3—Now You Have New Hearing Aids

Hearing in noise is arguably one of the most computationally difficult things we ask our brain to do—Northwestern University's Auditory Neuroscience Laboratory

Getting Used To Hearing Aids

Adult-onset hearing impairment usually advances gradually, slowly reducing our sensitivity to high frequency sounds as it inches its way toward the lower frequency sounds. Over time this muffling of sound becomes the norm.

If we could magically give you perfect ears and hearing such that you did not need hearing aids, you would be shocked at all the little noises you would start hearing. It would take you a while to get used to hearing with perfect ears.

A normal hearing person is used to, and usually ignores, hearing their hair rub on their shirt collar, the crickets through the window at night, the loud crunch of eating popcorn, and the sound of their urine stream hitting the toilet water.

Some first-time hearing aid users often nudge us away from the best hearing they can get toward the auditory world to which they have grown accustomed. There can be a trade-off between a hearing aid setting that gives the best speech understanding, usually a setting where you hear everything, and adjusting the hearing aids until they sound "normal". At first if the hearing aids are ideally adjusted, it might seem as if you are hearing too much.

- *Your voice will sound different to you at first*
- *You will hear road noise*
- *WalMart is loud*
- *Eating carrots is loud*
- *Normal hearing individuals can't choose what they do and don't hear, but they do learn to ignore some sounds*
- *If a normal hearing individual hears a sound, we usually want you to hear it too*

Your voice will likely sound different to you at first. It is one thing if outside sounds are different, but it is a bit of a jolt when your own voice sounds different. It is a little like hearing your self over a tape recorder; it just doesn't sound right (see the section "Your Voice" later in this chapter.)

Many people want hearing aids that do not pick up background noise. And that makes sense because that is where most hearing impaired people have inordinately greater difficulty understanding speech.

If you hear background noise without the hearing aid, the hearing aid is not going to make that background noise softer.

Consider three things about reducing background noise. One is that if you hear the background noise without the hearing aid, the hearing aid is not going to make that noise softer. The other is that what is background noise to one person is a noise of particular importance to another person. Music is one example. Some would prefer a hearing aid that reduces music, while others would hate that.

The third consideration is that very often the background noise is voices. If you are in a group of ten people who are all talking, the hearing aid does not know whose voice you want to hear and whose you do not want to hear. (Although it can make the assumption that where your head is facing is usually toward the sound of interest, and also that the loudest voice is the one you want to hear.)

Hearing aids do have a few tricks up their sleeves when it comes to background noise. They can tell wind noise and mechanical noise from speech and make adjustments accordingly. They can also be made to be directional.

Your outer ear is naturally directional. Because of its cupped shape you hear sound coming in front of you better than sound in back of you. CIC, iIC and Canal aids benefit from this natural directionality because their microphones set inside the bowled part of your outer ear.

Hearing aids with directional microphones can go a step further and form a more narrow beam of directional sensitivity, especially if the left and right hearing aids are communicating with each other.

Another way that hearing aids can improve the signal of interest is through the use of a remote microphone, where a separate microphone is provided. This microphone is housed outside of the hearing aid and can be given to the spouse who can wear it on her/his shirt collar, or can be put on the preachers pulpit so that the person-of-interest's voice sounds as close to your ear as the remote microphone is close to their mouth. A remote microphone is often used with school age children and the teacher wears the microphone. Historically, this has been called an auditory trainer.

Gradual or All At Once

Most experienced hearing aid wearers wear their hearing aid most of the day and take them off at night when they go to bed. Part-time hearing aid usage is not usually the best. However, wearing hearing aids all day can be overwhelming to some new wearers.

When a new hearing aid wearer first wears his or her hearing aids out in the real world they can get an avalanche of sound that they are not used to hearing. So, some people may do better if they wear the hearing aids only in quiet situations at first and gradually increase the amount of time and situations where they wear their hearing aids.

