Introduction

Significant hearing loss affects an estimated 27 million United States citizens (Kochkin, 1999). Only about 5.6 million of these citizens, however, pursue amplification (Kochkin, 2000). There are several reasons why relatively few patients proceed to purchase hearing aids. First, a patient’s preconceived ideas about hearing aids are often based on information from dissatisfied hearing aid purchasers. Second, advertisements have made the audiologist’s job very difficult. Advertisements often imply that purchasing brand “X” will resolve the patient’s communication difficulties. The audiologist must respond to each individual’s physical and emotional reactions pertaining to the use of hearing aids. It is not just the dynamics of the damage sustained by the auditory system; rather it involves the whole person. It is often necessary to carefully restructure realistic expectations.

In achieving a higher probability of a successful hearing aid fit and a satisfied patient, the audiologist must be an attentive listener and counselor, in addition to being knowledgeable about the products recommended. The audiologist must provide a professional environment that is not only physically comfortable and accessible, but also one where the patient does not feel threatened or coerced into selecting hearing aids.

Initial Contact

The Appointment

The patient’s initial contact with the audiologist is via the office staff. The patient or referring professional will call to schedule an appointment. The office staff must be prepared to speak to patients in a manner that will be as easy for the patient to understand as possible. The person scheduling the appointment should speak clearly and sufficiently loudly so that the patient will clearly understand the information being provided. The office staff should call the day before an appointment to remind the patient of the date and time.

A comfortable waiting room (good lighting, wide variety of reading material, television), adherence to the scheduled time of the appointment, and easy access for disabled individuals (sufficient room for wheelchairs and walkers) will give the patient a comforting first impression.

Case History

Obtaining a thorough case history is an important first step. Patients are able to provide the audiologist with a significant amount of information. They will convey their primary complaint and why they have selected your facility. It is important to obtain this informa-
tion quickly and efficiently. The audiologist should also clarify the referral source. Did the family physician or an otolaryngologist refer the patient? If hearing loss is not a primary complaint and is secondary to vertigo, tinnitus, or otalgia, the patient may not or cannot be ready to proceed with amplification until these other concerns have been addressed or resolved. If the patient has been referred by a family physician, an otolaryngology consult is strongly recommended for any conductive, mixed, asymmetrical, or fluctuating hearing loss as well as active drainage, otalgia, and unilateral tinnitus. If the patient has a history of chronic ear problems or surgical interventions, it is important to check that the otolaryngologist has provided medical clearance for the patient’s use of hearing aids. The physician can indicate that clearance has been approved by signing a medical clearance form. Another option for adults would be to sign a waiver of medical clearance. Patients must be made aware that they are assuming full responsibility for any contraindications. This latter option should not be encouraged especially if obvious contraindications (as stated above) are present. Additional information such as previous and present noise exposure, family history of hearing loss, and progression of the hearing loss should be obtained. Previous hearing aid experience will also be helpful in guiding patients to the appropriate hearing aids that will meet their individual communication needs. It is beneficial for the audiologist to know as much as possible about previous hearing aid experience.

Amplification History

There are several points of information that can be useful:

- Has the patient worn monaural or binaural hearing aids? If patients appear to be good candidates for binaural amplification, try to determine why they chose to be fitted monaurally.
- How many years of hearing aid experience has the patient had?
- What is the age of the most recently purchased hearing aids?
- Are the current hearing aids working satisfactorily? If not, what are the sources of dissatisfaction (performance in noise, excessive moisture, excessive repair, feedback, poor performance on the telephone etc.)
- What is the make, model, and style of the hearing aid(s) that have been worn in the past by the patient? Do the current hearing aids have volume controls?
- What communication and repair problems have not been successfully addressed by hearing aids in the past?
- What are the patient’s goals in purchasing new hearing aids?

It will be helpful to reiterate this information at the hearing aid evaluation and explore these questions further to enable the selection of appropriate hearing aids. Often, patients will encourage their family, friends, and acquaintances to see an audiologist if they themselves feel as though their concerns and difficulties were addressed efficiently. Patients will also give the audiologist information regarding what their goals are for this evaluation. It is important to obtain this information as quickly and efficiently as possible. Emphasis on the goals and concerns of the patient can be more thoroughly discussed at the hearing aid evaluation. It is difficult to address concerns in a meaningful way when the data established from the audiogram are not yet available.

Assessing Patient Motivation

It is important to know if the visit was self-motivated or rather prodded by family and/or friends. It has been our experience that if a family member brought the patient to the office and the patient does not believe he/she has any difficulty hearing, the patient will probably not experience success with amplification. For example, if a patient is being seen by an otolaryngologist for a sinus problem and family members mention to the doctor that they feel the patient is not
hearing as well as he/she used to, the doctor will usually refer the patient for a hearing test. It is difficult to persuade a person that is denying hearing loss that amplification will be of benefit.

**Converting Hearing Loss to Communication Difficulty**

After the diagnostic hearing tests, it is important to educate the patient not only about the audiogram, but also about how the hearing loss relates to everyday communication. This will facilitate the acceptance of the hearing loss by the patient. Examples can be given of situations where communication may be difficult for that individual’s hearing loss. Examples can include difficulty with recognizing speech of females, children, and communication in noise and reverberation in patients who have a sloping hearing loss.

In our experience, it is helpful if the audiogram is in graphic form as compared to tabular format. Visualization helps patients understand the difference between pitch and loudness and allows them to see how they have fared compared to persons with normal hearing. A graph of the intensity and frequency of the most frequently used sounds in speech that is plotted on the audiogram, such as the frequency spectrum of familiar sounds audiogram (Fig. 13–1), may be beneficial and makes it easier to demonstrate the impact of hearing loss on communication. An articulation index such as “count-the-dots” by Conrad Lundeen (Fig. 13–2) with a resulting percentage of hearing loss may be helpful in quantifying the magnitude of hearing loss for speech recognition. It is important to note that the use of the count-the-dot audiogram is not an acceptable method of calculating percent hearing loss for workers’ compensation cases.

To further assess and identify potential communication priorities, patients could be given the unaided portion of the Abbreviated Profile of Hearing Aid Benefit (APHAB) (Cox, 1997) to take home and use as a guide to make them aware of their communication difficulties. After they have had time to consider and evaluate the information provided, they may decide to proceed with a hearing aid evaluation (HAE). On the other hand, this may be the initial seed that will take months or years for patients to accept and act upon. Patients must be comfortable with their decision to pursue amplification and not feel rushed in the decision-making process. It is much easier to discuss the communication needs of patients if they have been allowed the time to accept the reality of their hearing loss.

