Hearing Aids: Smaller and Better

Hearing problems affect about one third of Americans between ages 65 and 74 and half of those aged 85 and older. In fact, hearing loss is the third leading chronic medical complaint among older adults, after arthritis and high blood pressure. Yet 80% of people who would benefit from hearing aids don't use them. For some, it's embarrassing even to need a hearing aid; for others the device seems unsightly. The expense may be a problem as well. (Although Medicare and other insurance plans usually cover the cost of having hearing tested, they rarely cover the cost of a hearing aid or of having it fitted.)

But times have changed. New hearing aids are smaller and more effective than those made just a few years ago. "One of the biggest advances has been the introduction of hearing aids that fit in more features with less bulk," says Sharmila Srireddy, an assistant professor in the School of Medicine at Johns Hopkins and a clinical audiologist (a professional with a degree in evaluating hearing loss and prescribing and fitting hearing aids). Other advances include better technology for hearing conversations in noisy environments.

It's still true that hearing aids cannot restore lost function and none capture sound as well as your own ear. But they can augment the hearing that remains, and do it very well.

Technology for enhancing sound

Most hearing loss in older adults is caused by presbycusis, an age-related degeneration of the inner ear that results in lowered sensitivity to high frequencies and a loss in the ability to discriminate among speech sounds (so that people seem to mumble). Presbycusis generally affects both ears equally, and most people with the condition can benefit from hearing aids in both ears. Although there are dozens of hearing aid manufacturers and models, they all fall into a handful of categories distinguished by how they process sound and how they are worn.

Conventional analog units convert sound into an electric current, which an amplifier boosts and a speaker converts back into sound. Analog models are often the cheapest (about $900 to $1,700 each) and the easiest to adjust, but as more advanced hearing aids become less expensive, many manufacturers are beginning to phase out analog models.

Programmable analog units are customized by computer to accommodate individual patterns of hearing loss. They adjust volume automatically for various environments (for example, music, one-on-one conversation, and background noise situations). They cost about $1,700 to $2,400 each.

Digital units employ microchips to convert sound waves from a microphone into digital signals that can be manipulated by a computer, which makes it possible to tailor and process sounds very precisely—including the suppression of background noise. Digital models, therefore, can provide the clearest sound. It's also possible to switch between different settings suitable for specific listening conditions, and some digital aids even adjust themselves automatically to suit different sound environments. Features such as multiple programs, multiple microphones, and feedback reduction mechanisms can be included, which explains why they are usually expensive ($2,500 to $3,000 or more). However, several companies have recently introduced simple digital units for about $1,500.

All three systems are available in four styles. Completely-in-the-canal (CIC) and in-the-canal (ITC) models—which comprise three out of four hearing aids now sold—are tiny devices customized to fit entirely or almost entirely in the ear canal. In-the-ear (ITE) models are worn in the external ear, making them more noticeable. Behind-the-ear (BTE) models are housed in a crescent-shaped plastic case that hooks over the ear.

Typically, the smaller the unit and the more features it has, the more expensive it is. Which type and size are right for you depends on many factors, including the size and shape of your ear canal, the degree of hearing loss, your manual dexterity, and your listening needs. The smallest units may be unable to produce the volume necessary for some people with moderate

Should You Buy on the Internet?

Conventional hearing aids can be purchased through the Internet or from a catalog, where you will also find offerings for lower-cost alternatives sold directly to consumers rather than through a specialist. Some are one-size-fits-all disposable units that cost less than $100 each; other models costing several hundred dollars have replaceable batteries and can be adjusted to fit. Customers may be asked to sign a waiver to purchase a device. (By law, you must get a written medical evaluation from a physician to buy a hearing aid or sign a waiver saying that you do not want such an evaluation.)

But mail-order hearing aids are not custom molded, an important step for optimal benefit. In addition, mail ordering doesn't allow for proper follow-up to ensure that the device fits, is properly tuned, and meets your needs. To get the best results, Johns Hopkins audiologist Sharmila Srireddy recommends that people obtain their hearing aids through an audiologist or a licensed dispenser.

to severe hearing loss, and batteries must be changed every 4 to 7 days.

