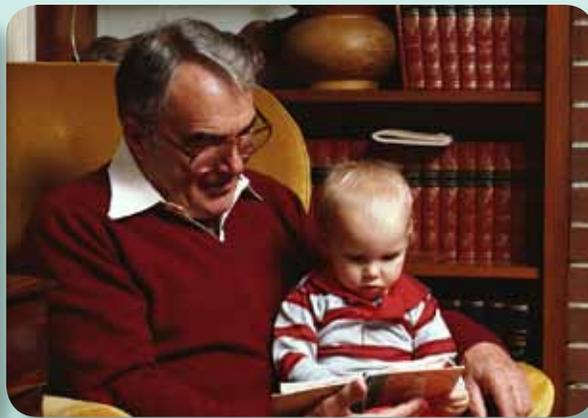


Your Guide To

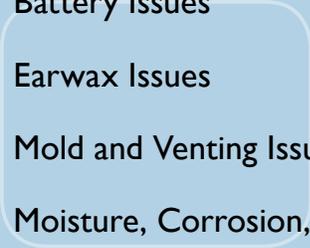
# CARE AND MAINTENANCE OF HEARING AIDS





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# Your Guide to Care and Maintenance of Hearing Aids

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If you are a new hearing aid user or even if you've had your hearing aids for a while you may need a guide to help you care for and maintain your hearing aids in top condition. Here are some of the main issues that you need to know and understand to get the most from your amplification.

In this guide we address eight main issues: 1) Batteries, 2) ear wax, 3) ear mold/venting issues, 4) moisture/corrosion/dirt/intermittence, 5) telephone use, 6) feedback, 7) static/noise, and 8) prevention. If you need help with any of these you may consult the longer guide which is linked at the bottom of this introductory section or click on the key topical areas to go directly to that issue.

**Issues with batteries include the following:** Dead and defective batteries, getting the most out of your batteries, batteries in backwards, spent batteries, defective batteries, short battery life, conserving battery life, safety issues with batteries.

**Issues with ear wax include:** earwax obstruction, preventing wax build-up, when and how to remove wax.

**Ear mold and venting issues include (comfort & sound quality):** ear discomfort, causes of ear discomfort, correcting a hearing aid fitting problem, plugged up vents.

**Moisture, corrosion, dirt & related intermittence:** moisture problems, resolving moisture problems, effects of moisture, dirty volume control, dirty battery, problem of oily skin.

**Telephone issues:** poor telephone reception, telecoil circuit, successful use of the telecoil circuit, other tips for improved telephone listening.

**Feedback issues:** hearing aid squeal (acoustic feedback), acceptable versus unacceptable feedback, earwax and feedback, solving the feedback problem, feedback with new hearing aids, feedback and telephone use.

**Static and other unwanted sounds:** wind noise, background noise.

**Preventive hearing aid maintenance:** Spare set of hearing aids, hearing aid disuse and longevity.

## Introduction

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Hearing aids are electronic devices that are greatly beneficial to millions of people. Like any piece of technology, they can stop functioning at any time. Consider that hearing aids are usually worn for long hours each day, which places stress on electrical components and battery power. They exist in relatively hostile conditions of moisture, warm temperatures (especially with certain styles) and substances such as earwax, skin acids and oils. These substances may be healthy for the ear but are potentially corrosive to hearing aids. Additionally, these substances can block sound delivery pathways making the hearing aid perform poorly. For these reasons, no matter how well they're made, sooner or later they will stop working.

Hearing aid failure is often unpredictable and sometimes occurs at the most critical and inopportune times, such as in the middle of an important business meeting.

Hearing aid failure can be upsetting in such cases and even in less critical situations, a hearing aid that quits working can produce considerable frustration. At the very least, hearing aid breakdown is annoying. This information addresses how to keep your hearing aids performing and how to spot the cause of malfunction early when breakdowns occur. We include tips on preventive maintenance to improve hearing aid reliability and longevity. Remember that some hearing aid failures will be beyond your control. Such failure will result in “down time” on your part and may require a send-off to the factory for repair. Also addressed will be sub-par performance from hearing aids which, even when working, may not function as well as they might.

Some styles of hearing aids are subject to more stress and abuse than others, and the approach you should take in troubleshooting hearing aid breakdowns can vary from one style to the next. Reasons for hearing aid failure which are related to a particular hearing aid style will be noted in each section. You need to be familiar with the basic hearing aid styles of which there are five. These styles are described in terms of their location on the ear or body (rarely used) and for purposes of convenience the ear level styles are identified by acronyms: BTE, ITE, ITC, and CIC (see our write-up on [hearing aid styles](#) on the BHI website). In this guide, much of our instruction will be directed toward BTE, ITE and ITC aids because these represent the majority of styles in current use in the United States. Problems specific to CIC hearing aids will be highlighted because these hearing aids of this “deep canal” type can be quite problematic.

As part of this introduction, a few words should be added about hearing aid longevity. You may have asked, “How long will my hearing aids last?” Just as hearing aids will malfunction on occasion for reasons described above, it follows that they won't last indefinitely. This is true even for very expensive ones. For various reasons, cost being one of them, some wearers would like their aids to last 10 to 15 years or more. Hearing aids that remain in useful service for this long are the exception rather than the rule. In fact, research has demonstrated that the typical hearing aid gets replaced about every 5 years.

Also, some hearing aids are replaced not necessarily as a result of being worn out but due to changes in a person's hearing or because the individual may desire hearing aids of improved technology. In any case, you're well-advised to consider 5 years as the average life span of most hearing aids. All things considered, proper maintenance will help to extend the longevity of hearing aids to their optimum potential.

We present this outline of problem-solving techniques at the risk of giving you the impression that hearing aids are fragile devices that will commonly fail and require unusual care and worry on your part. This is not at all the case. For the most part today's hearing aids are exceptionally reliable and durable. They will serve your hearing needs day after day, year after year with rarely a breakdown.

Like your automobile, any number of problems can go wrong with a hearing aid, but for the most part, easy and relatively inexpensive remedies are available.

## BATTERY ISSUES

### Battery life

The inexperienced wearer is often disappointed by what is viewed as short battery life. After all, watch batteries of approximately the same size last a year or more before replacement is necessary. Hearing aid battery life is related to two primary factors: the size (and storage capacity) of the battery and the amount of current energy draw required by the hearing aid. The larger the battery, the greater the storage capacity. However, the number of hours you will get from a battery depends on the current energy draw.



Hearing aid amplifiers simply draw heavy current loads, much heavier, for example, than those required for simple watch circuits or even heart pacemakers. As a useful comparison consider the common battery-operated flashlight. Interestingly, the typical flashlight uses a standard size D battery which has 1.5 volts, almost identical to the voltage of a hearing aid battery, but of vastly larger size with greatly increased storage capacity. Even so, imagine how long a flashlight would work if it were used continuously for 16 hours a day as is required for hearing aids! The fact that hearing aid batteries maintain operation for long hours at a time, day after day, is quite impressive.

