take extras for them too. Because they want to hear during the concert and after the concert too." ■

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Avid concert goer and earplug wearer Shannon Blessing plans to enjoy the music for many years to come.

Photo courtesy of NIDCD

“Thank You!” from Babies Everywhere

BY KARL R. WHITE, PH.D., DIRECTOR, NATIONAL CENTER FOR HEARING ASSESSMENT AND MANAGEMENT

Thomas R. Behrens, Ph.D., a pioneer of newborn hearing screening, died of cancer on March 25. Behrens was born in Switzerland in 1931 and, while working as a special education teacher in Zurich, discovered that his oldest daughter was deaf.

Shortly thereafter, Behrens and his family moved to the United States, where he earned a Ph.D. in language pathology and psychology of Deafness from Northwestern University in Chicago in 1963. After serving as an assistant professor at Northwestern for two years, he moved to Washington, D.C., to become the director of the Kendall Demonstration Elementary School at Gallaudet University where he was a professor of education and the director of the Department of Education. In 1973, Behrens moved to the federal Department of Education where he served as a branch chief and division director in what is now the Office of Special Education Programs (OSEP).

During his time at OSEP Behrens worked to implement newborn hearing screening programs in the U.S. Much of his work was done behind the scenes and he never sought recognition for his efforts but he arguably did more than any other person to make universal newborn hearing screening a reality.

Behrens was instrumental in persuading C. Everett Koop, M.D., the Surgeon General of the U.S. at the time, to include screening all babies for hearing loss in the Healthy People 2000 goals. Behrens was also actively involved in the 1993 National Institutes of Health Consensus Development Conference that concluded that all newborns should be screened for hearing loss before leaving the hospital.

A few years later, he worked closely with his good friend, Louis Z. Cooper, who was then serving as the president of the American

Academy of Pediatrics, to engage the Academy more fully in promoting newborn hearing screening by creating the Early Hearing Detection and Intervention Chapter Champions program which has now spread throughout the U.S.

Behrens worked tirelessly to help deaf infants and young children and their families.

His voice was gruff, his advice was blunt and his approach was often unorthodox, but people learned to listen and to follow him because he was smart and creative in the implementation strategies he suggested. Everyone who knew him was impressed with the greatness of his heart and the purity of his motives. He was a champion who accomplished much and left the world a much better place for deaf children and their families.

We miss his intellect, his energy and his integrity. When we paid attention to his advice, we were always more successful. And although we miss him, we are better for having known and been taught by him. ■

NIDCD NATIONAL TEMPORAL BONE, HEARING AND BALANCE PATHOLOGY RESOURCE REGISTRY

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If you suffer from any type of hearing loss or balance disorder the scientific study of your inner ears could be of great value in the search for the causes and treatments of hearing disorders. The *National Temporal Bone, Hearing and Balance Pathology Resource Registry* is currently seeking individuals who wish to donate their temporal bones to medical research.

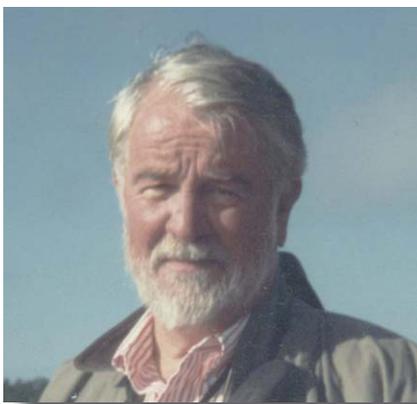
Due to the location of the temporal bones deep within the skull, studying donated temporal bones after death is one of the best ways to learn about the causes of ear disorders, and to devise new treatments and cures. The removal of the bones does not change the appearance of the head, face or outer ear.

Please contact us to find out how **YOU CAN GIVE THE GIFT OF HEARING AND BALANCE**



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Thomas R. Behrens, Ph.D.

Photo courtesy of the Behrens family

Hearing Aids Would You Like Them Here or There?



BY NANNETTE NICHOLSON, PH.D., AND ASHLEY DELAUNE

Gone are the days when the market expects you to conform to a prescribed method of buying a hearing aid. Corporations large and small are ready to give you what you want and bring it to your turf. Want it at Costco? How about at the mall? Maybe you prefer boutique-style shops or the traditional doctor's office? Or if you want to shop in your pajamas from the comfort of home, you can do that too. In a box, with a fox, in a house, with a mouse, here, there...you can get hearing aids almost anywhere.



FROM THE STORE

Amplifon USA is the largest hearing aid retailer in the country, accounting for close to 15 percent of hearing aid sales in the United States. The group is the parent company of Amplifon Hearing Centers located in Wal-Mart Supercenters ([www.](http://www.amplifonhearing.com)

[amplifonhearing.com](http://www.amplifonhearing.com), previously known as National Hearing Centers), Miracle-Ear (www.miracle-ear.com, including Sears outlets), Sonus (www.sonus.com) and the Sonus Network (www.sonusnetwork.com). The Amplifon group has a distribution network composed of 2,800 of its own retail outlets, plus 2,000 affiliated shops and almost 3,000 service centers operated by hearing aid specialists.

Audibel (www.audibel.com) is a network of over 1,000 independently owned practices that dispense hearing aids manufactured by Starkey companies, which include Audibel, Micro-Tech (www.mtheating.com), NuEar (www.nu-ear.com) and Starkey (www.starkey.com). In addition, the Starkey Hearing Alliance (www.starkeypro.com) is a select network of hearing care professionals who have access to Starkey resources and tools.

Avada Audiology & Hearing Care Centers (www.avada.com) number more than 200 in 17 states and are owned and managed by a senior management group called Hearing Healthcare Management (<https://www.hearinghealthcare.com>) boasting over 300 years of industry experience and expertise.

Beltone (www.beltone.com) is a hearing aid manufacturer and distribution

Guides to the Purchase of Hearing Aids

A number of publications are available to guide consumers in their decision to purchase hearing aids. Consider consulting the Better Business Bureau (www.bbb.org/us) prior to any hearing aid purchase.

American Association of Retired Persons (AARP)

Consumer Guide to Hearing Aids, http://assets.aarp.org/www.aarp.org/_articles/health/docs/hearing_guide.pdf

Federal Trade Commission (FTC)

FTC Facts for Consumers: Sound Advice on Hearing Aids, www.ftc.gov/bcp/edu/pubs/consumer/health/hea10.pdf

Federal Drug Administration (FDA)

Straight Talk from FDA about Hearing Loss and Hearing Aids, www.fda.gov/opacom/lowlit/hearaid.html

National Institute on Deafness and Communication Disorders (NIDCD)

NIDCD Fact Sheet: Hearing Aids, www.nidcd.nih.gov/staticresources/health/hearing/HearingAids07.pdf ■

network of over 1,400 affiliated independently owned offices across the U.S. Belton has provided manufacturing and retailing services for over 60 years and has been a subsidiary of the GN ReSound Group (www.gnresound-group.com) since 2000. The GN ReSound Group is one of the world's largest providers of hearing instruments and includes Resound (www.resound.com) and Interton (www.interton.com) hearing aid manufacturers.

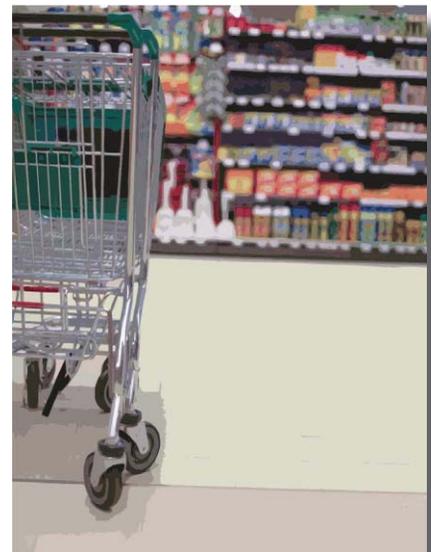
Costco Wholesale (www.costco.com), a discount warehouse chain, has hearing aid centers in over 200 stores. Costco is currently recognized as the fourth largest hearing aid retailer in the U.S. – and eighth in the world – and distributes Rexton hearing aids (also known as Kirkland Signature hearing aids). Plans to increase market position by partnering with the American Association of Retired Persons (AARP) are underway.

HearAtLast Inc. (www.hearatlast.com), has partnered with Wal-Mart Canada and has approximately 30 HearAtLast retail stores located within Wal-Mart stores, Wal-Mart Supercenters and Sam's Clubs in Canada, the first to distribute Vivatone Hearing Systems LLC (www.audiosyncheating.com) in Canada. The HearAtLast facilities sell a selection of brand-name hearing aids and offer complimentary screening tests, diagnostic testing and instant custom MP3 headphones, as well as custom hearing

protection products and services through their partnership with Sonomax (www.sonomax.com) and VitaSound (www.vitasound.com).

HearUSA Inc. (www.hearusa.com), the parent company of HEARx Ltd., HEARx West, Helix Hearing Care of America and HearUSA Hearing Care Network, owns several hundred practices, nearly all of which it started. HEARx (www.hearx.com), now known as HearUSA, is one of the nation's most respected hearing care providers and the only one accredited by the Joint Commission on Accreditation of Healthcare Organizations. The company is composed of over 80 company-owned and -operated hearing care audiology clinics across the U.S. In addition, the company oversees a network of audiology based and credentialed hearing care clinics. HearUSA markets independently owned practices through provider directories and Internet portals. HEARx West consists of 22 centers throughout southern California.

The National Ear Care Plan, an independent audiology network, was designed to provide high quality hearing care in a cost-managed environment, contracting with health plans, employer groups and subscriber organizations. Acquired by HEARx Ltd. in 2001, it is now recognized under the name of HearUSA Hearing Care Network (www.hearusa.net), with nearly 2,000 hearing



care providers through the U.S. Helix Hearing Care of America (www.helixhca.com), formed in 1997, was purchased by HEARx in 2002, and consists of over 120 independently owned, multidisciplinary clinics designed to treat and rehabilitate disorders of the auditory system. The HearUSA e-Hearing Health Web site (<http://store.hearusa.com>) is an online bulletin board to meet the needs of shoppers interested in hearing healthcare.

Newport Audiology Centers (www.newportaudiology.com) have over 20 years of experience as a provider to managed care plans and have exclusive contracts with many of them, including Aetna (www.aetna.com), Anthem ([WWW.DRF.ORG 866.454.3924 TTY 888.435.6104 SUMMER 2009 13](http://www.</p></div><div data-bbox=)

Federal and State Regulations

Over 20 years ago, opinion leaders wondered if mail-order hearing aids were a blessing or a cause of harm. More recently, a similar question has been posed by Max Stanley Chartrand: "Internet Hearing Aids: Boon or Bane to the Consumer?" The author points out that all 50



states have laws and regulations in place for the express purpose of watching out for the hearing aid consumer's best interests. One of the biggest concerns states face is the qualifications of providers of hearing healthcare services and products within their state. Some states, such as Colorado, Missouri and Texas, forbid "mail-order" hearing aid sales (including Internet sales). Other states, such as California and New York, permit Internet sales if the dispenser meets specific qualifications. Maryland is the most recent state to pass new regulations specific to Internet sales of hearing aids and the qualifications of providers. Learn more at www.audiologyonline.com/news/news_detail.asp?news_id=3564.

The Food and Drug Administration (FDA) does not permit the sale of over-the-counter hearing aids in drugstores and other retail outlets; FDA regulations state that a hearing aid cannot be sold unless the buyer

first receives a medical evaluation from a licensed physician. However, a consumer over the age of 18 can sign a written waiver of this requirement. The dispenser must inform the consumer that the waiver is not in his best interest and must not in any way encourage the consumer to exercise the waiver. In fact, the FDA regulation requires that, prior to the sale of a hearing aid, the practitioner advise the consumer that it is in his best health interest to see a physician, preferably one specializing in diseases of the ear, before purchasing a hearing aid. The rule requires that a person obtain a medical evaluation of hearing loss six months prior to purchasing a hearing aid. The International Hearing Society, American Academy of Audiologists and the American Speech-Language-Hearing Association endorse the FDA regulations for hearing aid sales and hearing aid practices. ■

anthem.com), Healthnet (www.healthnet.com), Humana (www.humana.com), Secure Horizons (www.securehorizons.com) and United Healthcare (www.uhc.com) as well as other well known plans. Audiology practices affiliated as Newport Alliance Providers receive referrals from Newport through contacts with managed care programs. Affiliates agree to follow Newport protocols in the provision of services to managed care recipients. This distribution network offers most major hearing aid brands; however, chief suppliers are Phonak (www.phonak.com), GN ReSound (www.gnresound.com), and Rexton (www.rexton.com).

Sam's Club (www.samsclub.com), in partnership with General Hearing Instruments Inc. (GHI, www.generalhearing.com), has opened several

clubs featuring hearing centers, such as the new club in Lady Lake, Fla. In addition, distribution strategy includes the online sales of GHI hearing aids (www.samsclub.com).

One of the newest "kids on the block" is **Zounds** (www.zoundshearing.com), a company founded by Sam Thomasson, an engineer, entrepreneur and father of a child with hearing loss. Zounds hearing aids are available through a network of more than 25 Zounds hearing centers located in malls or shopping centers across the U.S.

IN THE MAIL DIRECT TO CONSUMER

Despite the apparent controversy over mail-order and Internet hearing aid sales, **Lloyds Hearing Aid** (www.lloydhearingaid.com), in Rockport, Ill.,

has been in operation for over 45 years, has a strong Internet presence and recognizes that low price is one of the primary reasons consumers buy from them. Lloyds prefers to receive a copy of an audiogram and has a 45-day fee-free return policy (except on custom-built hearing aids, on which there is a nonrefundable \$50 return fee).

America Hears (www.americahears.com) dispenses digital hearing aids that are programmed via their Virtual Office package, enabling the consumer to make adjustments to the hearing device at home. The Virtual Office package includes software and their exclusive hardware, which is used to connect the hearing aid to a computer. Minimum computer requirements can be found on their Web site.

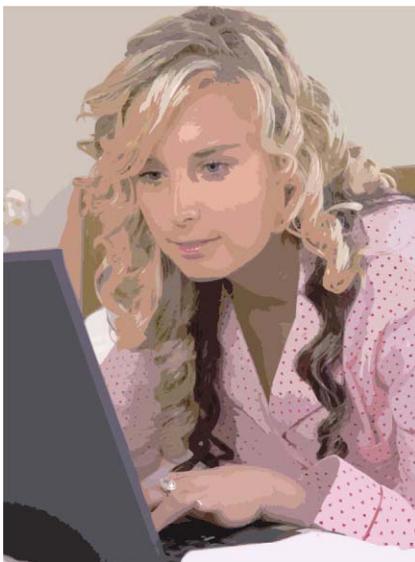
HearSource (www.hearsource.com)

Hearing Aid Manufacturer Distribution Guidelines

Many major hearing aid manufacturers well known for the quality of their products have decided to only use distributors who directly fit and sell their products through in-person consultations. Oticon (www.oticonusa.com) was one of the first major hearing aid manufacturers to publish a set of guidelines outlining these principles. Oticon refuses to accept new orders from distributors who provide hearing aids to end-users through indirect means without direct contact. Examples of violations of the guidelines include sales of Oticon products through catalogs, mail order or

over the Internet, where there is not face-to-face consultation between the consumer and a hearing health-care provider. Oticon stated, "People with hearing loss deserve to make the best choices possible for themselves that best fit their individual needs. We believe this is best accomplished through a personal relationship with a dispensing professional in a face-to-face setting." Widex (www.widexusa.com), Siemens (www.siemens-hearing.com), GNResound (www.gnresound.com) and Starkey (www.starkey.com) have similar published policies. Starkey states that they do

not sell their hearing aid products directly to Internet retailers and that they do not endorse the practice of selling hearing aids to consumers via the Internet. Further, they "do not believe that Internet retailers can provide consumers with the same high-quality professional services as our carefully chosen worldwide network of authorized hearing professionals." ■



sales, first introduced its disposable hearing instruments in 2000. Songbird states that "the Songbird Flexfit hearing aid is perfect for anyone with mild to moderate hearing loss; especially for those who feel they don't need hearing help all the time."

Other direct-to-consumer online vendors include **Hear Pod** (www.myhearpod.com) and **Hearing Help Express** (www.hearinghelpexpress.com).

E-COMMERCE VIA A HEARING CARE PROFESSIONAL

Finally, as a happy medium, there's the Internet-based hearing aid purchase that goes directly to a local hearing care professional for in-person fitting and adjustment.

