

Your Guide To

# HEARING AIDS



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## The Impact of Treated Hearing Loss on Quality of Life

Sergei Kochkin, Ph.D. — Better Hearing Institute, Alexandria, Virginia

It would seem that hearing is a second-rate sense when compared to vision in our visually oriented modern society. People with hearing loss delay a decision to get hearing help because they are unaware of the fact that receiving early treatment for hearing loss has the potential to literally transform their lives. Research by the National Council on the Aging on more than 2,000 people with hearing loss as well as their significant others demonstrated that hearing aids clearly are associated with impressive improvements in the social, emotional, psychological, and physical well-being of people with hearing loss in all hearing loss categories from mild to severe. Specifically, hearing aid usage is positively related to the following quality of life issues. Hearing loss treatment was shown to improve:

- Earning power
- Intimacy and warmth in family relationships
- Emotional stability
- Perception of mental functioning
- Group social participation
- Communication in relationships
- Ease in communication
- Sense of control over life events
- Physical health



And just as importantly hearing loss treatment was shown to reduce:

- Discrimination toward the person with the hearing loss
- Anger and frustration in relationships
- Feelings of paranoia
- Social phobias
- Hearing loss compensation behaviors (i.e. pretending you hear)
- Depression and depressive symptoms
- Anxiety
- Self-criticism

If you are one of those people with a mild, moderate or severe hearing loss, who is sitting on the fence, consider all the benefits of hearing aids described above. Hearing aids hold such great potential to positively change so many lives.

**You Should Hear What You Are Missing!**

## Hearing Aids

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### HOW HEARING AIDS WORK

While the processing of modern hearing aids is complex, and computer programming is required to make some of the adjustments, the basic components that make them work has not changed. The basic function of a hearing aid is as follows:

- Sound waves enter through the microphone, which converts acoustic signals into electrical signals.
- The amplifier increases the strength of the electrical signal.
- From the amplifier, the signal is then transformed back to an acoustic signal by the receiver (a miniature loud speaker).
- From the receiver the signal is channeled into the ear canal, either through a small tube or through an ear mold.
- A battery is required to power the hearing aid and enable the amplification process.

Many hearing aids also have user controls (e.g. toggle switch, volume control wheel, push button, or remote control) that enable the wearer to adjust a variety of hearing aid parameters, including:

- Turning the hearing aid “on” or “off”
- Changing the volume
- Switching to the telecoil
- Switching between omni- and directional-microphone settings
- Switching to a different pre-programmed memory

### STYLES OF HEARING AIDS

Hearing aids have been available in four styles: body, eyeglass, behind-the-ear (BTE), and in-the-ear (ITE). Included in the category of ITE hearing aids are in-the-canal (ITC) and completely-in-the-canal (CIC) styles (all shown in the figures below). While body and eyeglass style hearing aids were regularly used 40- 50 years ago, they comprise only about 1% of all hearing aids marketed today. Instead, most individuals choose ITE (approximately 80%) or BTE (approximately 20%) style hearing aids. This transition in style, use, and preference is occurring for a number of reasons, including the reduction in the size of the components, durability, and cosmetic concerns on the part of the consumer.

The **ITE** style hearing aid fits directly into the external ear. The circuitry is housed primarily in the concha (external) portion of the ear. Due to the miniaturization of the component parts (including the microphone, receiver and battery), it is possible to make hearing aids small enough to fill only a portion of the concha (ITC) or fit deeply into the ear canal (CIC). All three of these styles have typically been considered to be more modern and cosmetically appealing. However, modern BTE hearing aids have become smaller and at times are less noticeable than some ITC hearing aids. Other features of in-the-ear aids are as follows:

- More secure fit, and easier insertion and removal than with BTEs.
- Improved cosmetic benefits with smaller styles (CIC, ITC).
- Less wind noise in the smaller styles than with BTEs.
- Directional microphone technology available for most styles, excluding CICs.
- Deep microphone and receiver placement with CICs may result in increased battery life and high frequency amplification compared with other styles.
- All components are integrated into a one-piece shell, which may be easier to handle and operate than for BTE styles.