Furthermore, battery efficiency has improved greatly in recent years. Today's batteries will keep a hearing aid going many days longer than the older style hearing aids (for example, BB-type) whose batteries were ten times larger! Signs of a failing battery are weak output, distortion, increased tendency of hearing aid feedback, intermittence and or strange or unusual sounds such as static or fluttering (sometimes called "motorboating"). Weak and faulty batteries are a leading cause of hearing aid failure. In general, today's hearing aids require approximately 1.2 to 1.4 volts to operate properly. When a battery reaches 1.1 volts or less, the hearing aid will function poorly, if at all. The battery should then be replaced. In contrast to batteries of an earlier era, battery strength is sustained at a constant level until just a few hours before it dies, at which time it goes quickly. Older batteries used to lose power gradually over their life, requiring the wearer to adjust the volume at ever-increasingly higher levels to maintain proper output. This is not true with today's batteries.

### Anticipating the Dead Battery

So, in light of battery usage, how can you avoid hearing aid failure caused by weak or dead batteries? First, you'll need to develop a replacement cycle. Knowing the approximate time when a battery will go dead can decrease one of the sources of stress that may accompany hearing aid use. A replacement cycle is most easily developed by marking a calendar each time a battery goes dead. A designation such as R-B or L-B for right aid or left hearing aid batteries works nicely. Most hearing aids today use zinc-air batteries with a pull-tab on the back of the battery. You can just as easily stick the tab on the corresponding date on the calendar and note it as right or left replacement.

After a few weeks, you'll learn the replacement cycle required of the hearing aid and will become remarkably accurate in anticipating the impending failure of weakening batteries. Calendar marking may not be necessary after a few months, although for those with poor memory, it can be continued indefinitely.

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For the technically-oriented, an inexpensive battery tester can be purchased that will read the exact voltage strength of a new or used battery. This is probably a good idea because it allows you to determine if hearing aid failure is due to the battery itself.

### Getting the Most Out of Your Batteries

Today's batteries have excellent shelf life, up to one year or more if kept in a cool, dry place. Refrigerating batteries, a common practice years ago, is unnecessary. Most batteries used today are of the zinc-air type which means a charge does not begin until a pull-tab is removed from the face of the battery, allowing air to enter through tiny openings. Never remove the tab until the battery is to be inserted into the hearing aid.



To optimize battery longevity, disengage it when the aid is out of use for a period of time. The most common period of regular disuse for most wearers is overnight. When the aid is removed at bedtime, the easiest thing to do is simply open the battery compartment door all the way and set the aid down on a dresser top or some other safe and convenient but accessible location.

Avoid storing your hearing aids on a bed table or other similar location where children and or your pets can get to them; otherwise they're easily lost or destroyed. It's not necessary to remove the battery from its compartment. Position the aid so that the door remains open and the battery remains in it. This will simplify hearing aid start-up in the morning. Just close the battery door and the aid is ready to go. If the aid is placed on the dresser carelessly, the battery may fall out. This isn't really a problem, except that it creates an unnecessary inconvenience the next morning when the hearing aid battery must be located, oriented and reinserted. For individuals with limited vision or finger dexterity, this inconvenience can be significant. If you have an aid with the "flip up" door, you will have to remove the battery in order to prevent its discharge.

Rechargeable batteries represent the ultimate in making batteries last and they are available in some hearing aid models. They used to last only about 10 hours with one charge, and this was awkward for full time users to need replacement in the middle of each day. Recent specifications claim they last 16 hours. The chargers cost quite a bit, so it may take more than a year before actual savings will occur.

### Batteries in Backwards

The matter of inserting batteries, although not directly related to battery life, raises the question of another source of hearing aid failure. Batteries have a "negative" and "positive" polarity and therefore each side must be positioned correctly in the battery door to coincide with the electrical contact requirements of the circuit. The flashlight analogy cited earlier applies as well to battery orientation. We all know that a flashlight whose batteries are inserted incorrectly will not work. Manufacturers of hearing aids help with this problem as much as they can by marking a "+" sign on one side of the battery door to remind you that the positive side of the battery must be on that side. Because this "+" imprint is so small and for many impossible to see, the manufacturer also tailors the battery door to match the shape of the battery.



## BATTERY ISSUES

A close look at any battery will disclose that batteries are perfectly flat on one side (the positive side) and beveled on the other (the negative side). The battery door is similarly configured and should be studied by new wearers in its open position, under a magnifying lamp if necessary, to learn these identifying characteristics. Then you can position the battery appropriately in your fingers and insert it correctly with confidence.

Please note that with the battery in place, if the door doesn't close readily with only a minimum of force, this is often a sign the battery is in backwards. When this happens, reverse the battery and try again. In any case, do not force the battery into place. Doing so can damage the hearing aid. Never insert the battery into its place by accidentally sliding it beneath the battery door. By-passing the battery door will usually not damage the hearing aid but may likely jam the battery in place and require a trip to your hearing healthcare provider to have it removed.

A few hearing aid manufacturers have implemented the use of a hearing aid battery compartment that allows you to install the battery regardless of its polarity. This may become more popular in the future. On your next hearing aid purchase, you may want to inquire about it.

### **Spent Batteries**

Naturally, every hearing aid wearer likes to get the most hours possible from every battery. To do this, some people will remove batteries that show the earliest signs of weakening and save them for later use after they've recovered some of their charge. It's true that near spent batteries will self-rejuvenate to a degree after removal from a hearing aid and may provide power for an extra day or so. The strategy of holding onto spent batteries however has several problems. First, it can give you a false sense of security. Hearing aid batteries with weak voltages can fail at any moment. Secondly, and of greater concern, these batteries somehow get mixed in with the fresh batteries. The result is confusion and frustration when a bad battery is picked up and inserted in the hearing aid when it's thought to be good.

Re-using worn batteries is a poor practice because the savings is not really worth the bother. Consider the following: assume a battery lasts two weeks and costs \$1.00. If you get two extra days per battery by recycling spent batteries, the result would be four extra days use per month. The daily cost of batteries using two per month at a cost of \$1.00 per battery is about 6 cents. So, four extra days at 6 cents/day is 24 cents savings per month, or less than \$3.00 per year. A savings of \$3.00 per year is clearly not worth the hassle of keeping track of used batteries. This also holds for binaural hearing aid wearers who might save approximately \$6.00 per year. Our advice is, when zinc-air batteries go dead, throw them away.

### **The Defective Battery**

Present-day batteries are very reliable as a rule and you can usually depend on a fresh battery working as it should. Occasionally, however, a new battery or a whole pack will be defective. Your hearing healthcare provider will gladly exchange them for a fresh package.

### **Short Battery Life**

Shortened battery life will result most likely from one of three possibilities: the battery is defective and has a weakened charge; the hearing aid is defective and draws current in excess of what it should; or the battery routinely is left in operation in the hearing aid during periods of disuse (for example, overnight). Wearers who are always careful to disconnect the battery overnight can usually assume a defective aid in the situa-

## BATTERY ISSUES

tion of poor battery life. While batteries can be faulty on occasion, as noted earlier, most commonly it will be the hearing aid itself at fault. When this happens, the likely solution is factory repair.