Ahearingaid.com (www.ahearingaid.com) allows you to choose an audiologist or hearing instrument specialist from its national network to conduct the assessment in person and to recommend a hearing aid if that is appropriate. Ahearingaid.com orders the hearing aid for you from the manufacturer and ships it to the selected audiologist or hearing aid dispenser for the fitting. Participating professionals

are paid by Ahearingaid.com for the initial evaluation, fitting and some follow-up visits.

HearingPlanet (www.hearingplanet.com) simplifies hearing care by providing easy access to an endorsed local clinic, a wide selection of competitively priced hearing aids and trained hearing consultants to guide patients throughout the process. With over 1,100 clinic locations throughout the U.S., HearingPlanet is one of the largest and fastest-growing hearing care providers in the country. Added to this cutting-edge business model is a consumer blog at <http://blog.hearingplanet.com>. ■

offers a Personal Programming Hearing Aid System, enabling the user to adjust the hearing aid at home, office or on the go – using a personal computer or laptop. Live support is available to help in the fitting and adjustment process.

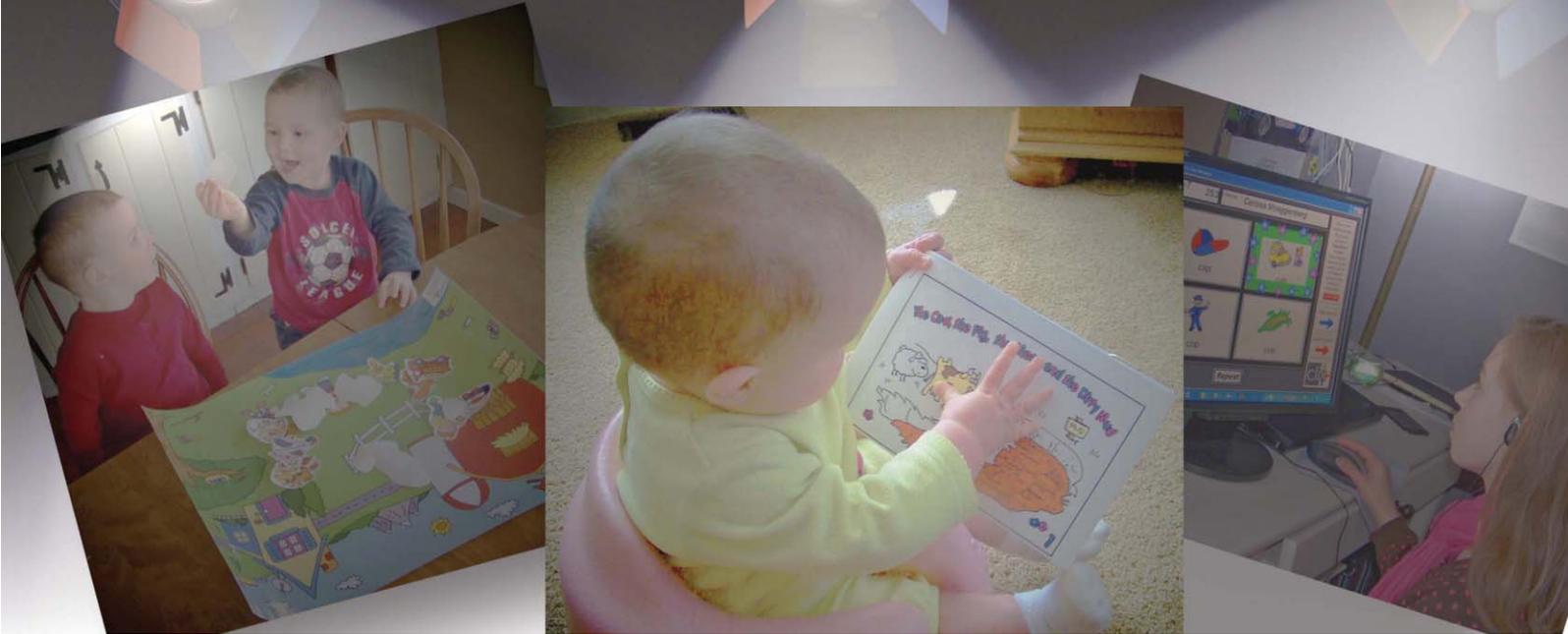
OpenFit Online (www.openfitonline.com) also offers a home programming box with each order.

Songbird (www.songbirdhearing.com), a relative newcomer to Internet

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LIFE-CHANGING TECHNOLOGY



Big and little kids participate in the Advanced Bionics Listening Room. With activities for infants, toddlers, kids, teens and adults, CI users can learn how to hear better in noise and on the telephone and to more fully appreciate music.

Photo courtesy of www.hearingjourney.com/Listening_Room

SHOWSTOPPERS!

from the Exhibit Hall of AudiologyNOW!

BY NANNETTE NICHOLSON, PH.D., MEGAN CATES AND ROBERT IRVING, PH.D., J.D.

Dallas – the “Big D” – a brash, stylish, cosmopolitan city with a well-earned reputation for fashion, luxury shopping and flashy prosperity, served as the host for AudiologyNOW! 2009, the annual convention of the American Academy of Audiology. Exhibitors offered samples of the newest, best and brightest in assistive listening devices, earphones, hearing aid accessories, alerting systems, wireless technology, hearing aids, implant technology, balance and tinnitus interventions, telecommunications technologies and much more. Trends reporters scouted the halls to bring you the best of each.

Assistive Listening Devices and Alerting/Signaling Systems

Humantechnik (www.humantechnik.com) debuted the **CM-BT Bluetooth®** headset with listening amplification that connects to mobile phones, computers and audio devices. Also new is their *lisa* signaling system that connects wirelessly to a receiver to turn a doorbell or telephone ring into flashing lights or vibrations

no matter where you are in the house.

The **Comfort Contego® HD Courtroom Listening System** by **Comfort Audio** (www.comfortaudio.us) is versatile and easy to use. It includes a transmitter, three receivers, headphones, neckloops, a sound cable, two charge units and a user manual conveniently packaged in a high-impact lockable aluminum case. The Comfort Contego is compatible with Americans with Disabilities Act guidelines and is available through an audiologist or the Contego online store.

The **Lifetone HL™ Bedside Fire Alarm and Clock** (www.lifetonesafety.com) uses a patented sensor that “hears” your existing smoke alarm and puts out a 520-hertz square wave that generates multiple tones, making it easier to hear and more effective in breaking the sleep cycle than standard smoke alarms. Available at Harris Communications (www.harriscomm.com).

Earphones and In-Ear Music Monitors
Able Planet’s (www.ableplanet.com) new **Clear Harmony™** headphones feature the company’s award-winning sound quality

The Lifetone HL™ Bedside Fire Alarm and Clock “hears” your existing smoke alarm and generates multiple tones that are easier to hear and more effective in breaking the sleep cycle than standard smoke alarms.

Photo courtesy of Jan Biang



in noise-cancelling technologies. **Linx Audio™** creates high-frequency harmonics that enhance the sound quality and speech clarity of difficult-to-hear words or notes, increasing the perception of loudness without increasing the volume. The soft cushioning of the headphones allow them to be worn with or without a hearing aid, without feedback or squealing problems. Beginning August 1, all Clear Harmony active noise-cancelling headphones sold to consumers with hearing loss will have an **In-Balance Communication** cord, available through audiologists worldwide. It incorporates the patent-pending In Balance Volume Control and Calibration Device that balances sound for consumers with asymmetrical hearing loss, thereby helping to preserve hearing in the better ear. In addition, the cord employs a Clear Voice Microphone that turns the active noise-cancelling headphone into a communication headset. Now, people with hearing loss can block out background noise, enabling them to speak freely over the phone or on a computer with voice over Internet protocol (VoIP) applications. Able Planet donates 10 percent of consumer direct Web sales to charities for people with hearing loss. Contact Able Planet for more information or to become a distributor at vhenley@ableplanet.com.

Westone (www.westone.com), celebrating its 50th year in business, announced the release of the **Westone UM3X**, the latest addition to **Universal Fit Musicians Monitors**, designed to offer performing musicians a well-balanced monitor no matter what in-

strument they play. In-ear monitors help eliminate feedback, lower onstage noise levels and reduce vocal fatigue, all while protecting hearing. Equipped with a durable 50-inch stereo “Y” cord and a 3.5 mm stereo jack, the UM3X is also perfect for personal audio devices such as MP3, CD and DVD players, and laptop computers. The UM3X comes with a travel case, 1/8-inch to 1/4-inch stereo adaptor and 10 different types of eartips to customize the fit to the anatomy of your ears.

Microsonic introduced **Microsonic Music™** (www.microsonicmusic.com), offering a range of **EPIC™ In-Ear** earphone monitors designed for the professional musician as well as everyday iPod user. Their earphones sport an innovative swivel nozzle for a comfortably fitting angled ear tip.

Phonak (www.phonak.com), a newcomer to the music scene, has **Audéo Perfect Fit Earphones**, which combine trendsetting design with comfort and sound quality.

Starkey Laboratories (www.starkey.com) is making a name in the music industry with their **ListenHear™** products, including audio monitors, Custom Mini Monitor, earbud mold and earplugs. Their **Personal Audio Monitors** eliminate the need for traditional stage monitor wedge speakers. Providing lower stage volume for the performer and up to 26 decibels (dB) of sound isolation from ambient sounds, these custom-fit earpieces are also ideal for MP3 players, computers or gaming systems. The acoustic design of the MP3 earbud molds optimize the sound quality of standard in-ear headphones that come with MP3 players and other audio equipment. Unlike traditional ear protection, the musician’s earplugs attenuate sound across all frequencies, making music more clear and natural sounding. They are available with 9 dB, 15 dB and 25 dB filters.

Other specialty applications for custom ListenHear earmolds include a newscaster/telecaster mold (used extensively by broadcast professionals, reporters and law enforcement agencies); the pilot headset (with a place for an adjustable boom for microphone positioning); and the racing receiver mold (used by motorsports drivers who demand quality communication and sound suppression underneath the racing helmet). The stethoscope adaptor mold is



Ear Gear covers, prevents loss of and protects hearing aids, implants and FM systems from the elements.

Photo courtesy of www.gearforears.com



a customized receiver mold to fit nearly any stethoscope receiver, enhancing hearing in noisy medical environments.

Hearing Aid Accessories and Care Products

A multipurpose answer to hearing aid cleaning and care is **Jodi®-Vac**. The **Jodi-Elite** (<http://jodivac.com>) is a compact, portable, affordable hearing aid cleaning and storage solution that helps keep hearing aids clean, dry and safe. Simply vacuum wax and debris from the hearing aids before going to bed and then place them in the large felt-lined compartment, close the lid and the desiccant pillow will remove moisture while you sleep. The felt-lined compartment can be used for battery storage as well.

Ear Gear (www.gearforears.com) is a child and adult hearing aid safety product designed to cover, prevent loss of and protect hearing aids, implants and FM systems from wind, rain, sweat, dust and dirt. Acoustically transparent, Ear Gear is available for most models and comes with a one-year unconditional guarantee.

Loved by kids and adults alike, **Tube Riders®** (www.otocool.com) offers more than 20 decorations to add personality to hearing aid and implant devices, making hearing more fun!

Kidlfyx Kreations (<http://kidlfyxcreations.com>) offers fun solutions for bone-conducted devices, FM products, hearing aids and implants. Kidlfyx is also a distributor of Ear Gear and Tube Riders.

Health Enterprises (www.healthenterprises.com) showcased



The Universal Hearing Aid Dryer™ safely removes moisture and helps dry wax for easier removal.

Photo courtesy of www.hearingtech.com

Acu-Life Audio-Kit™ Hearing Aid Cleaner – the Swiss Army knife of hearing aid cleaners – which includes a wax removal brush, pick, tube and vent cleaner, battery door opener and battery replacement magnet. Health Enterprises also offers hearing aid dehumidifiers, cleaning wipes, hearing aid phone pads, hearing aid blowers and battery testers. In addition, the **Acu-Life Impact Noise Reducers**, with a noise reduction rating of 18 dB, block loud impulse sounds from music without that “plugged up” feeling.

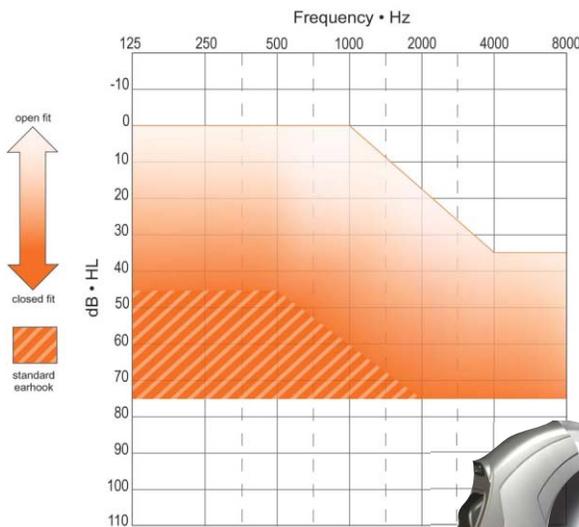
The portable **Power-Vac™** by **Hearing Technologies** (www.hearingtech.com) operates on AA batteries or a DC converter and includes hearing aid cleaning tools. Designed for all styles of hearing aids including open fit, the **Universal Hearing Aid Dryer™** safely removes moisture and helps dry wax for easier removal. Completing the product line are hearing aid battery testers and digital hearing aid battery testers.

Connevens Limited (www.connevens.com) offers a wide array of hearing aid first aid products. Of particular interest is the **Connevens Baha® Listener Kit**. Like a conventional hearing aid, a Baha needs regular daily testing to ensure that it is working correctly. The Baha Listener Kit includes a Baha mount, linked to the **Crescendo**, which allows the Baha to be listened to via the headphones supplied. Hearing aid users who want to be able to check a Baha can use the Baha Listener by purchasing a set of stereo leads or an inductive neck loop. The output of the Baha can then be fed directly into the hearing aids.



Digitel™ digital hearing aid battery tester by **Hearing Technologies**.

Photo courtesy of www.hearingtech.com



While the Klik® is preprogrammed for ease of operation, it can be fine-tuned for the user's preference.

Photos courtesy of www.klik-hearing.com



Tube Riders offers more than 20 decorations to make wearing hearing aid and implant devices fun.

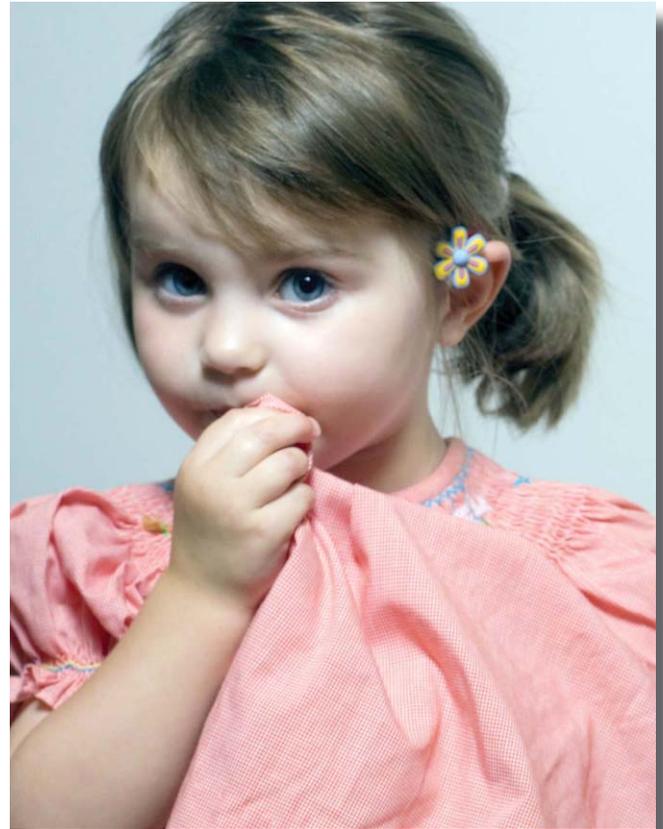
Photo courtesy of www.otocool.com

Discovery (www.discoverear.com) offers three types of warranty coverage: loss, damage and component failure coverage on all makes and models of hearing aids under eight years old. Along with coverage on all types of hearing instruments and Neuromonics tinnitus devices, Discovery also provides warranty coverage on processors for bone conduction implants, cochlear implants (CIs) and Logicom FM receivers for CIs. Available through a network of audiologists and hearing aid dispensers throughout the U.S., their warranties are designed to complement or extend the manufacturer's warranty.

