

My neighbor 'Jack' has a bilateral moderate-to-severe sensorineural hearing loss. A retired NASA engineer, he has an active family and social life in our community of Annapolis, Maryland. When I asked him how exactly I could help, he handed me a one-page handout provided to him by his audiologist. 'Can you help me choose the best model?' he asked.



Best Practices in Hearing Enhancement

What Jack Discovered and What Every Consumer Should Know

By Cynthia Compton-Conley

Knowing what I do for a living, Jack contacted me to ask for help. He had been seen by a local audiologist and had some questions. As we sat at my kitchen table, I looked over his audiogram. The handout from his audiologist showed a table of four models of one brand of hearing aid with the prices of each model listed along the bottom of the page. In small print, the table listed 28 possible features, all of them related to hearing aid circuitry. As the price of the hearing aid increased, more features were listed as available.

As I inspected the table, Jack asked, “Can you help me choose the best model? These features make no sense; I don’t know what they will do for me.”

I responded: “Jack, you are very astute.” These features should not be chosen by you, but by your audiologist based upon your hearing test results, your performance in speech-in-noise testing (which was not done), as well as your budget and lifestyle. Further, with your particular degree of hearing loss, it is likely that you will need to use additional hearing assistive technologies (HAT) along with the hearing aids. Has your audiologist conducted a needs assessment? Has she asked you about your listening needs?”

Jack replied: “Well...she did ask me if I was having hearing issues. She then did the hearing test and told me I needed hearing aids and to use the handout to decide how much I want to spend and then make an appointment to come back for a fitting.”

What Should Have Happened?

Best practices should have happened. Asking someone a general question about hearing issues is not enough. Much more detail is needed. Ideally, Jack should have been asked to discuss his lifestyle and his hearing needs within that lifestyle so that his audiologist could begin to determine which technologies and behavioral and environmental strategies might best meet those needs. Speech-in-noise

testing also should have been done as findings from this testing can help determine if technologies beyond hearing aids are needed to improve speech understanding, and also will help provide realistic expectations.

Today, a range of hearing enhancement technology is available to improve a person’s ability to hear and understand in various situations. These technologies include not only hearing aids and implants, but also a variety of HAT or assistive listening devices (ALDs). Assistive listening devices extend the reach of hearing aids and cochlear implants, making it possible to dramatically enhance hearing in many difficult listening situations.

It’s time that the profession of audiology moves from being technology-centric to being patient-centric or patient needs-centric. Why? Because a person’s listening needs—along with his or her hearing loss, lifestyle and other factors—inform the selection of technology, not the other way around.

Unfortunately, my profession continues to focus on hearing aids as the solution for hearing difficulty. This *hearing aid-centric* thinking neglects to consider the big picture: What do you, the patient, want and need to hear well? While hearing aids (and/or implants) might be indicated, additional ALDs might be needed as well. In fact, in many cases, hearing aids might not be indicated at all as the listener’s needs might be addressed by ALDs alone.

It’s time that the profession of audiology moves from being *technology-centric* to being *patient-centric* or *patient needs-centric*. Why? Because a person’s listening needs—along with his or her hearing loss, lifestyle and other factors—inform the selection of technology, not the other way around.

If you and your audiologist have a full appreciation of your listening needs, then you both are better equipped to team together to do the problem-solving necessary to make good decisions about which technologies might or might not be best for you and how they should be set up in your home, in your office, or in another setting. Let’s see how focusing on your listening needs works.

Listening Needs and Their Impact Upon Technology Selection

Once the audiologic assessment is completed and any medical conditions ruled out, then it’s time to talk about your hearing loss and what to do about it. If the first thing you hear out of your audiologist’s mouth is, “How much do you want to pay for hearing aids?” then you should stand up, make a 180 degree turn, and head quickly for the nearest exit. Why? Because your audiologist (and your physician for that matter) should focus on you as a whole person, not as a potential hearing aid purchaser. Thus, a comprehensive *receptive communication needs assessment* should be done that examines the four universal receptive communication needs all of us possess.

- 1. Face-toFace:** All of us must be able to engage in face-to-face communication, whether in one-to-one situations or in groups.
- 2. Media:** We also must be able to receive media on all platforms: TV, radio, tablets, phablets, phones, movie theaters, etc.
- 3. Telecommunications:** We must be able to communicate on the phone. This includes landline and mobile as well as teleconferences using phones and computer devices.
- 4. Alerting Signals:** We also need to be aware of alerting signals such as the alarm clock, smoke alarm, baby cry, appliance signals, etc.

