



Hear well in a noisy world

Hearing aids, hearing protection & more

WHEN WE SET OUT to test hearing aids, we encountered the same challenges that hearing-aid shoppers face every day: a fragmented and confusing marketplace and difficulty sorting out good hearing-aid providers from less-capable ones.

We followed a dozen actual patients for six months as they shopped for and used hearing aids, conducted a national survey of 1,100 people who had bought a hearing aid in the past three years, and lab-tested the features of 44 hearing aids. Here's what we found:

High prices. Our shoppers purchased two pairs of hearing aids each, or 48 aids in all, ranging from \$1,800 to \$6,800 per

pair, including professional fitting and follow-up services, in the New York City metropolitan area.

Mediocre fitting. We had audiologists check how well providers fit our shoppers' hearing aids to their individual hearing loss. Two-thirds of the 48 aids they bought were misfit: They amplified too little or too much.

Lack of information. Most of the providers our shoppers visited discussed style and features, but a significant minority didn't. One-fourth of respondents to our survey, conducted by the Consumer Reports National Research Center, didn't know whether their aids had feedback suppression, and a third didn't know whether they had directional microphones. Both

features can be critical to performance.

So why bother with hearing aids? Medical evidence shows that they can improve your quality of life and relationships with friends and family, so it's worth persevering until you get aids that are properly selected and fitted. Of our survey respondents, 73 percent pronounced themselves highly satisfied with their aids. As one of our shoppers noted, "I'm hearing music sounds I haven't heard for over 20 years."

Moreover, hearing-aid technology has made major strides in recent years, most notably with the development of very small open-fit digital hearing aids. In loud social settings, the most challenging environment for hearing-aid users, survey participants reported more improvement with those aids, which don't plug up the ear canal, over other styles that use ear-molds, custom-shaped inserts that fit tightly in the ear canal.

If you're avoiding noisy places or having trouble in conversation or understanding TV, it might be time for a hearing aid. In our survey 67 percent of first-time aid users sought aids because they got tired of asking others to repeat themselves.

Once you've accepted your hearing loss and are considering getting hearing aids, your most consequential decision is finding the proper professional from whom to buy them because it's likely to be a long-term relationship. This is not a project for the faint-hearted because the industry is anything but standardized. Our shoppers encountered a variety of providers, including hospital-based clinics and strip-small storefronts, all legally able to fit a hearing aid, but with varied resources and expertise. In this report, we'll help sort things out step by step.

1 Select a provider

We'll get the easiest advice out of the way first: If you are a veteran, your first step should be to determine whether you are eligible to get your aids at your near-

est Veterans Affairs facility. The 13 percent of survey respondents who went to the VA gave it high scores across the board. Depending on their eligibility, veterans might be able to get their hearing aids free, with at most a co-pay for office visits. Survey re-

Choosing a good provider is a critical step.

spondents who got their aids elsewhere paid a median of \$3,352 per pair.

For everyone else, our suggested choice is a medical office headed by an otolaryngologist (an ear, nose, and throat physician) who employs an audiologist to fit

and dispense hearing aids.

About one in five survey respondents got their hearing aids from a doctor's office. They gave those providers higher marks on their thoroughness in evaluating hearing loss than did respondents who went to other types of providers. Another plus: An ear doctor can rule out medical conditions such as a tumor or bacterial infection in the ear that might be affecting your hearing. He can also clear your ears of wax so that you're ready for your hearing test.

Medicare will cover the medical exam and an audiologist's test if ordered by a physician. Some private Medicare Advantage plans might cover part of the hearing-aid cost. People with other types of private insurance should check with their carriers because coverage might vary.

If you can't find a conveniently located

Which type is best for you?

The ideal hearing aid for you depends on the severity of your hearing loss, your lifestyle, and your manual dexterity. Smaller aids are less visible, but you pay a price for vanity: They offer fewer features (see "Features at a Glance," on page 36) and might be more difficult to manipulate. People

with more severe hearing loss might get better results with a behind-the-ear model with earmolds or an in-the-ear model. In our survey, owners of behind-the-ear, open-fit designs reported the most improved hearing in loud social settings. Prices listed below are for a single aid.

Behind the ear open-fit

Pros Comfortable, barely visible. No earmold, so less plugged-up feeling. Might not need a telecoil.

Cons Sweat might cause malfunction. Limited manual controls.

Price \$1,850 to \$2,700

Behind the ear with earmold

Pros Most versatile and reliable. Fits widest range of hearing loss. Good for children.