The **BTE** style hearing aid is housed in a small curved case which fits behind the ear and is attached to a custom earmold molded to the shape of your outer ear. Some BTE models do not use a custom earmold; instead the rubber tubing is inserted directly into the ear. The case is typically flesh colored, but can be obtained in many colors and/or patterns. Other features include:

- BTEs may be the most appropriate choice for young children, as only the earmold needs to be replaced periodically as the child grows and the ear changes in dimension.
- Typically, BTEs are the most powerful hearing aid style available, and may be the best option for persons with severe-to-profound hearing loss.
- FM and direct auditory input is routinely available as an optional or standard feature.
- Telecoil circuitry is often more powerful than with ITEs.
- Non-occluding earmolds may be used with BTE hearing aids, if a medical condition exists or if the patient reports a “plugged” sensation when wearing other hearing aid styles.
- Directional microphone technology available with most BTE styles and models.
- Larger battery sizes used in BTEs may be easier to handle than smaller styles for those with limited manual dexterity or vision deficits.



BTE w/ earmold



BTE w/ small tubing



ITE



ITC



CIC

## Brief Guide to Modern Hearing Aid Technology

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In addition to the basic features of hearing aids discussed earlier, there are many other features available in modern hearing aids—some of them are for convenience and ease of use, others are designed to improve speech understanding or listening comfort.



### Adaptive Feedback Cancellation

Acoustic feedback (whistling from the hearing aid) can be annoying, embarrassing, and in some cases, prevent the hearing aid wearer from using the correct amount of gain. Many of today's hearing aids have an automatic feature that quickly detects acoustic feedback and cancels it. This feature is designed to manage transitory feedback (e.g., caused by placing one's hand or a telephone next to the ear), and is not a solution to a poorly fitted ear mold or hearing aid.

### Automatic Gain Control—Output (AGCo)

AGCo or output compression is used to put a “ceiling” on loud sounds. It handles the output after the amplifier, and can be adjusted to correspond to the patient's threshold of discomfort (maintaining sounds below this level).

### Automatic Gain Control—Input (AGCi)

AGCi, or input compression, often referred to wide dynamic range compression (WDRC) is used to “repackage” the speech signal (and other incoming sounds) to correspond to the reduced dynamic range of the hearing aid user. That is, if the incoming sounds have a 60 dB range, and the patient only has a 30 dB range of useful hearing, the sounds might be “compressed” by 2:1 to fit into the useful auditory region. The notion is that most people with a hearing loss need more gain for soft sounds than for average, and more gain for average sounds than for loud. WDRC accomplishes this automatically—in fact, if the WDRC is programmed correctly across frequencies, many hearing aid users have little need for a volume control.

## Digital Noise Reduction

With digital hearing aids, it is possible for the hearing aid to analyze an incoming signal and differentiate speech from a broad-band noise signal. This can be accomplished simultaneously in several channels. If the dominant signal is believed to be noise in a given channel, there is a reduction in gain. Note, however, that what a typical hearing aid user might consider to be “noise,” (background talkers at a party) might not be considered “noise” by the hearing aid. While this feature has the potential to improve speech understanding in typical difficult listening situations, this has yet to be verified by research.

## Digital Signal Processing

Until recently, the majority of hearing aids utilized analog signal processing. This has changed rapidly the past few years, and today, nearly all hearing aids sold in the U.S. utilize digital signal processing. The advantage of digital processing is that less space is required, allowing manufacturers to include many more “programmable features” in a small package. Through the use of digital signal processing, the hearing aid can conduct an analysis of an incoming signal, and make a reasonable classification of the content—speech versus broad-band noise versus acoustic feedback (whistling) versus music, for example. This classification can then be used to trigger automatic activation of other special features.

## Directional Microphone Technology

Using special microphones or phase cancellation signal processing, it is possible to configure a hearing aid so that sounds from the side, and especially the back of the hearing aid user are amplified less than sounds originating from the front. It can serve as a type of “spatial” noise reduction if the user is correctly positioned. Directional technology is available on all hearing aid styles except CICs (because of size constraints). Importantly, directional technology does not improve localization of sounds. Research has shown that many hearing aid users prefer directional technology for listening in noise, usually when:

- the noise originates from behind the listener,
- the talker is in front of the listener,
- the listener is close to the talker,
- the room has low reverberation.