Before an aid is returned to your hearing healthcare provider with this problem, it's wise to verify that your present batteries in use are in fact good. Because battery life can vary somewhat within acceptable limits, we recommend taking action with the hearing aid only when battery life is consistently one-half of what it regularly has been or should be. This would help to confirm a defective hearing aid. Otherwise, you might be dealing simply with variability in longevity among batteries.

### **Conserving Battery Life**

Some hearing aid wearers concerned with operating costs will turn their hearing aids off when they “don't need to hear.” Such individuals feel they get increased longevity with this strategy analogous to the “turn off the lights when not in use” philosophy. While there may be some justification for this practice in special circumstances (for example, while working in a noisy shop for a few hours), a habit of turning hearing aids on and off “as needed” is not recommended. You can never tell when an important auditory event will come along, such as another person's voice or a warning signal. You don't want to be inconsiderate of others by shutting off your “antenna” so you hear them only when you want to. Furthermore it's important to be aware of the rich assortment of environmental sounds that keep us in touch with the world.

### **Stockpiling Fresh Batteries**

With today's batteries, is there anything wrong with storing a reasonable supply? If you see a two-for-one battery special, it's tempting to take advantage of this offer and save money but we give you this caution: such “sale batteries” are sometimes promoted to get rid of old stock and might more correctly be termed “stale batteries.”

If you're inclined to store a supply of batteries, our advice is to investigate the manufacture date and then purchase no more than six months' supply at a time. Beyond this period, full storage life of the batteries might be compromised. Also, you just might decide to change hearing aids before the supply is used up, resulting in an over-supply of batteries that may no longer be of the appropriate size for your new hearing aid. People who travel are well-advised to purchase an adequate supply of batteries before taking a trip, especially if traveling overseas. Avoid situations where you must make a purchase of unfamiliar brands which may be of poor quality or irregular size.

### **Safety Issues**

Never leave batteries lying around where children or pets can get them. Be sure to keep them separate from your pills so that you do not mistakenly ingest batteries thinking they are your pills. Thousands of people each year, both adults and children, have experienced serious injuries to their digestive system due to ingesting of batteries and in some cases fatalities have been reported.



## EARWAX ISSUES

### Earwax Obstruction

Another leading cause of hearing aid failure is wax blockage. The technical name for common earwax is cerumen. It's produced by a gland in the outer ear roughly one-third of the way down the ear canal. The product of this gland is a pasty substance, usually light brown or tan in color and bitter in taste. (Take our word on this one!) Cerumen is believed to exist in the ear canal to discourage flies and insects from entering this opening.



The degree of wax generated in the canal varies greatly from one person to the next. On average, men experience more wax buildup than women. Some women, however, can produce large amounts of cerumen, as can children. For reasons not clearly understood, some individuals generate little or no wax. If you're presently unaware of the wax condition in your ears, your physician or hearing healthcare provider can readily inform you of this after examination with an otoscope (ear light).

Hearing aid wearers must continually be on the lookout for adverse effects of earwax. When hearing aids are inserted into the ear canals, (or earmolds in the case of BTE hearing aids), they can slide alongside or directly into accumulated wax. The fresher the wax, the softer and more easily it can get pushed into the sound bore (receiver) of an aid. A thin smear of earwax over the receiver (sound) tube will shut the hearing aid down instantly.

### Preventing Wax Build-up

The first defense against wax build-up is regular cleaning of your ear canals by a physician or audiologist, or as simple as it sounds, in a shower by direct spray into the canals. The cautions here are to be careful of the water pressure, and be certain you don't have a hole in your eardrum, or any other condition which might prevent such easy management of earwax.

Hearing instrument specialists are generally not trained to remove earwax, and while wax removal is within the scope of practice for audiologists, many prefer not to provide this service. In any case, you are well-advised to locate a person or office that will provide this service as needed. Attempting to control build-up of earwax by regular use of cotton swabs is not recommended. Aside from the possibility of doing physical damage to the ear canal or drum (the "don't put anything in your ear smaller than your elbow" concept), cotton swabs will usually only serve to pack the wax deeper with each attempt. By looking into the ear, professionals can readily discern the cotton swab users, as the wax shows a nicely formed concave surface down in the ear canal.



Some hearing aid wearers with chronic wax problems may find regular use of "ear lavage" effective. Equipment along with instructions for home use are available in many hearing care offices and drug stores. Wax softeners for use prior to cleaning can also be purchased. Some people may be uncomfortable squirting water into the ear canal. A discussion with your physician would be advisable before attempting it. The main problem with this type of treatment is the difficulty knowing when the wax is all out.

The second defense against wax blockage is utilization of some type of wax guard for your hearing aid. There are a number of commercially available products which suit this purpose.

Many manufacturers now provide such a device on their hearing aids. Directly, or under magnification, you can look into the sound opening of the hearing aid to see if a wax guard is there. These common devices include “spring,” “Band-Aid” or “trap-door” style guards. All such devices should be discussed with your hearing health care provider who can explain service requirements.

### **Responsibility for Wax Maintenance**

Whomever dispensed your hearing aids does not have the primary responsibility to keep them free of earwax. You need to develop a daily habit of inspecting the end of the hearing aid where the sound comes out and looking for wax blockage. If accumulation is noticed, this wax can be readily removed in most cases by the hearing aid wearer with tools provided by the hearing healthcare professional. Remember, periodic check-ups (every 3-6 months) with your hearing health care professional are recommended.



After you have been fit with hearing aids, be sure your hearing healthcare professional demonstrates how to clean your hearing aids using tools which normally come with the purchase of hearing aids.

### **When and How to Remove Wax**

The best time to inspect hearing aids for wax is at the end of the day. At this time, any accumulated wax will still be soft and more easily removed. If you use the Band-Aid style guard, you can wipe across it gently. After a few days if you observe the cushion separating from the adhesive backing, remove it altogether and replace. If used properly, you'll never need to clean out the receiver (loud speaker) which is the rubber housing hole at the tip of an aid.

If your hearing aids have the wire coil in them, you may use a device known as a wax loop. This is merely a wire looped around the end of a piece of plastic. Gently insert it into the receiver tube, turn it one full rotation, then remove. Avoid picking or poking. Clean any debris from the loop. Nightly cleaning has the added advantage of keeping the receiver tube open for more adequate ventilation and drying. Review this procedure carefully and thoroughly with your hearing healthcare provider so that inadvertently you don't damage your hearing aids by cramming the wax loop into the wrong opening (such as the microphone port on the face of the hearing aid) or too deeply into the receiver port which can damage the speaker diaphragm.

Additionally, a wax tool that is a little too large to fit readily into the receiver tube can push the tube itself down into the shell of the hearing aid. This will damage the aid, often causing it to squeal, resulting in needed repairs.

Wax should also be removed from hearing aid vents. This is the other port in the hearing aid next to the receiver (loud speaker) port. It can be identified because vents are longer, they do not have a rubber housing through the channel, and often run the length of the earpiece or earmold. This also means they're not as easily cleaned. Some people have resorted to the use of wires of various gauges to ream out vents. Wire should be used with caution as it can crack the shell. Large vents are less likely to get plugged up and much easier to clean. Pipe cleaners work extremely well for large vents, such as ITEs, and light gauge fishing line for vents in CICs. Your provider will have suggestions for obtaining these and other suitable tools for cleaning.