Cons Most visible. Vulnerable to sweat and wax. Plugged-up feeling from earmold unless vented.

Price \$1,200 to \$2,700

Completely in the canal

Pros Does not need telecoil. Almost invisible.

Cons Short battery life. Too small for directional microphone. Ear might feel plugged up unless aid is vented. Vulnerable to wax and moisture.

Price \$1,365 to \$2,860

In the canal

Pros Barely visible.

Cons Same issues as with completely-in-the-canal models, though less severe. If the ear canal is large enough, might have telecoil or directional microphone.

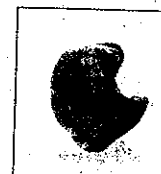
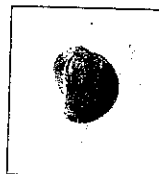
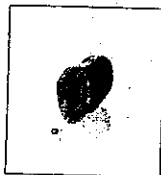
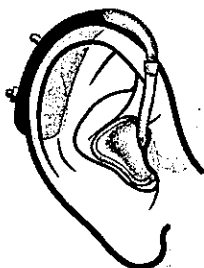
Price \$1,300 to \$2,750

In the ear

Pros More room for features such as telecoil, directional microphone, volume control. Less of a plugged-up feeling.

Cons More visible. Vulnerable to wax and moisture.

Price \$1,200 to \$2,700



Price source: Hearing Journal, 2008.

doctor's office that dispenses aids, an independent provider is a reasonable alternative, our survey found. Thirty percent of respondents got their aids from that type of provider, which is usually staffed by non-M.D. hearing professionals. We consider it important to have some choice of brands, and independent providers generally carry two to four different ones. (The Food and Drug Administration requires

patients to have a physician's exam before acquiring a hearing aid but lets adults who don't want one sign a waiver.)

Name-brand stores such as Beltone and Miracle-Ear, used by 18 percent of survey respondents, handle their own brand. (The remainder of survey respondents went to clinics in civilian hospitals or at big-box retailers such as Walmart and Costco. We didn't have enough re-

sponses to evaluate them.)

The professionals you might encounter at independent providers could fall into two categories: audiologists and hearing-aid specialists (also called hearing-instrument specialists). Name-brand stores more often use the latter.

Both types of professionals can evaluate your hearing and fit your hearing aids. But their training varies significantly. Newly

Protect your ears from noise

In an era when some people think nothing of spending hours on end listening to their MP3 players at high volume, the risk to your hearing from everyday activities might be greater than you think. Someone whose day includes a workout at a noisy gym while listening to music on an MP3 player, lunch at a clamorous restaurant, a subway ride, a few hours of mechanized yard work, and a night out with friends at a dance club can easily end up with a dose of noise exposure that over time can be damaging.

That is more than just a theoretical concern. About 30 million Americans have hearing loss. Studies show that roughly 15 percent of American teenagers are showing early signs of that condition, at an age when their hearing should be almost perfect.

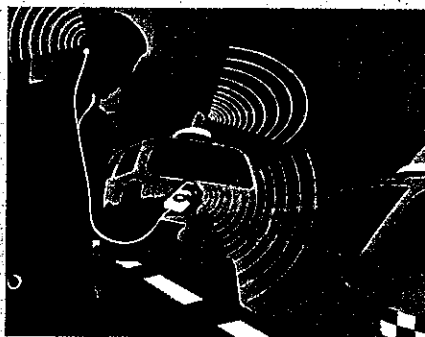
"We are prematurely aging our ears," says Brian Fligor, Sc.D., director of diagnostic audiology at Children's Hospital in Boston.

Here's how to tell whether your lifestyle is putting your own hearing at risk and what you can do about it if it is:

How hearing loss happens

Loud noises can temporarily or permanently damage the microscopic hair cells in the inner ear that convey sound to the brain. Those cells can bounce back from an occasional assault, such as that Metallica concert you went to last year. But if you live a habitually loud life, some of those cells might eventually stop working for good.

Hearing loss might progress for many years before you become aware of the problem. It



usually starts with a loss of soft consonant sounds such as "f" and "sh," making speech more difficult to understand. But it can grow into a very serious condition that can isolate people from family and friends, leading to depression and other psychosocial problems.

How much noise is too much?

That's more difficult to answer than you might imagine because some ears can withstand loud noises better than others, and individuals' exposures are so variable and difficult to track.