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These four needs might occur at home, at work, at school, while engaging in leisure activities, while traveling and when out in the community attending meetings, movies, theater, etc. Your audiologist should team with you as your *hearing enhancement coach*, spending time with you to learn about your lifestyle and your needs so that he or she can problem-solve and determine what behavioral, environmental and technical solutions are needed to ensure that you hear and comprehend in as many listening environments as possible.

Back to Jack

As Jack and I drank our tea, I queried him about his four needs within the context of his lifestyle. I determined that he needs to be able to understand:

- his wife and children and grandchildren (face-to-face; home)
- others when volunteering at our local boys and girls club (face-to-face; volunteer work)
- family, friends, and waiters when dining at a restaurant (face-to-face; community)
- soundtracks on TV and in the local movie theater (media; home and in the community)
- on his landline and cell phones (telecommunications; home and community)

Finally, I determined that he would not be able to hear his doorbell or smoke alarm without hearing aids and I wanted him to be safe at night when his hearing aids are out and he is “turned off” (alerting; home).

I explained to Jack that hearing aids would definitely help him. Directional microphone technology in hearing aids would help him understand speech amidst noise as long as the noise is not too severe and if he is close enough to the talker in a room that is not too reverberant. I also explained that wireless hearing aids with a *spouse mic* that his wife can clip on would be useful in certain noisy situations such, as restaurants or in the car.

We also discussed how hearing aid *telecoils* can help him better understand on hearing aid compatible landline telephones and how special Bluetooth® interfaces can be used with his cell phone. We also discussed how telecoils are needed in order to connect to large area assistive listening systems, such as hearing loops, in the community. Finally, we discussed *alerting systems* that can be used in the home to alert him to the doorbell and smoke alarm when he is napping or asleep at night with his hearing aids removed.

Jack returned to his audiologist knowing what he needed. He was fitted with hearing aids with telecoils and wireless connectivity. He is now hearing better at home, when doing

volunteer work, and when out and about in his community. He also now knows how important it is to be an informed consumer and his own advocate.

Know Your Needs and Be Your Own Advocate

Before you see an audiologist for a hearing test, do your homework and determine your receptive communication needs. Try drawing the table you see below. The four communication needs are shown across the top. On the left side you can see the common settings in which these needs occur. Try filling in the blanks. For example, what are your face-to-face listening needs at home, at work (paid or volunteer), and in your community (movie theaters, concert halls, lecture halls, in your doctor’s office, etc.). There might be other settings where you have difficulty such as in school, while traveling, etc. Do the same for media, telecommunications, and alerting needs.

If you already use hearing aids or cochlear implants, do you have difficulty understanding in quiet situations or in noisy situations? Does it make a difference if you are close to or far from the person talking? If you do fine as long as you are close and it’s quiet, then your hearing aids are all you may need. If you experience difficulty when it’s noisy or when you are far away from the talker, then ALDs might also be needed.

Listening Needs and Situations

	Face-to-Face	Media	Telecommunications	Alerting
Home				
Work				
Community				
Other				

Understand Hearing Aid Features

When selecting hearing aids you have the choice of various models, but it is very important to be sure that the model you choose contains some key features.

Directional Microphones

Directional technology can improve your ability to understand in noise by reducing what you hear to the sides and behind you. This technology works best when you are close to the sound source (“near-field” listening). However, its effectiveness is reduced or eliminated if you are too far from the sound source (“far-field” listening) and/or are listening in a very reverberant room such as a house of worship. In these situations ALDs can be used along with your hearing aids.

Telecoil

Another helpful feature is a telecoil. As shown in the illustration at right, a telecoil is a small sensor that is placed inside the hearing aid (or cochlear implant) and used to pick up electromagnetic energy from hearing aid compatible phones.



Hearing aid telecoil

Telecoils also provide wireless access to large rooms that are equipped with loop, FM or infrared (IR) systems, as mandated by the Americans with Disabilities Act (ADA). If your hearing aids do not have telecoils, then the only way to access large-area wireless listening systems is to remove your hearing aids and use the receiver and earphones provided by the movie theater or other venue. This may or may not be ideal. These systems, as well as digitally modulated wireless systems also can be used at home to better hear in face-to-face conversation with your family as well as when enjoying TV and other media.

Wireless Hearing Aids

Newer hearing aids contain built-in wireless receivers that can be paired with wireless accessories from the same manufacturer, and also allow for wireless communication between the two hearing aids. For example, one brand of hearing aid can be ordered with a TV transmitter that allows you to receive a stereo TV signal in your hearing aids when you enter the room. This same system can be ordered with a spouse mic that your significant other can clip on so that you can hear better in a car, restaurant, etc.