If patients have already accepted the fact that they have a hearing loss before arriving for the initial appointment, it will be helpful to determine which specific needs prompted them to come to the audiologist for help. Patients may have expressed a concern about communication difficulties in their work environment or social situations. Specific information about the work or social situations must be gleaned so these problems can be explained by the audiogram and used later at the hearing aid evaluation. Or patients may no longer be experiencing or have never experienced success with their current hearing aids. The audiologist will need to determine if this is due to a change in hearing or if a different type or model of hearing aid might be appropriate. Examples could include a patient wearing completely-in-the-canal (CIC) hearing aids with a severe to profound high-frequency hearing loss, or a patient having a goal to hear better in noise, but is wearing hearing aids with omnidirectional microphones. Some patients simply have unrealistic expectations. Confirmation of the patients’ concerns and verification of subjective reports can be addressed at this time. Has the hearing loss and/or the current hearing aids resulted in difficulty at work? Are there problems with communication within the family and household? Is there difficulty communicating over the telephone? Are patients avoiding activities that define their quality of life?

All this information will be useful to the audiologist at the hearing aid evaluation, hearing aid fitting, and follow-up visits.
Once the initial hearing tests and case history have been completed and medical clearance has been obtained, the patient’s communication needs and hearing aid options are discussed. These options include differences in technology, styles such as CIC, behind-the-ear (BTE), in-the-ear (ITE), and in-the-canal (ITC) hearing aids, and accessories, earmolds, color, warranty, and price.

Figure 13-1. The audiogram of familiar sounds. (With permission of the American Academy of Audiology.)
The family is encouraged to accompany the patient for this very important decision-making process. Invite the spouse, family, or friends to participate only at the discretion of the patient. Support of significant others is important; however, it is imperative that the patient be comfortable discussing communication needs. If the hearing aid evaluation is scheduled for a separate visit, it would be advantageous to briefly highlight the important information on the audiogram as well as verifying the primary communication concerns.

**The Role of the Audiologist**

The initial role of the audiologist is to provide advice based on knowledge and opinion. To provide the highest probability for success, the audiologist must not only provide information, but also gather information. The successful audiologist must possess knowledge about the technology before the session begins. Forming an opinion as to which hearing aids will be best suited to the needs of the patient will require obtaining information from the patient and the family about communication needs, emotional concerns, and physical limitations.

To address the patient’s primary communication concerns it is helpful to use information gleaned from conversation and informational questions. Tools such as the APHAB (Cox, 1997), Client Oriented Scale of Improvement (COSI) (Dillon et al, 1997), Profile of Hearing Aid Benefit (PHAB) (Cox and Rivera, 1992), and the Communication Profile for the Hearing Impaired (CPHI) (Demorest and Erdman, 1986) are beneficial. Some of these tools may also be used to
quantify hearing aid benefit. The results from these tools are often useful for addressing inquiries from insurance companies and lawyers, and for discovering unstated needs.

In our fast-paced clinic, the APHAB or COSI yields the most information in the least amount of time. The COSI is an interactive scale that is beneficial in addressing specific situations of concern to the patient and may be easier for a patient with visual impairments or persons with memory/cognitive deficiencies to complete. The COSI requires patients to provide the audiologist with a list of up to five specific hearing needs, ranked in order of personal significance, they feel are of importance for their personal communication. The audiologist can use this information as a guideline in making an appropriate hearing aid recommendation. After the hearing aids have been fit, the patient is asked to rank the degree of change that has been experienced with the hearing aids in each specific situation listed on the COSI. The patient is also asked to rate a percentage of hearing ability for each situation he/she has listed.

The APHAB requires patients to rate their hearing difficulty in 24 specific listening situations listed on the questionnaire. This questionnaire is completed both without and with hearing aids. The APHAB provides the audiologist and patient with a comparison of unaided versus aided problem scores in percentage scores. The APHAB is also helpful in comparing the patients’ benefit aided-unaided scores perceived with their current hearing aids as compared with their new hearing aids. This comparison can be accomplished by having the patient complete the aided portion of the APHAB with response to the previous hearing aids and then again a few weeks later after the new hearing aids have been worn. It is helpful to complete the initial portion of the COSI or APHAB prior to describing the hearing aid options so that the audiologist can focus on the description of hearing aid options that are appropriate for the patient.

Also, the audiologist must address the emotional concerns of the patient. The goal here is to identify the emotional barriers related to amplification and implement appropriate strategies in managing those barriers. Some typical issues that we have experienced include:

1. “I will not wear anything that anyone can see!” Cosmetics may be of great concern to a patient regardless of age and everyday activities. The patient may be concerned with appearing disabled or aged. Patients from the business world may especially feel their career may be at risk if they appear “handicapped.” These feelings must be recognized as “real” by the audiologist and used as a guide in selecting hearing aid style. In some cases, however, the hearing loss and difficulty communicating in business situations may be more conspicuous than the size of hearing instrument. Some patients will accept this and others will continue to focus on size. It is imperative that the patient understand that reduced hearing aid size may increase the number of repairs and may eliminate the possibility of some advanced technology such as hearing aids with dual microphones for improved performance in noisy listening situations. Dual microphones often address one of the patient’s primary communication concerns, which is recognizing speech in the presence of background noise.

2. “I will not wear two hearing aids!” Often, patients have decided prior to their appointment on how many hearing aids they are willing to consider. If applicable, explain to the patient why binaural amplification is advantageous. If binaural amplification is recommended, inform the patient that a binaural fitting offers the possibility of improved sound localization, communication in noise, and optimum speech detection and understanding.

3. “I will not wear hearing aids all the time!” Patients must understand that to hear best, they must wear the hearing aids during their waking hours. They
will acclimatize themselves to environmental sounds more quickly and will be less distracted if they wear the hearing aids at home even when they are alone. Often, encouraging maximum use of the hearing aids during the 30-day trial period seems logical to the patient and will result in increased use after the trial period. There may be a fear that constant use of hearing aids will decrease the person’s ability to hear without hearing aids. Counsel the patient that this may seem logical, but more than likely the patient is struggling less to listen when the hearing aids are in place.

4. “I will not spend much money!” This issue needs to be dealt with cautiously. There are persons who indeed have a limited income and need to be referred to or offered financial assistance programs. Others would rather not spend the money on hearing aids and that is their choice. Many states have programs for persons with limited income. Vocational rehabilitation organizations and city programs may offer assistance with hearing devices and/or assistive listening devices (amplified telephones, alerting devices, etc.). Some manufacturers also have assistance programs for patients who qualify. For some programs offering assistance, the patient is required to provide financial information, and in some cases a referral from a hearing health care professional is adequate. The audiologist is encouraged to check into local and statewide programs. We believe that all appropriate hearing aid options must be discussed regardless of cost. Patients can then make an informed choice on the amount they wish to spend.

It is important for the audiologist to remember to be sensitive to previous negative hearing aid experiences. It is helpful to know the size, model, and circuit of any previous hearing aids that were reported to be unsuccessful. If patients have the current hearing aids with them, it may be possible, using the serial number, to contact the manufacturer about specific technical information. Ask patients to provide a list of problems they encountered with their current hearing aids. Some of these problems, such as hearing in background noise, may be resolved with improved technology. Some of the problems may not be resolved, but addressing realistic expectations may improve the patient’s anticipation of realistic benefits to be derived from hearing aids. Some patients say, “When I wear my hearing aids I can hear my feet on the floor.” These are sounds the person may not have heard for some time, but that persons with normal hearing hear daily. Also, positive emotions are helpful to successful hearing aid fits. If patients previously wore hearing aids, it is helpful to know what they enjoyed most so that those experiences may be incorporated into the new hearing aids, if appropriate.