Noise is measured in decibels, with 0 being the quietest sound a person can hear, 60 a normal conversation, and 140 (a gunshot at close range) a level that can cause immediate, permanent damage. Every additional 10 points on the scale represents a doubling of perceived loudness. At loud volumes over long periods, an increase of even a few decibels adds to your risk of hearing loss.

Our health and safety experts, after studying existing guidelines and scientific research on

hearing loss, have concluded that almost everyone can safely be exposed to 70 decibels, about as loud as your morning shower, indefinitely without harm. But you should do everything you can to avoid or minimize exposure to noise above 100 decibels. That's a sound level that can be exceeded by rock concerts, sporting events, movie theaters, and some MP3 players when played at maximum volume.

As for the decibels in between, it all depends. Particularly if your hearing is already deteriorating or you are exposed to significant noise on the job or recreationally, try to avoid other prolonged exposure to noise between 75 and 85 decibels. Above that, everyone should limit prolonged exposure or use hearing protection. For instance, if you're going to spend time operating a 90-decibel lawn mower, wear earplugs or earmuffs.

As for MP3 players, Fligor's research shows that most people listen at safe volumes in quiet settings. But in a louder place, such as an airplane cabin, a gym, or a city street, a large majority of listeners dial the volume up to risky levels to drown out ambient noise.

What you can do

Gauge your exposure. Check the chart below to see how loud different types of products and environments can be. The more of them you're exposed to, especially for extended periods, the greater your risk.

As a rule of thumb, if the noise around you makes it difficult to carry on a conversation without shouting, it's too loud.

How loud is it?

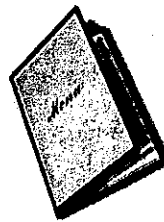
These are often loud enough to add to your risk, according to our own tests of everyday products and published research on a variety of environments.



Hair dryers
77 to 92 decibels



Lawn and yard equipment
86 to 99 decibels



Bars and restaurants
50 to 90 decibels



Movie theaters
72 to 104 decibels



Aerobics cl:
78 to 106 dec

minded audiologists must have a doctoral degree (generally the Au.D.), pass national and sometimes state tests, and have more than 1,000 hours of clinical training. Hearing-aid specialists generally have from six months to two years of supervised training or a two-year college degree and in most states must pass licensing tests. They can also seek national certification.

You might not necessarily know when

you walk in the door which professional you are dealing with. Our shoppers occasionally encountered two or three types working at the same office. Our survey respondents had a difficult time even making distinctions among professionals; 87 percent said they'd visited audiologists, though many had gone to vendors known in the industry to be staffed primarily with hearing-aid specialists.

Does it matter whether the office is staffed by an audiologist or a hearing-aid specialist? Audiologists have broader training and, unlike hearing-aid specialists, can treat auditory conditions that might be better addressed without hearing aids, such as balance problems.

But both types of professionals made mistakes in fitting the aids purchased by our 12 shoppers. Audiologists made fewer serious fitting errors than did hearing-aid specialists, but in about two-thirds of all of the fittings, patients ended up with incorrect amplification.

In the sections that follow, we provide advice on how to increase your chances of getting a good hearing-aid fitting, regardless of which type of provider you choose.

Consider practical things, too, in your choice of provider. Check with your state to make sure the professionals' licenses

Allow time to get used to new hearing aids.

are current, and with the Better Business Bureau or state attorney general's office for complaints.

Make sure the location and office hours are convenient. Ask whether the office does walk-in repairs rather than requiring you to make an appointment. Ask about hearing-rehabilitation services or support groups for after you get your hearing aids. Experts we interviewed said that those elements might be important for your long-term satisfaction with your aids.

2 Understand the product

Digital hearing aids, which have captured more than 90 percent of the market, come in five major types (see "Which Type Is Best for You?" on page 33). In those aids, sound goes in the microphone and is digitally processed by a chip, amplified, and delivered into the ear. Those aids also have features to modify that sound, making it more lifelike and correcting for other problems.

Because individuals' sound perception is, well, so individual, a hearing aid that thrills one person might seem just so-so to another with almost identical hearing-test results. Even within brands, there might be several versions of a model. That kind of variation makes judging hearing-

A rough way to test for temporary hearing loss is to put your car stereo on its lowest audible setting before you enter a noisy place, such as a rock concert. If you can't hear it when you return, you might have a temporary noise-induced hearing loss.