Some hearing aids automatically switch to a directional mode when the signal type and/or input intensity are matched to the characteristics of the algorithm. Adaptive directional hearing aids automatically tracks a dominant single noise source (e.g., a car passing by someone on a sidewalk), attempting to provide maximum reduction in gain toward the location of the source.

## Multiple Channels

The majority of today's hearing aids have multiple channels. Each channel represents a portion of the frequency range important for understanding speech. One advantage of multiple channels is that features such as gain and compression can be programmed differently to reflect changes in the patient's hearing across frequencies. Multiple channels also are useful for implementing other features such as digital noise reduction and feedback cancellation (which will be discussed later). There is no consensus regarding how many channels are enough (or how many are too many)—to some extent, this depends on the feature utilized within the channels.

## Multiple Memories

A memory is a location to store hearing aid settings that are designed for a particular listening situation. It is common for hearing aids to have two or three memories. For example, in a hearing aid with three memories, it is common that memory one will be for listening in quiet, memory two will be for listening in noise, and memory three will be for telephone. On the other hand, many hearing aid users find that a single memory works in a variety of listening situations, and may only use one memory. Changing memories is accomplished by using a button (or toggle switch) on the hearing aid, with a remote control device. In some digital hearing aids, it happens automatically.

## Telecoils

With this special circuit, electromagnetic signals can be picked up from the handset of the telephone and amplified in a manner similar to the amplifying function of the hearing aid. Although many hearing aid wearers report benefit with this circuit, there is substantial variability across hearing aids. Telecoils are not available in some smaller custom-made models due to space limitations. Often, hearing aids with multiple memories will devote one memory to the telecoil. In these aids, the telecoil can be accessed through a push button on the hearing aid or by the use of a remote control device.



## The Binaural Advantage

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If you have hearing loss in both ears (bilateral hearing loss), then you are most likely a candidate for two hearing aids. While a hearing healthcare professional can best determine if you are a candidate for two hearing aids, the ultimate decision-maker concerning binaural aids is the person who will wear them. It is important that the person with the hearing loss be given the chance to experience binaural (two hearing aids) amplification, before a decision on one or two hearing aids is made. Similar to the way refractory problems in both eyes are treated with a pair of glasses, it makes sense that bilateral hearing loss should be treated with binaural hearing aids. Let me share with you why two hearing aids are better than one.



**Better understanding of speech.** By wearing two hearing aids rather than one, selective listening is more easily achieved. This means your brain can focus on the conversation you want to hear. Research shows that people wearing two hearing aids routinely understand speech and conversation significantly better than people wearing one hearing aid.

**Better understanding in group and noisy situations.** Speech intelligibility is improved in difficult listening situations when wearing two hearing aids.

**Better ability to tell the direction of sound.** This is called localization. In a social gathering, for example, localization allows you to hear from which direction someone is speaking to you. Also, localization helps you determine from which direction traffic is coming or where your children or grandchildren are playing. Simply put, with binaural hearing, you will better detect where sounds are coming from in every situation.

**Better sound quality.** When you listen to a stereo system, you use both speakers to get the smoothest, sharpest, most natural sound quality. The same can be said of hearing aids. By wearing two hearing aids, you increase your hearing range from 180 degrees reception with just one aid, to 360 degrees. This greater range provides a better sense of balance and sound quality.

**Smoother tone quality.** Wearing two hearing aids generally requires less volume than one. The need for less volume results in less distortion and better reproduction of amplified sounds.

**Wider hearing range.** A person can hear sounds from a further distance with two ears, rather than just one. A voice that's barely heard at 10 feet with one ear can be heard up to 40 feet with two ears.

**Better sound identification.** Often, with just one hearing aid, many noises and words sound alike. But with two hearing aids, as with two ears, sounds are more easily distinguishable.

**Keeps both ears active resulting in potentially less hearing loss deterioration.** Research has shown that when only one hearing aid is worn, the unaided ear tends to lose its ability to hear and understand. This is clinically called the auditory deprivation effect. Wearing two hearing aids keeps both ears active.

**Hearing is less tiring and listening more pleasant.** More binaural hearing aid wearers report that listening and participating in conversation is more enjoyable with two aids, instead of just one. This is because they do not have to strain to hear with the better ear. Thus, binaural hearing can help make life more relaxing.

