HEARING AIDS: CANDIDACY

A good hearing aid candidate is intrinsically motivated to pursue help with their hearing. If a person has normal hearing at 2 kHz with hearing loss above that, I defer to the patient's preference. If a person has hearing loss at 2 kHz and continuing beyond that, I start recommending a hearing aid trial. Anything beyond that will likely require hearing aids. Obviously this is individual and should be discussed with your provider.

HEARING AIDS: TRIAL PERIOD

Most states have laws requiring dispensers to offer a trail period with hearing aids. In Minnesota for example, the patient can be fit with hearing aids and use them for 45 day before electing to keep them. This gives people plenty of time to adjust and determine if they are beneficial. These periods vary by state and information should be available online.

HEARING AIDS: FINDING A GOOD PROVIDER

Patients always ask me which hearing aids are best. The reality is that how they are programmed is more important than the brand. This hinges on finding a good provider.

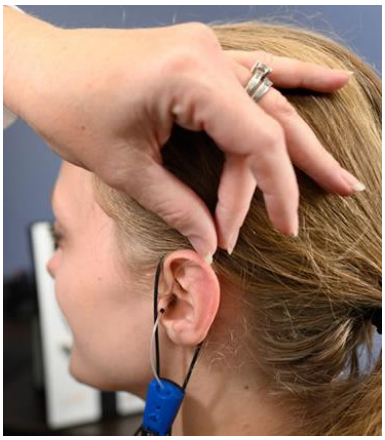
Both hearing instrument dispensers and audiologists fit hearing aids. Patients are often confused by the difference. Hearing instrument dispensers are required to have high school equivalent education and to pass a state hearing aid dispensing test. Audiologists are required to have a Doctorate of Audiology, hold state licensure, and pass the hearing aid dispensing test. This is not to say that all audiologists are good and all hearing instrument dispensers are bad, but there is a difference in requirements.

Both American Speech Language Hearing Association (ASHA) and the American Academy of Audiology (AAA) have search functions to find a certified audiologist. Google "ASHA ProFind" or "AAA Find an Audiologist." That is a good start, and I would cross-reference with online reviews, recommendations from friends, and a phone call to the clinic. Most clinics will work with a few brands of hearing aids. I would ensure that they perform a test called On-Ear, Real-Ear Measures (or probe microphone measures) when fitting hearing aids. If they don't do that test, I would look elsewhere for hearing aid services.

HEARING AIDS: ON-EAR, REAL-EAR MEASURES (PROBE MICROPHONE MEASURES)

Real-ear measures (REMs) is probably the most important tool in a hearing aid fitting. Clinical practice guidelines from several international organizations strongly recommend these measures (e.g. ASHA, 2006). Unfortunately, more than 50% of providers routinely do not do these tests. Some hearing aid providers would argue that verification is not needed because they use the manufacturer fitting algorithms. This is inadequate as the manufacturer fitting algorithms have been shown to not provide adequate amplification (reviewed by Jorgensen, 2016). Simply put, I would not pursue a hearing aid from a provider who does not make these measurements for hearing aid fitting and adjustment.

Using this tool, I can set hearing aids exactly to a patient's hearing loss without subjective feedback from the wearer. This measurement is completely objective. To make these measurements, I place a soft tube by the ear drum that is connected to an external microphone worn around the ear, see the picture below. I then play a passage of speech to the hearing aid at a calibrated volume, and the microphone measures the sound that the hearing aid is putting in the ear. This plots on a graph that looks like an upside down hearing test. Using this objective measure, I can set a hearing aid to prescriptive targets and adjust to patient preference from there. This is the GOLD STANDARD in hearing aid fitting. Ask your potential provider about this. Call them and ask something like, *"Do you use on ear measures or probe microphone measures to fit hearing aids?"* If they do not, I would strongly suggest seeking alternative providers.