Finally, the audiologist should rule out any hearing aids that are inappropriate due to physical limitations:

1. Severity of hearing loss: The patient should be made aware that certain styles of hearing aids will not provide adequate benefit to certain degrees of hearing loss and may lead to problems with feedback. An example of this can be seen when a smaller device (ITE, ITC, or CIC) is fit to an ear that requires a significant amount of high-frequency amplification. Even if feedback is not an immediate concern, changes to the elasticity of the soft tissue and cartilage of the supporting structures over time often create a problem with leakage and thus feedback. In addition, changes in hearing and amplification needs often cannot be addressed if there is no room for modification and increase of gain.

2. Pathology: A patient with a draining ear should not be wearing ITE, ITC, or CIC hearing aids. Not only may it exacerbate the medical condition, the hearing aid may function only intermittently because of the moisture, resulting in frequent repairs. A BTE model may allow aeration through a vent in the earmold.
with less chance of feedback and also could be switched from ear to ear (if hearing loss is appropriate) to allow more chance for the ear to heal. A patient with Meniere’s disease may consider a BTE instrument as well; however, a well-fit ITE (preferably one with multiple memories) can also accommodate varying degrees of a fluctuating hearing loss. Programmable devices are an especially excellent choice for this situation.

3. **Cerumen:** Patients who regularly schedule appointments for cerumen removal will need to consider hearing aids such as BTE aids, to facilitate easy and thorough wax removal. This will result in less time, cost, and frustration caused by wax-related repairs. Sometimes cerumen will not be evident until the patient starts wearing hearing aids. It is strongly suggested that patients be made aware of this problem.

4. **Fine or gross motor coordination problems:** A patient with problems such as arthritis, Parkinson’s disease, or paralysis may find a remote control an easier way to adjust the hearing aids than hearing aid mounted controls. Technologies such as digital signal processing (DSP), wide dynamic range compression (WDRC), and the K-Amp, where no adjustments are necessary, may be most appropriate for individuals with motor coordination problems. It is helpful to allow the patient with these problems an opportunity to try to manipulate the hearing aids and its controls.

5. **Visual acuity:** It is not necessarily correct to assume that a patient with decreased vision will have significant problems. Let the patient try to adjust the hearing aids, remove the batteries, and place the hearing aids in the ear canal. It has been the experience of the authors that some patients with reduced visual acuity may actually perform better with manipulating the controls than patients with good vision! If vision is decreased, consider the following:

   a. **Battery door:** Some manufacturers will change the battery door to a different color or stack the battery drawer so that it is easier to feel.

   b. **Remote control:** Use a remote control with a limited number of buttons. To keep track of a remote control, some patients will use a strap to connect their remote control to a belt or wear the remote control as a necklace.

   c. **Decreased memory:** A patient with decreased memory or cognitive deficits may have to rely on assistance in using and caring for the hearing aids. The patient’s significant other or primary care person should be encouraged to accompany the patient on all visits. The audiologist can help the patient and “helper” decide which tasks should be attempted by the patient and which tasks the helper can do. It never hurts to have more than one person know how to care for the hearing instruments.

6. **Illnesses:** A patient with a terminal illness may either choose to purchase hearing aids or may want to consider using an assistive listening device (ALD). In these cases, it is imperative to expedite the fitting of the hearing aids or ALD. Patients who cannot understand information from their physicians, clergy, family, or friends will need to ease the stress of communication as much and as quickly as possible. Patients with other illnesses should not be told to wait until they are feeling better. Patients must be given the option to proceed with hearing aid selection and fitting at their own discretion. Most patients will feel in more control of their medical problems if they can communicate with their physicians and family.

Patients may have combinations of limitations from the issues described above. All limitations must be evaluated before a final decision on hearing aids can be made. This decision process should be a team effort be-
between the patient, any support persons accompanying the patient, and the audiologist.

**Technology**

After the audiologist has discussed the needs and any physical limitations of the patient, it is time to discuss available technology. The audiologist must be aware of the amount of information the patient would like to know about hearing aids. Some patients will want great detail about technology. Internet access is enabling consumers to gather knowledge about hearing aid products via manufacturers, audiology clinics, professional organizations, and consumer Web sites. The audiologist who is knowledgeable about these Internet sites will be able to discuss the information found on the Web sites with confidence. On the other hand, there will be patients who would rather trust the audiologist to make all the technology choices for them. These patients must be informed that there are many options, some more appropriate than others, and they must know why a particular selection was made for them. Then, when casual conversations about hearing aids with friends or acquaintances occur, patients will not question if they should have been fitted with a different set of hearing aids. Most patients will want concise brief information without confusing in-depth details:

- **Nonprogrammable digital hearing aids** are a recent addition to technology options. They are more affordable than programmable digital hearing aids.
- **Nonprogrammable analog hearing aids** provide a limited amount of changes that can be made by the dispenser. The signal processing may be linear or nonlinear. Linear processing is characterized by a one-to-one input/output curve until the maximum output is approached, and the frequency-gain response curve has the same shape for all low to moderate input levels. Nonlinear processing does not have a one-to-one input/output curve and the frequency-gain response curve may have a different shape at different input levels. In the case of any custom hearing aids, the manufacturer builds a hearing aid that comes as close as possible to the audiologist’s requested gain, slope, and output matrices. If the audiologist does not specify the desired matrix, manufacturers will use their own matrices based on the information (e.g., audiogram) provided. If changes are needed to alter the frequency-gain response of the hearing aids, the audiologist may need to return the hearing aids to the manufacturer with the requested changes clearly specified. Again, the manufacturer will try to accommodate the requests. If the patient has selected a nonprogrammable BTE, the dispenser must decide the manufacturer and model that will most likely yield a successful hearing aid fit. Currently, approximately 25% of our fittings are in the nonprogrammable category. These fittings are typically selected based primarily because of financial limitations. If the fitting outcome, based on probe microphone measurements or patient satisfaction, is not satisfactory, the audiologist will need to modify the hearing aids or order other hearing aids from the manufacturer’s specification books.
- Keep in mind that repeated unsuccessful attempts to fit hearing aids will probably lead to patient frustration and may result in the hearing aids being returned for credit. For nonprogrammable analog hearing aids, it may be beneficial to ask the manufacturer’s technical support staff to offer suggestions based on its experience with the products.
- **Digitally programmable analog hearing aids**: It may be necessary for the audiologist to explain digitally programmable hearing aids versus digital signal processing in hearing aids. Some patients have been misinformed and conclude that their hearing aids are digital hearing aids when in fact they are digitally programmable analog hearing aids. This is espe-
cially evident when the patient is using an older model of digitally programmable analog hearing aid that was manufactured prior to the introduction of “true” digital hearing aids in the late 1990s. Digitally programmable hearing aids offer the patient (depending on the model and style selected) a more expeditious fit and technology. The audiologist can make numerous changes to the hearing aids while the hearing aids are being fitted in order to meet goals based on a prescriptive formula of probe microphone measurements. The fine-tuning of the hearing aids based on patient comments can be more easily accomplished with programmable hearing aids and as the patient wears the hearing aids. It is also possible to return to previous settings based on information saved in the computer or on a printout from the computer that is saved in the patient’s file.