**Feeling of balanced hearing.** Two-eared hearing results in a feeling of balanced reception of sound, also known as the stereo effect, whereas monaural hearing creates an unusual feeling of sounds being heard in one ear.

**Greater comfort when loud noises occur.** A lower volume control setting is required with two hearing aids than is required with one hearing aid. The result is a better tolerance of loud sounds.

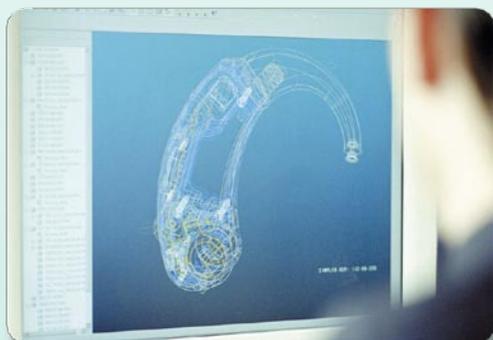
**Reduced feedback and whistling.** With a lower volume control setting the chances of hearing aid feedback is reduced.

**Tinnitus Masking.** About 50% of people with ringing in their ears report improvement when wearing hearing aids. If a person with tinnitus wears a hearing aid in only one ear, there will still be ringing in the ear that does not have a hearing aid.

**Consumer preference.** An overwhelming majority of consumers who have hearing loss in both ears, choose two hearing aids over one, when given the choice to hear binaurally.

**Customer satisfaction.** Research with more than 5,000 consumers with hearing loss in both ears demonstrated that binaurally fit subjects are more satisfied than people fit with one hearing aid.

Logically, just as you use both eyes to see clearly, you need two healthy ears to hear clearly. Before you decide on one hearing aid, try two. Your hearing healthcare professional can demonstrate to you the binaural advantage experience either through headphones (during testing), probe microphones, master hearing aids, or during your trial fitting. Decide for yourself.



## Getting the Most Out of Your Hearing Aids

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There is nothing more important to the manufacturers of hearing aids and hearing healthcare professionals than your satisfaction with their product and services. Like any smart professional, they know that satisfied clients lead to repeat business and to positive word-of-mouth advertising for their products. The hearing aid industry is interested in delighting you, in meeting your needs and exceeding your expectations. The hearing aid industry is people-oriented in that it allows significant interaction and communication between the person with the hearing loss and the hearing healthcare professional to assure that they have done all things possible to meet your needs. It is important to emphasize that you have a roll to play in assuring your satisfaction with hearing aids. So I would like to offer some suggestions for optimizing the chances that you will be one of these delighted hearing aid wearers.

### I. Meeting Your Needs

Simply stated, satisfaction is having your needs, desires or expectations met. Another way of looking at satisfaction is that you are fulfilled, based on a promise which may have come from the hearing healthcare provider, literature, a website, advertising or a mixture of these sources. You have very specific needs and the purpose of the hearing healthcare provider is to find out what your needs are and to meet them. Thus, during the process of rediscovering your hearing it is important to determine what your needs are, what outcomes you are looking for, and most importantly, how you'll know when you've fulfilled your needs. Many people go into their hearing healthcare practitioner with a vague concept of their need: "I can't hear," or "It seems as if people are mumbling more," or worse yet, "My wife says I don't listen to her."

I believe you will have a more fulfilling hearing aid experience if you dig deeper to comprehend the impact your hearing loss has had on your life emotionally, behaviorally, mentally and socially. Write the issues down because they will become a roadmap for both you and your hearing healthcare professional. Also, many hearing healthcare professionals have assessment scales designed to help you understand problems caused by your hearing loss. Once you know your problems, you can better identify your expected outcomes. It's your personal needs list and when it's fulfilled it will bring a smile to your face and the faces of your loved ones. This list also becomes a contract between you and your hearing care professional.

Identification of communication situations that cause you the most difficulty is a critical first step in solving your hearing loss problems. If you can describe difficult listening conditions, your hearing care provider can address the problems and develop strategies to help you manage them. If you need more information, ask for it. Some people want highly technical information about hearing aid systems and hearing loss, while others just want a brief overview of hearing aids and their function. Most providers will be happy you asked, and will give you information such as consumer literature, data sheets, brochures, videotapes and other types of instructional materials. Ask for clarification if you need it. Many complex concepts can be explained in an uncomplicated way.