HEARING AIDS: BRANDS AND COST

The major manufacturers of hearing aids are collectively called the "big six" and include Phonak (and sister company Unitron), GN ReSound, Oticon, Starkey, Signia, and Widex. They all make good devices. They each have their strengths for certain applications and process sound in a way that gives their hearing aids a distinct sound quality. Overall, they all can provide access to the soft sounds of speech that are missed with hearing loss, which is paramount.

I am often asked about places like Beltone, Miracle Ear, Costco, and Sam's Club. Let's take Beltone for example – they rebrand and dispense GN ReSound hearing aids. Miracle Ear rebrands Signia hearing aids I believe. These are great hearing aids, and we use them all the time where I work. One caveat about the Beltone/Miracle Ear versions is that they are *digitally locked*, so no other clinic can adjust them. This holds true for many Sam's and Costco hearing aids as well. I do not think this is necessarily a make-or-break deal, but you should just be informed before making that decision. I have a couple patients a week who want me to adjust their hearing aids, but I simply can't because they are locked. Also, big box hearing aids might be "de-featured," meaning that the advanced signal processing algorithms are removed from these products. On the surface they might look the same, but are different under the hood.

One thing I do appreciate about Sam's and Costco is that they offer REMs, as they fit according to best practice guidelines. Of course, cost is the big difference between the big box stores and a private practice. I just checked on Costco's website, and they offer a pair of Kirkland hearing aids for ~$1,500. That's about half of what hearing aids start at in private clinics. Typical price ranges for hearing aids from private clinics around my location are $3-6+k for a pair. Note that Costco's name brand offerings will likely be more expensive than their Kirkland branded aids, however.

HEARING AIDS: SPEAKING OF COST… *WHY THE LARGE RANGE IN PRICE?*

Hearing aids come at different "levels of technology" which start at entry level, then mid-level, then premium hearing aids. It pains me to even write that because I think the terminology implies that "entry level" hearing aids are somehow grossly inferior to the much more costly "premium" level hearing aids. Entry level hearing aids in my area will run a little over $3k a pair. Mid-level hearing aids will run about $4.5k a pair, and premium hearing aids will run $6k+ for a pair. These are just rough estimates and can vary significantly based on your location.

The most critical piece in receiving good benefit with your hearing aids is having them programmed correctly. A pair of entry level hearing aids that are programmed correctly will provide much more benefit than a set of premium level hearing aids that are not. Refer back to my soap box about real-ear measures.

Premium level hearing aids are advertised to have better and more aggressive noise reduction features that would result to better hearing in more difficult listening situations. I have seen fitting guides from hearing aid manufactures that recommend entry level hearing aids to people who communicate mostly in quiet or who live more sedentary lives. Then they will recommend premium level hearing aids for people who live active lifestyles and are in more complex listening environments. You might also see a graph of how much better people perform on laboratory tests with the premium hearing aids. This marketing not-so-subtly implies, "Get entry level if you're old and boring. Get premium if you're young and active!" But does this marketing play out in the real world?

It is true that premium level hearing aids offer more aggressive features for handling background noise which can be confirmed in laboratory tests. However, studies have shown that there is not a significant difference between entry and premium level hearing aids in a real-world scenario. Dr. Yu-Hsiang Wu at the University of Iowa wrote a seminal article on this very topic. He basically found that, yes, premium hearing aids work better in a well-controlled, laboratory setting. It is also true that people appreciate having noise reduction features active in their hearing aids, which was true for both entry level and premium hearing aids. When comparing the real-world effectiveness of noise reduction between the entry and premium level hearing aids, there was no difference. Ultimately, the study concluded that "older adults with mild-to-moderate hearing loss are unlikely to perceive the additional benefits provided by the premium [noise reduction] features in their daily lives."

This is not to say that there aren't certain individuals who would experience benefit with high end devices. Everyone's hearing loss is different, and so is their experience with hearing aids. Some patients do appreciate benefit from high end devices. Premium hearing aids also tend to allow more control by

the user in the remote control app on their phone. They are indeed more user-adjustable, more automatic, and maybe handle noise a bit better. Is it worth double the money? I suppose that depends on how you value money. Hearing aids definitely follow the law of diminishing returns. Double the money definitely doesn't mean double the hearing aid. I would ask your audiologist for a feature list that spells out exactly what you're getting with each level of technology. This can help you see what you're paying for and decide based on your needs. If you are unsure about which level to get, use your trial period as testing grounds. You always have the option to upgrade during the trial period if you feel that might be beneficial.