Midwest Hearing Industries (www.mwhi.com), a hearing instrument insurance provider for over 45 years, insures against financial loss from physical damage to hearing instruments due to theft, fire, accidental breakage, water, auto accident and even mysterious disappearance. They insure all makes and models with no deductible and economical payments. Warranties are underwritten by an A-rated national insurance company.

Hearing Instruments

Oticon (www.oticon.com) introduced **Oticon Hit** to appeal to budget-conscious consumers. Hit and **Hit-Pro** are designed for hearing losses up to 105 dB hearing level and are available



10:00 am Make a reservation

12:05 pm Change doctor appointment

5:45 pm Call a friend

Relay Anyone, Anytime

Use your voice on the telephone again!

SIPRelay[®] with CaptionCallSM Voice Carry Over (VCO) is a free text-based relay service for people with a hearing loss. It is ideal for those who want to use their own voice and residual hearing, but who would benefit from a captioning of the other party's voice. A computer with an Internet connection and a telephone is all you need to use SIPRelay with CaptionCall VCO. Communication is fast and easy—whether you're making a reservation, changing a doctor appointment, or calling a friend.

Did we mention that SIPRelay is free? Visit www.siprelay.com to find out more.

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SIPRelay[®]
with VCO www.siprelay.com



ReSound™’s tiny hearing devices, both comfortable and invisible in the ear.

Photo courtesy of www.gnresound.com

iScroll® digital volume control and new push-button memory switch, it is a perfect match for those who may have limited dexterity.

Bernafon (www.bernafon-us.com) presented **Vérité**, a new

premium RITE hearing system, using the proprietary Bernafon ChannelFree™ signal-processing, coupled with a variety of adaptive features, and Vérité clear sound.

Persona Medical, the new face of **Magnatone** (www.magnatone.com), introduced SpeechPro (patent pending), a featured element of the **EVoK** product line, which provides real-time speech mapping, measuring the hearing instrument response in the ear and automatically adjusting the EVoK hearing instrument to the prescribed amplification.

Phonak (www.phonak-us.com) introduced the **CORE Collection**, a complete range of hearing systems and accessories that fit any user’s needs – regardless of hearing loss, lifestyle, personal taste, age or budget. Models range from the smallest CIC to the most powerful BTE with a variety of sizes, colors, coupling options and FM compatibility.

GN ReSound (www.gnresound.com) won the Chicago Athenaeum GOOD DESIGN™ 2008 Award for their innovative hearing instrument: **be** by **ReSound™** is the first of new Invisible Open Technology (IOT) hearing instruments – tiny hearing devices, both comfortable and invisible in the ear with MultiVenting™ to reduce feedback and occlusion. **be** by ReSound is perfect for first-time users and for people with mild or moderate hearing loss.

Rexton (www.rexton.com) turned on the sparkles with two new products, **Gem** and **Cobalt**. Gem has speech enhancement and sound smoothing algorithms to enable hearing in a noisy environment, while its wind reduction and wireless capability make it perfect for any weather. The Cobalt has automatic noise reduction, feedback cancellation, Bluetooth capabilities and rechargeable and remote control options.

Siemens Hearing Instruments’ (www.siemens-hearing.com) extensive research into consumers’ lifestyles and motivations has yielded a hearing solution for all types of people and listening situations: **Motion™**, introduced at a new price point, allows you to stay connected to your world. The optional **Tek™ Bluetooth** wireless enhancement connects with mobile phones, MP3 players, laptops, televisions and other devices – transforming hearing instruments into a stereo, wireless headset.

Sonic Innovations (www.sonici.com) caused quite a stir with their **Touch™**, a new tiny RITE. Patented digital sound processing preserves the audio qualities ears hear naturally and Touch automatically adjusts to the sound environment, providing the best listening experience for any situation. Touch comes in five base and 15 interchangeable colors, and is available in three technology levels, with progressively more features.

S Series with Drive Architecture™ is **Starkey’s** new line of hearing aids (www.starkey.com). Drive Architecture uses multi-core processing, similar to the technology in the newest computers, and provides three times more power than previous technologies. The complex programs in S Series eliminate feedback, provide

in receiver-in-the-ear (RITE), completely-in-the-canal (CIC) and powerful behind-the-ear (BTE) instruments. Another Oticon wonder, the **Dual**, has rapidly become the “go-to” device for a full inventory of high-end benefits, binaural processing and wireless connectivity in a small, stylish design.

Ear Technology Corporation (www.eartech.com) entered the hearing instrument scene in 2005, with **TransEar®** (www.transear.com), the first bone conduction hearing aid to treat single-sided deafness without surgery, without a bulky headband and without another hearing aid being worn in the “good” ear. With their newest product, they dared to ask the question, “What if programming a high-end digital instrument were as easy as the click of a button?” The answer was **Clik®** (www.clik-hearing.com). Clik is preprogrammed with a variety of algorithms at your fingertips. Techno-savvy consumers can even fine-tune their hearing aids in real-world listening environments without sacrificing fitting quality or hearing aid performance.

AudioSync Hearing Technologies (<http://audiosynchearing.com>), a member of the Starkey Laboratories family, introduced Exeleron™ Technology – the synergy between hearing aid and software – in two product lines. The **Via™** represents a complete line of high-performance instruments, offering all styles from power BTE to custom products, and **Vue™** features feedback cancellation, directionality and seamless environment adaptation.

Audina® Hearing Instruments (www.audina.net) has released the sleek and contoured **flx®** digital hearing instrument. Featuring an



The Oticon Hit is designed for hearing losses up to 105 dB and is available in RITE, CIC and BTE instruments.

Photo courtesy of www.oticonusa.com

optimal performance in noise, enhance telephone listening and keep track of information about the hearing aid itself.

Unitron (www.unitron.com) unveiled **Passport™** and **Shift™**. Passport offers unprecedented user control over four adaptive features: listening preferences, wireless connectivity, programming and interactive personalized learning via smartFocus™. Shift is an ultra-small, ultra-smart BTE. Shells and spines can easily be interchanged to cater to personal style.

Vitasound Audio's (www.vitasound.com) **Freedom AD** is a speaker-in-the-ear (SIE) instrument that can be used with either a soft ear tip or a custom ear tip. With the thin tubing and various sound tip options, it's easy to insert and practically invisible.

Widex (www.widexusa.com) unveiled **Mind™440** with **Zen™**, a high-end addition to their product line, and **Mind™330**, a mid-range addition. Mind hearing aids offer dual integrated signal processing, high definition locator microphones, TruSound Compression System and a speech enhancer for improved understanding in noise. The patented Zen program generates soothing harmonic tones and chimes, which can aid in relaxation and may well change the way we think about Zen forever.

Implant Technologies and Accessories

On May 1, **MED-EL** (www.medel.com/US) introduced new **MAESTRO System Software Version 3.01** for the **Opus 1** and **2** audio processors. This new version of software also allows **COMBI 40+** implant users to access the Opus 1 and 2 processors introduced by the company last year. The Opus processor family features **FineHearing™**, an advanced sound-processing technology for improved music appreciation and better understanding of speech in noisy environments. The COMBI 40+ implant model, used from 1998 to 2005 in the U.S., was replaced by the **PULSARci100** and **SONATAti100** implant models. Several thousand COMBI 40+ users in the U.S. will now be able to access the latest sound coding technology through FineHearing. MAESTRO 3.01 includes new features and enhancements for PULSARci100 and SONATAti100 implants. These newer MED-EL CIs support proprietary Auditory Nerve Response Telemetry (ART™), which provides clinicians with precise information on the physiological response of the auditory nerve to stimulation by the CI.



Unitron's Passport offers unprecedented user control over four adaptive features.

Photo courtesy of www.unitron.com



Sonic Innovations' Touch™ comes in five base and 15 interchangeable colors.

Photo courtesy of www.sonici.com

The Most Important Wake-Up Call You Will Ever Get



Request a free catalog!

When a T3 smoke alarm is activated, the Lifetone HL™ Fire Alarm and Clock sounds a 90dB alarm with a 520Hz square wave pattern, which is more effective at waking up people with hearing loss.

HARRIS COMMUNICATIONS www.harriscomm.com (800) 825-6758

Become a dealer! We've been in business for over 25 years and have become experts in assistive listening technology. Call (800) 582-8569 for more information.



MED-EL has introduced the new MAESTRO System Software Version 3.01 for the Opus 1 and 2 audio processors.

Photo courtesy of www.medel.com/US

In an effort to provide support to their CI users and to improve patient outcomes, **Advanced Bionics** (www.advancedbionics.com) has developed an amazing resource: the Listening Room (www.hearingjourney.com/Listening_Room). With activities for infants, toddlers, kids, teens and adults, every CI user can learn how to hear better in noise, on the telephone and to more fully appreciate music. The exercises are helpful for adjusting to amplification for the first time, adjusting to a change in fitting parameters or providing perspective when considering the purchase of newer technology. For more, contact the Bionic Ear Association at 866.844.HEAR (4327) or e-mail hear@advancedbionics.com.

CochlearAmericas (www.cochlearamericas.com) has launched a new rehabilitation program for CI recipients. The **HOPE** program provides free online training for parents of children with CIs, adult CI recipients as well as other guides and materials to aid in rehabilitation. For more information, visit www.cochlear.com/HOPE. Cochlear's new **Sound and WAY Beyond** CD-ROM features self-paced modules designed to improve adult and teen recipients' understanding of vowels, consonants and sentences. The program includes over 10,000 words and sentences for adults and teens at all skill levels. The product's advanced modules include music appreciation training, hearing in noise training and other exercises. Sound and WAY Beyond allows for individual results to be summarized and printed to help CI recipients hold meaningful discussions with their audiologist and therapist.

Hold the phone – Oticon is now making implants? The William Demant Holding Company has just announced a new business focusing on the development and marketing of bone-anchored hearing solutions (read full story at www.hearingreview.com/news/2009-03-30_01.asp). **Oticon Medical** is the culmination of years of work by Oticon's development team to produce a comprehensive program of sound processors, implants, fitting software, patient accessories and special tools for surgeons. Oticon Medical's bone anchored hearing solutions will feature sound

processors based on Oticon's proprietary RISE platform. One of Oticon Medical's aims is to bring implant options to places in the world that currently have very limited access to this intervention. We applaud the efforts of Oticon in their outreach to deaf and hard of hearing communities worldwide!

Interventions for Hearing Loss, Tinnitus and Dizziness

Neuromonics (www.neuromonics.com) is the manufacturer and distributor of the FDA-cleared and clinically approved **Neuromonics Tinnitus Treatment** and **Oasis™** device. Customized to a person's unique hearing and tinnitus profile, it addresses the neurological, attentional and emotional processes of tinnitus, thus retraining the brain to filter out the disturbing tinnitus sounds.

Listening and Communication Enhancement (LACE) by **Neurotone** (www.neurotone.com) is an interactive, computerized program to help develop listening skills and provide practice in listening strategies for situations when hearing is not enough. LACE has been proven to help hearing aid users become more comfortable hearing with amplification. LACE CD-ROM training includes 20- to 30-minute sessions of adaptive degraded speech training and adaptive auditory memory training. The recommended training regimen is 30 minutes per day, five days per week for four weeks. A new DVD version includes 10 LACE sessions and is designed to accommodate people without a computer and Internet access. Download a LACE demo at www.neurotone.com/lace-demo-download.html or call 800.409.LACE (5223).

Audifon Hearing Systems (www.audifon.com) offers two products for tinnitus retraining. Their **switch™** tinnitus retraining instruments are based on modern digital mini-BTE technology.



LACE helps develop listening skills.

Photo courtesy of www.neurotone.com

Online Exclusive!
 Read the rest of Nannette Nicholson's report on **AudiologyNOW! 2009**.
 Log on to www.hearinghealthmag.com

switch's external receiver unit combines optimal wearing comfort with easy use and an award-winning, almost invisible appearance. **Jump™**, available in BTE and ITE devices, is Audifon's analog tinnitus retraining instrument and helps in tinnitus/hyperacusis habituation.

Beltone (www.beltone.com) offers hearing instruments that can be used both as a hearing aid and a sound generator for managing tinnitus. The Tinnitus Breaker™ feature of the Beltone **Reach™** hearing instrument produces white noise, a low-volume noise of mixed frequencies that makes distressing tinnitus less noticeable.

Telecommunications

Clarity® (www.clarityproducts.com) offers the **Clarity Professional C4230** phone with 50 dB of amplification to make conversations louder and clearer. Featuring dual speakerphones and a digital answering machine, this phone is full of features for those with a moderate to severe hearing loss or low vision. Clarity Professional C4230 can be purchased at www.soundclarity.com.

An on-the-go **Clarity CD30™** amplified neckloop provides 30 dB of gain and hands-free use for telecoil hearing aid wearers, and is designed for use with most cellular, corded and cordless phones. The **ClarityLife C900** is twice as loud as an ordinary cell phone and offers large buttons for easy dialing. Featuring a simple slider design, the C900 has a full keypad of large, half-inch-sized buttons that slide out when you need to dial a number.

ClearSounds Communications (www.clearsounds.com)

The amplification feature of the Clarity phone helps make conversations louder and clearer.

Photo courtesy of www.clarityproducts.com

featured the **Amplified Personal Emergency Telephone Talk500ER**. This amplified telephone comes with a corded amplified phone with a wireless pendant lanyard that can be used for emergency access to the phone for notification to either a preset number or emergency help number. The pendant works up to 100 feet from the phone. When the call is answered, the caller and the other party can hear one another over its amplified speaker. **Talk550ER** also has a talking keypad and menu, recordable outgoing emergency message, up to five waterproof pendants and has **IonArmour®** natural antimicrobial protection.

Jitterbug (www.jitterbug.com) phones are simple, helpful



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Enjoy the sounds of life

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Introducing Conversor Pro by Conversor Limited, a new and improved listening device that offers users the versatility to enjoy the most out of everyday life.

In the opening passage to David Lodge's novel *Deaf Sentence*, a "tall bespectacled grey-haired man is standing at the edge of the throng in the main room of the gallery; stooping very close to the young woman in the red silk blouse, his head lowered and angled away from her face, nodding sagely and emitting a phatic murmur from time to time..."

Imagine being in a crowded room like Desmond Bates, Lodge's fictional character, who is a hearing instrument wearer, and cannot hear the sound he wants to hear in crowded or noisy environments.

The growth of the Assistive Listening Device market, and in particular the use of FM systems, over the last ten years is evidence that hearing aids are limited in certain situations or environments and that from time to time a little help required. Individuals.

Conversor Limited has launched Conversor Pro after many years of research into the market which is a loop-based FM system which utilises the Telecoil or T-setting in the hearing instrument and has omni and uni-directional microphones which provides the user with the ability to eliminate those troublesome background sounds and noises.

Conversor Pro has been designed with simplicity of operation to the fore. Easy to use, just switch on and the controls are instinctive and easy to use. Conversor Pro is ergonomically designed for comfortable operation.



Easy, everyday use...

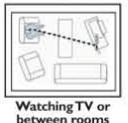
Conversor Pro has the added advantage of being programmable by distributors and group leaders for use with multiple hearing instrument wearers in schools, universities and group situations.

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The Jitterbug offers a patented ear cushion which reduces background noise.

Photo courtesy of www.jitterbug.com

and affordable. They feature a patented ear cushion to reduce background noise and a powerful speaker for loud-and-clear conversation. The phone is also hearing aid compatible. Other features include large, backlit buttons, bright text that is easy to see, and live Jitterbug operators available 24 hours to place calls, provide directory assistance and add names to your phone list. All service options, including voicemail, are accessed with simple “yes” or “no” questions. There are no contracts,

no long distance or roaming fees and add-on minutes don't expire for up to a year. Jitterbug service plans start at \$10 per month and the Jitterbug works wherever most cellular service is available.

Nokia's (www.nokia.com/lps-5) **Loopset LPS-5** helps those with a telecoil-equipped hearing aid, CI hearing aids or CIs to enjoy excellent audio quality and hands-free operation. Mobile calls

can be accessed wirelessly through the hearing aid via Bluetooth technology and a single button does the call handling.

Phonicear® (www.phonicear.com) introduced the **Xen Enhanced Cordless Phone** with extra-high volume that combines important functions for people with and without reduced hearing. By connecting a Silhouette teleloop to Xen, placing the earhook next to the hearing aid and setting the aid to T position, hearing aid wearers get hands-free conversation without disturbing background noise.