Another advantage to discuss with the patient is the ability to change the frequency-gain response of the hearing aids in a more efficient way than manipulating trim potentiometers or sending the hearing aids back to the manufacturer to have new circuits installed if the patient’s hearing should gradually change over time. The patient must be aware that at some point a change in hearing will probably result in the need to purchase new hearing aids.

• **Digitally programmable digital signal processing** offers some of the same advantages as the programmable analog circuit. Digital signal processing offers the advantage of greater processing capabilities. At the present time, some of the digital hearing aids, such as the Widex Senso, will detect softer speech information from the environment than is possible with current analog hearing aids (i.e., kneepoint of 20-dB HL). This may be beneficial to patients who would like the opportunity to hear the fainter consonant sounds. Some digital hearing aids offer many frequency channels (two to nine) for the audiologist to adjust. This may be beneficial to the patient and audiologist when programming audiograms with unusual configurations. Digital hearing aids also offer feedback reduction that may result in an automatic reduction of low-input gain and/or phase reversal (Sweetow, 1998). As researchers and engineers become more knowledgeable about the human ear, the capacity of digital hearing aids will be designed so that incoming signals can be manipulated in more precise ways.

• **Disposable hearing aids** are a recent option. These hearing aids offer an inexpensive way for a patient to try hearing aids. This is also an option for a patient who needs a short-term hearing aid, such as a presurgery candidate. These aids can also be used as a convenient loaner. Currently, the batteries in these hearing aids last approximately 40 days. The battery cannot be replaced, and only analog signal processing is available at this time. These hearing aids have no volume control and are fitted as one size fits all.

### Options

#### Multiple Memories

Almost all hearing aids with multiple memories are programmable. Different memories may be used for different listening environments. Memories may be used to access directional microphones, programmable telephone circuits, or different memories that may be more appropriate for listening to music or listening to speech at cocktail parties and sporting events. Multiple memories may be beneficial to a patient that has a fluctuating hearing loss that requires different frequency-gain response settings. Memories may also be designed to allow the patient to compare different settings, which will result in a preferred setting for everyday use. This is especially beneficial if the hearing loss is difficult to fit, such as reverse slope audiograms, profound hearing loss, or unusually shaped audiograms. It is important to have
useful programs available when sending patients off for their first experience. It is helpful for patients to understand that these programs are not “set in stone” and that changes, or “tweaking,” is part of the follow-up care. Once the preferred setting is selected any unused memories may be removed or new memories offered to the patient. Multiple memories are helpful, but it must be remembered that just because the hearing aid has the capability, it does not validate the option. Some patients’ lifestyle may not indicate the need for this option. It is important always to fit the technology to the patients and their communication needs.

Directional Microphones
This technology option tends to be most helpful for those patients whose communication needs include difficult listening situations. The audiologist needs to be aware of the effectiveness of various manufacturer microphone arrays. At this time, multiple microphones provide the most improved signal-to-noise ratio (Valente et al, 1995; Killion et al, 1998). Patients who thought that having conversations in restaurants and hearing the sermon in a religious service were experiences of the past have been pleasantly surprised at their newfound abilities. Directional microphones are available as a single microphone with a front and rear port. A single directional microphone is usually found in nonprogrammable ITE and BTE models or programmable BTE models. Dual-microphone technology, provided by two perfectly matched omnidirectional microphones, is available in nonprogrammable hearing aids, but is most often found in programmable BTE or ITE models. For dual-microphone ITE models, it is essential that the markings for precise alignment of the two microphones are made on the impression or the result may be less than optimal to the patient. The D-Mic is one example of a dual-microphone design with a single microphone capsule containing a directional and an omnidirectional microphone. It is available on both programmable and nonprogrammable ITE and BTE models. It can be configured with a switch to allow the user to switch between omnidirectional, directional with a flat response, or directional with a low-cut response. It can be equipped with a triple-throw switch to allow the user to access all three microphone options (Valente et al, 1999).

Telephone Coils
A telecoil (T-coil) option is available on most ITE and BTE hearing aids and some ITC hearing aids. BTE telecoil sensitivity is typically stronger and thus more effective. Some manufacturers will place the telecoil vertically or horizontally depending on the intended use of the coil. If the T-coil is to be used with telephones it should be arranged in the case of the hearing aid in a horizontal position. For assistive listening devices, such as an induction loop, the T-coil should be positioned in a vertical position. Some hearing aids, such as the ReSound BTP, are designed so the position of the T-coil will function well for either listening situation. The patient needs to be aware that the telecoil will not function and may in fact distort the signal from the microphone when used with or in close proximity to a digital cellular phone (Victorian, 1998). This problem is supposedly resolved with some of the newer DSP hearing aids. The T-coil does not usually function as well with portable phones as with in-line phones. The power of the T-coil on many instruments is not always adequate for the patient’s hearing loss; however, some manufacturers are addressing this concern by allowing the audiologist to custom design the telecoil response during programming.

Acoustically coupling the telephone is also a choice, and depending on the hearing loss may offer clearer reception than the use of the telecoil (Plyler et al, 1998). For example, when wearing a BTE, patients with slight to mild high-frequency hearing loss may hear best by holding the phone over the ear near the microphone of the hearing aid (Fig. 13–3). For ITEs, the phone may be placed directly on the ear, but tilted slightly away to avoid feedback (Fig. 13–4). ITC and CIC hearing aids typically do not result in as much feedback when
the phone is held to the ear. The patient may also choose to use a telephone pad to decrease the likelihood of feedback (Fig. 13–5). Other patients prefer to remove the hearing aid and use an amplified telephone.

**Direct Audio Input (DAI)**

This is available on some programmable and nonprogrammable BTE hearing aids. It is also available in ITEs on a special order basis by some manufacturers. DAI should be considered if ALDs are to be used in conjunction with the hearing aids. The DAI will provide the audiologist with greater flexibility with ALDs and allow more choices. Sometimes manufacturers are able to retrofit a hearing aid with the DAI option. The audiologist will need to inform the patient about this option, in the event the patient elects to use the hearing aid with DAI, presently or any time in the future. The cost of this option varies and is sometimes not viewed favorably by the consumer.