Sometimes, wax build-up becomes dry and flaky before it's removed. When this happens, a good brushing of the hearing aid openings can be helpful in addition to use of the wire loop. When brushing, always hold the hearing aid upside down so that wax particles fall out of, rather than down into, the hearing aid. Also, keep your brush clean so that wax particles which collect in the bristles from previous brushing aren't injected inadvertently into the openings.

## MOLD & VENTING ISSUES

### (Comfort and sound quality Issues)

#### Ear Discomfort

Like pressure on the feet from a tight fitting pair of new shoes, hearing aids can occasionally be uncomfortable. Unlike feet, however, such discomfort in the ear is not tolerated well. Hearing aid-related ear pain can distract from intended amplification. Discomfort associated with hearing aid use usually has a specific anatomical site of origin but a widespread reaction. That is, a tight-fitting earmold may cause specific tenderness in one spot in the ear canal but in time the sensation can radiate. Additionally, accumulation of earwax and moisture may result in periodic ear discomfort.

#### Causes of Ear Discomfort

The most common cause of ear discomfort is an ill-fitting earmold (in the case of BTE) or hearing aid shell (in the case of ITE, ITC or CIC). Earpieces are fabricated from impressions taken of your ear. Usually they'll fit precisely. They're designed to fit snugly but not uncomfortably. It should be realized, however, that your degree of hearing loss will have a bearing on the tightness. Severe hearing losses must have a tight fit to prevent feedback (whistling).



There are two causes for ear discomfort which can result from a poorly fitting hearing aid or earmold. Either the earpiece was made improperly or incorrectly positioned in the ear. Ear impressions can and usually do provide exact replicas of the ear canal. This is because most hearing healthcare providers are experienced in taking ear impressions. Occasionally, however, impressions can be distorted during preparation, while in transit to the laboratory or during fabrication.

Another factor affecting comfort has to do with jaw movement. In some cases ear pain is caused or aggravated by movement of the jaw when earpieces are in place. For many, movement of the jaw can have significant influence on the shape of the canal. This is really quite normal. The effects of jaw movement can be felt by placing the “pinkie” finger deep in the ear canal while moving the jaw. (Try it while you're reading this). This movement arises from the joint of the lower jaw called, technically, the temporomandibular joint, or simply TMJ.

Even though earmolds may have reflected accurate impressions of the canal, the resulting earpieces may not “give” when the jaw and ear canal are moving, as when talking or chewing. If you suspect a poorly fitting earmold or hearing aid due to influences of the TMJ, you should discuss this matter with your hearing care professional and seek a solution within the usual 30 day trial period. Never accept hearing aids which cause you discomfort or which hurt.

The second most common cause of ear discomfort is the earpiece which is placed incorrectly in the ear. Earmolds that have been accurately fabricated can cause ear pain if not inserted correctly. When placing the earmold or hearing aid in the ear, you must make certain the device is “seated into its exact position or it can create pressure points in the canal. Difficulty with correct placement is a common problem, especially for new wearers.

## MOLD & VENTING ISSUES (Comfort and sound quality Issues)

Those who use behind-the-ear (BTE) hearing aids, for example, must make sure the entire earmold is properly placed. A common problem here is when the earmold is inserted into the canal, and the uppermost portion isn't tucked into the groove of skin at the top of the ear. This incomplete placement can shift the angle of the earmold just enough to create a tender spot down in the canal. ITE wearers can have the same problem. With mini-BTE hearing aids there is less of a problem since you are only inserting a thin tube in your ear with a canal placement device or receiver at the end of the tube.

Those who try CIC aids may experience some fitting and placement problems initially. The deeper a hearing aid is placed in the canal, the more sensitive the canal tissue. Some wearers are simply reluctant to push an aid fully into the canal, fearful that doing so will cause pain. This is understandable. Also, there can be concern the aid can be pushed too deeply into the canal and cause damage. This also is a logical concern. However, ear canals tend to be carrot-shaped (that is, the deeper into the canal, the narrower the opening) and the aid cannot be pushed without discomfort beyond its appropriate location. With detailed instruction from your hearing healthcare provider and with practice, however, you will soon get a "feel" for the exact location of the hearing aid and should be able to insert it correctly with confidence and without discomfort. If the hearing aids are difficult to insert, repeated "fiddling" can also cause discomfort. Special earmold lubricant is available to assist in the insertion. If placement difficulties aren't easily resolved, practicing proper insertion of the hearing aid in the presence and under the watchful eye of your hearing healthcare provider is helpful and reassuring.

### Correcting a Fitting Problem

Ear discomfort associated with the new set of hearing aids can be either transitory or persistent. If you're a new wearer, you should understand that initial discomfort of a slight degree can be expected. Normally, we wear nothing inside the ear canal. So tolerating that first earpiece will require some adjustment. Such discomfort will subside substantially or be completely gone after only a few days. Again, it's like adjustment to new shoes. Discomfort which persists after going through an initial adjustment period is another matter. Unrelenting discomfort present each time the hearing aid is worn should certainly be noted in follow-up visits with your clinical audiologist or hearing instrument specialist. During such visits your provider will either need to modify the earpiece by grinding or buffing, or remake the fitting by taking a new ear impression. It's helpful here to note that in most situations of poor fit, satisfactory corrections can be made right in the office. Also, please be aware that most wearers don't experience these initial difficulties at all and "hit the ground running" with new hearing aids. Often, we hear in our office, "I forget they're even in my ears!"



### Plugged Up Vents

A vent in an earmold or hearing aid is simply an open passageway or tube that extends from the front of the earpiece to the tip. It almost always exits the tip very close to the sound opening (receiver tube). Except in the case of more significant hearing loss, a vent will always be present. The diameter of the vent may be either large or small. In general, hearing aids fit to people with mild loss will have large vents while those fit to individuals with more severe losses will have smaller vents. They're usually placed in earmolds or hearing aid shells by manufacturers. They can also be placed there or modified by your provider. Vents should

## MOLD & VENTING ISSUES (Comfort and sound quality Issues)

always be kept open to perform their intended function. Again, if you have a vent on your hearing aid the hearing healthcare professional should instruct you on how to properly clean them.

### Purposes for Vents

Vents are placed in earpieces for three important reasons. First, they allow sounds that you may hear normally to enter the ear canal directly without being amplified. You don't want to block the ear to sounds which you hear normally. Vents that serve this purpose are usually fairly large and obvious. This type of vent is very helpful if your hearing loss affects only higher pitches (technically called frequencies).

The second purpose of venting is to reduce amplification of unwanted sounds. Often these are low-pitched tones which you may already hear normally. Experienced and sometimes even new wearers will report hearing better when their provider enlarges the vent by drilling. This diminishes low-pitch bothersome background sounds. Hearing aids and earmolds fit to those with more severe loss will require smaller vents.

A third purpose of venting, perhaps the most important in some fittings, is to decrease the acoustic effects of your own voice. You'll readily identify this as the objectionable sounds of your own voice while the ears are blocked off. This is called the "occlusion effect". It's the "my voice sounds like I'm talking in a barrel" effect.