For many new hearing aid wearers, my suggestion is that they wear their hearing aids at first as much as possible, excluding bedtime. If the hearing aids allow some sounds to exceed an uncomfortable loudness, adjustments probably need to be made. If the hearing aids are rubbing a sore spot on the ear, adjustments need made. However, if the wearer is simply overwhelmed by sound, tired of hearing, or their ear is tired of having something on/in it, removing the aid and gradually increasing the wearing time may be the answer.

For other new hearing aid wearers it may be preferable to use a schedule of gradually getting used to hearing aids. For example, wear the hearing aid in quiet settings for a few hours the first day. The next day, wear the aid for 4-5 hours in quiet. On subsequent days, gradually include wearing the hearing aid in noisy situations until after one or two weeks you are wearing the aids most of the day.

Audiologist Dr. Robert Martin leans toward a progressive approach in getting used to hearing aids. He uses a baseball analogy: “Learning to use a hearing aid is like playing baseball. First you need to get on base. It is foolish to try and hit a homerun every time you bat.” His first goal is to make the hearing aid comfortable to wear and make sure his patient can hear the people at home. With follow-up in subsequent weeks, he gets the hearing aid settings to a level closer to what allows maximum benefit.

How It Might Feel In Your Ear

The skin of your ear and ear canal is very thin. The outer half of your canal has skin over a little fat which is over cartilage. The inner half of your ear canal is thin skin over bone. It is unforgiving.

It will feel like something is in your ear, but it should not hurt. If the hearing aid does hurt, or is causing a sore spot on your ear, you will need to return to the person who fit the hearing aid. It might be that you are not getting the hearing aid in correctly or it might be that the hearing aid has a high spot and needs reduced accordingly.

If the hearing aid hurts or is causing a sore, your ear will not toughen and time will not usually take care of this problem. Time will take care of getting used to how a hearing aid sounds strange to you, but time will not make your ear stop hurting. Remove the aid and return to the Audiologist.

The outer ear is odd in shape and the ear canal is tortuous, and a hearing aid can be a chal-

lenge to insert for some people. It may be helpful to take a family member or friend with you when you get the hearing aid. That way, that person can help you insert the hearing aids should you have difficulty doing so.

At first it will feel like something is in your ear, but it should not hurt.

There can be instances where, after years of fitting ok, the hearing aid starts rubbing a spot on the ear. Some earmold and hearing aid plastics can shrink, crack or break, but the usual cause of this is a change in the shape of the ear. Your face is not the same shape today as it was ten years ago. The same is true for your ear and ear canal.

Some tight fitting hearing aids will also tend to "wallow out" the ear canal. Most hearing aids are a little tighter in the ear when you first get them than they are a few years later.

I liked my old hearing aids better than my new hearing aids

If you like your old aids better than your new ones, is it because of the physical fit, because of the sound of the aids, or both? If the new hearing aids are tighter than your old ones, this is probably good and expected. Hearing aids will tend to loosen-up in your ears with time. If they are too loose, you might lose too much sound around them and therefore weren't hearing well with your old, loose-fitting aids.

If it is because you don't like the sound of the new hearing aids as well, could it be because you are hearing more with them than you did with the old ones? You probably should be. Just as it may have been a bit overwhelming when you first got your old hearing aids and were hearing the noisy world in a new way, your new hearing aid may be better suited to your new hearing loss and it is a bit of a challenge again.

If it is because you actually still understand speech better with your old hearing aids, then it is time for follow-up. Take both sets of hearing aids with you so that the Audiologist can compare their settings and determine what it is about the old hearing aids that works better for you.

Follow Up

There is often a conflict between what you need in order to hear well and what you want. You may not want your voice to sound funny to you. You may not want to hear yourself eating something crunchy. You may not want to hear the refrigerator run. So sometimes we start you with a fitting that is a little softer, with a little more venting, than you may ultimately end up with. With follow up, we can tell a few things about your hearing aid fitting that might not have been evident at the initial fitting, and we can gradually get you to hearing everything you should be hearing (as you get used to ignoring these new sounds).

If you take 10 people with perfect hearing and ask them to adjust a radio, some will turn the volume higher than others, some will turn the treble up; some will turn the bass up. All 10 have

perfect hearing but all 10 arrive at different settings. This variation among 10 perfect hearing individuals can also be evident in 10 people with your same hearing.