Wireless Technologies

Conversor Limited (www.ConversorPro.com) introduced the **Conversor Pro Personal FM system** consisting of two lightweight components: an FM microphone/transmitter and a pendant receiver. The microphone/transmitter can be held in the hand and pointed directly at the desired sound source; placed on a suitable surface in close proximity to the sound source up to 25 meters away; or worn by a speaker moving about the house, or in lecture and classroom situations. It can also be connected directly to a TV, stereo, VCR/DVD/CD player, or computer for enhanced hearing enjoyment with the supplied cables. Non-hearing instrument users can also use the Conversor Pro with the included headset or earbuds. Available from U.S. distributor Teltex at www.teltex.com.

Oticon's (www.oticon.com) **ConnectLine™** is an integrated system that delivers improved speech intelligibility and sound quality via the **Oticon Streamer**. A compact Bluetooth device that acts as a gateway between Dual or Epoq hearing instruments and external sound sources, it can be paired with up to eight wireless devices such as TV, landline, mobile phone, iPod/MP3 player, PC or DVD player.

The latest entry from **Bellman & Symfon®** (www.bellman.com) is the **Domino Personal Hearing System**, a transmitter and receiver to enhance speech in difficult listening situations – at school, in restaurants, the car or watching TV. Sound is picked up by the speaker's transmitter and converted into digital data that is clarified by removing annoying background noise, then streamed over an encrypted wireless radio link to the receiver that sends the sound to headphones, earphones or a neckloop. The transmitter can be worn by the person speaking in a lecture situation or among a group of speakers in a group discussion. The transmitter also has a stereo input for streaming high quality audio from a TV, MP3 player or stereo system.

COMMidt's (www.commidt.com) CIBS product line includes

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HearIt All amplifies speech from a microphone or telephone conversation via a telecoil or loop system, FM transmitted signals and conversation on mobile phones via Bluetooth – all directly to a hearing instrument or headphones.

Photo courtesy of www.phonicear.com

the **CIBS Total**, a set consisting of an audio transmitter called **Audiostreamer**, a **Maestro** receiver, and **Liberto**, the Bluetooth microphone. Maestro can be used with mobile phones, TVs, microphones, CD and MP3 players, computers and alerting systems. High quality sound is transmitted wirelessly via the Maestro to a hearing aid/implant with a telecoil or a Maestro neckloop. The transmitter can communicate with up to eight Bluetooth units at the same time.

Phonak (www.phonak.com) offers new intuitive wireless connectivity with mobile phones, MP3 players and computers with **Click'nTalk**, without any programming required. Phonak's **iCom** package directly connects hearing instruments to television speakers via Bluetooth.

Phonic Ear's (www.phonicear.com) new **4-in-1 HearIt All** is a smart combination of several recognized electronic technologies and protocols in one unit. Winner of the 2009 Danish Society of Engineers' Technological Product Award for end users, HearIt All amplifies speech from a microphone or telephone conversation via a telecoil or loop system, FM transmitted signals and conversation on mobile phones via Bluetooth – all directly to a hearing instrument or headphones.

Siemens Hearing Instruments' (www.siemens-hearing.com) wireless connectivity solution is **Tek™**, bringing it all together in true stereo for a rich listening experience. Tek allows Siemens hearing aids **Pure®**, **Explorer™**, **Life** and **Motion** to connect to a mobile phone, television or music – making earbuds “so 20th century.” ■

Nannette Nicholson, Ph.D., is an associate professor with a joint faculty appointment in the Audiology and Speech Pathology Department at the University of Arkansas for Medical Sciences and University of Arkansas at Little Rock, and a clinical staff appointment at Arkansas Children's Hospital. Contact her at NicholsonNannette@uams.edu.
Megan Cates is an Au.D. candidate at the University of Arkansas for Medical Sciences.
Robert Irving, Ph.D., J.D., is a member of the Audiology and Speech Pathology Department Development Council.



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Heard Around the World



Aborigine Children Suffer Disproportionately from Hearing Problems

With as many as 85 percent of Aborigine children in Australia's Northern Territory suffering some degree of hearing loss, doctors are warning about negative social consequences and urging authorities to take action. This unusually high percentage of children suffering from hearing problems is attributed to middle ear infections (otitis media). The Aborigines generally live in poverty; low hygienic standards and cramped housing conditions increase the opportunities for otitis media to spread.

Doctors fear that the children will be slower to learn in school and will have more difficulties concentrating in class. Chris Perry of the Royal Australasian College of Surgeons says the infections typically occur shortly after birth and go untreated.

Fortunately the discovery of such a shocking statistic is receiving a positive response. According to Australian newspaper, the *Centralian Advocate*, the Australian federal government initiated a series of "medic blitzes" in April 2008, checking the health of Aborigine children. For more information about the efforts of the government to improve the hearing of Aborigine children, visit www.bmj.com/cgi/reprint/327/7412/413.pdf (free login is required).

Humanitarian Support in Honduras

Susan Sundstrom, chief of the Audiology/Speech Pathology Service at the George E. Wahlen Department of Veterans Affairs Medical Center in Salt Lake City, Utah, traveled to the Center for the Deaf and Hearing Impaired in San Pedro

Sula, Honduras, in February 2009 to provide training for teachers and parents. Sundstrom provided training for the staff in performing hearing testing and fitting hearing aids and was also able to help the center connect with resources in the United States.

Before her departure to Honduras, she received hearing aid donations from Phonak Hearing Instruments and school supplies from Utah Idaho School Supply to take to the clinic. "It was gratifying to be able to share my professional expertise with a community that has so little and needs so much," said Sundstrom. Anyone willing to share their time helping in this clinic should contact Cheryl Humphries at logosima@hotmail.com.

Breaking the Language Barrier

Marshall Chasin, M.D., is exploring new adaptations for hearing aids to enable them to adjust to the language of the user. According to Chasin, there is no reason why the vocal output of an English speaker should be any different from that of a Chinese language speaker. However, Chinese languages are tonal with linguistically meaningful differences expressed in pitch changes on the lower frequency vowels. Unlike spoken English, a simple change of pitch in a Chinese language can make a difference as to the meaning of a given word. This means that it is more important for a listener of a Chinese language to be able to distinguish the tonal differences on the lower frequency vowels than for a listener of English.

And the differences are not limited to Chinese and English. For instance, in languages such as Portuguese, where nasal sounds are linguistically important, more

gain should be specified in the hertz region where nasals have their greatest energy. Bilingual individuals could have a hearing aid with two programs with, for example, one set for English and the other for Japanese.

In order to make this a reality, further research is needed and a number of questions remain in this relatively new area of study. For more information visit www.hearingreview.com and search for "How Hearing Aids May Be Set for Different Languages."

Chilean Theater Installs First Loop System

The Cultural and Artistic Center of the University of Chile has installed the first T-Loop system in the country. "I'm happy with this new technology in the theater of the University of Chile," says María Sol Vega, who recently attended a performance there. "I've been deaf since I was little and have been using a hearing aid since I was 15. I cried from excitement while watching the show because I was able to hear it normally. This initiative by the University of Chile should be copied by all entertainment venues."

The loop system was donated by Audiomedical. "This is the first Chilean institution to show serious interest in this matter. It is an extraordinary step forward in creating awareness that hearing loss may occur in any family and that not only grandparents are affected, but many young people and children suffer from hearing disorders," stated Carlos Valdivia, general manager of Audiomedical.

Spanish speakers can read more by visiting www.espaciologopedico.com and searching "Teatro instaló aro magnético para discapacitados auditivos." ■

Deafness Research Foundation (DRF) is excited to exhibit at two upcoming conferences.

October 4-7, 2009 – American Academy of Otolaryngology – Head and Neck Surgery Annual Meeting and Oto Expo at the San Diego Convention Center: We would love to say hello to our colleagues within the Academy – please visit us at booth 117 in the exhibit hall! Registration is required through the AAO-HNS. Visit www.entnet.org.



Photo courtesy of the Las Vegas News Bureau

October 22-24, 2009 – AARP 2009 Convention, Vegas@50+: Come visit us at booth 760 at the Sands Expo and Convention Center in Las Vegas. Don't forget to enter our free sweepstakes at the convention to win one of two amplified telephones donated by Hitech, and pick up a free gift bag which will include a copy of *Hearing Health*, information about DRF and two pairs of Mack's Earplugs (www.macksearplugs.com), donated by McKeon Products. Registration for Vegas@50+ is required through AARP. Visit www.aarp.org/aarp/events/Life_at_50_Las_Vegas.

If you missed the first issue of our e-newsletter, *Hearing Health E-News*, you can read it on our Web site, at www.drf.org/Hearing+Health+E-Newsletter. You can also sign up to receive this quarterly e-newsletter at www.drf.org. *Hearing Health*

E-News highlights DRF information, programs and events, as well as updates about our funded researchers – a valuable tool for staying up to date on the exciting developments within DRF.

And if you enjoy reading online, *Hearing Health* magazine in its entirety will now be available in a page-ipping format at www.hearinghealthmag.com. Forwarding the link to your friends is a great way to share this free resource without having to give away your copy!

I Don't Believe My Ears!

By Val Blakely and Rachel Chaikof, ©2009. Published through www.blurb.com. 36 pp. Softcover, \$14.95, Hardcover \$24.95.

I Don't Believe My Ears! is a compilation of

delightful stories about adults and children with hearing loss – a great addition to a care package for an individual or family who is new to hearing loss. Each of 17 vignettes reads as colloquially as an e-mail from a friend and relates an amusing incident that proves that losing one's hearing in no way affects the sense of humor.

Blakely and Chaikof have written or illustrated several books, maintain several Web sites and blogs and have spoken at numerous conferences around the world in an effort to raise awareness of hearing loss.

Purchase *I Don't Believe My Ears!* online through Blakely's Web site, www.deafkidscanhear.blogspot.com, or Chaikof's, www.cochlearimplantonline.com (click on "Shop"). Net proceeds from the book go to DRF. ■

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RESEARCH

Zebrafish

A Serendipitous Solution

BY KELLY OWENS, PH.D., ALLISON COFFIN, PH.D., DAVID RAIBLE, PH.D., AND EDWIN RUBEL, PH.D.

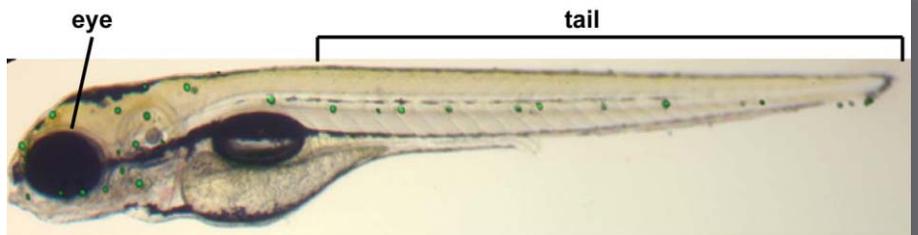
Some of the most fruitful avenues of research have arisen from new combinations of ideas and people. One such collaboration started in early 2001, when Edwin Rubel and two of his postdoctoral fellows, Lisa Cunningham and Alan Cheng, ventured from their lab in the University of Washington’s Virginia Merrill Bloedel Hearing Research Center across the street to meet with David Raible, a neuroscience professor in the university’s Department of Biological Structure. Raible uses small zebrafish to study development of the nervous system, while Rubel studies the auditory system in birds and mammals, looking at how hearing damage occurs and how it might be prevented. Eight years later, a large group of researchers in both labs are still working together, trying to understand – and someday prevent – human hearing loss.

Most hearing loss is due, at least in part, to loss of the sensory cells in the inner ear that are responsive to sound. Each human cochlea (the hearing organ in our ears) has only a few thousand of these tiny sensory hair cells, so-called because they have a little hair-like tuft sticking out of the top of each cell. These hair cells are exquisitely sensitive to sound and enable us to hear a huge range of sounds, from the whisper of the wind to the roar of a jet engine. Unfortunately, they are also extremely sensitive to damage from noise and some types of drugs and also are lost as we age. In humans, this is a perma-

nent condition; once hair cells die, we can’t grow more of them.

But some animals and some humans seem resistant to toxic noise and drugs and some humans hear perfectly through old age. What grants this protection? Do some people have genetically “tough” ears and others have “weak” ears? If so, what are the genes responsible for this difference and can we use them to protect hearing?

Like humans and other vertebrates, fish have ears, although you wouldn’t know it just by looking at one! There are no outer ears sticking out from the sides of their heads but their inner ears are remarkably similar to our own, including the possession of a full complement of hair cells. Fish also have a second hair cell-bearing system called the lateral line, which is a series of hair cell clusters (and surrounding supporting cells) grouped in rows along the head and body of the fish, with the little hair-like tufts sticking out



Picture of a five-day-old zebrafish with eye and tail indicated. The clusters of hair cells along the lateral line are labeled with a dye that shows up in the picture as a series of green dots on the head and body of the fish.

Photo courtesy of David Raible Lab, Univ. of Washington

into the water.

Fish use their inner ears like we use ours, for hearing and balance, while they use the lateral line to detect water movement around their bodies. These hair cells are the same type of cells that detect sound and provide balance cues in our inner ear. Zebrafish, commonly found in pet stores, are particularly useful as a model system for research. These fish are small, inexpensive to keep and will reproduce year-round, making for a constant supply of larvae for study. And if that weren't enough, the larvae are easy to genetically engineer and are transparent, allowing researchers to watch events inside the fish as they happen.

Here was an animal that conveniently displays its hair cells externally, getting around the problem of all that tough bone that encases the hair cells in humans and other mammals. Rubel wondered if the zebrafish lateral line system might provide a direct look at what happened to a hair cell when it was damaged and offer a way to screen for genes that might confer protection. After one short meeting and an evening experimenting with the hair cells of these fish, Rubel and Raible were convinced that they had found the system for a new approach to research aimed at preventing hearing loss.

Enter Julie Harris, a Ph.D. student who joined the University of Washington's neurobiology graduate training program just as the collaboration between the Rubel and Raible labs was established. In a remarkably productive series of experiments, Harris confirmed that lateral line hair cells of zebrafish were damaged by "ototoxic" drugs (drugs that damage the inner ear). This occurred in the zebrafish the same way as it does in humans and other mammals. Now one could test many zebrafish in a short time (needed for genetic screening) and carefully study how the hair cells die and how these lateral line hair cells regenerate. Zebrafish really were a good model for hair cell studies, opening up all kinds of new possibilities for research.

Our approach, and that of many other research labs, is based on the idea that if we know the cellular details of why hair cells die with exposure to noise or ototoxic drugs, or as we age, we can prevent it or slow it down in humans. Where the zebrafish model has made a huge difference is that it lets us approach the question of why some people are so sensitive and some so resistant to hearing loss. We can search for the genes involved in cell death responses; Brock Roberts and Kelly Owens of our group have used a genetic screen (a technique for randomly identifying mutations in genes) to search for genetic alterations that protect hair cells from damage by ototoxic drugs. So far we have identified five genetic mutations that potentially protect hair cells from damaging drugs. One of these genes, which we call "sentinel," encodes a novel protein whose function was previously not described. This is a good example of the ability of genetic screening to identify genes whose potential role in hair cell biology was previously unknown.

As more people joined this project at the University of Washington and as other centers became aware of it, new ideas emerged for using zebrafish lateral line hair cells to address hearing impairment issues. In parallel with our genetic screening, we have tested libraries of chemical compounds as well as libraries of approved drugs to determine whether they can prevent hair cell death, or in the case of approved drugs, whether they might actually



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This photograph is a magnified view of one volcano-shaped cluster of hair cells labeled with a yellow vital dye in a living zebrafish larvae.

Photo by Glen MacDonald

cause hair cell death. Felipe Santos, an otolaryngology fellow who joined our group, rapidly screened over 10,000 chemicals from a library of small drug-like compounds and identified two promising chemicals that we call PROTO-1 and PROTO-2, which act to prevent hair cell loss in the zebrafish lateral line. But would these molecules protect mammalian hair cells? To test this idea, Santos, along with Lisa Cunningham, treated mouse inner ear hair cells with PROTO1 and 2 and the ototoxic drug neomycin. Most of the mammalian hair cells survived! While much additional research will be required before PROTO1 and 2 might be used as therapeutic drugs, these experiments demonstrate the potential power of this approach for therapeutic drug development.