**Style**

The audiologist should have actual examples of the different styles to show the patient. Most manufacturers are eager to make the dispenser personal “dummies” of all the styles for no charge. The audiologist need only send the hearing aid manufacturer an impression of the ear. See Table 13–1 for a comparison of the various styles of hearing aids.

**CROS/BICROS**

If appropriate for the hearing loss, the contralateral routing of the signal (CROS) and bilateral CROS (BICROS) should be discussed. The CROS/BICROS hearing aids may be programmable or nonprogrammable. The connection between the hearing aids may be hardwired or wireless. Our most successful fittings have been with the wired programmable BTE models. Patients who previously were unsuccessful or struggling...
with wireless systems have been very satisfied with the wired programmable models despite the inconvenience of the wire. The wireless models exhibited more internal noise and were found not to be as reliable as the wired models. It is most helpful for the audiologist to have a working model of the CROS/BICROS hearing aids. Often the patient will be anxious about the cosmetics and aggravation of the wire connecting the two devices; an in-office demonstration of the benefit is often enough to convince the patient to try a CROS/BICROS hearing aid. Some models offer directional microphones.

Volume Controls
Depending on patient preference, a volume control may or may not be desired. Patients with fluctuating hearing loss must be fitted with hearing aids with a volume control. Patients with previous hearing aid experience with hearing aids having volume controls will often prefer a volume control. Most of the DSP hearing aids do not have volume controls and most patients perform well without this option due to the nature of the signal processing. There are some DSP hearing aids that offer volume controls. Our experience suggests that patients with severe to profound hearing loss prefer a volume control regardless of the type of signal processing.

If a volume control is desired by the patient or recommended by the audiologist, several choices are available. Volume controls on ITEs are typically rotary and have an on/off switch incorporated into the control at the minimum stopping point. Volume controls on BTEs rotate vertically and have a stopping point at minimum volume and maximum volume. Recently, digital rotary volume controls have become available. These controls have no starting or stopping point, and although they do change the volume, they will reset to a preprogrammed established comfort level each time the hearing aid is turned on despite the rotation of the wheel or dial. Volume controls are also available as push buttons. Push buttons may require better fine motor skills than the rotary volume control wheel. Toggle switches are also available. The switch is held in position, either up or down, until the desired loudness setting is achieved. The loudness may also be adjusted with a remote control. CIC instruments may have a screw-set volume control or a very small rotary control that may have to be adjusted after the hearing aids are removed from the ear.

Remote Controls
These hand-held devices allow the patient to select volume and telephone settings, access memories, activate dual microphones, and turn the hearing aids on and off. Remote controls may be easier to manipulate than the hearing aids for patients with diminished fine-motor skills. Some patients prefer many listening choices and a remote control will sometimes offer more choices than options on a typical hearing aid case. Still, some patients who find programming their video

Figure 13–5. Telephone ear pad coupled to a telephone receiver.
recorder a difficult task will thus find the requirement of a remote control to operate their hearing aids very intimidating. However distasteful it appears initially, patients will seriously consider this option if they feel the benefits are significant! Some remote controls, such as the ReSound and Philips, work via signals that require the remote to be aimed directly at the hearing aids. Other remote controls work by a frequency modulated (FM) signal and do not require special positioning of the remote in relationship to the hearing aids. Patients who work around computers or electrical equipment may find the electronic emissions from these devices interfere with the hearing aid reception of the signal from the remote. Remotes may also be a problem if there are several of the

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<td>Completely in the canal (CIC)</td>
<td>Cosmetically pleasing</td>
<td>Most frequent repairs</td>
</tr>
<tr>
<td></td>
<td>Easy to use with the telephone</td>
<td>Easily occluded by cerumen</td>
</tr>
<tr>
<td></td>
<td>Less wind noise</td>
<td>Smaller battery requires more frequent replacement</td>
</tr>
<tr>
<td></td>
<td>Will require less coupler gain</td>
<td>Fit is critical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restricted venting choices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restricted gain due to feedback</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Most expensive</td>
</tr>
<tr>
<td>In the canal (ITC)</td>
<td>Cosmetically pleasing, but more visible than CIC</td>
<td>Numerous repairs</td>
</tr>
<tr>
<td></td>
<td>Can accommodate larger venting than CIC</td>
<td>Fit is critical</td>
</tr>
<tr>
<td></td>
<td>Easy to use with the telephone</td>
<td>Limited battery size requires more frequent replacement</td>
</tr>
<tr>
<td>In the ear (ITE)</td>
<td>Easier to insert</td>
<td>Restricted gain due to feedback</td>
</tr>
<tr>
<td></td>
<td>May accommodate T-coil</td>
<td>May still become occluded with cerumen</td>
</tr>
<tr>
<td></td>
<td>More circuit selection options</td>
<td>Coloring may not match skin color</td>
</tr>
<tr>
<td></td>
<td>Easier to manipulate</td>
<td>Restricted gain due to feedback</td>
</tr>
<tr>
<td></td>
<td>Easier to clean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More venting choices than CIC or ITC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Easier to fit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Battery lasts longer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>May accommodate dual microphones</td>
<td></td>
</tr>
<tr>
<td>Behind the ear (BTE)</td>
<td>Cerumen can be visualized in tubing</td>
<td>Requires more steps to insert</td>
</tr>
<tr>
<td></td>
<td>Earmold can be removed for cleaning</td>
<td>More susceptible to problems related to humidity and perspiration</td>
</tr>
<tr>
<td></td>
<td>Stronger T-coil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tends to have less repairs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hearing aid may match hair color</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Earmold may be clear or tinted</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hearing aid can be humisealed for moisture protection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cheaper to replace earmold than recasing hearing aid</td>
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</tr>
<tr>
<td></td>
<td>Larger vent possible with less chance of feedback</td>
<td></td>
</tr>
<tr>
<td></td>
<td>May accommodate dual microphones</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Least expensive</td>
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</table>
same manufacturer’s hearing aids being used in a confined area. This was noted by a group of patients who all wore the same model hearing aid. When they were in church and within reception distance of the remote, it was possible for one person to adjust another person’s hearing aid accidentally when they were trying to adjust their own hearing aid. Currently, most hearing aids can be programmed to respond with different “addresses” to avoid this situation.

Battery Doors

There are various methods of accessing the battery. Different battery doors and hearing aids house different-size batteries. The patient should know the expected life of a battery and the price range of the batteries. The patient should also be made aware that different-size batteries as well as different kinds of batteries vary in battery life and performance (Fig. 13–6). For example, zinc-air batteries will usually last longer than silver-oxide batteries.

Manufacturers will often recommend the battery type that is most efficient for their technology. Most manufacturers recommend zinc-air batteries for their devices; however, silver-oxide batteries are specified for some remote control devices. Patients’ dexterity must be considered if they are to successfully remove and insert the battery. Showing the patient samples and letting them practice may help in the selection of a certain type of battery door. Explain to patients that there are many sizes of hearing aid batteries and that patients will know the size that is appropriate for their hearing aid when it is fitted.