## MOISTURE, CORROSION, DIRT AND RELATED INTERMITTENCE

### Moisture Problems

Handling moisture problems will depend on what type of hearing aids you own. The use of water to remove wax or dirt from any part of the hearing aid itself is inadvisable. Moisture is a natural enemy to electronic devices. The use of a dry cloth or tissue to wipe clean the outside surface of the hearing aid is the only recommended cleaning practice.

With regard to BTE style hearing aids, earmolds used with these aids must be removed from the hearing aids before cleaning. They can be soaked in a solution of soap and warm water, gently scrubbed clean and then completely dried before re-connecting to the hearing aid. Two methods we recommend for drying is a hand-held, forced-air blower which simply pumps air through the tubing or a can of compressed air (typically used to blow dust off computer keyboards). Failure to dry earmolds will risk moisture seepage into the aid.



Another useful tool in keeping moisture from being a problem is regular use of a dehumidifier. Commercial versions are available and very reasonably priced. The device is simply a container for your hearing aid with a built-in, moisture-absorbing chemical. The hearing aids are placed in the container anytime they're not being worn. The device absorbs accumulated moisture and leaves the hearing aids dry. The chemical

## MOISTURE, CORROSION, DIRT AND RELATED INTERMITTENCE

eventually becomes saturated with moisture but can be recharged by heating it in a warm oven. Be sure to follow the manufacturer's instructions.

As noted earlier, ear canals can produce a degree of moisture which can affect hearing aid performance. Like the problem of earwax, the amount of moisture present in human ear canals can vary widely from person to person. Your activity level and climatic conditions in which hearing aids are worn are two of the more common variables affecting moisture build-up. People with high levels of physical activity who perspire easily can be more prone to moisture problems than those who lead a more sedentary life.



Moreover, a moisture problem can be further aggravated by conditions of high humidity. Moisture build-up can result from either internal or external sources. Internal sources are those related to the condition of the auditory canal while the latter refers to liquids which arise from outside the ear, as those, for example, associated with rain or severe perspiration.

### The Effects of Moisture

While BTE-type hearing aids, if maintained properly, can outlast in-the-shell types, they tend to have the worst problem with moisture. Water vapors arising from the canal condense in the connecting tube. When these vapors reach a region outside the canal of slightly cooler temperature, condensation converts to small droplets of water which appear as tiny bubbles in the tube. The accumulation of enough water droplets can be sufficient to close the tube and shut down amplification.

Externally-produced moisture surprisingly is less of a problem. Rain water, unless very severe or persistent, usually runs around the ear and off the head with little or no adverse effects. A worse condition, especially for BTE use, exists for the person who perspires a lot. With such individuals, beads of perspiration form in the hair along the top of the hearing aid. In time, this moisture can seep into the cracks and openings along the upper surface of the hearing aid and eventually affect operation. The case of the postal worker comes to mind whose daily walking route involved extreme outside weather conditions. The operation of his BTE hearing aid was little affected by rain water which was easily diverted by wearing a wide-brimmed hat. Heavy perspiration, however, caused predictable shutdowns during workdays of extreme heat and high humidity. It's worth noting here that proper care and maintenance will reduce mechanical problems associated with moisture.

Hearing aids of the type worn in the ear have less difficulty with moisture build-up. Externally produced moisture with in-the-shell-type hearing aids tends to flow around rather than into the ear as a rule. Also, the further the aid is placed inside the canal, the less the problem as moisture from the canal lining has less of an opportunity to get into the receiver tube. Therefore, CIC's are the least affected by internal and external moisture.

### Resolving Moisture Problems

The point was emphasized earlier that moisture and electronic devices are a poor mix. To every extent possible, moisture in the region of the ear must be avoided. This means, to state the obvious, that hearing aids are not to be worn while showering, bathing, or swimming. They should also be removed before getting into a hot-tub, steam room, or while participating in water sports of any kind. These precautions apply equally well to moisture-related exposures such as spray paint, spray deodorant, hair sprays, and most aerosols. Chemicals in these particles are particularly destructive because they leave permanent residues which build up over time. With repeated use, they are certain to cause eventual hearing aid failure and permanent damage.

## MOISTURE, CORROSION, DIRT AND RELATED INTERMITTENCE

When hearing aids are unavoidably exposed to moisture as with individuals who must work outdoors, extra precautions must be used. In the case of the postal worker cited earlier, a simple plastic sleeve slipped over each BTE aid resolved the problem without significantly affecting performance. Some hearing aids are constructed specifically with watertight gaskets and are more weatherproof than others. Actually, most recent vintage hearing aids are surprisingly resistant to water damage and function in a variety of situations without intermittence, especially if they can thoroughly dry out overnight.

In this regard, hearing aids should be left in the open air when stored overnight with battery doors open, especially if moisture build-up is a problem. The use of dry-packs which absorb moisture can also be used to advantage during storage. These dry-packs are inexpensive and available from your hearing healthcare professional.

Other drying techniques may also be tried. One recent BTE wearer who had a chronic problem with moisture solved it by dangling his hearing aids (overnight) upside down by the earmolds from a homemade wire hanger. In this position, moisture was more readily able to escape from the hearing aids than when they were stored laying flat which tended to trap the moisture.

It should be noted that hearing aid failure due to moisture is not always easy to diagnose. Except for water vapor forming in the tube of BTE hearing aids which is readily visible, moisture is difficult to observe. If hearing aid stoppage is found to be unrelated to the more obvious causes, such as faulty batteries or wax blockage, then moisture build-up should be suspected. The use of drying procedures previously described should help isolate this problem. Also, perhaps with the help of your hearing healthcare provider, you could check your daily routine. For example, it will do little good to faithfully dry out hearing aids overnight if every morning after they're inserted you apply a healthy portion of hair spray!

### **Dirty Volume Control**

Hearing aids that still use volume controls (some current hearing aids don't) operate on the basis of metal contact points that slide against each other in normal operation. You can almost feel movement in the contacts as you rotate the volume wheel up and down. These contact points can become corroded with dirt or other residue that will not allow current to pass. This may occur when the volume control is in certain positions where corrosion is the worst. The result is an aid that goes on and off or even produces a very audible static noise as it is being adjusted. If you experience this problem, we recommend you rotate the volume control knob in continuous movements back and forth between low and high power up to 20-30 times. If this does not resolve the problem, it will require factory cleaning and or repair.

### **Dirty Contacts**

Battery contact points can also become corroded and create similar problems. As with the volume control, dust, moisture, and earwax are the primary culprits. Corroded contacts in the battery compartment result in intermittent or stopped current flow which has a direct effect on hearing aid output. Corroded battery contacts are also quite difficult for you to clean and will require office or factory servicing.

### **The Problem of Oily Skin**

Some individuals with oily skin have battery contact problems. During routine handling and insertion of batteries, oily residue can be transferred from finger tips to the surfaces of the battery and adversely affect

## MOISTURE, CORROSION, DIRT AND RELATED INTERMITTENCE

contact pickup. Such oily film can cause intermittence. If you suspect this problem, replace batteries with an ordinary tissue to prevent their surface “contamination,” or be careful to wash your hands thoroughly before handling them.