## 2. Motivation

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Advanced hearing aid technology can now compensate for most hearing losses, but there are still millions of hearing aid candidates who are not ready to accept this fact. Is there a missing link? I think so. People with hearing loss are in different stages of readiness. At one extreme the individual is in denial about the hearing loss. If either a family member or a professional insists on hearing aids at this point, behavior is unlikely to change and most likely such a person would be dissatisfied if pursuing hearing aids.

Individuals highly motivated to improve their hearing have an infinitely better chance of success with hearing aids. Such motivated people recognize their hearing loss and are open to change. They tend to seek out relevant information related to their hearing loss and the technology needed to alleviate the hearing problem. The most highly motivated hearing aid candidates have a willingness to discuss their feelings about their hearing problem and explore some hearing options that might be available to them. When they are fitted with hearing aids, they eagerly explore their new technology, discuss problems during follow-up visits with their hearing healthcare professional, and patiently learn to adapt to their technology.

## 3. Positive Attitude

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The most important personality trait that one could possess is a positive attitude, not just toward the process of obtaining hearing aids, but toward life in general. Motivation is a key to success with amplification. This means a willingness to try hearing aids, adapt to new solutions, and keep frustration at a minimum when obstacles arise. If you view your circumstances as beyond your control, there's a higher probability that you'll be less successful in adapting to change, including hearing aid use.

Hearing aid studies have shown that people who have a positive outlook on life do better with hearing aids. They have a positive self-image and believe they're in control of their life. My recommendation is take charge and be determined to improve the quality of your life with today's modern hearing aids!

## 4. Age of Your Hearing Aids

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It is human nature to want to keep your hearing aids as long as possible in order to maximize value. However, it should be kept in mind that hearing aids do break down over time, ear canals change in shape, and your hearing loss will change over time. In the research that I have conducted, customer satisfaction is at its highest in the first year of use (78%). After 5 years of use, satisfaction drops significantly to 58% and after 10 years of use even lower to 51%.



So, it's important that you make sure that both the physical and audiological fit of your hearing aids is optimized for your hearing loss today rather than the way it was five, ten or fifteen years ago. I would recommend that you replace your hearing aids every four years; if your hearing aids are programmable you may be able to keep them longer since your hearing care provider can usually adjust them to the degree of hearing loss you currently have.

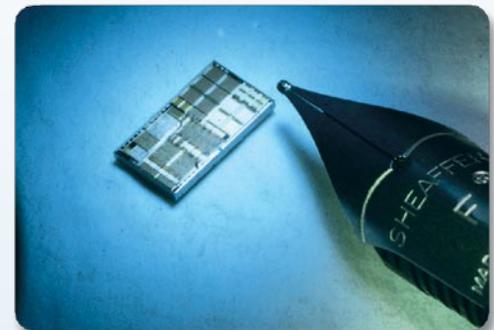
## 5. Choice of Technology

I have conducted extensive research across dozens of technologies. There is no doubt that customers are more satisfied with programmable technology. Advanced programmable technology allows the dispenser to adjust the hearing aid to your specific hearing loss characteristics with more precision. If the product does not meet your needs then the hearing healthcare professional can adjust the hearing aid at their location versus sending it back to the manufacturer for adjustment. This additional flexibility is worth at least 10% customer satisfaction points even with the budget-priced programmable product, because there is a greater likelihood that your needs will be met.

The tools for fitting advanced technology hearing aids are also more advanced. For example, some manufacturers store hundreds of "real world" sounds in the computer and allow you to see how your hearing aids will sound in those situations. This tremendous feature allows the hearing aid dispenser to dynamically adjust the hearing aids based on your personal reaction to sounds. If you can afford advanced technology, do not hesitate to purchase programmable hearing aids.

A second advanced feature to consider is directional hearing aids. They have either two or three microphones in them. Because of their design they are able to reduce annoying background noise and have been proven in both the lab and in the real world to improve your ability to understand speech in more difficult listening situations. I have conducted three studies on directional hearing aids. I found a 17% customer satisfaction improvement in two studies and a 26% improvement in another. The latter achieved a 90% customer satisfaction rating, the highest I have ever seen in a hearing aid. If you are an active person, then directional hearing aids will result in enhanced speech intelligibility in more listening situations.