Colors

Various colors are available for selection. ITE devices can approximate most skin pigments. BTEs may be selected based on skin color, hair color, or as a fashion choice. Manufacturers offer chips of colors for the audiologist and patient to use in deciding a color choice. One manufacturer offers user-changeable cases in a variety of colors.

Earmolds

When choosing an earmold for a BTE hearing aid, there are many choices offered by a variety of earmold and hearing aid manufacturers. The audiologist should be aware if the patient is allergic to any plastics. The patient, depending on the hearing loss, may be given a choice of being fit with an earmold made of hard or soft materials and different colors. Some manufacturers have color chips to aid the audiologist in selecting one that comes closest to matching the color of the patient’s skin pigment. The audiologist should advise the patient that acrylic or hard earmold materials are more durable and can be more easily modified in the office, while soft materials may offer more comfort and a tighter seal in instances where feedback may be a problem. Based on a patient’s history of earmold remakes, it may be beneficial to stay with the same material, venting, and style that have previously been successful. This may not be possible if there has been a significant change in hearing sensitivity.

Warranty

Warranty options vary with each manufacturer and need to be addressed at the time of the hearing aid selection. Some extended warranties must be purchased at the time of the order, whereas extended warranties from other manufacturers can be purchased prior to the expiration of the original warranty. Patients may wish to contact their insurance agent regarding loss coverage as a rider on their homeowner’s, car, or renter’s insurance policy. It is also important to inform the patient of the typical costs for out-of-warranty repairs and the approximate charges for buying extended warranties.

Cost

The patient should be provided with a copy of the hearing aid services and fee information prior to starting the hearing aid evaluation. This informs the patient of the possible costs involved prior to the discussion of a
The exact price of the hearing aid should be stated and documented for the patient so that there is no confusion or embarrassment at the time of the purchase. After hearing all of the options available and the costs that accompany those options, it would be easy for patients to confuse the information. All services that are included in the cost should be explained as well as separate charges. Our office bundles the hearing aid evaluation, hearing aid checks and cleaning, reprogramming (for the life of the hearing aid), and an initial set of accessories necessary to maintain the

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**BATTERY LIFE CHART**

Revised 01-01-2001

<table>
<thead>
<tr>
<th>Battery Drain Current (mA)</th>
<th>Zinc Air 600 mAh</th>
<th>Zinc Air 610 mAh</th>
<th>Zinc Air 630 mAh</th>
<th>Zinc Air 290 mAh</th>
<th>Zinc Air 80 mAh</th>
<th>Zinc Air 90 mAh</th>
<th>Zinc Air 100 mAh</th>
<th>Zinc Air 120 mAh</th>
<th>Zinc Air 150 mAh</th>
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<td>100</td>
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<td>80</td>
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<td>.9 ma</td>
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<td>1.6 ma</td>
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<tr>
<td>1.8 ma</td>
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<td>900</td>
<td>810</td>
<td>720</td>
<td>690</td>
<td>690</td>
<td>690</td>
<td>690</td>
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</tr>
</tbody>
</table>

**BATTERY LIFE (hours)**

- Battery life may vary with sound environment (push-pull circuits)
- All measurements are approximate

Call the Starkey Battery Hotline at 1-800-328-6661 for Starkey Custom, Audioic, Energizer and Rayovac.

Figure 13-6. Battery life chart used to determine approximate battery life for a hearing aid. (Courtesy of Starkey Laboratories, Inc.)
hearing aid(s). (These accessories are described in detail in the following section.) Some offices may choose to unbundle the cost of the hearing aid evaluation, the hearing aids, programming and fitting fees, and follow-up services.

**Helping the Patient Decide**

The audiologist can ask probing questions to further identify the severity and specific areas of hearing difficulty (e.g., “Do you have trouble in noise?”) and relate the answers to the specific technologies (directional microphones). It is at this point that the audiologist can address any unrealistic expectations the patient may have concerning expected benefits with amplification. It is crucial that the patient understand the differences between various technologies and styles. It is important for the patient to understand that because a hearing aid is smaller does not necessarily mean it is more technologically advanced. The cosmetic concerns of the patient are important; however, improved communication is the primary goal. On the other hand, just because something is new and technologically advanced, it does not necessarily mean that it is the most appropriate to meet the amplification needs of the patient.

We should try to focus on the individual needs of the patient at hand. It may be helpful to the patient to demonstrate the sound quality of different types of hearing instruments, such as analog hearing aids and digital hearing aids. It is also helpful and beneficial to demonstrate directional and omnidirectional microphones. The SoundPro II system from ReSound is an example of multiple sound libraries that can be used to demonstrate various listening situations such as a soft male/female voice, music, environmental sounds, or background noise to demonstrate the effectiveness of directional microphones. To demonstrate a directional microphone, it is helpful to have patients seated with their back to the loudspeaker. The loudspeaker may be emitting noise, speech, or speech babble. The patient should face the audiologist. Next, toggle back and forth between omni and directional settings while communicating with the patient. If the SoundPro or equivalent system is not available, a wall-mounted speaker and multitalker babble as background noise can be used to demonstrate the effectiveness of directional microphones. The patient may be allowed to leave the clinic briefly to determine the effectiveness of stock hearing aids having directional microphones.

When the audiologist and patient have selected hearing aids to purchase, the patient should be given a brochure describing the hearing aids. In addition, the agreed-upon charge for the hearing aids should be written down and provided to the patient. This way, at the time of the hearing aid fitting there is no misunderstanding about the charge for the hearing aids. This happens most often because so many devices and their charges are discussed at the HAE. A list of information regarding expectations for the new or experienced hearing aid user and a list of strategies for communication for the hearing-impaired listener and family members should also be given to the patient. Offer technical reports from hearing aid manufacturers to patients who express interest in this type of information.

A detailed description of the counseling and hearing aid selection should be entered in the patient’s chart. It is especially helpful to document in the chart if patients decide to pursue CIC hearing aids even though they were counseled that they probably will not achieve maximum benefit with this style and they will probably experience higher than usual problems associated with the receiver being occluded with cerumen. It is also recommended to document when a patient chooses to proceed with a monaural fit when a binaural fit was recommended. Some patients will deal with these issues during the 30-day trial period, recognizing the limitations and allowing changes to be made. If the patient returns months or years later with complaints of too many repairs or of the hearing aid not working, and the recommendations are documented, the audiologist can gently remind the patient of the
previous discussion. When patients leave the office after the hearing aid evaluation, they should feel comfortable that they have made a wise choice, and the selection was guided by a confident and knowledgeable professional.

**Hearing and Fitting**

After the performance of the hearing aids has been verified using real-ear analysis and subjective behavioral measures, it is time to explain to the patient how to use and care for the hearing aids. This section provides a comprehensive overview of how this goal may be achieved.