Turn it down. Discipline yourself to play music at a lower volume. Keep your MP3 player well below maximum volume and limit listening time to 90 minutes per day. Use your MP3 player's volume limiter if it has one.

Schedule quiet times. Hearing loss is cumulative, so make sure to offset noisy periods with quieter ones.

Use hearing protection. Foam earplugs can reduce your noise exposure by about 20 decibels, but only if you insert them properly. Here's how: Roll the earplug gently between your fingers to make it long and thin, then reach over your head to lift your ear with one hand while inserting the earplug with the other. Hold each earplug in place until it expands. Or you can use over-the-ear earmuffs, which are easier to put on and take off but can be hotter and bulkier.

Use the right headphones. Our tests have shown that noise-canceling over-the-ear headphones and insert-type rubber-tipped earbuds, properly sized to fit your ear canals, can be good at blocking background noises that lead to higher listening volumes. We found that the Panasonic RP-HC55 insert-type earphones were tops for noise canceling, and the Bose QuietComfort 2 were also very good at sound reduction. Just avoid using them in places where you need to stay alert, such as city streets and airports.

A caution about kids & MP3 players

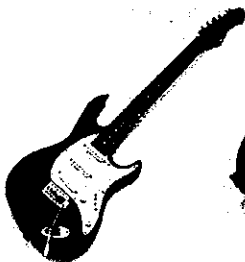
We tested three MP3 players and three aftermarket headphones marketed to children and found reason for caution.

Played with their factory earbuds at maximum volume, all three of the players (the Disney Mix Stick, the Mattel Barbie Girls, and the SanDisk Sansa Shaker) were loud enough to pose a hearing risk with prolonged regular use.



Of the three aftermarket headphones, the Ingemi Corp iHearSafe, and the Sony MDR-222KD claimed to limit maximum volume. The Sony was somewhat quieter at maximum volume than the factory headphones but could still pose a risk on some players for extended periods. The iHearSafe lowered volume further but on some players might actually be so quiet at maximum volume that children will have difficulty hearing the music. The third model, Kid's Gear, didn't claim to limit volume, and it generally didn't.

Bottom line. Check your child's player at its maximum volume with the headphones it will be used with. If it sounds loud to you, it's probably too loud for your child. Demand that it be turned down, limit use time, or take it away.



Rock concerts
89 to 120 decibels



Sporting events
89 to 115 decibels



Airplane cabins
72 to 86 decibels



New York subway
83 to 112 decibels

aid models and brands almost impossible. "There are differences between brands, but they're not significant enough that you can say what are the best brands," says Todd Ricketts, Ph.D., associate professor of hearing and speech sciences at Vanderbilt University.

Our laboratory tests didn't compare brands, but we did evaluate features. Among the most useful were the telecoil

and directional microphone. Don't pay for unnecessary features, as some of our shoppers were pressured to do. The more features you buy, the more you'll probably pay, but you might not need every one.

Even with features appropriate for you, you might need to temper your expectations. In crowds, for instance, your aids will never completely eliminate jarring background noise. "It's going to bring peo-

ple back to hearing, but because of the way we process sound, it's not going to bring them back to normal hearing," says audiologist Patricia Chute, dean of the School of Health and Natural Sciences at Mercy College in Dobbs Ferry, N.Y.

3 Get a thorough evaluation

A hearing-aid provider is only as good as her evaluations—how she determines your hearing loss and verifies that the prescribed aids work.

During your first visit, the provider will establish your hearing-loss profile with audiometry testing. You'll sit in a soundproof booth and indicate whether you can hear individual words piped into your headphone, as well as tones played at various pitches and volumes. A graph, called an audiogram, displays which parts of the sound spectrum you're having difficulty hearing so that the provider can calibrate your aid properly.

A good evaluation includes several other tests, too; you might be asked to listen to speech while a noisy recording plays. You might be asked to repeat words the tester says, with and without being able to see her lips move. You might answer questions about how your hearing difficulty affects your everyday life.

You should also discuss your needs and lifestyle. Do you like to chat on the phone? Does your social life involve a lot of large gatherings or restaurant meals? One lesson from our shoppers: Don't count on the provider to ask those questions.

The provider should then show you a few models and ask you to choose. If your chosen style includes an earmold, she'll make an impression of your ear canal. You might have to pay a deposit.