Some hearing aids can also be used with smartphones, allowing phone calls and music to be sent to the hearing aids directly. There are smartphone apps that allow for hearing aid adjustments to be made with your phone. Some companies also offer add-on receivers that allow their wireless microphones to be used with brands of hearing aids other than their own.

Because of the existence of traditional and new technology side-by-side, it makes sense for wireless hearing aids to also include telecoils. This way you can be guaranteed to have access to all existing technologies, including the loop, FM and IR technologies in the community.

Understand the Role of Assistive Listening Devices

When you understand your needs, you come to realize that hearing aids and cochlear implants will not likely solve all of your needs. This is particularly true if your hearing loss is significant and you experience difficulty understanding speech amidst noise and reverberation. In these situations, you might need to use ALDs. Thus, it is important that your audiologist understands the important role that ALDs might need to play in your life.

Don't Forget the Importance of Communication Strategies

Regardless of the technology that a person chooses to use, it will be most effective if it is used in conjunction

with behavioral communication strategies such as speechreading, asking for clarification, preferential seating, etc. A nice review of these and other strategies can be found on the HLAA website at: hearingloss.org/content/living-hearing-loss.

Shop for an Audiologist Not a Hearing Aid Brand

Many people shop for a brand of hearing aid, thinking one is better than the other. You might be surprised to know that, when programmed in an identical manner, major brands will all perform very similarly. However, when programmed poorly, the best brand will sound terrible and make you wonder why you even bothered.

What you should shop for is an audiologist. There are two “brands” of audiologists. One engages in best practices and the other does not. Obviously you want best practices. Look for someone who can function as a *hearing enhancement coach* and *problem-solver*. He or she will test your hearing thoroughly to determine its nature and to ensure that there are no medical issues that need to be addressed. Speech recognition testing will also be performed to determine how well you understand speech, not only in quiet but also in noisy situations. A commonly used speech-in-noise (SIN) test is called the QuickSin. As the name suggests, it's a quick way of estimating how you will function in noisy environments, and determining if you might need ALDs in addition to directional technology to help you understand better in challenging situations such as noise, reverberation, and distance (or all three). The audiologist should also ask you about your listening and lifestyle needs since formal tests do not always reveal each person's particular hearing challenges.

After your audiologist has determined your residual hearing aid listening needs, then the process of selecting your individualized *hearing enhancement solution* begins. This solution will consist

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of some combination of technology and training. It could be as simple as hearing aids equipped with telecoils (so you can, for example, access hearing loops in your community) and some instructive counseling. It might be as intricate as hearing aids, telecoils, ALDs and formal training in speechreading and other strategies. How simple or involved depends upon your particular needs.

When fitting hearing aids, your audiologist should ensure that the hearing aids chosen for you are working properly. The first thing he or she should do upon receiving the hearing aids (before you even get to the office) is to measure their electroacoustic performance in a hearing aid analyzer to verify that the hearing aids meet the manufacturer's specifications. This is quality control, folks.

The next step is the programming and *verification* of the hearing aids. Each hearing aid is programmed using software provided by the manufacturer. Adjustments are made to meet certain *fitting targets* established by a large body of audiologic research. The purpose of fitting targets is to provide you with the audibility and listening comfort that you need. Best practice documents recommend that at the time of the fitting, a small flexible microphone be placed in your ear to determine the output of the hearing aid while it is in your ear. Measurements are taken by presenting speech signals at different loudness levels. Through additional computer programming, the hearing aids are then adjusted at each level to optimize speech understanding and listening comfort and *verify* that the hearing aids are meeting target as closely as possible.

This process is the ONLY—I repeat—the ONLY way to objectively determine what Sound Pressure Levels (SPLs) the hearing aid is delivering to your eardrum and to verify that the fitting is a good one. Without this *Probe-Microphone Test* (also called *Real Ear*), it's anyone's guess as to whether or

not the hearing aid is adjusted properly. Probe-microphone testing also provides a baseline for comparison when you return for adjustments and is also used to compare performance if your hearing aid malfunctions. Before you make an appointment to be fitted with hearing aids, always ask if the audiologist uses probe-mic (or real ear) testing to verify a hearing aid fitting. If the answer is "no," find another audiologist.

Best practice also recommends that some form of aided loudness testing is conducted to assure that loud sounds are not uncomfortable. This usually involves listening to speech and other loud environmental sounds wearing the hearing aids, and then giving loudness ratings such as "comfortable," "loud, but okay," or "uncomfortably loud." The hearing aids are adjusted so that no sounds are uncomfortably loud.

After the hearing aid fitting has been verified, you should be instructed in the care and use of the hearing aids. This process should involve your significant other as well. The ultimate success of the hearing aid fitting could depend upon how much information you are able to recall from the orientation process so feel free to ask questions and take notes and call the office if you have any questions. Remember, it's all about YOU and your happiness. You should also ask for complete copies of the testing done as well as a formal report.