Use and care of the hearing aids and accessories should be addressed in detail in addition to providing the patient with written instructions. Hearing aid manufacturers provide detailed manuals; it is important, however, to carefully review the information with the patient and then allow the patient to use the manual as a backup at home. Only the most important material should be addressed at the initial visit if the patient is easily overwhelmed. Subsequent information can be added at the follow-up visit. The most important issues to be addressed at the time of the hearing aid fitting include:

- Insertion/removal of custom hearing aids or earmolds
- Placement/removal of batteries
- Operation of switches (on/off, M-T-MT)
- Demonstration of remote control and how to manipulate options (on/off, memories, T-coil, volume)
- Volume control
- Toggle switches (omni/directional, T-coil, on/off)

It is recommended that the hearing aids be used on a daily basis (all day, if possible). The more consistently patients wear the hearing aids, the more quickly they will adapt to amplification. Sometimes it is necessary to provide the patient with a reduced wearing schedule. This can be decided at the discretion of the audiologist based on the information gleaned from the patient interview and past hearing aid experience. These instructions should always be written out in precise, easy-to-follow directions. A wearing schedule is sometimes necessary for those patients who are easily overwhelmed and/or those patients who have never had amplification and need to be “weaned” into their auditory environment.

It is important to explain to the patient that everyday sounds will initially be distracting. Noises such as running water, traffic, chewing, and their own voice are going to have a major impact on the new hearing aid user. Even the microwave signals, turn signals in the car, and the turning of newspaper pages can be new and sometimes overwhelming experiences. Hearing loss usually occurs in such a slow progressive manner that patients are typically unaware of what they are missing until hearing is reintroduced via amplification. Auditory stimulation is introduced very quickly, thus making the new hearing aid wearers suddenly aware of sounds in which they may not necessarily be interested. The brain needs to relearn what some of these sounds are and will eventually make them a part of the patient’s new auditory baseline. When this occurs, these everyday sounds will not be given any additional emphasis and will therefore become less distracting. It is important to stress this process of adaptation so that the patient does not become overwhelmed and immediately give up.

**Use of Hearing Aids**

**Telephone Usage**

It is advisable to provide each patient with a self-adhesive telephone pad (Fig. 13–5). These typically are sold in two shapes (round and square). Patients can tell which is more appropriate for their personal phone system. The use of the phone pads reduces the likelihood of feedback when the hearing aids are used acoustically with the telephone as opposed to using the telecoil switch. This is more of an issue with custom products than it is with BTEs. It is helpful to have a phone receiver handy that has had a phone
pad applied so that the patient can learn how and where to hold the phone to alleviate feedback. In some instances, such as the case with wall phones, the telephone pad will prevent disconnection when hanging up the phone. Finally, the phone pads should not be considered a replacement for use of the telecoil. Whether the hearing aids have a telecoil or are coupled acoustically to the telephone, it is recommended that an actual demonstration take place to allow the patient to practice orienting the telephone to the hearing aid for optimum performance. This can be accomplished by dialing the local time/temperature service to demonstrate the use of the telephone acoustically or with the telecoil. Telephone use is often one of the top three concerns and a significant communication difficulty for patients. Allowing the patient to practice with the telephone will alleviate some of the frustration of using the phone at home or at work. Make a note of the difficulties the patient has with the phone use and bring these up for troubleshooting when the patient is called for the postfit phone check.

**Batteries**

Insertion and removal of the battery must be practiced until the patient is comfortable with this task. If the patient is not capable of successfully completing this task, the caregiver may be instructed. Sometimes the patient will, over time, become more independent in using and caring for the hearing aids. If difficulties are present with manual dexterity, a wax loop with a magnet attached at the opposite end is sometimes helpful in extracting and replacing the battery. It is helpful to the patient if the audiologist is familiar with the retail establishments in the area that carry hearing aid batteries and knows how much they cost. Audiologists may have a mailing program where the patient can call and order batteries. This can be very helpful to housebound patients. Battery club cards can be explained at this time. It is not uncommon to have a program where the patient buys X number of packages and receives one free. The battery club card should have the address and phone number of the clinic on it for the patient’s convenience. This program can also be extended to the AdHear wax guard system. The patient should be reminded that swallowing batteries is harmful and that care should be exercised in deciding where to store the batteries while the hearing aids are in the Dri-Aid kit.

**Use of Switches**

While the hearing aids are out of the ear, the audiologist can locate and demonstrate any switches. It is usually easier for patients to find any switches if they can visualize them. Also at this time, the audiologist may wish to identify the various components of the hearing aids and provide a brief description of their importance. Explaining where the microphone and receiver are and what happens to the sound in between helps the patient understand the underlying principles of the device. Letting patients work the switches and get a feel for how they operate while they can see what they are doing helps them orient to the switch while it is on the ear. Common switches include the on/off, M-T-O, tone, T-coil, and omni/directional. If any potentiometers are present on the hearing aid, it is necessary to point these out and describe their function briefly. Patients need to be aware that they cannot inadvertently change these settings. They should also be counseled to not adjust the potentiometers at home.

**Miscellaneous**

Show the patient where the make and serial numbers are located on the hearing aids. Although it is difficult to read the numbers, it is common for the manufacturer on custom products to use red for the right device and blue for the left for the patient’s convenience. This is also a good tool for teaching the patient which hearing aid goes in which ear. Eventually, the patient will not have to rely on this trick, but it takes some of the anxiety away in the beginning. For BTE products, a colored sticker for right/left identification
can be placed in the battery compartment. It is also possible to teach the patient how to identify the correct ear by establishing a code based on the serial number of the hearing aids. Examples include using the even-numbered hearing aid or the lower numbered hearing aid on the right ear, etc.

**Care of Hearing Aids**

**Management of Cerumen**

The patient should be shown how to use the wax prevention mechanism. Options can include a brush, wax loop, coil, flip-up guard, AdHear wax guard, or snap on wax trap (Fig. 13–7). Allow the patient to practice using any wax prevention tools because some of these can be very confusing to a new patient. New users are often afraid of using the tools. It is effective to demonstrate this procedure to any family members who may be present as well.

Special care should be given when instructing the patient to use a wax loop so that the patient does not inadvertently destroy the receiver. In addition to the wax loop, a wax spring can also be utilized as a “safety net.” The spring can also be used in combination with the AdHear wax guards. If a wax spring has been installed, be sure to show patients the wax spring and make them aware of its purpose. This way, if the patient is cleaning the receiver tube and the spring is accidentally removed, the patient does not panic. If the “scooping” method is demonstrated as opposed to the “twisting” of the wax loop, the wax spring stays in place more efficiently. These springs are available from most manufacturers and are easily changed by the audiologist. Flip-up guards and snap-on guards should be used with discretion with those patients whose fine-motor dexterity is lacking. These guards can be difficult to manipulate. For patients who do not demonstrate the ability to use these systems, the hearing aid brush is a good standby. Most people are able to manipulate the brush, which will help keep the hearing aid working in between trips to the dispenser for thorough cleaning.