To potentially shorten the process between identification of a protective treatment and its use with humans, Henry Ou, another member of our group, tested drugs that already have FDA approval for use in humans for other medical treatments and found 10 FDA-approved drugs that prevented hair cell loss in zebrafish. These drugs are currently being tested in mammals. Owens, Allison Coffin and others in our group are using protective drugs and protective genes to profile pathways of hair cell death. That is, we want to determine distinctions between the cellular pathways and molecules that the hair cell uses in response to different ototoxic drugs. Our group and others have also used the screening methods to ask about other, unknown causes of hearing loss. For example, Miguel Allende and colleagues in Chile and John Incardona and colleagues at the National Oceanic and Atmospheric Administration have examined the effects of common environmental agents. Ou and Lynn Chiu have begun testing common therapeutic drugs for previously unrecognized damage to hair cells and found over 20 with potentially dangerous levels of toxicity.

But what about individuals whose hair cells no longer function



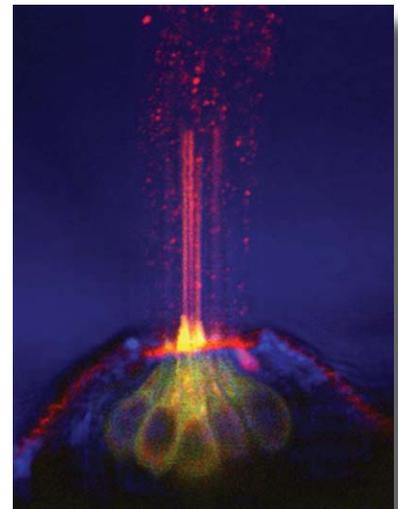
Members of “the fish group” from the Rubel and Raible labs, left to right: (front) David Raible, Edwin Rubel, (middle) Yoshinobu Hirose, Eva Ma, Heather Brignull, Allison Coffin, Frederica Mackert, Arminda Suli, (back) Parhum Namdaran, Kelly Owens, Lauren Clancey, Dale Hailey, Nick Coley

Photo courtesy of Eva Ma

properly? Clearly, prevention is only half of the picture. Although many tissues in the human body can repair themselves, including replacing damaged cells, our inner ears do not produce new hair cells. In fact, hair cells are not regenerated in any mammal – but they are regenerated in fish, birds

and amphibians. One aspect of our research is to understand how hair cells are regenerated in the zebrafish so that we can someday stimulate replacement of hair cells in human ears. To this end, Eva Ma, a graduate student in the Raible lab, has determined that lateral line hair cells can regenerate within 48 hours and that these new hair cells appear to be generated from dividing cells that lie beneath them. Replacing hair cells in the ear is only useful if they are functional and can be connected to the rest of the nervous system. The labs of James Hudspeth of the Howard Hughes Medical Institute in Maryland and Hernan Lopez-Schier from the Centre for Genomic Regulation in Barcelona are focused on understanding how newly made hair cells are connected to the nervous system.

A lot has happened since that fateful meeting eight years ago. Many fish hair cells have been protected from drugs, and new hair cells have grown to replace damaged ones. But our real business is to come up with ways to protect human hair cells and regenerate those lost due to genetic anomalies, ototoxic drugs, noise or aging. Today, we cannot take drugs to protect our hair cells or to grow new ones but hopefully we will be able to do this in the future. We have entered a new and exciting era of biomedical research. The zebrafish has opened promising approaches toward prevention and treatment of hearing loss. With other approaches already underway and those not yet imagined, the next two decades are likely to dramatically change the therapeutic options available. ■



Allison Coffin, Ph.D., is a senior fellow at the University of Washington. Outside the lab, she enjoys playing softball, home improvement and an occasional motorcycle ride with her husband, Cory.

Kelly Owens, Ph.D., is an instructor at the University of Washington and mother of an energetic teenage son. She is an avid reader, enthusiastic painter and perpetually hopeful gardener.

David Raible, Ph.D., has been a faculty member at the University of Washington since 1995. When not in the lab, he is riding his bike or watching his girls play soccer.

Edwin Rubel, Ph.D., has studied normal and abnormal development of the ear and auditory pathways of the brain since 1971. He has enjoyed Northwest living since 1986. When not working, he plays with his wife of 45 years, his adult children and his four grandchildren.

DRF Centurions — At the Forefront of Our Cause

In 1963, the nation's leading ear, nose and throat specialists came together with a simple but important goal: to advance the research crucial to their fields, knowing that their practices and patients would directly benefit from this work. This innovative group became The Centurions – champions and supporters of Deafness Research Foundation (DRF).

The Centurions now enjoy the support of more than 1,800 physicians, researchers and other professionals in fields related to hearing and balance sciences. Under the leadership of President David S. Haynes, M.D., and Secretary/Treasurer John L. Dornhoffer, M.D., The Centurions play an essential role in promoting DRF.

To learn more about The Centurions, how to become a member or identify Centurions members in your area, please contact DRF at 866.454.3924, 888.435.6104 (TTY), visit our Web site at www.drf.org or e-mail centurions@drf.org.

In each issue, a member of The Centurions fields questions about hearing health and related issues. In this issue, questions were addressed by Centurion Matthew O'Malley, M.D., an otologist/neurotologist specializing in diseases of the ears, who currently practices at the Midwest Ear Institute in Indianapolis, Ind.



Got a question you would like one of the nation's leading ear, nose and throat doctors to answer? E-mail it to info@drf.org.

hearing test may reveal the underlying hearing loss. The ringing (hissing, buzzing, etc.) sound in your ears is a symptom called tinnitus and is quite common. Hearing loss is one of the most frequent causes but there are many others as well. One common misconception is that nothing can be done to help individuals with tinnitus. Yet many individuals with hearing loss and tinnitus find that the tinnitus improves when they use a hearing aid to restore hearing. It is difficult to make the ringing sound disappear entirely but often the intensity can be reduced with proper treatment. If you are experiencing hearing loss or tinnitus, you should see an otolaryngologist, commonly called an ear, nose and throat doctor, who will examine your ears, perform a hearing test and attempt to determine what is causing your hearing loss and tinnitus. Modern treatments for hearing loss are very effective, ranging from hearing aids to surgery, as needed. ■

Twice within a year, I have had severe bouts of dizziness with no other symptoms. Both lasted a day and then everything was back to normal. They were about six months apart. Could this be the beginning of something that preventative medicine can keep from getting much worse?

**John Patrick
Cocoa Beach, Fla.**

Episodes of dizziness can often be effectively treated in order to help control the symptoms. Proper diagnosis is essential to treatment because dizziness can be caused by dysfunction in several parts of the body. For example, it might be the result of an inner ear problem, a small stroke or even an irregular heartbeat. The treatment for an irregular heartbeat is very different from that of an inner ear problem. The best place to start is with a trip to your primary care physician. By discussing the symptoms first with your primary care physician, appropriate tests and referrals to specialists can

be made. Common tests include evaluating the heartbeat, or imaging the brain and balance organs with an MRI. Sometimes special tests of the balance organs are performed as well. Generally the testing isn't painful and often can be done in the office or in an outpatient center. Although there is no guarantee, proper treatment usually results in a reduction in the frequency and severity of dizziness episodes for most people.

I have had ringing in my ears for many years and now it seems I'm losing my hearing as well. Is the ringing in the ears making me lose my hearing?

**Juli Anderson
Georgetown, Texas**

No, more likely, the hearing loss may be what is causing the ringing. As you lose hearing, your body tries to cope with the hearing loss and many people begin to notice a ringing sound in the ears. Though the ringing is often noticed first, a sensitive

We are halfway to our goal of raising \$50,000 for the 2010-11 Centurion Clinical Research Award, funded by The Centurions. The support of this professional organization will help ensure that clinical research continues in the field of hearing and balance science! To learn more about The Centurions or how to contribute to the award, please visit www.drf.org/Centurions or e-mail centurions@drf.org. The 2009-10 DRF Centurion Clinical Research Awardee will be highlighted in the Fall 2009 issue of *Hearing Health*.

ACOUSTIC NEUROMA

Acoustic Neuroma

Diagnosis and Treatment Options

BY DAVID S. HAYNES, M.D., FACS

An acoustic neuroma, otherwise known as a vestibular schwannoma, is a benign tumor affecting the eighth cranial nerve, which consists of two divisions – the hearing, or cochlear, division and the balance, or vestibular, division. Acoustic neuromas generally arise from the balance, or vestibular, division of the nerve. All tumors can be classified as either benign or malignant, with benign tumors having a tendency to be less locally invasive with no potential to spread throughout the body. Acoustic tumors are clearly benign with no malignant potential and are relatively slow-growing.

Diagnosis

Acoustic neuromas affect two out of every 100,000 persons. They are most commonly diagnosed in people between the ages of 30 and 60. No environmental causes have been found and, as these tumors are nonhereditary, there is no risk of passing the propensity to develop the tumor to an offspring. Similarly, the affected person's parents, siblings and offspring are at no greater risk of having an acoustic neuroma. Only persons with bilateral (both sides) acoustic neuromas – a rarer disorder called neurofibromatosis type II (NF2) – have a hereditary risk. A genetic defect in the form of a lack of a specific tumor suppressor gene that leads to the development of these tumors has been identified. As mentioned, this defect is not passed on to offspring.

The symptoms of acoustic neuroma are hearing loss, tinnitus and, less commonly, vertigo. Although these symptoms are rela-

tively common, they do not normally occur just in one ear. When they do, this alerts the healthcare provider that there is a potential acoustic neuroma, the diagnosis of which is confirmed via magnetic resonance imaging (MRI). The addition of gadolinium, a contrast agent, during the MRI allows for the diagnosis of tumors as small as one millimeter.

Treatment

Once a diagnosis of an acoustic neuroma is made, several diverse treatment options exist for the patient. These include observation, microsurgical excision and stereotactic radiosurgery. Many variables should be considered prior to selecting treatment. These include age, hearing status, tumor size and growth rate, health status, and other medical conditions. Because acoustic neuromas are slow-growing and benign tumors, the recommendations for treatment vary between physicians and medical centers based on their outcomes and experiences. It is not uncommon for a patient to receive differing recommendations for treatment following a second opinion, often leading to confusion on the part of the patient.

If observation is chosen, an MRI should be performed every year until a growth rate is established. If significant growth is determined or if symptoms progress, the possibility of intervention (surgery or radiosurgery) can be entertained. The aim of observation is to avoid intervention, if possible, or to establish the tumor's growth rate prior to intervention. Radiosurgery is a technique of focused-beam radiation delivered directly to the tumor via image guidance. This is done in a single or multiple (fractionated) doses. The intent with radiosurgery is to exercise nonsurgical control of the tumor growth over time. Microsurgical excision is performed by a surgical team of ear (neurotology) and neurologic surgeons. The intent of microsurgery is to remove the tumor under the microscope and to control tumor growth and the development of further symptoms.

The best treatment option for the long-term benefit of the patient is obviously under considerable debate. Research on acoustic neuroma has been ongoing since 1949 and current efforts are attempting to hone in on early detection of acoustic neuroma – before hearing loss happens. Perhaps the research of today will yield a clear solution to treating acoustic neuroma tomorrow. ■

David S. Haynes, M.D., is the director of the Division of Otolaryngology and Neurotology/The Otolaryngology Group of Vanderbilt University Medical Center and the president of the Deafness Research Foundation Centurions.

More on NF and NF2

Neurofibromatosis Inc.	www.nfinc.org
Children's Tumor Foundation	www.ctf.org www.neurofibromatosis.org
National Institute of Neurological Disorders and Stroke (NINDS)	www.ninds.nih.gov
Neurofibromatosis Fundraising	www.run4nf.org

NF2 Support Groups

NF2Crew	www.nf2crew.org
Advocure NF2: Advocates for a Cure	www.advocurenf2.org
Rebecca Dufek's Blog Site with Updates on Fundraising Events	www.diverbeck.blogspot.com
Yvonne Foong Fundraising Effort	www.yvonnefoong.com ■

Silver-Lining Seekers Meet my Friends with NF2

BY SHERRY COCHRAN

Neurofibromatosis type two (NF2) is a genetic disorder that causes benign tumors, primarily in the central nervous system and involving the spinal cord and brain. These tumors, despite being noncancerous, commonly cause deafness, balance problems, decreased mobility, neurological damage and vision loss. Constant monitoring of tumor growth and surgical removal or radiation treatment can help preserve or restore a percentage of hearing and vision loss. An auditory brainstem implant (ABI) can restore residual to partial hearing for some. At present, there is no cure for NF2 and the tumors continue to grow back.

Even under the dark cloud of a possible new tumor, many people with NF2 are finding the silver lining. I had never heard of NF2 when I first met Rebecca Dufek at a local chapter meeting of the Association of Late Deafened Adults. I am late-deafened and understand the struggles of losing hearing as an adult but my heart went out to these individuals whose hearing loss was caused by a devastating and potentially fatal disease. While getting to know the individuals featured below, I found we share many of the same ongoing concerns related to hearing loss – which I expected – and I learned of their extraordinary courage and determination to live life to their fullest capabilities – something I had not expected. They don't want sympathy; they passionately want more public awareness of NF2, particularly advocacy and fundraising for research to find a cure for NF and NF2.

The effect of these inspirational stories on me has been that I now have a new cause for which to advocate. I am determined to continue writing about NF2 and have included a chapter about it in my upcoming book about hearing loss. And don't be surprised if you end up in the cause to create awareness of NF2 after meeting these friends of mine. ■



Sherry Cochran

Photo courtesy of Sherry Cochran

Sherry Cochran is a freelance photojournalist and published author. Her first book, *Missing Pieces: A Woman's Search for her Birth Family* (www.greenyeddragon.com/missingpieces/) was serialized in *Hearing Health*. Cochran, who is late deafened, is currently working on a book about hearing loss and two fiction children's books. She lives in Seattle with her husband and family.

Nathan Waldrip

Nathan Waldrip was always involved in sports while growing up and knew that he wanted to be a coach and teacher. At age 20 he was diagnosed with NF2 and had acoustical tumors that were surgically removed, causing total deafness. He has had several smaller tumors removed since then, as well as cyber-knife radiation on a brainstem tumor. He currently has a few brain and spinal tumors that are being monitored. The symptoms resulting from his surgery and NF2 are balance difficulties, neurological deficits, bilateral drop-foot and dexterity problems with fingers and thumbs.

When Waldrip was diagnosed with NF2 and lost his hearing, other people thought he would be unable to pursue his dream of becoming a coach and teacher. Waldrip was determined to finish school and has become a junior high school football coach and teacher. He knows basic American Sign Language (ASL) and tried using sign language interpreters for his job but decided to stop using them because he is not fluent in sign language. He reads lips

and uses speech and writing for communication. Because sports are very visual, the communication barrier is not a huge problem when he coaches football.

The principal of the school gives him a copy of the agenda for staff meetings. He used to request note-takers or other forms of accommodation for situations where he would not be able to follow along. Waldrip says, "I would be told I'm not missing much, to just sit with the other coaches and they would tell me what is going on. I finally gave up. I could speak up and demand better accommodations but then I'd have to pay attention and stop drawing football plays on my legal pad during the in-service meetings!"

"Do not let anyone tell you what you can or cannot do," Waldrip adds. "If you want something bad enough, go get it – don't let hearing loss or NF2 stop you. I will continue to teach and coach until they have to carry me away." ■



Photo courtesy of Rebecca Dufek

Rebecca Dufek

At age 27, Rebecca Dufek was diagnosed with NF2 when symptoms of tinnitus and hearing loss prompted an MRI which revealed numerous brain tumors, including two on the auditory nerves. She decided against surgery when she learned there was a high risk of losing all her hearing.

Dufek elected to undergo radiosurgery (radiation treatment) to stop the growth of a tumor residing on the auditory nerve of the ear with residual hearing. However, she ended up losing her residual hearing and experiencing a host of severe side effects that included loss of balance, vision impairment, dizziness and facial paralysis and nerve pain. Three years later, she had surgery on the same tumor, greatly relieving her facial nerve pain and restoring her balance sufficiently so she could scuba dive, hike and even run a half marathon.

NF2 impacted her life in so many ways that deafness became more of a minor annoyance rather than the main issue. Dufek believes that the need to cope, overcome and prepare her for ongoing complications with the disease made her a stronger individual. Dufek says, "NF2 greatly altered the course of my life as I had known it but a deaf counselor encouraged me to go back to college to get my master's degree."

Dufek learned to become assertive when asking for accom-

modations for school. She was the first person with hearing loss to graduate from the University of Washington's College of Education with a master's degree.

Dufek wanted to do meaningful things with her life. She had always been an athlete and began engaging in endurance sports to keep her body healthier. She participated in athletic fund-raising events, donating money through sponsors to nonprofit research organizations studying NF2.