Another thing to consider is getting a remote microphone. These give the most "wow factor" out of anything I use to help people hear better in noise. A remote microphone is about a third this size of a deck of cards, is wireless, and connects directly to hearing aids. You clip it on the person you want to hear, and it elevates their voice over the noise. They work great in restaurants, in the car, and when listening across distances (e.g. conferences, church). Some of the best bang for your buck with hearing aids would be to get entry level devices and use a remote microphone in noise.

All this is to say that you are not getting a sub-par product if you get an entry level hearing aid. I feel like "entry level" hearing aids are often wrongly dismissed as inadequate. There is no need to strain your budget to get top of the line hearing aids if entry level meets your requirements.

HEARING AIDS: OVER-THE-COUNTER HEARING AIDS

They are coming. Right now, the market offers personal sound amplifiers (PSAPs), which is what you see on the Walmart shelf. They cannot be labeled as hearing aids because that term is a class of medical device that is regulated by the FDA. So they will be labeled "hearing amplifier" or "personal sound amplifier" to avoid the FDA regulations. There are some good PSAPs out there, but most of them don't cut it. The good ones get so close to the cost of an entry level hearing aid that a person would likely be better off moving that direction and having them custom fit to you and your hearing loss using on-ear, real-ear measures.

There's a big gap between price and quality of PSAPs and traditional hearing aids. Over-The-Counter (OTC) hearing aids are supposed to fill this gap. OTC hearing aids are meant to increase access to hearing devices for adults with mild to moderate high frequency hearing loss. They are going to be much less costly than traditional hearing aids but maintain a quality standard that is regulated by the FDA. Click here to read more. The FDA was supposed to issue a proposed rule by August 18, 2020, but I couldn't find anything online about them actually getting that done. Nonetheless, we are on the cusp of them arriving on the market, and it could help a lot of people who need a little boost for the high pitches without the significant investment of traditional hearing aids.

HEARING AIDS: VA

If you are a veteran, know that the VA fits premium, high end hearing aids. On the open market these cost over $6k for a pair. I have patients who come through who are hesitant to pursue hearing aids from

the VA for some reason. Those are your benefits. You earned them serving our country. Don't hesitate to use them if you can.

HEARING AIDS: STYLES

The most common hearing aid style these days is the receiver-in-the-canal (RIC) hearing aid. It has the small piece that sits behind the ear with a thin wire that runs to the speaker that sits in the ear canal. The main reason that this style is the most popular is because these hearing aids are physically discrete and accommodate high frequency hearing loss, which is most common.

For people who have normal or near normal hearing in the low pitches, it is preferable to allow those low pitches to enter the ear canal naturally. Using a small, perforated dome on the speaker end allows those sounds to enter the ear as they normally do. Then the high pitches can be amplified according to the amount of hearing loss measured on your audiogram. Other hearing aid styles, especially custom hearing aids, cause the occlusion effect, where it sounds like you are talking in a barrel. We've all experienced this when talking or chewing with ear plugs in. The RIC style avoids this and is typically used for high frequency hearing losses.

HEARING AIDS: SUMMARY

- Make sure to look up the trial period in your state.
- On-ear, real-ear measures (probe microphone measures) are ESSENTIAL in a good hearing aid fitting. Make sure your provider performs these.
- Finding a good provider is more important than getting the "best" hearing aid. The "Big Six" hearing aid manufacturers all make good devices. Sam's, Costco, Beltone, etc. have their place; just know what you are getting.
- You don't need to stretch your budget for high end hearing aids if "entry level" hearing aids satisfy your requirements.
- The VA fits high end hearing aids if you qualify for them.
- It takes time to adjust to hearing with hearing aids. Make sure to give them a fair shot during your trial period, so you have the flexibility to return them if needed.