It should be noted in summary that during regular use, it is impossible to prevent a certain amount of contamination of hearing aids from elements in the environment. Sooner or later these elements are bound to affect aid performance. The auto mechanic, for example who works in a greasy, dust-laden environment is highly susceptible to hearing aid corrosion. Intermittence and frequent servicing should be expected when hearing aids are used in such unfavorable environments.

Intermittent problems can be difficult to diagnose. One strategy is to rule-out the most obvious causes. Often, when a hearing aid quits working, the first thing that comes to mind is that the battery is dead. An easy test is to take the battery from the other side (assuming it is working) and place it in the hearing aid that is not working. If the hearing aid begins working, then the problem was the battery and a new one can be activated. If it does not work, then other problems, such as wax build up, battery contacts, etc. may be to blame. Similarly, a battery in question can be placed in the working hearing aid to see if it has adequate capacity.

## TELEPHONE ISSUES

### Poor Telephone Reception

If hearing and understanding speech are difficult face to face, even with hearing aids, then telephone reception will be similarly difficult. Likewise, if your hearing aids allow you to function well in a face to face situation, you should converse with little difficulty on the telephone.

At the outset, it should be noted that some people have no difficulty hearing on the telephone without their hearing aid. This is because the telephone system has some built-in amplification, and a telephone held closely to the ear can provide adequate pickup while blocking out some background interference. Individuals with greater loss will need additional amplification to hear well on the telephone. On the other hand, those with severe to profound loss may be unable to converse at all on the telephone, with or without amplification. To explore what telephone amplifying devices are available to you, see our write-up on [assistive listening devices](#).



Whether you use hearing aids or not for the telephone, if you're in the presence of noise, cover the mouth-piece each time after you speak. This prevents undesirable room noise from traveling into your telephone receiver and being amplified into your own ear (or hearing aid), adding confusion to what you may already be finding difficult to hear.

### The Telecoil Circuit

One mechanism developed to improve telephone reception that has been available for many years is the telecoil (short for telephone coil). Not all hearing aids have them. If yours has it, you'll see some designation or switch on the case. BTE-type hearing aids with this device will have a switch position labeled "T." In-the-shell hearing aids may simply have a manual two-way switch. Because the telecoil circuit requires extra space, smaller hearing aids such as the ITC or especially CIC will not have them. Telecoil circuits work by processing electromagnetic waves produced by the telephone receiver (a process known in electronics as induction). When the hearing aid switch is on "T," a special wire coil is activated within the hearing aid circuit in place of the microphone. The only sounds that will come through the hearing aid in this position is what you hear through the telephone. Background noise near the telephone, for example, is unamplified which is a big advantage. Hearing aids with T-coils (as they're called) should work on nearly all currently available telephones. Telecoils can be quite satisfactory for mild to moderate hearing losses.



### Successful Use of the Telecoil Circuit

Review of your hearing aid operator's manual will familiarize you with the telephone setting. If the hand-switch on the aid is not set to the telephone mode, only the regular microphone will pick up sound which may provide inadequate reception. To get the best reception from the telecoil, the receiver of the telephone must be positioned within the most sensitive area of the hearing aid. To find this position, simply move the telephone earpiece around the ear during conversation until the voice comes in loudest. Your hearing healthcare provider will be more than happy to demonstrate this procedure on an office telephone.

### Other Tips for Improved Telephone Listening

Selection of the most appropriate hearing device is the first step toward successful telephone use. The clinical audiologist or hearing instrument specialist should be consulted during the selection process so that your individual needs are given full consideration. For some, telephone use is of little consequence. To others, it may be critical. For this latter group all possible telephone options need to be carefully explored. The next most important step is practice. Optimum telephone pickup is often achieved only after periods of trial and error. When asked about telephone use, an occasional hearing aid wearer will say, "I tried it once but it didn't work." You'll need more patience than that. Don't expect to get your best results after only one or two attempts. Practice is especially important here and the best way to get practice is to prearrange a long telephone conversation with a friend or relative. Explain that you're experimenting over the telephone with your new hearing aids. A patient listener will allow you to try your hearing aid in a variety of telephone positions (or, perhaps hearing aid settings as well) until you achieve optimum reception. Such practice will result in success with the telephone in a wide majority of cases. Also realize that poor telephone reception can be the fault of the telephone in isolated cases.

### Cell Phones and Hearing Aids

While your hearing aid may work on a regular phone it may not work properly on a cell phone. In purchasing a cell phone special care should be taken to assure that the cell phone is compatible with your hearing aids. On this site we have provided instructions on [how to purchase a cell phone](#) which is compatible with your hearing aid. In addition the Better Hearing Institute maintains a list of the [most hearing aid compatible cell phones](#) on this site.

## FEEDBACK ISSUES

### **Hearing Aid Squeal (Acoustic Feedback)/Whistling**

Feedback is the term we use for the high-pitched squeal commonly associated with amplifiers that have microphones and loudspeakers connected to them. This is the case with hearing aids. The squeal is caused by amplified sound that radiates from the speaker, is inadvertently picked up by the microphone and gets continuously re-amplified. The same thing can happen in an auditorium when the loudspeaker and microphone are too close together, or the amplifier volume is set too high. The hearing aid is said to “go into oscillation,” and the squealing sound coming from the loudspeaker is the result. Feedback can be avoided when the sound coming out the loudspeaker is prevented from reaching the microphone.

In the case of hearing aids, the pathway of sound from the loudspeaker opening (receiver) to the microphone input is along the side of the hearing aid or earmold in the ear canal, or through a vent. If the earmold or shell-type hearing aid fits snugly into the ear, and the vent is not too large, sound is unable to leak out and reach the microphone located outside the ear canal, in which case the aid won't squeal. When hearing aids or earmolds fit too loosely in the canal, the opposite can result. In general, a loose-fitting hearing aid or earmold is more likely to squeal than a tight one. Also, a high-powered hearing aid will have a greater tendency to feedback than a low-powered aid and therefore will require a tighter fitting earmold. Competent hearing healthcare professionals realize that the size and placement of hearing aid vents must be determined with the utmost regard to the potential for feedback. Feedback is less of a problem in recent years because of the ability that hearing healthcare professionals have to eliminate feedback at selective frequencies.

### **Acceptable Versus Unacceptable Feedback**

We want to emphasize that acoustic feedback is a natural phenomenon of amplifiers and not of concern, in and of itself. Feedback is to be expected, for example, when a hearing aid is “on” and held in a cupped hand. It does no damage to use feedback in this way to tell if the hearing aid is working. Similarly, it's usually not a problem to purposely cup the hand to the ear and listen for the “beep” as the hand is moved toward and away from the ear. Many wearers test the hearing aid in this way to be sure it's on. Others will rotate the volume control to the position of feedback during adjustment. Here again, this is no problem. These are all examples of predictable and acceptable feedback.

Unacceptable feedback is the type that spontaneously rings without warning or provocation; that happens, for example, while you're chewing, brushing your hair, scratching the side of your head or tilting your head downward. This latter movement causes a slight shift in the position of the hearing aid, sometimes just enough to allow sound to leak out. The squeal associated with all of these activities can be vexing not only to you but to those around you. Feedback of the unacceptable kind also occurs when you try to turn the volume of the hearing aid up to a more desirable level but cannot because the aid starts to squeal. At this volume position, with you attempting to extract the last decibel of sound possible, the aid is on the verge of feedback and will squeal at the least little disturbance. These are examples of feedback which you will not want to tolerate. Almost all of them can be corrected with help from your hearing healthcare professional.