"You Mean I Have to Buy More Equipment?"

People are often shocked to learn all of their listening needs might not necessarily be met with premium or even mid-level hearing aids. I often hear this question: "You mean the hearing aids won't help me in all situations and I have to buy even more equipment?"

The answer is: "Yes, I am recommending a customized 'total communication solution'—one that will enable you to hear not only in quiet, but also in situations having poor acoustics.

So, to have that good result, we need to use additional technologies." Designing a total communication solution for each person takes time and requires a certain expertise. Clients need to realize that this time and expertise is not always covered by insurance and might need to be paid for out of pocket. In my experience, people are totally fine with this once they realize how much benefit they receive in their everyday lives.

Once you walk out of the door with your new hearing aids, you are not done. The next few weeks involve a *validation* process: Does the hearing aid fitting help or not? You might be wearing hearing aids or you might be wearing hearing aids and ALDs. It all depends on your needs and what you and your audiologist decide is best. In the first weeks you should keep a log of your experiences so that you can return to your audiologist or adjustments/counseling if necessary. Oftentimes a questionnaire is given before and after the fitting to see how many communication difficulties have been resolved and what else needs to be done, if anything, to improve your ability to hear in all situations of your life.

Make sure you understand the return and refund policy if you are not satisfied with the benefit that the technology provides. There will be an adjustment period, and you will need to be patient but, if after a good try, you feel something isn't right, then it probably isn't. Have faith in your judgment and be assertive. State laws require money-back trial periods with hearing enhancement technology (although the amount refunded depends on the state law). However, if best practices are followed—for example, your audiologist takes the time to listen to your concerns, verifies and validates, then most likely you will keep the technology recommended because it is helping you to meet all four of your receptive communication needs. Research has shown that the use of hearing aids improves quality of life

in many areas including relationships at home, self-confidence, mental health, safety and social life.

Depending on the nature of your hearing loss, you might need additional training (rehabilitative audiology) to help you better hear and understand with your new technology. Some providers offer this training in a group or individually. You might also want to inquire about self-guided, computer-based auditory training programs.

So What Happened to Jack?

Jack decided to shop for an audiologist who has the qualities discussed in this article. His new audiologist understands that everyone deserves to have full receptive communication access for a lifetime. She knows that by employing a holistic, patient-centered, needs-centered approach, she can team with her clients to problem-solve and find solutions that will make a positive difference in their lives.

Jack was fitted with two hearing aids containing telecoils so that he can easily connect to large-area ALDs installed in his community. He also purchased wireless technology that he uses along with his hearing aids to hear better on his landline and cell phones and to better hear his TV and his wife when they are out and about in the community. He also feels safer when sleeping because he knows his bed-shaker will alert him in the case of fire. He and his family and friends are now communicating more easily and he's becoming more comfortable with using the technology as time goes on.

It was not always an easy process and some tweaking was needed here and there. After all, selecting, fitting, verifying and validating technology is part science and part art. Jack's big moment (in my opinion) occurred one evening at a homeowner's meeting when he felt comfortable enough to ask the presenter to clip on a mic so that he could hear from the back of the room. When neighbors asked what was going

When You Need a Little More Help

- Have you ever had difficulty hearing or understanding conversation in a restaurant, during a shopping transaction such as a pharmacy or bank or when interacting with your physician or attorney? Do you have difficulty hearing and understanding in your place of worship, at the movie theater, in lecture halls or in other public (or private) places?
- Do you have difficulty understanding on a landline or cell phone?
- Have you given up listening to music privately because you cannot figure out how to connect your hearing aids or implants to an MP3 player, your smart phone or your stereo system?
- Do you worry about your safety and security? Do you know whether or not you will be awakened by your smoke alarm when sleeping (and your hearing aids/cochlear implants are not being worn). Can you hear the doorbell, the appliance alert, your children or grandchildren?

By combining hearing aids/cochlear implants and hearing assistive technology (HAT), all four needs can be met—at home, in the workplace and when you are out and about in your community. To settle for less should not be an option.

Over the next few months, HLAA will be launching new tools for its members and the community at large to help spread the word on how to enhance hearing in all walks of your life. It's an exciting time and we hope you will come along for the ride.

on, he proudly announced:

"This is my secret weapon. It's a wireless microphone that transmits to my hearing devices. When Joe here talks into it I will be able to hear more clearly than any of you in this echo-chamber!" I noticed when the meeting ended that a circle of people formed around Jack, asking him where he bought his hearing enhancement technology. Jack's audiologist is going to be busy. **HLM**

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