**Disinfectant**

The patient should understand that disinfectant spray (Fig. 13–8) should not be applied directly to the hearing aids or earmolds, and that the solution should remain on the earmolds and/or hearing aids for at least 10 minutes in order to be effective. The solution is best used when sprayed on a clean dry cloth and applied to the hearing aids and/or earmolds. The solution should then be completely wiped off with a clean slightly damp cloth. It is important to completely remove the solution so that it does not irritate the tissue in the ear canal. The earmolds can be removed from the hearing aids before using the disinfectant and can be washed in warm soapy water (not alcohol) after the solution has been applied to remove the solution. The patient, however, must be encouraged to fol-
low the directions suggested by the manufacturer on the method for cleaning softer (e.g., vinyl) earmold materials. Patients often feel that alcohol is a good cleaning agent. It should be made clear that alcohol is not recommended to clean hearing aids or earmolds due to the drying nature of its composition. Finally, cleaning the earmold and/or hearing aids is very important especially in those patients with chronic drainage, otitis externa, or fungus. If the patient acquires an ear infection, the earmolds or hearing aids should be thoroughly disinfected prior to reinsertion of the hearing aids and/or earmolds. The physician may recommend the hearing aids or earmolds not be worn on a temporary basis to facilitate the healing process.

Effects of Moisture and Humidity

The Dri-Aid desiccant should be used every night. The battery must be removed prior to placing the hearing aids in the airtight container. A variety of containers are available and should be chosen for ease of use and hearing aid size (Fig. 13–9). Earmolds are not harmed by also being placed in this container. If the hearing aids are placed in the Dri-Aid kit whenever they are not used, it decreases the likelihood of loss and damage and at the same time helps prevent damage to the hearing aid circuitry of the device due to moisture. At this time it would be a good opportunity to discuss with the patient the adverse effects of allowing the hearing aids to become wet (swimming, shower, hair salons, etc.).

For BTE purchases, it is advisable to provide a tubing blower. The tubing blower can be used to easily remove moisture from the earmold tubing. The tubing blower is especially helpful in removing the excess water after washing the earmolds. It is advisable to show the patient the proper way to remove the earmold from the hearing aid. Practicing the removal and reinsertion of the two pieces is important. The patient needs to understand how to line up the device with the earmold in order for it to sit well on the ear.

Insertion/Removal of Hearing Aids

Now patients anxiously wait to learn how to insert and remove the hearing aids or earmolds from their ears. Helping them visualize how the hearing aids look in the ears with a picture is often helpful. Showing them where each part of the hearing aid goes by pointing to the device and then touching their ear will help. Showing them how to hold the hearing aid is important, but then it is usually best to just tell them to “go for it.” We have found that the less verbal instruction given, the less confusing the process is for patients. Inserting and removing by feel works best for most patients. Mirrors may be used, but sometimes they hinder progress due to visual impairments and the reversed mirror image. A video otoscope can be very handy if one is available. Try to teach the patient to avoid the “screw-it-in” approach and demonstrate that “straight in” is very ef-
icient in most cases. It is sometimes helpful for the audiologist to insert the hearing aids and let the patient see how it feels when they are inserted properly. Let patients remove the hearing aids and then have them pay attention to where their fingers touch the hearing aids. Allow the patient to try to insert the hearing aids at this time by using this same grip. Practice makes perfect, but do not allow the patient to become frustrated. Put the hearing aids aside and discuss something else if this occurs. Encourage the patient that this procedure becomes easier with time and that patience is the key. In the case of the BTE, the audiologist can remove the earmolds from the hearing aids and let the patient practice inserting and removing the earmolds without the hearing aids attached. When the patient is comfortable with this, reattach the hearing aids and let the patient try again. Some patients may be hard on themselves and expect that they should be able to do things as easily and as comfortably as the audiologist. Teach the patient how to check to make sure the hearing aids and/or earmolds are seated properly.

**Follow-up Care**

At the conclusion of the hearing aid fitting and after any questions and concerns have been addressed, the patient is encouraged to schedule a follow-up appointment. This appointment can be scheduled for 1 to 3 weeks later, depending on the hearing aid circuit and user knowledge. Subsequent visits are scheduled as necessary. It is important that patients understand the significance and length of the trial period. It is also imperative that they realize the difference between the trial period and the warranty. Although patients are scheduled for follow-up, a phone call to new hearing aid wearers approximately 2 days after their hearing aid fit will sometimes alleviate simple problems before they escalate. These phone calls are almost always well received and appreciated. Sometimes it is necessary to reschedule the date of the follow-up appointment to address immediate concerns. Immediate concerns can include soreness of the ear due to a poorly fitting hearing aid or earmold, difficulty inserting the hearing aid, or difficulty manipulating the hearing aid and/or the remote. It is also recommended that the audiologist send a “thank you” letter to the patient.

Make sure the patient knows how to reach the dispensing audiologist and encourage the patient to call with concerns and questions. Keeping communication open is important in creating a successful hearing aid user.

**Postfit Assessment**

During the follow-up visit, patients should complete the *aided* portion of the APHAB or
COSI. This will verify for them that their communication difficulties were addressed and will also bring attention to any unresolved problems. Realistic expectations may need to be discussed once again. The patient should also be reminded about the warranty provided by the manufacturer. Inform the patient what to expect from the audiologist, such as reminder cards sent to remind the patient to schedule an annual hearing aid check and hearing test. Inform the patient that annual appointments will include a thorough cleaning of the hearing aids with a device such as the Ultra Vac (Fig. 13–10), a listening check of the hearing aids by the audiologist, an electroacoustic analysis of the hearing aids, and a check of the patient’s hearing. The audiologist could also provide newsletters to keep the patient abreast of hearing aid research, communication strategies, and staff news. Continued follow-up will result in patients feeling they have had personal care from a caring and trustworthy audiologist.

Conclusion

Hearing aid technology is changing at a rapid pace and it is of utmost importance for the audiologist to stay on the cutting edge of this new technology to provide their patients with the most recent options available. Only the audiologist will know where the patient’s priorities lie and what the patient’s limitations are. Audiologists can sometimes catch themselves presuming what the patient’s needs are based on the audiologist’s own personal experiences and communication needs. Each person’s quality of life is dependent on unique and personal variables. Not every hearing aid model can meet the needs of every patient. The responsibility of the audiologist is to provide the information in a straightforward and concise manner to help lead patients to the hearing aid devices that will best meet their needs. This can become precarious if the patient attempts to shift the sole responsibility of decision making onto the audiologist. Patients need to be aware that they have taken a major step in deciding to come to your office in the first place. Their responsibility, however, does not stop there. It is not inappropriate, however, to narrow the band of choices based on the patient’s responses noted during the initial contact or subsequent counseling sessions. Help the patient make the most of what residual hearing remains, and the reward to the audiologist and the patient will be evident.

References


Dillon H, Alison J, Ginis J. Client oriented scale of improvement (COSI) and its relationship to several other measures of benefit and satisfaction provided by hearing aids. *J Am Acad Audiol* 1997;8:27–43.