Disposable hearing aids are an option if you don't want to change batteries or make a big initial investment. Models cost about $40 to $70 each and last for up to 70 days. These are appropriate only for people with mild hearing loss and a relatively large ear canal, since they come in only one size.

Getting help

If you're concerned about your hearing, first talk to your doctor. The solution to your problem may be as simple as cleaning out impacted wax from the external ear canal.

If your hearing loss is due to presbycusis, you'll probably be referred to an audiologist. Another option is to see a state-licensed hearing aid dispenser, who also has special training. If your evaluation indicates hearing loss, a hearing aid may be recommended. The hearing professional will recommend models that are appropriate for you. Keep in mind that, depending on your problem, a less expensive model may be just as effective as a high-priced unit.

Once your hearing has been evaluated, you can purchase devices anywhere hearing aids are sold. Be sure to choose a licensed professional who has the patience and skill to help you get accustomed to the unit.

Most models have electroacoustic adjustments to control volume, background noise, and feedback. Often, making adjustments requires several visits with the audiologist or hearing aid dealer. Before you buy a hearing aid, ask if there is a warranty that allows you to try it out. Most manufacturers have a 30- to 60-day trial period during which you can return the hearing aid for a refund.

For more information

- **National Institute on Deafness and Other Communication Disorders** (800-241-1044); www.nidcd.nih.gov
- **Johns Hopkins, Division of Audiology,** www.hopkinsmedicine.org/otolaryngology/audio/index.html

DRUGSTORE AISLE

▶ Many elderly Americans are taking **prescription drugs** that may be inappropriate. Authors of a study in the *Archives of Internal Medicine* reviewed a prescription claim database for 765,423 adults (mean age 74 years) for the year 1999. Using a list of 28 drugs that experts had linked to **a high likelihood of adverse outcomes** in older patients, the authors found that 21.2% of the patients filled prescriptions for these drugs—results strongly suggesting that drug use should be closely monitored in the elderly.

▶ The FDA has approved Aldara (imiquimod) topical cream for treating **superfical basal cell carcinoma,** a type of skin cancer that usually occurs on the arms, legs, chest, or back. The drug was previously approved to treat precancerous skin lesions and genital warts. Aldara is for people who are not candidates for surgery and should not be used on the face.

AF *(continued from page 3)*

of life is significantly compromised by AF. Any patient who experiences an episode of AF needs to be evaluated by a cardiologist, who can determine whether rate or rhythm control is the best course of therapy. The drugs recommended to control the heart rate in AF are the beta-blockers atenolol (Tenormin) and metoprolol (Lopressor) and the calcium channel blockers diltiazem (Cardizem) and verapamil (Isoptin). Digoxin should only be used as a second-line medication in AF.

According to the new guidelines, for those patients with AF who choose to undergo cardioversion, utilizing either an electrical shock or antiarrhythmic drugs is appropriate for restoring normal rhythm. If more than 48 hours have elapsed since the onset of AF, a transesophageal echocardiogram (TEE) should be performed before cardioversion to rule out possible blood clots in the heart. Direct-current cardioversion, which is performed under light sedation, momentarily stuns the heart, stopping all electrical activity and permitting a normal pattern to reemerge in about 90% of patients who undergo the procedure. Antiarrhythmic drugs, such as amiodarone (Cordarone) and propafenone (Rhythmol), also can be used to convert AF to normal rhythm.

For most patients who undergo cardioversion, maintenance antiarrhymic drug therapy is not recommended because the risks outweigh the benefits. In selected patients, however, such therapy may be given long term to help maintain normal rhythm. Once normal rhythm has been restored, both antihypertensive ACE inhibitors and cholesterol-lowering statin drugs may help prevent the recurrence of AF.

Other options for AF

Occasionally, patients are unable to tolerate the drugs used to control heart rate, or the drugs prove inadequate. In such cases, one option is a nonsurgical technique that uses radiofrequency energy to sever the faulty communication between the atria and the ventricles. A pacemaker is then implanted to restore normal function.

A surgical option is the maze procedure, which involves making a series of maze-like cuts in the atria. The cuts are then sewn back together and, when they heal, form scar tissue to block faulty circuits and thus thwart AF.

Another promising approach being investigated employs drugs specifically to block an ultrafast potassium channel in the atria. Researchers hope that such drugs can control AF without affecting the function of the ventricular chambers.