When you return to pick up your aids, usually in a week or two, the provider should do several tests to verify that they are working optimally. Of that battery of tests, one stands out as a must-have: the real-ear test, which measures the match between your hearing loss and the response of your hearing aid. "There is evidence that you get a better fitting with a real-ear test and people are more satisfied," Ricketts says.

More than half of hearing-aid providers have real-ear testing equipment, but less than a quarter use it regularly, according to 2006 data from the Hearing Review, an industry publication. So make sure in advance that your provider will use it to verify your hearing aid's fit.

Features at a glance

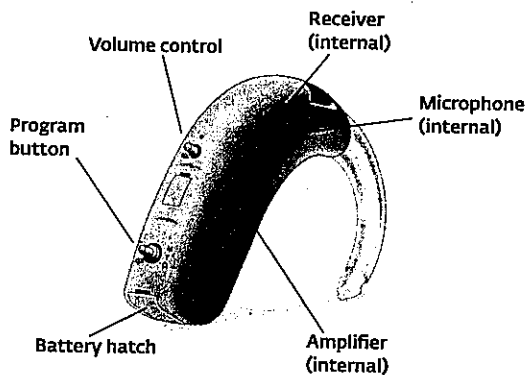
We evaluated major features of 44 hearing aids of varying styles and brands. We also asked our 1,100 survey respondents which features they had and how well their aids worked in various settings. You'll generally pay more for added features.

Telecoil amplifies sound from your phone without picking up background noise, which helps prevent feedback, though it's not needed in some styles of aids. Our survey suggested it helped. Our tests of these nine aids from seven manufacturers, performed in an outside lab, found all telecoils were effective.

Behind-the-ear: GN ReSound Sparx (power model), Phonak Naída HIIP, Siemens Centra HP, Starkey Destiny 1200 Power Plus. **Behind-the-ear open fit:** Oticon Epoq XW, Sebotek Pac Voice-Q 821, Unitron Element 4 Moda Dir. **In-the-ear:** GN ReSound Ziga ZG40/D, Phonak Savia Art 33.

Directional microphone helps you converse in noisy environments. Survey results show it helps in loud social settings, while listening to the TV or radio, and for hearing household noises. These models got very good scores in our lab tests. **Behind-the-ear:** Starkey Destiny 1200 Power Plus, Siemens Centra HP. **In-the-ear:** GN ReSound Ziga ZG40/D, Phonak Savia Art 33, Widex Flash (power model).

Feedback suppression helps quell squeals when your aid gets too close to the phone or has a loose-fitting



earmold. Survey results suggest the feature works. These aids got good or very good lab-test scores.

Behind-the-ear open fit: Beltone Marq9, GN ReSound Dot 30, Miracle-Ear ME950, Siemens Cielo 2 Life S/Dir, Starkey Zon.5. **In-the-ear:** GN ReSound Ziga ZG40/D.

Other features worth noting:

Digital noise reduction can reduce irritating background sounds such as the clinking of dishes. But it might not help in all environments. Just one of the 44 models lacked this feature.

Low-battery indicator sounds to alert you that it's time to change batteries. Most aids had this feature.

Power-on delay helps prevent feedback as you insert the aid. Most aids had this feature.

Wax guard helps keep the aid free of ear wax, a cause of malfunctions and a major complaint of survey respondents.

Automatic volume control (compression)

provides more amplification for low sound levels than high sound levels, which prevents high sound levels from being intrusively loud. Most aids had this feature.

Vents are tiny tunnels in earmolds that help minimize the stuffed-up sensation they often produce.

Manual volume control

lets you adjust volume with a dial. Otherwise, the aid determines how loud it should amplify.

Behind-the-ear models only:

Direct audio input allows the aid to be connected by cable to MP3 players and other audio devices.

Bluetooth capability allows hands-free use of cell and regular phones.

More details on tested models are available to subscribers at www.ConsumerReportsHealth.org.



4 Be a smart buyer

Where we could verify the wholesale price of the aids we tested, the average markup was 117 percent, so there's room to bargain. Only 15 percent of our survey participants tried that, but more than 40 percent of those who tried succeeded. Cheryl Wruk, 62, a county board member from Crivitz, Wis., got her aids discounted to \$1,500 from \$1,750 by declining promotional extras such as a \$100 gas debit card.

Make sure you clearly understand the terms: extra visits not covered by the price, length of warranty, the cost to replace a lost or damaged aid, the cost of batteries, the length of the trial period during which you can exchange or return your aids, and the return fee, if any. Make sure your contract allows you to return your aids and get all or most of your money back if you're not satisfied.