Dufek says, "Being an endurance athlete gives me a great incentive to take care of myself and also allows me to advocate for my NF2 peers. Despite the challenges presented by hearing loss and NF2, I can honestly say I have a better appreciation of life than if I had not learned to overcome adversity." Now at age 37, Dufek has another tumor growth and must make a major decision: surgery poses some serious risks but not having surgery to remove part of the tumor mass also poses equal or greater risk. "It is a common challenge that those of us with NF2 live with over and over: more tumor growth and deciding what to do," says Dufek. "As mortality stares us squarely in the face, we wonder how our quality of life will be affected, if we survive.

"There is much to learn from those of us with NF2. It is important to take a proactive approach to one's hearing loss and to realize that a full and happy life can still be achieved despite deafness." ■

Yvonne Foong

Yvonne Foong was born with an underdeveloped left optic nerve but her childhood in Malaysia was filled with ballet lessons, figure skating, karate lessons and music. She won many awards in these activities.

At age 13 she began experiencing tinnitus in her right ear, weakness in her limbs and balance problems, but did not get serious medical intervention until she was at the point of needing a wheelchair. By age 16 she lost all hearing in her right ear and was diagnosed with NF2 when multiple tumors were found on her brain and spine. Several tumors were removed from her spine and she had to learn to walk again.

Foong had surgery to remove the tumor on the auditory nerve of her right ear and became totally deaf. Severed nerves partially paralyzed her face, making it difficult to eat. She regained her ability to walk, but continued to have balance difficulties.

"My hearing loss and inability to walk affected me physically, socially and emotionally. I communicated less with people. As a result, I became self-conscious and my confidence plummeted."

Foong's family has a limited income and, wanting the best medical treatment, Foong began searching the Internet for resources. She found an NF support group and got recommendations for treatment centers in the United States. Thus began Foong's ongoing efforts to raise funds for travel and treatments in

Photo courtesy of Yvonne Foong



the U.S. She developed a Web site to solicit donations and sell Heart4Hope T-shirts and accessories, designed in collaboration with a friend. She also sells her book entitled *I'm Not Sick, Just A Bit Unwell*. Foong's fund-raising paid for an ABI.

Foong has had several surgeries to remove more brain and spinal tumors and gamma knife radiation treatment to shrink the tumor growing on the peripheral nerve of her good eye. At this writing, Foong is once again in Los Angeles, preparing for another surgery to remove a large brain tumor.

Foong, now 23, has become a speaker in Malaysia, advocating and raising awareness not only about her own plight but also for others with NF2. She is a junior on a scholarship with a collaborative program between Segi University College in Malaysia and Upper Iowa University in the U.S. Her goal is to become a pediatric psychologist and therapist for children with hearing loss, specializing in the area of ABIs, cochlear implants and hearing aids, perhaps inspired by the positive impact her own ABI has made: "The ABI is like a dream come true for me. I can hear environmental sounds and carry on a conversation, especially in quiet environments. The ability to hear my own voice vastly improved my speaking ability," she says. ■

Online Exclusive!

"Auditory Brainstem Implants Restore Hearing for People with NF and NF2"
Log on to www.hearinghealthmag.com



Photo courtesy of Stephen Wallin

Stephen Wallin

Stephen Wallin, 56, was diagnosed with NF2 as a young adult in college when a tumor began to encircle his cranial nerve roots at the brainstem. Wallin had surgery to remove part of the tumor that caused deafness in one ear. The other ear has variable hearing levels due to severe tinnitus that comes and goes, causing unpredictable tonal distortions.

Wallin is often wrongly accused of having selective hearing or failing to focus. "It's very frustrating for me because my ability to focus is connected to the auditory system which includes the vestibular center. These connect to the brainstem that interacts with the other parts of the nervous system. One of those mechanisms has the ability to focus on conversations and apparently mine was damaged," says Wallin.

Other symptoms that Wallin developed are severely dry eyes, a scar on the cornea in his eye, facial paralysis, oral numbness causing chewing and swallowing difficulty, loss of motor skills on the right side and

balance problems.

"The funniest things were getting the hang of certain activities again, like skiing and bicycling. With practice, they became almost easier than walking, which can be rather more jolting than gliding," says Wallin.

Wallin is a college lab coordinator and substitute professor. He enjoys setting up the different sensors that can be used to interface with physics experiments. Fortunately, for lab demonstrations a perfect voice and hearing are not absolute necessities. For communication, Wallin prefers the computer and is a one-handed, touch typist due to his vision problems and loss of right-hand mobility. Wallin also uses his voice, his residual hearing and basic ASL, which has the added benefit of helping to improve his hand-eye motor coordination.

Wallin says, "When I first experienced the NF2 symptoms, I would not look other people in the eye or go out in public much. But now I would advise others not to be shy or try to overcompensate and to live life to the best of their capabilities." ■

Photo courtesy of John Steele

John Steele

John Steele was diagnosed with NF2 at age 30 and has undergone the surgical removal of two brain tumors that caused complete deafness. One optical nerve sheath tumor and three spinal tumors are being monitored. Slurred speech, decreased balance, blurred vision in the right eye, partial facial paralysis, diminished use of limbs on the right side and problems chewing and swallowing have been the side effects since Steele had tumor surgery.

Steele has an ABI that partially restored his hearing. He also reads lips and writes to communicate. Steele works in risk management for a large international corporation.

Steele realizes that "learning to be deaf" will be a life-long adjustment and part of the process is teaching others how to communicate with

him. Steele says, "I realized that I have to be a lot more forward and patient than I was before I became deaf. If I don't take it upon myself to create interaction with others, they aren't going to talk with me. I'm finding that, as I become more comfortable with my deafness, others around me become more comfortable as well." Steele emphasizes the importance of the entire family learning ASL to help keep family relationships strong. Otherwise, it's possible for the parent with hearing loss to become alienated from spouse and children. Steele's entire family, even the younger children, are learning ASL together. ■



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MANAGING HEARING LOSS

Hearing Aids

Available, Affordable, Accessible

BY NANNETTE NICHOLSON, PH.D.

The ability to communicate is fundamental to the human experience, allowing us to meet our educational and social needs, and yet it's not an unalienable right. In fact, it might seem as though communication is a privilege of the rich and well insured – a true treasure. And looking for organizations to help in the purchasing of a hearing aid or trying to find a government program that you might be eligible for is much akin to a treasure hunt – but without a map. Well, here's the map you've been waiting for. We'll not only navigate the government programs and the nonprofit options, but also insurance and savings plans that can soften the impact of the purchase of a good set of digital hearing aids.

FYI Hearing Health

Congress has reintroduced Hearing Aid Assistance Tax Credit Act (H.R. 1646 and S. 1019). This legislation could potentially provide up to \$1,000 for two hearing aids for dependents and adults 55 years and older. To support the legislation, consider joining the bill's Facebook page and writing your legislators. Read more in "Have You Heard" (p. 50) and visit www.hearingaidtaxcredit.org. ■

Government-Sponsored Programs

Veterans Administration (VA)

The second largest department in the United States government, following the Department of Defense, is the Department of Veterans Affairs, responsible for administering programs of veteran's benefits for veterans, their families and survivors.

As a hearing impaired veteran returning home from World War II, my uncle found himself with severe noise-induced hearing loss. Although he enjoyed post-war employment and success in a series of administrative positions with great health insurance benefits, his policy did not cover the cost of hearing aids. It was several years before he contacted his county veteran service officer who assisted him with an application for service-connected hearing loss. He was also informed that veteran service organizations, such as the American Legion (www.legion.org; 800.433.3318), Veterans of Foreign Wars (www.vfw.org; 816.756.3390) and Disabled American Veterans (www.dav.org; 877.426.2838), could have assisted him with this process as

well. Following an investigation and evaluation to determine if his hearing loss was military service-related, he received a pair of behind-the-ear hearing aids to accommodate his hearing loss. This was several years ago and he has continued to receive his hearing healthcare from the Kansas City VA Medical Center. To help demystify the process, he recommends a document titled "Can I get a hearing aid from the VA?" available from the National Center for Rehabilitative Audiology Research: www.ncrar.research.va.gov/ForVets/documents/CanIgetaHearingaidfromVA.pdf. Note that during the transition from TRICARE (the active duty health system, www.tricare.osd.mil) to the VA (www.va.gov; 800.827.1000), veterans often find themselves on their own with regard to healthcare needs.

Medicare and Medicaid

Medicare (www.medicare.gov; 800.633.4227) is the federal health insurance program that is designated for people 65 years of age and older. Although directed toward a specific age bracket, Medicare plans are also applicable to certain people with disabilities. Medicare has two major parts: Part A is hospital insurance and is financed through federal taxes while Part B is supplementary

medical insurance and has a monthly premium. Medicare never covers hearing aid expenses. If the adult has additional disabilities and qualifies for Medicaid, it is possible in some cases that hearing aids may be covered.

In contrast, Medicaid provides medical assistance to certain individuals and families with low income and resources and may cover hearing aids. It is jointly funded by the federal and state governments. Although the federal government establishes national guidelines, each state has the authority to establish its own eligibility standards, determine the type, duration and scope of services, set the rates of payments and administer the program. Eligibility criteria can be found on the Centers for Medicaid and Medicare Services Web site at: www.cms.hhs.gov/MedicaidGenInfo.

Vocational Rehabilitation (Voc Rehab)

A young lady I know is getting ready to enter college. She was diagnosed with moderate hearing loss in a public school hearing screening at the age of seven. Although her parents both worked as nurses at the local community hospital and carried family medical insurance through their employer, hearing aids and eye glasses were specifically excluded from the policy. Her parents worked hard to save money to pay for her initial set of hearing aids, as well as a replacement pair when she was 13. Five years later, she is once again due for a new set of hearing aids. She and her family were referred by her audiologist to Voc Rehab.

Each state's Voc Rehab program is as an integral part of a state-wide workforce system to assess, plan, develop and provide services for individuals with disabilities. Any deaf, hard of hearing or late-deafened individual whose hearing loss poses a barrier to employment, or who needs assistance in preparing for a job, getting a job or keeping a job is eligible for services. Services and technology assistance may vary by state, or even by county.

The Social Security Administration pays state Voc Rehab for the cost of the services they furnish to people receiving Social Security Disability Insurance (SSDI) benefits or Supplemental Security Income (SSI) based on disability or blindness if certain conditions are met. The services must result in the individual's return to work for at least nine continuous months at a substantial earnings level (www.ssa.gov/OACT/COLA/sga.html). Most states have a program that will assist with the purchase of hearing aids, cochlear implants and assistive listening devices for individuals who require this technology to be employable.

Individuals with Disabilities Education Act (IDEA)

I recently worked with a family whose child was diagnosed with a severe to profound sensorineural hearing loss at the age of three months, following a referral from the birth hearing screening. Otherwise healthy, the baby had been diagnosed with Mondini's aplasia, an abnormality of the cochlea, requiring an aggressive program of early intervention and conventional amplification in the form of hearing aids, as well as consideration for cochlear implantation. The child was referred for services available under IDEA (<http://idea.ed.gov>), which guarantees a free, appropriate, public education for all children with disabilities, including speech,

language and hearing disorders.

Part C of IDEA ensures services, education and support to young children who: 1) have a diagnosed physical or mental condition with a high probability of a resulting developmental delay, 2) have an existing developmental delay and 3) are at risk of developing a delay or special need that may affect their development or impede their education. The purpose of early intervention is to lessen the effects of the disability or delay. As a payer of last resort, Part C will kick in for hearing aids if they are specified on the Individualized Family Service Plan when all other options have been exhausted. Part C is typically administered by the state department of health or department of human services. Calling the county office of this department is a good place to start.

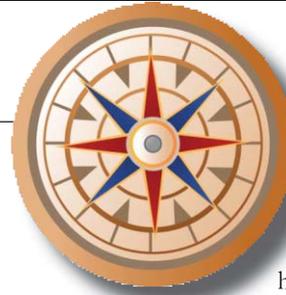
As a child approaches his third birthday, preparation to transition services to Part B of IDEA (typically administered by the state department of education) are made. Hearing aids are viewed by state departments of education as personal devices and are not typically covered but FM systems are considered educational amplification and are typically provided through the school system.

Between the ages of three and 21, children and young adults are eligible for service under Part B of IDEA. Services are provided as outlined in the child's Individualized Education Program (IEP). Again, though hearing aids won't be covered, assistive listening systems for use in the classroom are common in IEPs for children with hearing loss. The systems go with the students through their school years.

Tax Equity and Fiscal Responsibility Act (TEFRA)

Another family I work with has three children, ages two, six and 11. The two oldest children have hearing loss. The 11-year-old recently received bilateral cochlear implants and the six-year-old wears bilateral hearing aids. The family's health insurance provided partial coverage for the cochlear implants and surgery; however, the younger daughter's hearing aids were not a covered expense. Although they secured an FM system for both girls through Part B of IDEA, they still needed help with the purchase of a set of hearing aids. Because this family's income was above the income guidelines for poverty, they did not qualify for Medicaid coverage and were advised to explore financial assistance under the TEFRA provisions in their state.

TEFRA 134(a), a provision of the Tax Equity and Fiscal Responsibility Act of 1982, allows states to extend Medicaid coverage to certain disabled children. In some states, the program is administered by the state Medicaid program. For example, in my state, to qualify for TEFRA benefits, the child must be disabled according to the SSI definition of disability, be younger than 19 years of age, have countable resources that are less than \$2,000 and cannot have income that exceeds the Long Term Care Medicaid limit. Parental income and resources are not considered; only the income and resources of the child are counted (www.medicaid.state.ar.us/InternetSolution/General/programs/tefra/tefra.aspx). Children who live in institutions or who receive extended care in institutions are not eligible for TEFRA benefits. Check your state's guidelines regarding TEFRA.



Insurance Coverage and Discount Programs

Health Insurance Coverage for Hearing Aids

In little over a decade, universal newborn hearing screening has quickly become the standard of care in hospitals across the U.S. As a direct result of the ability to identify hearing loss within the first few months of life, a number of states have introduced legislation mandating hearing aid coverage by private health insurance companies. Connecticut, one of the first states to pass a mandate, requires insurance companies to cover hearing aids for children under 12 years of age (\$1,000 every 24 months). Delaware passed similar legislation requiring \$1,000 of coverage every 36 months (effective January 1, 2009) for children under 18 years of age. Kentucky's law provides \$1,400 per aid every 36 months for children under 18 years of age. For more information about state mandates for hearing aid insurance see www.hearingloss.org/advocacy/govtassistance.asp. Additional states with insurance mandates that were not listed on the Web site as of our press date include Arkansas and Wisconsin.

A few large organizations have included coverage for hearing aids in their benefit packages. For example, the National Elevator Industry (www.neibenefits.org) includes hearing care services provided by a participating HearUSA (formerly known as National Ear Care) network provider (www.hearusa.org). Their plan covers one hearing aid per ear up to \$1,200 (every 36 months for adults; every 12 months per dependent child). In a 2007 United Auto Workers (UAW) General Motors report (www.uaw.org/contracts/07/gm/gm04.php), UAW reported hearing aid coverage of \$2,000 for hearing aids, ear molds and associated devices every three years. Members who go to network providers for services receive additional discounts. A Blue Cross/Blue Shield plan covers up to \$1,000 per hearing aid once every three years including hearing aid fitting, evaluation and post-fitting treatment, while the Mail Handlers plan covers \$500 per ear every five years. A summary of the plans offered can be found at (www.opm.gov/insure/health/planinfo/index.asp).

The Federal Employees Health Benefits Program (FEHBP) hearing aid insurance plans went into effect on January 1, 2009, for potentially 8 million federal employees, retirees and their families (www.opm.gov/insure/health). In 2008, for the first time, the FEHBP provided a hearing aid benefit for dependent children of federal employees. The new 2009 benefits include coverage for adults as well. The expansion of hearing aid coverage is included as an optional fee for service, with a wide variety of benefit amount. The FEHBP offerings are consistent with the Hearing Instrument Association's (HIA) white paper, entitled "Issues in Third Party Reimbursement," published in December 2008, defining the key elements of any coverage plan: provider choice, patient participation, and quality and medically effective treatment. (Read the white paper at [http://hearing.org/uploadedFiles/Reimbursement%20White%20Paper%20\(12.2008\).pdf](http://hearing.org/uploadedFiles/Reimbursement%20White%20Paper%20(12.2008).pdf).) While the benefits cover only a portion of the cost of hearing aid treatment, they do provide

significant assistance for people with hearing loss. Advocacy groups are hopeful that the expansion of the FEHBP coverage to include hearing aids will encourage other insurance companies to consider offering similar benefits as part of company-sponsored as well as private insurance plans.