### **Earwax and Feedback**

Feedback can occur anytime sound is deflected toward the microphone. Normal eardrums tend to absorb energy so that if an earpiece is reasonably snug, leakage is minimal and feedback doesn't occur. Earwax, on the other hand, seems to absorb very little sound and will bounce the sound right back out of the canal toward the microphone. Therefore, individuals who experience unexplained feedback should have their ears checked for wax build-up.

### **Solving the Feedback Problem**

People with the most severe hearing loss provide the greatest challenge to their hearing healthcare provider when it comes to feedback control. Most of it is still manageable. As noted earlier, a first consideration in dealing with feedback is to ensure that your ear canals are clear of earwax. This does not usually require a medical evaluation each time the ears need to be checked. The audiologist or hearing instrument specialist can do the job just as well and usually at no cost. If the canals are obstructed, your provider may charge a fee to remove wax, or if necessary refer you to a physician. You may want to insist that examination of your ear canals be a part of regular office hearing aid check-ups.

Given clear canals and the hearing aid is inserted properly, the next obvious concern in dealing with feedback is the fit of the hearing aids. The most common cause of feedback problems is a poorly fitting earpiece. Sometimes the hearing aid or earmold are ill-fitting from the very beginning. Hearing aids that have been used for several years without feedback problems can gradually develop it as the aid “loosens up” in the ear. This results from two possibilities. If you wear BTE’s with earmolds, the earmolds can shrink and change shape. Also, tissues along the wall of the canal can gradually give way to small but persistent pressure associated with the aid. This problem of increasing tendency for feedback is pronounced in children whose bodies undergo relatively rapid changes. Therefore, more frequent earmold remakes can be expected with this age group to control feedback, especially in cases of severe loss.

Finally with modern technology advancements some hearing aids have feedback suppression circuits which sense when a hearing aid is going into feedback mode and make corrections to cancel out the feedback.

### **Feedback with New Purchases**

If you have purchased new hearing aids that squeal or act like they’re always on the verge of squealing, or do when volume is moved up to a desired level, insist on getting the problem corrected----the sooner the better. Correcting a feedback problem with a new fitting is most easily done during the initial hearing aid fitting.

Some feedback problems can be corrected readily in the office while the more severe cases may require a remake of the fitting. This will involve, of course, taking new ear impressions and going without the hearing aid for a brief time. But the temporary inconvenience will be well worth it. Whatever you do, don’t allow the problem to go uncorrected, thinking ”Well, in time it’ll probably straighten itself out.” A feedback problem will rarely go away on its own. If anything, it usually gets worse. Left unattended, a feedback problem can result in a fitting that is less than optimal. In addition hearing aids that squeal or whistle are an annoyance to those around you and in some situations such as in a theatre or quiet meeting can cause embarrassment to the hearing aid wearer.

### **Feedback and Telephone Use**

Feedback occurs most often when some object is placed next to the hearing aid. This object can be a telephone, your own hand or even a nearby wall or other flat surface. Feedback is not a problem with hearing aids (having a telecoil circuit) when the switch is in the “T position. However, it is a common problem with non-digital hearing aids. Some digital hearing aids have feedback managing capabilities.

With analog hearing aids, careful positioning of the telephone receiver by moving it a slight distance from the ear or tilting it at a slight angle often eliminates feedback and still allows adequate reception. Some hearing aids are less susceptible to feedback than others. CIC-type aids, for example, are the most feedback free. If feedback is a problem for you, a donut-shaped, sponge product-like product that fits onto the receiver of the phone can be purchased from your hearing healthcare provider.

## STATIC AND OTHER UNWANTED SOUNDS

Be assured that unless you happen to be listening to an old radio badly tuned to the station, internally generated static of any kind is abnormal and in need of correction. Static resulting from internal causes means that the noise is created from some problem inside the hearing aid or telephone and not existing in the environment.

Recall that for the hearing aid to have clear sound, adequate battery voltage must be maintained. Likewise, current drawn from the battery must be appropriate or the hearing aid can produce strange sounds. In cases of low voltage or dirty contacts, cleaning or replacing the battery, or servicing the contact points in the battery door should correct the problem. Moisture and dirt in the volume control or other switches can also cause static. Here again, cleaning and regular servicing will help.



Sometimes strange sounds including static-type noise coming through the hearing aid even though it's relatively clean and the batteries are fresh. This can be caused by defective components in the amplifier. These components can wear out in time and require replacement. Also, some hearing aids will pick up strange sounds that radiate from electrical appliances or light fixtures, especially fluorescent. Such sounds are externally generated. Hearing aids that pick up these kinds of unwanted sounds seem to be less of a problem now than with older hearing aids. Regardless, if you detect a problem, that you think may be caused by such a thing, bring this to the attention of your hearing healthcare provider to solve.

Another source of unexplained sound coming through a hearing aid that should be mentioned here are those sounds in the environment that you may have forgotten existed or you've not heard for a long time. New wearers often pick up on these new noises right away. One such person complained, *"Since I bought these hearing aids, I hear a terrible noise in my kitchen I never heard before. It's mostly constant but sometimes it goes off for awhile. What's wrong with these hearing aids?"* A courtesy home visit revealed that what she was hearing was the compressor of her old refrigerator! Obviously, she hadn't heard this noise for a long time. Other sounds to which you'll need to become re-acclimated are common noises associated with motion, like paper rattling, water running, utensils dropping on a plate, and wind.

### Wind Noise

If you spend a lot of time outdoors, wind noise can be especially bothersome. If so, you might want to investigate a CIC-style fitting which will eliminate or greatly reduce wind sounds. For non-CIC aids, a "windhood" or "windscreen" can be installed that can also help the problem. Discuss these options with your hearing healthcare provider.

### Background Noise

The single largest complaint of hearing aid wearers is difficulty hearing in the presence of background noise. Unfortunately, hearing aids even the most expensive ones, have difficulty separating the sounds and voices, you want to hear from those in which you have no interest. So you'll have to learn to put up with a certain amount of noise just as people with normal hearing do. The new digital hearing aids do offer some relief for those who must function regularly in noisy situations. In additional directional hearing aids may help since they tend to block out sounds from the noise source when you are facing the desired speaker. Additional strategies for optimizing your communication while wearing hearing aids in noisy situations is provided on the [Better Hearing Institute website](#).

## PREVENTIVE HEARING AID MAINTENANCE

Few consumer purchases have any faster rate of depreciation and limited resale value than hearing aids. Stated differently, from an economic standpoint your hearing aids are of no value to anyone but you. For this reason and because they're expensive to replace, it makes good sense to service them on a regular basis. Systematic maintenance will reduce repair costs, lessen the number of "down" times, and most importantly extend the life of your hearing aids. What follows is a brief list of maintenance procedures that will help you to accomplish this:

### **Clean Your Hearing Aids Daily**

This is best accomplished by first wiping the hearing aids with a dry cloth or tissue to remove wax, oil and moisture from the surface. Then lightly dry-brush all components using the wax removal techniques described earlier, and remove wax from the receiver and vent tubes. This cleaning should be done daily, preferably at bedtime.