Consider your future needs; ask whether the chosen hearing aid has enough residual amplification to handle a hearing loss that gets worse.

Insist on having brand and style choices. Survey respondents gave lowest marks for choice and selection among all aspects of their shopping experience. Just less than half of our shoppers were not offered a choice of hearing-aid style. "They sold me a completely-in-the-canal model without asking if I minded using that style," a shopper reported to us.

Keep in mind that if you're not thrilled with the first provider's evaluation or personality, or want to see what other provid-

ers offer, you're entitled to a copy of your audiogram to shop elsewhere.

Before you leave with your new aids, practice inserting and removing the battery, cleaning and storing the aid, putting it into your ear, using its switches and controls, and using the telephone while wearing it. Most of our shoppers got no telephone training or help with volume controls.

5 Practice and follow up

Putting on new hearing aids is nothing like putting on new eyeglasses and being able to see clearly right away. "I thought that everything seemed too loud," a shopper said. "The audiologist said it takes time for my brain to get used to processing things I have not heard for a long time."

Although 26 percent of survey respondents never had a follow-up appointment, we strongly recommend scheduling at least one. Most providers include that service in their fee. Adjustments might include changing the device's electronic settings, reworking an uncomfortable earmold, or getting a completely different hearing aid.

Practice everyday activities using the aids. "A hearing aid is not just an electronic device," says Brenda Battat, executive director of the Hearing Loss Association of America, a support and advocacy group. "It's part of a whole rehabilitative treatment." She suggests calling and listening to long-winded toll-free messages at the Social Security Administration or IRS.

Note any environments where you

A shopping summary

Where to go. Veterans, try the VA. Others, first consider a medical hearing practice that also dispenses hearing aids.

What to expect from the provider. An audiology degree or hearing-aid-specialist certification. A choice of several brands, styles, and features. Convenient hours. Walk-in repairs. Soundproof booth and several types of hearing tests. Real-ear test done at the fitting. Rehab classes or therapy after fitting. Flexible trial period. Money-back guarantee.

At the first visit. Discuss your activities and needs. Focus on features, not brand. Ask about a telecoil, directional mike, and feedback suppression. Ask for residual amplification. Insist on product choices.

At the fitting visit. Practice talking on the phone and other activities. Review the product manual, warranty, trial period, and return and repair policies.

At home. Practice using the hearing aids in different environments. If not satisfied, don't just leave them in a drawer. Return at least once for a follow-up check, and go back as often as needed thereafter.

have problems. One of our shoppers, a musician, couldn't tolerate a flutter heard at certain pitches with the first set of aids he purchased. The provider told him that was just the way the aids sound. But the second pair our shopper purchased for our study worked fine, with no flutter.

For more buying tips, check out our Web site, at www.ConsumerReportsHealth.org.

▣ CLOSE UP

Nonprescription hearing aids

You can buy a noncustomized hearing aid online, without a hearing test, for a fraction of the price of a prescription aid. But should you?

We bought and tested four such products in our labs and asked experienced hearing-aid users to wear them for one to three days.

Three of the aids cost around \$500 apiece: **Crystal Eaz**, **Digital iHear**, and **Nexear 500 NR**. They all lacked directional microphones and telecoils, useful features commonly offered in prescription aids. The Crystal Eaz and Digital iHear lacked feedback suppression, and our testers said feedback was a problem with both. We couldn't make the Nexear's volume loud

enough to test feedback suppression. Wearers had trouble controlling the volume on all three aids.

The fourth product, the **Magni Ear+**, cost only \$34.50 per aid. It was huge and uncomfortable, and it lacked a directional microphone, telecoil, and noise reduction. It generated feedback and was too loud at some frequencies and not loud enough at others. Wearers said voices were not clear.

Bottom line. The first three products offer a bit of amplification but little else for folks with mild losses who don't want to spend a lot. But those aids can't be customized for your individual hearing loss. We can't recommend the Magni Ear+ for anyone.

▣ For more information

Hearing Loss Association of America
www.hearingloss.org
Support and advocacy group and links to hearing professionals.

Alt.support.hearing-loss
newsgroups.cryer.info/alt/support.hearing-loss
Discussion group for people with hearing loss.

American Speech-Language-Hearing Association
www.asha.org/public
Information on finding a professional.

National Institute on Deafness and Other Communication Disorders
www.nidcd.nih.gov
Government clearinghouse on hearing-loss issues.