Workers with health insurance through United Healthcare (www.uhc.com) qualify as recipients of Ear Professional International Corporation Hearing Healthcare benefits (EPIC, www.epichearing.com), including referral to a national network of ear physicians and audiologists, evaluations and hearing aid fittings by licensed audiologists, brand-name hearing aids, availability of all levels of technology, pre-negotiated, pre-set pricing with no hidden charges, patient financing through GE Consumer Care Credit (www.carecredit.com) and home delivery of hearing aid batteries.

HearPO Corporation (www.hearpo.com) is the managed care division of Sonus Corporation (www.sonus.com), acquired by the Amplifon Group in 2002 (www.amplifon.com). HearPO contracts with managed care organizations, employers, third-party administrators and government agencies, such as Aetna, Blue Cross/Blue Shield, Cigna Healthy Rewards, International Union of Operating Engineers, Mail Handlers Association, MedAdvantage, New York State Retired Teachers Association, Teamsters – Local 705 and Washington Self Insurers Association. For more information refer to your health insurance provider's manual.

Hearing Healthcare Discount Programs

Over the past decade, discount hearing aid benefit packages have become increasingly popular. There is no doubt that this trend will continue in the next few years. HearPO (www.hearpo.com) is the largest hearing healthcare discount program in the U.S. On average, HearPO patients save 25 percent off retail pricing, with a guaranteed five percent savings off any published price from local providers. HearPO hearing aids include a standard three-year warranty with every hearing aid purchase (with the exception of Siemens Phoenix™ line). HearPO currently contracts with the following hearing aid manufacturers: Phonak (www.phonak.com), Siemens (www.siemens-hearing.com), Sonic Innovations (www.sonici.com), Rexton (www.rexton.com), Unitron (<http://unitron.com>), Bernafon (www.bernafon.com) and Vivatone (www.vivatone.com).

Another discount hearing healthcare plan is American Hearing Benefits (AHB; www.americanhearingbenefits.com), which serves as the network provider for a large number of unions, such as the American Federation of Government Employees (www.afge.org), American Federation of Musicians (www.afm.org), American Federation of Teachers (www.aft.org), National Association of Letter Carriers (www.nalc.org), United Auto Workers (www.uaw.org), United Farm Workers (www.ufw.org), United Mine Workers of America (www.umwa.org) and United Steel Workers (www.usw.org), to name a few. A complete union listing can be found at www.unions.org/home/hearingbenefits.php. AHB provides individual workers who are enrolled at www.Unions.org up to a 60 percent discount off the manufacturer's suggested retail price

on digital hearing instruments and a two-year warranty at no extra charge. In its nationwide network AHB has more than 1,500 hearing health offices and they are affiliated with Starkey (www.starkey.com), an American hearing aid manufacturer.

American Health Benefits also offers a hearing care discount program through HearPO (www.americanhealthbenefits.com/Hearing.aspx), providing a 30 percent discount on hearing evaluations and exams and a 30 to 62 percent discount on hearing instruments. Follow-up services are included at no charge for one year. In contrast, the hearing aid group benefits for the American Association of Truckers (www.americanassociationoftruckers.com) and National Business Association (www.nationalbusiness.org) are less comprehensive and are not affiliated with HearPO. Their benefit packages entitle them to a 15 percent discount on over 70 models of hearing aids at Beltone Hearing Centers (www.beltone.com).

The Universal Hearing Plan offered through the American Hearing Aid Association (AHAA) is another discount benefit program available to employees through their employers, local business associations or medical insurance companies (www.ahaanet.com/ahaanet/uhbp.asp). They offer the greater of two options: either a 30 percent discount, or \$250 off the manufacturer's suggested retail price. In addition, quarterly cleanings and adjustments, yearly audiometric screenings, repair and/or loss and damage replacement renewal options and two battery packages per quarter for the life of the hearing aid are included. AHAA offers a network of

over 2,000 independent audiologists, hearing aid dispensers, universities and hospitals providers.

The American Association of Retired Persons (AARP, www.aarp.org) and HearUSA are working in collaboration with Rexton (www.rexton.com) to develop and implement a hearing care program that offers real value to AARP members. The goal is to introduce the program in the third quarter of 2009 (www.hearusa.org).

Nonprofit Assistance

Believe it or not, despite the government-sponsored programs, insurance mandates regarding the provision of hearing aids and the numerous employee health insurance plans and discount plans, thousands of people with hearing loss still "fall through the cracks" and do not qualify for any of the above-mentioned programs or discounts on hearing aids. In times of economic turmoil, it is helpful to know who to turn to in the nonprofit arena for help with the purchase of hearing instruments.

Community Efforts

A number of social service organizations have identified hearing loss as a focal point for their efforts. For example, Delta Zeta Sorority (www.deltazeta.org; 513.523.7597) has partnered with Gallaudet University (www.gallaudet.edu; 202.651.5000) in Washington, D.C., since 1954. Local Delta Zeta chapters looking

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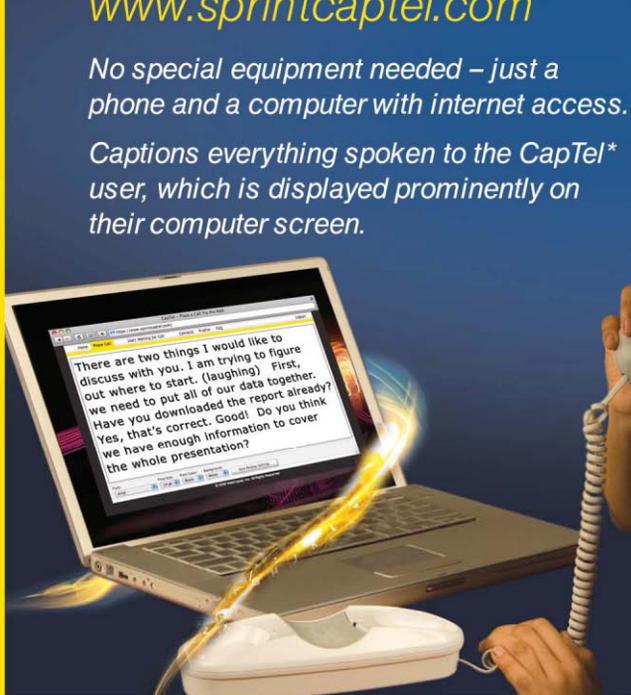
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Let's Get Together: Sertoma Affiliates

With an annual fee of \$150 paid either by the facility or sponsoring club, Sertoma Affiliates receive various benefits:

- **Sertoma Purchasing Cooperative** – Affiliates receive discounts on hearing aids, batteries, therapy materials and audiology and speech pathology equipment from leading suppliers, including Widex, Oticon and Phonak, among others.
- **Sertoma Grants** up to \$2,500 (only available to national affiliates that qualify) – The grants are for hearing health programs and projects. Grants cannot fund scholarships, capital improvements or salaries.
- **Professional Education Grants** – These grants enable affiliate staff members to attend conferences and trainings that greatly expand their ability to serve mankind within their communities. The impact of just one of these grants, up to \$400 per fiscal year, can be seen in the hundreds of lives these professionals touch each year.

Finally, there is a mutual benefit to the affiliate and Sertoma Club from this relationship. Many affiliates have staff who become Sertoma members, expanding support and service in the community. The affiliate's facility can also receive direct financial assistance and volunteer support from the club. In the future, Sertoma hopes that all of its local affiliates will be the vehicle to help those in need receive hearing aids or speech therapy at little or no cost. ■

for fundraising projects may be interested in sponsoring hearing aids for a needy child or adult with hearing loss. Delta Zeta chapters are encouraged to collect used hearing aids for recycling through the Starkey Hearing Foundation.

Bill Austin, owner and CEO of Starkey, created the Starkey Hearing Foundation in 1973 to help poor Americans with hearing disabilities. It soon went international and, over the decades, the Starkey Hearing Foundation has sent teams of audiologists and hearing aid technicians to more than 150 nations. Since 2000, they have fit more than 80,000 Americans with more than 160,000 hearing aids.

The Lions Clubs Hearing Aid Recycling Program (HARP) aims to address the hearing needs of children and others around the world and to establish an international hearing aid recycling program to promote the collection, refurbishing and distribution

of donated hearing aids. They collect old, used and unused hearing aids (regardless of size, condition or age). A number of statewide programs have been developed, such as the Georgia Lion's Lighthouse Foundation (<http://lionslighthouse.org>; 800.718.7483), Lions of Illinois Foundation (www.lionsofillinoisfoundation.org; 800.955.5466), and a joint program operated by the Lions Clubs of Michigan and the Michigan Association for Deaf and Hard of Hearing (www.michdhh.org; 800.968.7327).

In October 2007, Lions Clubs International Foundation (LCIF, www.lionsclub.org), in conjunction with hearing aid maker Rexton announced its latest philanthropic endeavor, the Affordable Hearing Aid Project, in which Lions Clubs partner with local audiologists to provide hearing aids for people in their communities. Applications for assistance are made to one's local Lion's Club.

Sertoma International (www.sertoma.org) has a long history of collaborative relationships with speech and hearing clinics. The Sertoma Adopt-An-Agency program establishes a relationship between Sertoma and a nonprofit hearing and speech facility. It is a practical way for a club to help a local organization and to promote Sertoma's national mission of SERVICE TO MANKIND. The Sertoma Hearing Aid Recycling Program (SHARP) helps needy people obtain hearing aids. Clubs collect used hearing aids, have them refurbished and distribute them to people in need. In cases where an individual cannot afford to buy a hearing aid, a club can raise the funds needed to purchase the aid (or to repair one). In addition, some clubs distribute discounted or free hearing aid batteries. For more information, call Sertoma at 800.593.5646.

The Sound Beginnings Children's Hearing Aid Program (www.wesharefoundation.org; 202.331.9694), sponsored by Quota International (www.quota.org; 202.331.9694), began in January 2008 and offers Quota International service clubs in the U.S. the opportunity to distribute up to 100 vouchers for free hearing aids supplied by Siemens Hearing Instruments to qualified applicants.

Audient (www.audientalliance.org; 877.AUDIENT) is a national nonprofit hearing care alliance uniting hearing healthcare professionals, suppliers and related groups around the common goal of providing access to quality hearing aids and related care for people with hearing loss and low income. Audient matches each income-qualified applicant with a hearing care professional in their community. Audient serves as a third-party administrator by performing income qualification, collecting the funds from the patient as agent of the provider and managing the database of outcome measures from each patient. Costs and pricing are designed to be reasonable for both patients and providers of care. Start the process by calling 877.AUDIENT or download the application at www.audientalliance.org/downloads/patients/AUDIENT_application.pdf.

The Hearing Impaired Kids Endowment Fund (HIKE, www.thehikefund.org; 352.688.2579) is sponsored by Job's Daughters International, a Masonic youth organization for girls. The HIKE Fund is for children who are in need of hearing aids or other assistive listening devices whose parents or guardians are unable to meet this specific need. Applications are available on their Web



site, or write to: The HIKE Fund Inc., c/o HIKE Board Executive Secretary, 10115 Cherryhill Pl., Spring Hill, FL 34608-7116.

The Miracle Ear Children's Foundation (www.miracle-ear.com/childrenrequest.aspx) serves and supports children who have hearing loss. Their purpose is to provide no-cost hearing aids and hearing support services to children whose families have incomes that are significantly limited. Eligibility requirements, procedures and a request for an application can be accessed on their Web site or by calling 800.234.5422.

Humanitarian Efforts in Developing Countries

The World Health Organization (WHO) estimates that more than 250 million people worldwide have disabling hearing impairment with the burden twice as large in developing countries. WHO reports that current hearing aid production is 10 percent of the global need with 75 percent of all hearing aids manufactured and distributed in North America and Europe and 25 percent going to the rest of the world. In an effort to address these needs, WHO first published *Guidelines for Hearing Aids and Services in Developing Countries* in 2001, now in its second printing (www.who.int/pbd/deafness/en/hearing_aid_guide_en.pdf). Soon after the initial publication, the International Society of Audiology formalized a Humanitarian Audiology committee that coordinates worldwide efforts to dispense hearing aid in developing countries (www.isa-audiology.org/humanitarian.asp).

In 2003, WHO was instrumental in helping to establish an independent collaborative partnership called World Wide Hearing Care for Developing Countries (www.WWHearing.org). The purpose of this organization is to promote better hearing through the provision of hearing aids and services in developing countries and communities, within the framework published in *Guidelines for Hearing Aids and Services in Developing Countries*. In 2006, WWHearing became a charitable association in Switzerland and signed a Project Collaboration Agreement with WHO in order to work together to encourage and enable the provision of affordable hearing aids and services on a massive scale, prioritized to developing countries and communities. WWHearing partners with a number of international organizations who work in the area of hearing impairment, such as Christian Blind Mission (www.cbm.org), Hearing International (www.hearinginter.com), IMPACT (www.impact.org.uk), Lions Clubs International Foundation (www.lionsclubs.org), South-East Asian Forum for Sound Hearing (<http://soundhearing.org>), and World Vision International (www.wvi.org). Hearing instruments are distributed through their service projects and pilot programs. Other organizations that sponsor mission trips and other educational activities include Partners for a Greater Voice (www.greatervoice.com)

and Global ENT Outreach (www.geoutreach.org).

Finally, select Rotary Clubs in New Jersey initiated a joint project to address the lower-income children with hearing loss of the Tucumán Province in Argentina and applied for a Rotary matching grant. The project has now become a nonprofit corporation, Help the Children Hear Inc. (www.helpthechildrenhear.org). And Hearing-Aid for Latin America (www.latinhearing.org) is yet another project sponsored by international and local Rotary Clubs (www.rotary.org). ■



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Applause

Good Deeds Abound

If you think only nonprofit organizations are working for the greater good, it may come as a pleasant surprise to learn that many hearing aid manufacturers are pitching in for people in need. Below is a sample of some of the good deeds done by the big names in hearing aids.

Oticon Pediatrics' Loaner Bank Program provides hearing instruments to children, ages birth to three years, who need immediate amplification when amplification is not readily available. Typically, such delays occur when children are awaiting third-party reimbursement approval or undergoing cochlear implant evaluation. "At Oticon, we believe that all children with hearing loss deserve every opportunity to achieve their full potential," says Peer Lauritsen, president of Oticon.

"We recognize that when delays occur, speech and language development can be disrupted. This program is a direct response to the many dedicated hearing care professionals who share our commitment to putting the needs of children with hearing loss first." Oticon implements its loaner program in collaboration with its dispensers. In addition to a hearing instrument, an EarGear hearing aid retention device is provided to assist with retention and prevent against further loss. For more information about the Oticon Pediatrics Loaner Bank Program, contact Maureen Doty-Tomasula at mdd@oticonusa.com or phone: 888.OTI.PED1 (888.684.7331).

Last spring **Siemens Hearing Instruments** renewed its partnership with Quota International's Sound Beginnings

Program, in which Siemens donates 100 free hearing instruments to children ages 17 and under who are in financial need. Today, only 11 states in the nation mandate partial insurance coverage for pediatric hearing instruments, making it all the more difficult for some families to afford this out-of-pocket expense. The Siemens vouchers for families accepted into the program allow for the donation of a total of 50 CIELO® 2 and 50 Siemens Explorer™ hearing instruments. Audiologists and hearing professionals may contact Quota International about the Sound Beginnings Program

at 202.331.9694 and ask for Yamilee Theophile, or e-mail yamilee@quota.org. Siemens' hearing loss awareness Web site can be found at www.hearitfortheirsttime.org. Still more information appears on the main Siemens Web site at www.siemens-hearing.com.

Starkey® Hearing Foundation believes that the greatest sound in the world is "Thank you." Thus the foundation lives out its aim – "So the World May Hear" – by initiating ongoing hearing mission trips to countries like Egypt, Malawi, Botswana and Mozambique. Those who go as mission volunteers are rewarded with the smile on a child's face as he or she hears for the first time. Since 2000, Starkey has distributed more than 338,595 hearing instruments around the world to people in need. In the United States, the foundation's nonprofit program Hear Now assists permanent U.S. residents with hearing loss who have limited financial resources. For more information, visit www.sotheworldmayhear.org/missions.