In these three studies conducted between 1996 and 2001, I found significant improvements in 100%, 93%, and 31% of listening situations measured. Compared to a 30% customer satisfaction in noisy situations for the average hearing aid, these directional hearing aids respectively had customer satisfaction ratings of 67%, 48% and a 49%. More studies are underway, but it is safe to say programmable directional hearing aids unequivocally should be the technology of choice where applicable.



## 6. Controls on Your Hearing Aid

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Your goal is to purchase a hearing aid that never needs adjustments. It should graciously determine the volume you need and adjust its directionality by sensing if you are in quiet or a variety of noisy situations. If you have a completely digital hearing aid, when it comes across steady state noise like in an airplane cabin or around an air conditioner, it should improve your hearing comfort in these situations by making the sounds more tolerable. In addition, it should not give you feedback (whistling, buzzing or squealing) as it amplifies sounds around you. It should restore your ability to enjoy some soft sounds (e.g. leaves rustling, bubbling of a fish tank, etc) while sensing very loud sounds and making them comfortable for you (loud sounds should never be painful to your ears).

While the industry has in principle developed automatic hearing aids, some people need to personally control their hearing aids. Research has shown, especially among experienced wearers, that some people (roughly a third) still need either a volume control, multiple memory switch (quiet versus noisy situation switch) or a remote control in order to control volume or to access different hearing aid strategies for handling different listening environments. Some people need control of their hearing aid for the following reasons: the automatic feature does not meet their needs in 100% of listening situations; psychologically the hearing aid wearer simply must have control of their hearing aids; or they are long-term hearing aid wearers who are used to a volume control and are therefore unwilling to part with it through habit.

It is very important that you determine your needs with respect to control of the hearing aid. You don't want to fiddle with your hearing aids every ten minutes but then again you don't want to be frustrated because your hearing aids work well in most situations but not in 10% of your favorite situations (e.g. listening to soft music). This is an area that needs to be explored with your hearing healthcare professional.

## 7. Sound Quality

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One of the most important aspects of an enjoyable hearing aid experience is that you like the sound quality of hearing aids. So when you test-run your hearing aids, make sure that you consider the following dimensions of sound quality:

- Do you like the sound of your voice?
- Is the sound too tinny?
- Does it make some pleasant soft sound audible to you?
- Are your hearing aids natural-sounding?
- Does the world sound like you are in a barrel?
- Is the sound clean and crisp (sound clarity)?
- Does your hearing aid seem to plug up your ear and in fact muffle sound?
- Are loud sounds uncomfortable to you?
- Does music sound pleasant and rich in texture?
- Does your hearing aid whistle, buzz or squeal on its own?



With today's modern digital hearing aids, most of these problems should be solved. If you notice any of these problems during the trial run and in your follow-up visits, by all means talk to your hearing healthcare professional about these issues. Such professionals are now capable of adjusting your hearing aids to your satisfaction. The extent to which all of the possible sound quality issues can be resolved is of course, governed by the severity of your hearing loss. In other words, some types of hearing losses are simply more conducive to restoration of rich sound quality in many listening environments while others are not.

## 8. Do NOT Purchase Based Only on Cosmetics

Over the past ten years the hearing aid industry has reduced the size of hearing aids to near invisibility. People can now wear them with greater comfort and we're finding very small CIC hearing aids have their distinct advantages such as on the telephone and in outdoor situations. Some people are concerned with cosmetics and prefer the least noticeable hearing aids, in the way that you might choose contact lenses instead of framed eyeglasses. The problem is that the smallest hearing aid may not be the most suitable hearing solution for you for a variety of reasons. Your specific hearing loss may require more power than available in CICs, you might not have the manual dexterity to manipulate them, or your ear canals may not allow them to be retained in your ears.