Sometimes also, your auditory system can become so attuned to the way that your old hearing aids processed sound, and even distorted sound, that it can take a while to get used to newer, less distorted hearing aids.

What I am trying to say is that you will probably need to go back for follow up after your initial fitting. You may not. But we can tell a lot about your fitting after you have worn your hearing aids for a while. If you come back, say after a week, we can take a look at your ear and make sure that the shell of the aid does not have a high spot, make sure that you are correctly inserting it, check where you have been setting the volume control, show you where your hearing aids are collecting wax and how to remove it. We can get an idea of what types of sounds might be bothering you. Sometimes we might make changes to the way hearing aids amplify sounds, but sometimes we might leave alone with the expectation that what you are experiencing is normal for someone whose hearing has gradually diminished over many years.

Come back and let us know how you are doing. You won't hurt our feelings. You won't use our time unnecessarily. Let us know what is wrong and what is right.

What I am also saying is that fitting hearing aids is partially a matter of matching the characteristics of the hearing aid to the characteristics of your hearing on a scientific basis. However, our tests are imperfect and how the hearing aids sound to you is important and worth considering.

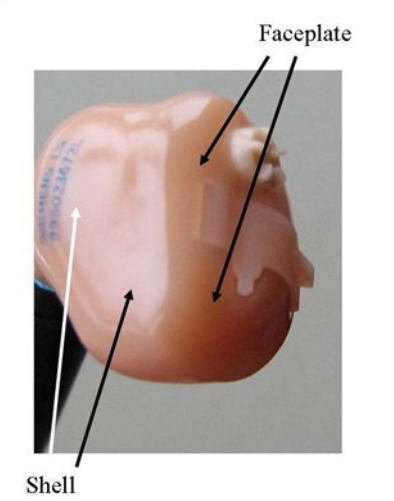
It might also be helpful to keep a diary of your first week's experience wearing the hearing aid. What sounds might have surprised you? What sounds were too loud? Does the TV volume you prefer now coincide with your spouse's preferred volume?

Here are a few things to make note of and report back to your Audiologist:

- Did any sounds get uncomfortably loud? What were they?
- Is the TV volume you now use with your hearing aid, the same as your spouse prefers? Is your spouse hearing impaired?
- Is your own voice sounding less disagreeable to you now that you have had a chance to get used to the aid?
- Were you able to use the phone ok?
- Are you able to insert and remove the hearing aids ok?
- Do you know how to clean wax from the hearing aids and how to change batteries?

- Is your ear sore anywhere?

"The Hearing Aid Goes till 3 O'clock and Then It Gradually Stops"



This is referred to as fading. The hearing aid works ok in the morning after it has set out all night, but then during the day as you wear it, it gradually stops working. This is usually from wax or other debris in the receiver port of the hearing aid.

Over night when the aid is setting out of your ear, the wax dries. When you put the aid on in the morning, there is enough room around the dried wax for sound to exit the hearing aid.

In your ear the wax absorbs moisture and the wax swells, gradually blocking off the sound from the hearing aid. This will eventually happen to most hearing aids. The following will help postpone it from happening.

Cleaning In-The-Ear Hearing Aids

One-piece hearing aids that fit entirely within the outer ear are categorized into 4 sizes or styles: 1) invisible-In-The-Canal or iIC, 2) Completely-In-The-Canal or CIC, 3) In-The-Canal or ITC or Canal and, 4) In-The-Ear or ITE or Full-Shell ITE.

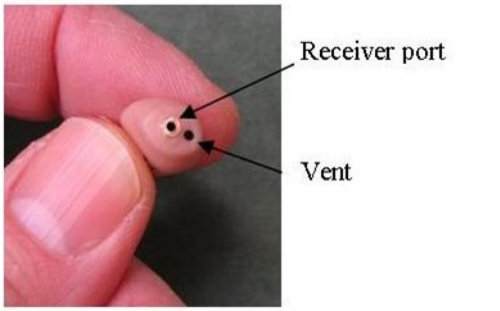
All of these hearing aids are cleaned the same. They have a shell, a faceplate, and a receiver port. Any time you see the word "receiver" associated with a hearing aid, think of "loudspeaker" or "speaker", the part of the hearing aid that turns electrical current into sound.