### **Proper Storage**

Place hearing aids in a safe, convenient and protected location, being certain to disengage the battery door in a manner recommended previously. Sticking hearing aids in pockets or at the bottom of purses without a protective container exposes them to dirt and dust that can eventually do damage. Dust-free carrying cases are provided with nearly all new hearing aids. You should have this case available when necessary. If moisture build-up is a concern, store the hearing aids in a closed container with an absorbent dry-pack available from your provider.

### **Schedule Regular and Periodic Checkups**

In-office cleaning and servicing are usually included free with your purchase of hearing aids and you should take advantage of this service from your hearing healthcare provider. We recommend servicing be done at least every three months (like servicing an expensive car). Hearing aids should be checked for power loss, dirty contact points, plugged vents and openings, and so forth. A more comprehensive servicing should be performed at least annually. This should include electroacoustic analysis (test box evaluation to ensure maintenance of original manufacturer's performance specifications). BTE wearers should also have the tubing replaced at this time (if not needed at 6 months). There may be a modest charge for this more comprehensive servicing but it's worth it. Residents of drier climates like Arizona will need more frequent tubing changes than those living in more moist environments like Louisiana. Next to daily cleaning, regular in-office servicing is the most important maintenance you can obtain.

### **Have a Spare Set of Hearing Aids**

We conclude with a discussion of hearing aid spares. We hope it's clear from the information contained in this chapter that basic knowledge of hearing aid operation together with use of simple maintenance techniques can go a long way to preventing hearing aid breakdown. We hope it's also apparent that despite your best efforts, without warning, your hearing aids can fail from time to time. If you're a person who's totally dependent on your hearing aids in order to communicate, you might want to consider the purchase of back-up hearing aids for use in emergencies. Maintaining two sets of hearing aids may initially cost more. It could be argued, however, that two sets used more or less alternately will last twice as long as one set used full time.

So, spare aids may not cost more in the long run. It's like the wisdom of owning two pairs of shoes versus only one pair. For some wearers, this works. Also, the availability of spare hearing aids removes the anxiety that might accompany this loss. Some hearing healthcare providers provide loaner aids which may or may

## PREVENTIVE HEARING AID MAINTENANCE

not be suitable to your personal needs but is worth inquiring about. How can you judge whether you should have spare hearing aids? The best test we know is an honest answer to the following question: *Does the mere thought of even a temporary loss of the use of your hearing aids create in you the slightest tinge of anxiety?* If it does, then you probably should have a spare set. Actually, the availability of “spares” is something we all insist upon with commonly used devices we consider vital. (Our cars have spare tires, for example, so we can avoid panicking when a tire fails.) In our experience, people with severe hearing loss will regularly maintain a backup set of hearing aids, especially when the livelihood of such individuals is dependent on good hearing. Furthermore, the federal government for decades has issued to eligible military veterans two complete sets of hearing aids so that good hearing won't be interrupted by temporary breakdowns. You may be one who would also like the extra security of backup aids in case yours go in for repair. Backup hearing-aids can be the still-functioning old set that you just replaced with new ones, or where money is of lesser concern, they can be hearing aids of more current vintage. If you choose to purchase or otherwise have available a set of spare hearing aids, try to ensure that they take the same size battery as your regular ones. This will lend itself to far more convenience than having to store and maintain two different kinds of fresh batteries.

### Hearing Aid Disuse and Longevity

The question arises, “Will my spare hearing aids wear out faster or maybe even slower if they're not used regularly?” It's true that peak performance of electromechanical devices can decline with disuse. This need not happen with spare hearing aids, however. This is avoided by rotating them periodically with your regular hearing aids, for example, once each month or more. This level of activity will keep them running and assure you that they're available and working if and when needed. During extended periods of storage (30 days or longer) the batteries should be completely removed so as to prevent corrosion from possible leakage. While cost is a serious consideration, two sets of hearing aids is ideal.



### Help From Family and Friends

Sometimes you just need a little help. Your spouse, family member or friend can provide that help with problem solving. As hearing aids have gotten smaller, so have the batteries. Sometimes the batteries are difficult to insert and remove from the hearing aid. Having someone help you orient the battery so that you get it in right will avoid the consequences of getting it in wrong and possibly damaging your hearing aid.

Inserting and removing your hearing aid can be difficult and if the hearing aid is placed in your ear improperly it may not function properly or even irritate your ear. A family member or spouse can help you make sure that the hearing aid is fitting correctly and well positioned in the ear.

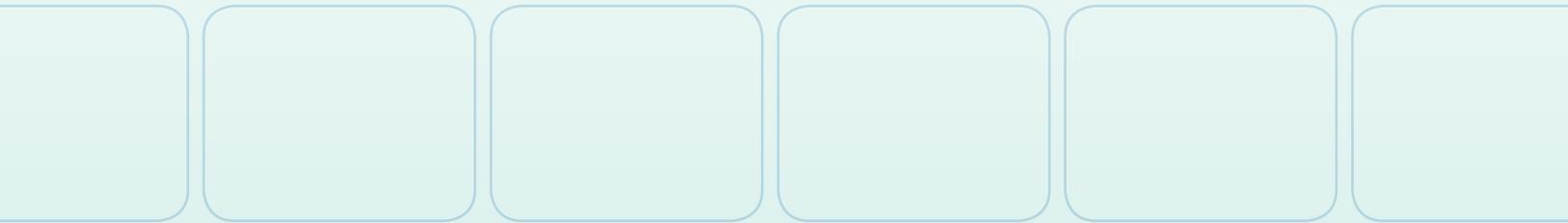
The openings in your hearing aid where sound is delivered to your ear are very small and when they become blocked with debris this will keep you from hearing at your best. Sometimes, the cleaning process requires small tools and it can be a frustrating process when you have difficulty seeing. A friend or family member can help with the cleaning to make sure your hearing aid is working properly.

Probably the best help you can get from a friend or family member is their help in monitoring your communication ability. You may not always be aware of communication that you are missing or problems with the hearing aid. This person can alert you that your hearing aid is making that “squealing” from feedback or an adjustment is needed in order to hear better. Friends and family can help out with just about every aspect of problem-solving and extending the life of your hearing aids.

## CONCLUSIONS

Today's hearing aids, products of an unprecedented technology, are creations of remarkable quality. Their more accommodating size, improved performance and generally high reliability are characteristics as impressive to most audiologists and hearing instrument specialists as they perhaps are to you. They're built to operate for long hours under adverse conditions and they do so with batteries while smaller, work harder and produce more energy for their size than those of an earlier era. For the most part, these hearing aids perform their valuable service unflinchingly.

Note: This material is a revision of an original chapter the first author co-wrote with Thayne C. Smedley, PhD, "Extending the Life of Hearing Aids and Problem-Solving," for the first and second editions of, *The Consumer Handbook on Hearing Loss & Hearing Aids: A Bridge to Healing* (Auricle Ink Publishers, Sedona AZ: ©1998 and ©2004).



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