Because of hearing loss stigma or embarrassment, many consumers come into hearing healthcare care offices and start off the dialog with, "I would like one of those invisible hearing aids that I saw on TV." A likely response may be something like: "We carry invisible hearing aids, but I first need to examine your ears, measure your hearing loss, assess your lifestyle and manual dexterity and then discuss how your hearing loss is impacting the quality of your life. You may or may not be a candidate for these hearing aids." If it is determined that you are not a candidate for CIC hearing aids and you still insist on buying them, the professional hearing healthcare provider will not fit you with the product because in essence they would be giving you the wrong prescription for your hearing loss.



## 9. Developing Realistic Expectations During the Trial Period

Follow the instructions you are given during the initial stages of adjustment. These are designed to help in formulating realistic expectations of what to expect from your hearing aids. You may need a specific wearing schedule for hearing aids. One experienced in-the-canal hearing aid wearer obtained CIC aids a few years ago. He was in his early 30s and had used hearing aids since he was a teenager. When he returned for his two-week recheck, he was asked how long he could wear the aids in the beginning. He said that he could only use them for 15 minutes at a time. Within two weeks he was wearing them full-time and they were completely comfortable. Had he not been counseled that the deep insertion of the shell tip with CIC hearing aids may take extra time to fully adjust, he might have become discouraged and given up on that particular style of hearing aids.

Be patient with yourself. If you have the best hearing aids for your hearing loss and your lifestyle, hang in there. Make sure you're comfortable with the advice you've been given. Ask questions. Remember, your provider is your advocate. Satisfied hearing aid wearers are not shy when it comes to telling others about their success, but unfortunately, neither are the ones who are dissatisfied. No two people are alike, and it's not a good idea to assume that if someone has had a bad experience, that all hearing aids are bad. You could very well be one of the overwhelming majority who has a good experience! There are many reasons why someone may not have been successful, so don't project these conditions and improbabilities onto yourself. Also, do not expect someone else's hearing aids to work for you. Would you wear their eyeglasses and decide whether you can be helped by glasses based on this experience?

Be realistic. Hearing aids will not permit you to hear the flapping of hummingbird wings near a jet engine. Remember that it takes time to get used to hearing aids, especially if you're a new wearer. Keep in mind that background noise is almost always part of your environment, and adjustment to it is required. In time, you will tune out many of these everyday sounds. It's important not to become disappointed or frustrated while your brain begins to adjust to a whole new world of sound. If you're an experienced wearer trying new hearing aids, understand that they might not sound like your old ones. Before you reject them, allow neural hook-ups in the auditory system to adapt to these new sounds. You just might find that you like this new sound better than the old one.

## 10. Ear Wax Protection

One of the common causes of hearing aid failure is that moisture and earwax fill up the receiver tubing of the hearing aid causing the hearing aid speaker to no longer function correctly. I strongly suggest that you purchase hearing aids with proven methods of keeping earwax out of the hearing aid. I have personally studied more than 90,000 hearing aid owners over a two-year period and determined that it is possible to reduce hearing aid repairs by 50% due to receiver failure by using a wax guard at the end of the hearing aids.



## Expectations — A Key to Success

Sergei Kochkin, Ph.D. — Better Hearing Institute, Alexandria, Virginia

Here are some issues you should keep in mind as you develop appropriate expectations about what your hearing aids can and cannot do for you:

- **Restore hearing.** No matter how technically advanced, in most cases hearing aids cannot restore your hearing to normal, except in some very mild hearing losses.
- **Types of hearing aids.** Not all hearing aids perform the same with every type of hearing loss.
- **Hearing in noise.** No hearing aid has been designed that will filter out all background noise. Some hearing aids can reduce amplification of some types of background noise or make you more comfortable in the presence of noise. The most effective solution for improving speech intelligibility in noisy situations is hearing aids with directional microphones. When directional hearing aids are coupled with digital signal processing, you can be assured that your hearing aids are optimized for improving your quality of life in noisy environments.
- **Fit and comfort.** Since you are purchasing custom hearing aids, you should expect the fit to be comfortable; ideally you should not even know they are in your ears. There should not be any soreness, bleeding, or rashes associated with your wearing hearing aids. If there is go back to your hearing healthcare provider.
- **Sounds.** Hearing aids should allow you to: (1) hear soft sounds (e.g. child's voice, soft speech) that you could not hear without amplification; this is part of the enjoyment of hearing aids; (2) prevent loud sounds from becoming uncomfortably loud for you-but very loud sounds that are uncomfortable to normal hearing people may also be uncomfortable for you.