The faceplate is mostly flat and faces the outside when it is in your ear, and is the part of the hearing aid in which the battery fits.

The shell is the contoured portion that touches your ear canal and is not seen when the aid is in your ear. You can often see the seam between the faceplate and shell. Most of the components of the hearing aid are assembled on the faceplate and then the faceplate is adhered to the shell.

Clean the wax and skin debris from the shell by wiping it with a cloth or tissue that has been moistened with a solution made for hearing aids, vinegar or alcohol. Since alcohol tends to age and harden plastic it should be your last choice. Your first choice will be cloths/solutions made just for cleaning the shell. These can be purchased where you bought your hearing aid. They do not age the plastic, they clean the debris from the shell, and they kill many of the germs that like the warm, damp environment of your ear canal.

All of these hearing aids have a receiver port. The receiver port is located at the end of the hearing aid, the part that points toward your eardrum. Often there is another opening here also: a vent. Pictured is a hearing aid showing the vent and receiver port. The receiver port usually has either a rubber tube in it or a wax filter over it.



The vent can range in size from very large to very small and sometimes there is no vent at all. The size of the vent is determined primarily on the severity of your hearing loss. It is a channel that travels from the canal of the hearing aid to the faceplate of the hearing aid. Since there are no electronic components in it, it can be easily cleaned by pushing a small nylon string through it (if it is large enough) or by brushing the wax from it.

When cleaning the vent you will want to be careful in 2 ways. First, sometimes the vent can have a sleeve or other piece of plastic that has been placed to make the effective size of the vent smaller. Do not remove this. The size of the vent is almost always critical to the way the hearing aid performs in your ear.

Second, do not to poke a hole in the wall of the vent, particularly between the wall of the vent and the inside of the hearing aid. So don't stick a metal pin into the vent, use only a plastic string or the bristles of a brush.

The most common thing that causes an ITE hearing aid to stop working is wax in the receiver port. Even if your ear canal does not make much wax, the hole can plug with skin and what little wax you do make.

- Clean the receiver port in the morning after the hearing aid has been out of your ear all night. This allows the wax to dry. If you clean the port when the wax is moist it may smear and not crumble away from the hearing aid.

- Turn the hearing aid upside down over a toothbrush so that the receiver port is pointing to the ground and run the receiver port back and forth in the bristles of the toothbrush. Much of the dried wax will fall away from the hearing aid in this manner.

- Most hearing aids have a wax filters, sometimes called a wax guard, in or over the receiver port. Some of them you can change, some of them you can't. Ask your Audiologist about your wax filter. If the wax filter happens to dislodge when you clean the receiver port with a toothbrush, the aid will work just fine without the filter. However, you'll want to have the wax filter replaced when you can to help keep the receiver protected.

- Clean the aid over a table or desk. This will help keep the aid from falling to the floor. The aid will usually survive the fall to the floor, but it will not survive you stepping on it.

- One more tip. Don't tell anyone I told you this. As a last resort if your hearing aid is not working and changing the battery or cleaning the receiver port did not revive it: *lightly* tap the hearing aid against a hard surface with the receiver port turned toward the ground. Occasionally this will dislodge some wax and the aid will work. Again, you would do this as a last resort. Do this after the aid has set out of your ear over night and the wax has dried.

If you tend to get a lot of wax in your hearing aid, if your ear canals itch, or if your ear canals tend to get infected easily, you should consider purchasing an electronic hearing aid drier/ cleaner. There are many variations on these but most commonly they contain:

- An ultra-violet light to kill germs.
- A fan and heater to blow warm air over the hearing aid.
- Some also have a desiccant or chemical drying agent.

If you do use an electronic drier with an ultra-violet light you might also lay the aid into the chamber facing up one night, and then facing down the next night so that the light can reach all parts of the hearing aid.