Widex® has several philanthropic initiatives: The Widex Pediatric Hearing Assistance Program (www.widexpro.com/wps/portal/pedHAP), supplies new hearing aids to children from families with financial need via facilities involved in Widex research. Since 2007, the Widex Loaner Network has provided banks of new Widex hearing aids to up to 10 facilities per year for use as loaner hearing aids for children. Finally, over the past 20 years, Widex has worked through its dispensers to provide hearing aids and accessories to groups going on international aid trips with hearing-related missions.

Phonak's Hear the World Foundation (www.hear-the-world.com) supplies technology and financial assistance to individuals and groups that work to improve the quality of life of people with hearing defects. Additionally, the foundation supports scientific studies and research projects on healthy and impaired hearing, as well as social issues related to hearing loss. ■



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LIFE WITH HEARING LOSS

If You Just

BY ELIZABETH THOMPSON

Martin Ritchie is not only “The Bold and the Beautiful,” but also “The Young and the Restless!” Just give him a stage and he’s sure to please.

Since he was 15, living in Austin, Texas, Ritchie has had a passion for acting. He hasn’t had his big break yet, but while he’s pursuing his dream, he’s got a little gig going that pays the bills: Ritchie is a model (bet you could’ve guessed that!).

At 17, Ritchie quit school and moved to Los Angeles where he eventually signed on with the reality TV show “The Janice Dickinson Modeling Agency.” His first order of business was to lose the youthful, soft look and get a more macho physique. He worked with a trainer to build his chest and arms and is still working on his pecs.

In 2008, Ritchie moved into the Dickinson mansion along with 11 other male models for the fourth season of “The Janice Dickinson Modeling Agency” on the Oxygen channel. There wasn’t much privacy but they had fun while competing for winning spots daily. Ritchie describes Dickinson, a former supermodel, as a den mother who watched over their diets and exercise regimens.

With this lucky break, it wasn’t long before Ritchie’s signature smile was in front of cameras everywhere. What makes his success even more remarkable is that Ritchie is deaf – and so is his entire family, including his parents and three sisters. Ritchie communicates with American Sign Language and lip reading. When he is working, he has an interpreter.

From the start, Ritchie has not been deterred by deafness. Not to say there haven’t been obstacles and naysayers. “I always prove them wrong,” says Ritchie. “Once I do, I think they change their perceptions of me and other deaf people, too. I always used to tell people that I am deaf before meeting them but now most people are well aware of who I am since I was on a reality TV show.”

Some of the other models on the show expressed a sincere interest in learning sign language and Ritchie was impressed with the respect and kindness he was shown by the other men. All in all, it was a good experience and it confirmed for him that a deaf person can succeed in a traditionally hearing work environment.



Martin Ritchie hasn’t let being deaf sway him from his acting ambitions. While waiting for his big break, Ritchie works as a model and recently appeared in the fourth season of the reality TV show “The Janice Dickinson Modeling Agency.”

Photos courtesy of Martin Ritchie

“My favorite thing about modeling is that I get to express my emotion whenever I want to. Sometimes they say, ‘Be serious and focus on the lens,’ but I go on in my own world as I improvise myself as a happy guy with full excitement in my eyes. It’s my signature: I always smile in front of a camera,” says Ritchie.

Smile



Standing in front of a camera posing and acting is tough enough without communication issues. But Ritchie is determined and his persistence and talent have not failed him. When he needs to blow off some steam, he goes for a jog of several miles or some rock climbing. These serve a dual purpose as he continually works to stay in the best physical shape.

Ritchie was beginning to consider Los Angeles his home, where he is a client of the AKA Talent Agency, but more recently he said he is falling in love with New York. Ritchie travels a lot and his life defies a strict schedule. For this he is thankful because he loves to do different things every day. "I cannot stay in the same room, such as an office, all day. It is not my thing. When I am not working, I stay home and write my autobiography. I get to hang out with good people with strong influences. I try to associate myself with good things every day," Ritchie said.

Ritchie has had many thoughts of "what if" or "I could have" that could easily drag him down. "I started to recognize those real things while I was growing up. I definitely have gained an understanding that I'm a minority; it's always a battle for me. I just cope with it every day."

As Ritchie blazes a trail for models with hearing loss, he strongly advocates diversity in other regards as well. On an entry on the "The Janice Dickinson Modeling Agency" blog Ritchie wrote:

"My encounter with three full-figured models was so emotional. It's something that I'll never forget. That is what I've always been talking about. We all want to see diversity in the world. Right? Imagine the wonderful benefit of diversity in the modeling industry. I strongly encourage that very much in this country. ... With no doubts, those girls are going to be very amazing and wonderful role models to other plus-size models. They are strong and very determined, just like me."

Plan B Also Includes the Smile

One glance at Ritchie's smile and you could guess what he might be if the road had turned another direction for him. Here's a hint: get a load of those teeth.

Ritchie says if he weren't modeling and acting, he would love to be a dentist. He admits he's obsessed with teeth – whitening, flossing and caring for the health of his teeth. He even advises friends and fellow actors on how to care for theirs.

Ritchie hopes that not only has his smile caught your eye but his infectious positive spirit as well. Even though life has thrown him some curves, he remains optimistic. As he moves closer to that role on the soaps, he may just teach his adoring public a thing or two about how to smile for the camera, even through adversity. ■

Elizabeth Thompson is a columnist for Suburban News Publications and lives in Grove City, Ohio. Her book, *Day by Day, the Chronicles of a Hard of Hearing Reporter* was published in June 2008 by Gallaudet University Press.

Under the Scope

DRF Support Leads to Major NIH Grant

BY JAMIE MORRISON, ASSOCIATE EDITOR

Where's that sound coming from? Thanks to stereophonic hearing and fast-operating brain circuitry, most people with properly functioning ears can detect almost instantaneously where sounds originate. But how? Gaining an understanding of how the brain accomplishes this task is the aim of Michael Burger, Ph.D., assistant professor of neuroscience at Lehigh University in Bethlehem, Penn.

Obviously, sound coming from the right reaches the right ear slightly sooner than it reaches the left ear, and vice versa. In fact, the difference in reception of sound by the two ears can only be a maximum of seven-10,000ths of a second. Yet within a few thousandths of a second after the sound enters the ears, the brain has computed the time differential and translated it into an impression of where the sound is coming from.

In 2008, Deafness Research Foundation (DRF) awarded Burger a grant to conduct experiments examining the brain cells and synapses of chickens, whose brain circuitry is similar to that of humans, in order to increase the understanding of how this happens. Burger is able to view thin slices of brain tissue under a microscope while touching an electrode to the cell for the purpose of studying electrical currents from even one individual synapse. "We're

The "Underwater Acoustic Society," from left: Jonathan Gale, Ed Rubel (underneath shark), Trevor Rubel, Michael Burger and Matthew Kelley scuba-diving in Belize.

Photo courtesy of Michael Burger, Ph.D.

investigating basic principles of brain physiology – how synapses and neural circuits function, as well as how they are regulated," Burger says.

Prior to receiving the DRF grant, Burger says, "I had several research aims, some of which I had data to support their feasibility, but others which I did not. The DRF grant funded a year of research during which I was able to collect the data to prove what I could do through my experiments." After completing his DRF-funded research, Burger resubmitted a grant application to the National Institutes of Health. He says, "It was accepted, largely based on my ability to show that these experiments were feasible and promising. So I have \$1.25 million over the next five years to hire staff and see the work I began with the DRF funds through to completion."

While Burger's research sounds literally mind-boggling, it has great potential not only to significantly increase scientists'

understanding of brain function, but to assist in the formulation of more effective cochlear implants that could enable their users to detect where sounds are coming from, just as normally hearing people are able to do. Hearing aid users could also benefit from Burger's research: it could help manufacturers create hearing aids that can better amplify the sounds a person wants to focus on and attenuate sounds that are just background clutter.

And those who suffer from tinnitus could find relief from the outworking of Burger's research. He is especially interested in studying the cochlear nucleus, the first central synapse in the brain. Many researchers believe that an excess of excitation and lack of inhibition of neural activity in the cochlear nucleus is the cause of tinnitus. Burger hopes his research will shed light on the causes of the insufficient inhibition of neural activity in this portion of the brain, thus leading to new tinnitus





Michael Burger, Ph.D., is conducting experiments to learn how the brain determines from where sounds originate.

Photo courtesy of Michael Burger, Ph.D.

treatments.

After earning his doctorate at the University of Texas doing research on the hearing of bats, Burger began to study birds with Edwin Rubel, Ph.D., a leading researcher in brain development and auditory hair cell regeneration at the University of Washington. Prior to his appointment at Lehigh in 2006, he spent a year of further study at the University of Munich in Germany on an Alexander von Humboldt Research Fellowship.

By his own admission, Burger is “a work-hard, play-hard kind of guy. I miss dinner at home a lot and I often work on weekends,” he says. But his wife Stacy works nearby in the international admissions office at Lehigh. They have a nine-year-old girl and a six-year-old boy so Burger spends a lot of time at the Little League fields. “I also do a lot of running and just finished a half marathon,” he says, “and I scuba dive as often as I can, which is only about once a year.”

His self-funded scuba-diving trips often happen after annual meetings of the Association for Research in Otolaryngology, when he meets up with Rubel, Matthew Kelley, Ph.D., of the National Institute of Deafness and Other Communication Disorders, and Jonathan Gale, Ph.D., of University College London for several days in the Caribbean. The “Underwater Acoustic Society,” as they call their meetings, provides a break from intense research but also keeps them sharp in their work. Says Burger, “We’re all in the same field so we have some good scientific conversations.” ■

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Invisible. Effortless. 24/7.

Lyric® is the world's first and only 100% invisible extended wear hearing device. The device is comfortably placed in the ear canal and can be used 24 hours a day, seven days a week, for up to 4 months.* Contact us today! *Individual replacement needs may vary.

www.lyrichearing.com/hhm

866.998.8879

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America's #1-doctor-recommended brand of earplugs, Mack's® offers a full range of earplugs for noise and water protection, a cordless/re-chargeable warm-air ear dryer, sleep masks, ear drying drops and earwax removal drops.

www.macksearplugs.com; 586.427.7560

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hear**LIFE**

By advancing the field of hearing implant technology, MED-EL's people and products connect individuals around the globe to the rich world of sound.

www.medel.com; 888.MEDEL.CI

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The National Temporal Bone, Hearing and Balance Pathology Resource Registry seeks donors of temporal bones to medical research. The removal of bones does not change the donor's appearance.

www.tbregistry.org; 800.822.1327

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Oticon Pediatrics is dedicated to helping children with hearing problems achieve their full potential by delivering child-friendly solutions and services to children, families and professionals.

www.oticonusa.com; 888.OTI.PEDI

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SayWhatClub (SWC) is an online support group for people with hearing loss. Members meet at an annual convention. SWC is a nonprofit organization run by volunteers and membership is free.

www.saywhatclub.com

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Sorenson IP Relay® (SIPRelay®) enables instant communication between deaf or hard of hearing people and hearing people via a personal computer or mobile device and a trusted Sorenson Communications Assistant (CA).

www.siprelay.com; 866.756.6729

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Sound Clarity, Inc., offers a complete line of assistive devices for people with hearing loss, including amplified telephones, personal amplifiers, hearing aid batteries and supplies and much more.

www.soundclarity.com; 319.354.5854

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www.sprintcaptop.com

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WCI is the nation's largest distributor of assistive listening devices for people with hearing loss, including the CapTel® captioned telephone. The company specializes in helping hearing professionals provide total overall solutions for their patients.

www.ultratec.com; 800.482.2424

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Have You Heard?

Juicy Morsels from the Big Apple

A provision of \$365 million in federal stimulus funds will benefit deaf and hard of hearing (D/HH) subway riders in the Bronx and Brooklyn. The final list of more than \$1 billion in Metropolitan Transportation Authority projects, released last April, will include at least a dozen station makeovers on the D and 5 trains. Additionally, 642 station booths will be fitted with induction-loop devices, making it easier for D/HH to hear the station agent.

SportsNet New York began offering closed captioning of all New York Mets baseball games starting May 1. This service not only benefits people present at the stadium but also sports fans at bars, gyms and other locations where games are transmitted.

Survey Says...

Researchers at the University of Iowa are asking adults and children who have received a cochlear implant (CI) to com-

plete a survey about the benefits they receive from their devices. This survey will be made available to CI users worldwide with translations into seven languages. Adults wanting to take the survey can visit <http://survey.uiowa.edu/wsb.dll/127/cochlearimplant.htm> and children can go to <http://survey.uiowa.edu/wsb.dll/127/childrencochlearimplant.htm>.

In addition, researchers are also interested in people who wear CIs and have tinnitus. To complete this survey, log on to: <https://survey.uiowa.edu/wsb.dll/127/citinpart1.htm>.

A third questionnaire for people who experience only tinnitus can be found at <https://survey.uiowa.edu/wsb.dll/127/tinglobalpart1.htm>.

H.R. 1646/S. 1019 in Committees

According to the Better Hearing Institute (BHI, www.betterhearing.org), two-thirds of Americans cannot afford hearing healthcare. This translates into hearing loss going untreated in many children, teenagers and adults of all ages. For most Americans, hearing

loss is inevitable due to the aging process, affecting one in three persons over the age of 65. The majority of health insurance policies do not cover hearing loss. Even though it is covered under the Americans with Disabilities Act and has been shown in research studies to affect quality of life, insurance companies (including Medicare) do not see hearing aids as a necessary medical expense.

The Hearing Aid Assistance Tax Credit Act (www.hearingaidtaxcredit.org) would help millions of Americans who need hearing instruments but simply cannot afford them. If enacted, it would provide a \$500 tax credit per hearing aid per ear, once every five years for dependents and for those aged 55 and older. The benefits of reducing special education costs and increasing work potential through minimization of psychological and mental disorders associated with untreated hearing loss in older adults both represent immense savings for taxpaying Americans. The bill is currently being considered in the House Ways and Means Committee and by the Senate Finance Committee. For updates on the status of the legislation, visit www.thomas.loc.gov and search H.R. 1646 or S. 1019. ■

Too much noise can harm your child's hearing.



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PROTECT THEIR HEARING

noisyplanet.nidcd.nih.gov

 **Deafness Research Foundation**
www.drff.org

Learn more about noise-induced hearing loss and how to prevent it.
(800) 241-1044

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Institute on Deafness and Other Communication Disorders

Hot Tips & News Clips

A new poster designed for placement on work-site bulletin boards is available free from **Howard Leight**. It details the care and maintenance of earplugs and earmuffs and provides clear instructions for each type of hearing protection device. Download at www.howardleight.com or contact Sperian Customer Care at 800.430.5490.

A new Web Site called "**Connect the Mentor**" allows cochlear implant candidates to communicate directly with volunteer "mentors," who include parents of implanted children, relatives of cochlear recipients and adult recipients. Visit www.BionicEar.com/CTM.

Oticon is again seeking nominations of outstanding individuals with any degree of hearing loss for the **2009 Oticon Focus on People Awards**. To complete an application, please visit www.oticonusa.com, under the Professional or Consumer sections and click on the Oticon Focus on People Awards link. ■

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The tiny **Floating Mass Transducer**™ (FMT), attached to the incus during a surgical procedure, amplifies sound through a “direct drive” application. This eliminates many of the issues inherent to acoustic systems (occlusion, insertion loss, feedback, discomfort) and provides a measurable improvement in sound quality.

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MED-EL offers today's most advanced hearing implant technology in cochlear and middle ear implants. As a leader in worldwide hearing implant solutions, our innovative research brings us to the verge of breakthroughs that will offer users a lifetime of more exciting tomorrows. For more information about our products or research, contact us today. www.medel.com

Source: Leutje, et. al. Phase III Clinical Trial Results with Vibrant® Soundbridge® Implantable Middle Ear Hearing Device. Otolaryngology-HNS. 2002; 126:97-107

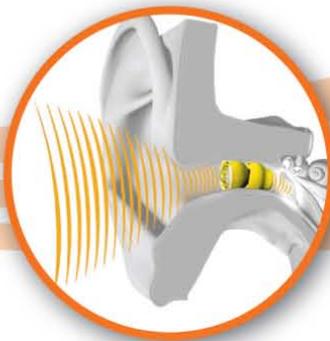
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*Lyric can be worn for up to 120 days at a time. Individual replacement needs may vary. Lyric is not appropriate for all patients. See your ENT physician, audiologist or hearing aid dispenser to determine if Lyric is right for you.

†Professional fees may apply. Annual subscription begins the first day of trial.

**Based on the combination of results from two surveys totaling 47 patients who had worn Lyric for at least 30 days.