- **Whistling and feedback.** It is normal for hearing aids to squeal or whistle when you are inserting them into your ear (if you do not have a volume control to shut it off). If it squeals after the initial insertion, then most likely you have an inadequate fit, and should tell your hearing healthcare provider.
- **Your friend's hearing aid.** Do not expect your friend's hearing aid brand or style to work for you.
- **Your family doctor.** Do not expect your family doctor to be knowledgeable about hearing loss, brands of hearing aids and whether or not you need them. Data shows that only 12% of physicians screen for hearing loss.
- **Expect benefit.** Expect your hearing aids to provide benefit to you during the trial period. By benefit, I mean that your ability to understand speech has demonstrably improved in the listening situations important to you (within realistic expectations though). This is what you hoped for, and you should expect benefit. If you do not experience an improvement, then work with your hearing healthcare professional to see if the aid can be adjusted to meet your specific needs. Never purchase a hearing aid that does not give you sufficient benefit.
- **Satisfaction guarantee.** Expect to be satisfied with your hearing aids; expect the quality of your life to improve due to your hearing aids.
- **Trial period.** Expect a 30-day trial period with a money-back guarantee if your hearing aids do not give you benefit (there might be a small nonrefundable portion for some services rendered).
- **Adjustment period.** Give your hearing aids a chance, being sure to follow the instructions of the hearing healthcare provider. Most people need a period of adjustment (called acclimatization) before deriving the maximum benefit from their hearing aids (even up to four months).



## Myths About Hearing Aids

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- **I'll just have some minor surgery like my friend did, and then my hearing will be okay.** Many people know someone whose hearing improved after medical or surgical treatment. It's true that some types of hearing loss can be successfully treated. With adults, unfortunately, this only applies to 5-10% of cases.
- **Your hearing loss cannot be helped.** In the past, many people with hearing loss in one ear, with a high frequency hearing loss, or with nerve damage have all been told they cannot be helped, often by their family practice physician. This might have been true many years ago, but with modern advances in technology, nearly 95% of people with a sensorineural hearing loss can be helped with hearing aids.
- **The consequences of hiding hearing loss are better than wearing hearing aids.** What price are you paying for vanity? Untreated hearing loss is far more noticeable than hearing aids. If you miss a punch line to a joke, or respond inappropriately in conversation, people may have concerns about your mental acuity, your attention span or your ability to communicate effectively. The personal consequences of vanity can be life altering. At a simplistic level, untreated hearing loss means giving up some of the pleasant sounds you used to enjoy. At a deeper level, vanity could severely reduce the quality of your life.
- **Hearing aids will make me look "older" and "handicapped."** Looking older is clearly more affected by almost all other factors besides hearing aids. It is not the hearing aids that make one look older, it is what one may believe they imply. If hearing aids help you function like a normal hearing person, for all intents and purposes, the stigma is removed. Hearing aid manufacturers are well aware that cosmetics is an issue to many people, and that's why today we have hearing aids that fit totally in the ear canal. This CIC style of hearing aid has enough power and special features to satisfy most individuals with hearing impairment. But more importantly, keep in mind that "an untreated hearing loss is more obvious than a hearing aid." Smiling and nodding your head when you don't understand what's being said, makes your condition more apparent than the largest hearing aid.
- **Hearing aids will make everything sound too loud.** Hearing aids are amplifiers. At one time, the way hearing aids were designed, it was necessary to turn up the power in order to hear soft speech (or other soft sounds). Then, normal conversation indeed would have been too loud. With today's modern digital hearing aids, however, the circuit works automatically, only providing the amount of amplification needed based on the input level. In fact, many hearing aids today don't have a volume control.
- **I am concerned about the integrity of hearing health professionals and the value of hearing aids.** Rest assured in our research at the Better Hearing Institute with thousands of people like you we found that hearing healthcare professionals receive customer satisfaction ratings of 92%. And 9 out of 10 people indicate that the quality of their life has improved with hearing aids. Overall satisfaction with 1 year old hearing aids is now 78% which is close to satisfaction ratings for most consumer electronics.



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