After reading this you may be thinking that you will just clean your ears everyday with a cotton swab so that you don't have to worry about getting wax in the hearing aid. Read the "Cleaning Your Ears" section to find out why this is not a good idea.

Cleaning Behind-The-Ear (BTE) Hearing Aids

There are 3 basic parts to BTE hearing aids: the hearing aid, the earmold, and the tubing connecting the mold to the aid. The earmold is what touches you ear canal and therefore what gets wax in it.

Since there are no electronics in earmolds, you can pick the wax out and brush and wipe the mold just like with the ITE hearing aids. Molds are made of plastic and you wipe them with a

cloth and cleaning solution, our first choice is a solution made just for this, second is vinegar, and last is alcohol (since alcohol has a drying effect on the mold).

Many earmolds also have a vent and, if your mold has a vent, you can usually get a bit of fishing line to run through the vent and keep it open.

The tubing connecting the mold to the aid gets hard and brittle with time. Once the tubing loses its flexibility you will need to have it replaced. For most people this should be done about once a year.

Usually the BTE hearing aid itself doesn't require much cleaning but keep hair spray out of it and wipe debris off it with a dry cloth.

RIC hearing aids are a hybrid between a BTE and ITE. They will have a receiver located in the earmold or in a plastic dome earpiece. You can brush and clean the dome like you would an ITE aid. If the dome plugs with wax it will usually come off of the receiver and you can run a plastic line through to clear the wax. Since the domes are plastic, they harden over time and need replaced occasionally.

Receiver of a RIC hearing aid. The black dome here is plastic and can be taken off for cleaning.

When the dome is removed you can get at the receiver which will have a wax filter. This filter can usually be changed and you will need to ask your Audiologist how to do this.

Germs and Hearing Aids

Healthy ears tolerate hearing aids and earmolds in them very well. However, if you are diabetic, if your wear your hearing aid 24 hours a day, or if you do not have a normal immune system, having the hearing aid close off your ear canal can make it a more prone to infection because your ear canal will be a bit damper and warmer.

Since germs can stay on your hearing aid it is a good ideas to wipe them off at night after you take the aids out of your ears. Use a cleaning cloth made for this or use a little vinegar on a tissue. I've seen some people, especially kids, stick the aid in their mouth, wetting the hearing aid before inserting it in their ear. Do not do this.

When you bring your hearing aid to us do not get your feelings hurt if we use a glove to handle the hearing aid or if we don't immediately touch your hearing aids. We can't see if there are unwanted germs on your hearing aid or not.

Your hearing aid should not have an odor when you remove it from your ear. If it does (have an odor) chances as you have an infection in the skin of the ear canal.

Cleaning Your Ears

We have several brochures in our office about hearing aids, about vertigo, about testing kids' hearing and so on. One brochure is about cleaning your ears. It is the brochure that everyone takes. It needs replenished 3 times as often as the other brochures. Anyone who has ever brought a non-functioning hearing aid to me and we showed them how wax was plugging the receiver port often starts inquiring about cleaning their ears to keep the wax gone.

"Cerumen" is used interchangeably with the word "earwax", although typically we will call it cerumen in the ear canal and wax when it is in the hearing aid.

Cerumen is made by glands in the outer third or half of your ear canal, the sebaceous glands and modified apocrine sweat glands. The waxy secretions from these glands combine with hair and sloughed skin (epithelial) cells to form what most people call earwax.

Cerumen protects the ear by repelling moisture, bacteria and fungi. Normally, cerumen is eliminated or expelled by the slow movement of the outer layer of skin of the ear canal which carries cerumen to the outside.

Hearing aids can interfere with this conveyor belt movement of cerumen outward. Since the holes of the hearing aid are small it doesn't take much cerumen to plug them, and the cerumen probably does collect in your ear canal faster when you wear hearing aids.

The first thing people think about when trying to keep cerumen out of their hearing aids is a cotton swab.

Cotton swabs are the #1 cause of wax impaction, #1 cause of itchy ears, and an avoidable cause of tympanic membrane (eardrum) perforation.

If you push a swab into your ear canal, some cerumen usually adheres to the swab but, very often, some will be pushed deeper into your ear and does not come out with the swab. Do this enough and the cerumen gets jam-packed deep in your ear canal.

Boy, it feels good to scratch your ear canal with that swab, doesn't it? Repeated cleaning with a swab not only takes the protective layer of cerumen off of the skin; it removes the top layer of skin and irritates the nerve endings within the skin. This makes your ear itch and makes your ear canal dry and prone to infection, particularly if you wear hearing aids, which tend to hold in heat and moisture.

So, how do you clean your ears? Cover your finger with a dry or water-moistened handkerchief or washcloth and wipe what you can get with your finger. Do not worry about wax that is deeper than the ear canal entrance: it is supposed to be there and is not a sign of poor hygiene.

Earwax is not soluble in water and so getting water in your ear doesn't help. If you do get water in your ear canal, you want to allow it enough time to dry before putting in your hearing aid. Trapped moisture tends to make ears itch.

A word about ear candling: No. It does not work (Seeely and others, 1996; FDA, 1998).

So, what about the hearing aid and getting wax in the hearing aid? Hearing aids do tend to cause cerumen to accumulate more in your ear than otherwise. So, try to keep wax out of your hearing aid as previously discussed. And you may have to have your ears checked periodically for cerumen. The Audiologist can do this and check your hearing aid at the same time and this is usually done once a year, sometimes more.

Your Voice

There are several reasons why your voice will sound different to you with a hearing aid in place. One reason has to do with simply hearing your voice through the hearing aid now, just as you are hearing other peoples voices through the hearing aid. Since you are used to hearing your voice with muffled hearing, it is a surprise to hear your own voice when unmuffled. I've had people comment that every time they say a word with "s" in it, that they hearing something making a sound, or making an "s" sound, or making a distorted sound. The reason is that they have not been hearing themselves say "s", probably for many years.

It can also be compared to hearing yourself over a tape recorder. Your voice seems odd when you hear it over a tape recorder or through a hearing aid. A lot of your own voice is normally heard through your body (bone conduction), whereas you normally hear someone else's voice through the air and then your ear (air conduction). With the hearing aid you are probably hearing more of your air conducted voice.

Another reason that your voice may sound different is the occlusion effect. The occlusion effect is best explained by example. Firmly plug your ears with your fingers and say the vowel "ee". When you do this, it is as if you are hearing the "ee" sound in your ears, and the "ee" sound is louder than it would be with your ears unplugged.

The reason for the occlusion effect is that much of your own voice is conducted through your body and escapes outward through your ear canal. You can actually place a microphone in someone's ear and record their own voice. When you occlude the ear with your fingers, or with a hearing aid, less of your voice escapes outward

A lady removed her hearing aid in the bathroom and dropped it. She couldn't find it and figured it might have fallen into the sink trap. A plumber took the trap off but the hearing aid wasn't there, so they tried the toilet. The aid wasn't stuck in the toilet plumbing either. A month later when she getting ready to do laundry, she found the hearing aid in the hem of her pants.

and more goes inward to your hearing mechanism. This is one of the reasons for a hearing aid vent.

If You Are Going To The Hospital

Hearing loss is invisible and not often understood by those with normal hearing. Doctors and nurses may not be aware of your hearing difficulties. Many hearing impaired people feel that their hearing worsens when they are ill. Their hearing may not actually be poorer, but those with impaired hearing have to exert more effort to understand what is said, increasing their cognitive load. When you are ill, this is harder to do and you cannot devote the same energies to trying to hear what is said.

- Tell the nurses and aides that you have a hearing loss. Don't assume they know.

- Ask that the International Symbol for hearing impairment be placed on your chart and door as a reminder to the hospital staff.

- Hearing aids have a tendency to get lost during hospital stays. When off your ears, place them in a special container with your name on it. By all means, do not wrap them in a tissue and place the tissue on the bedside stand. Tissues tend to get swiped into the trash.

- Ask for assistive listening devices for the television and telephone.