

# Hearing Solutions SIG

Sun City Texas Computer Club

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to attend any Club Special Interest Groups.  
Thank you for coming today.**

# “Latest Changes in Hearing Technology”

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# Introduction

## About me:

- **Graduated from the University of Austin at Texas in 2018**
- **Lived in Austin since 2002**
- **Two young children, Luke 4, Lily 1**
- **Worked in private practice for two years in Austin**
- **Recently hired at Tejas Ear, Nose, and Throat to perform audiological examinations for ENT testing.**
  - **Paula Kleck, licensed hearing instrument specialist and Rebecca Salazar, audiology assistant work in the Hearing Aid Center**

# Discussion Overview

- 1. Rechargeable batteries**
- 2. TCoil**
- 3. Hearing Aids and Speech in Noise**
- 4. Updates in Hearing Technology**

# Recent updates in hearing aid batteries

Besides conventional (disposable) hearing aid batteries, many hearing aids are now rechargeable.

Benefits of rechargeable hearing aids include:

- No need to change batteries
- Environmentally friendly
- Easy to use: place on charger at night and hearing aids are ready for use in the morning.
- Increases moisture resistance in some hearing aid styles



# Two Main Types of Rechargeable Batteries

## Lithium Ion

- Battery is fully encased within the hearing aid
- Provides up to 24 hrs of use with a full charge
- Slightly larger battery compartment
- Battery lasts about 3-5 yrs before needing replacement

## Silver-Zinc

- ZPower: common silver-zinc battery used in hearing aids
- Smaller and often interchangeable with conventional size 312 batteries
- Battery life is about 13-14 hrs
- One silver-zinc battery lasts about 12 months, before losing the ability to hold a charge. After this, your hearing professional can have them replaced.

# Pros

## Lithium Ion

- Fully encased battery = improved moisture resistance
- Long battery life per use: up to 24 hrs
- Easy to charge: place on charger at night. Hearing aids are ready to go in the morning.

## Silver-Zinc

- Smaller battery = smaller hearing aid
- Interchangeable with disposable size 312 batteries
- No known health risk and easy to ship
- Easy to charge: place on charger at night. Hearing aids are ready to go in the morning.



# Cons

## Lithium Ion

- Larger battery compartment = slightly larger hearing
- Must be shipped to manufacturer for battery replacement
- Special shipping label required
- Potential health hazard: spontaneously combustible if handled improperly.

## Silver Zinc

- Uncertain reliability
- Batteries must be replaced every year
- Shorter daytime battery life (13-14 hrs)





# Telecoil

- Telecoil (also known as Tcoil) is a setting inside your hearing aid that can be turned on when listening in a room that has a loop system for transmitting audio from a microphone.
- The loop acts as an electromagnetic field, and a telecoil wire inside the hearing aid converts the signal to sound.
- Improves sound quality by eliminating background noise, which greatly improves speech understanding.
- Look for the telecoil sign to know which buildings are looped.
- Commonly looped settings include churches, some taxis, lecture halls, and museums.

# Telecoil

- All hearing aid manufacturers offer aids with telecoil, but not all hearing aids have a telecoil.
- Some tcoil hearing aids are slightly larger to accommodate the extra telecoil wire. Must be at least size 13 or 312 battery size.
- If you don't have a hearing aid with tcoil, ask your professional about accessories that help reduce background noise.
- Everyone can benefit from tcoil or accessories that help reduce background noise, but especially those with more severe hearing loss where speech understanding is greatly affected.
- Sun City has many looped buildings, so many of you might be able to benefit from this option.

# Listening in Noise: Which Hearing Aid is Best?

- Listening in noise is the #1 complaint by hearing aid users.
- All manufacturers claim their latest hearing aids have the best performance in noise.
- Experience from practice: the bulk of my fitting experience has been with Resound, Oticon, Phonak, and Widex.
- No two hearing aids are the same: manufacturers use different computer chips which results in a wide variety of sound quality.
- Preference is highly dependent upon the user.
- Personal experience: I've had success with Resound, Oticon, and Widex.

# Listening in Noise

- Hearing loss causes difficulty hearing in noise because of damage to the sensory cells in the inner ear. This results in trouble filtering out unwanted sounds, such as noise.
- Everyone with hearing loss will likely struggle to hear in noise even with the best hearing aids.
- Some may have greater difficulty than others due to the severity of damage to the sensory cells.
- Hearing aids help, but there's no perfect solution for listening in noise.
- All hearing aids have speech in noise algorithms to reduce unwanted sounds, many of which are automatic. Typically, the higher the technology level, the more automatic the hearing aid behaves in terms of signal processing.
- Special settings can be programmed into your aids for help in specific situations.

# Listening in Noise: TIPS

- Try different manufacturers when purchasing aids to see if one performs better in noise.
- Check with your audiologist to see if anything can be done in your hearing aid programs to help in noise.
- Avoid busy restaurant times when possible.
- Sit in a well-lit location to make the best use of facial cues.
- Try to sit away from the center of a room (e.g. booth).
- Bluetooth hearing aid accessories, such as small wearable microphones can be very helpful for face-to-face communication. Many of them also allow audio streaming from your phone or other smart device.

***What are my options if I'm not ready to buy hearing aids, or if I can't afford them?***

# Hierarchy of Listening Devices

**Cochlear Implants,  
Hearing Aids**

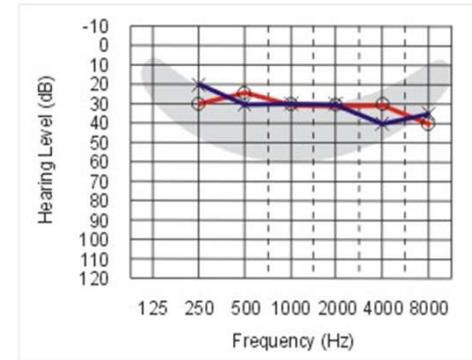
**Personal Sound  
Amplification  
Products**

**Hearables**

**Assistive Listening  
Devices**

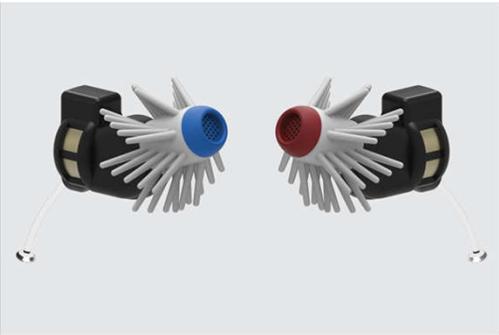
# Alternative Listening Devices

## **PSAPS** (Personal Sound Amplification Products)



- Over the counter sound amplifying devices made for for people with mild to moderate hearing loss. Designed to enhance hearing in certain environments. Not recommended for hearing loss treatment per the FDA.
- Not a good choice for moderate to severe losses because the the device isn't strong enough to provide adequate amplification. Appropriate for mild losses.
- Many brands currently available: Eargo, Etymotic QSA Personal Sound Amplifier (the Bean), LifeEar BOOST, Otofonix Elite Hearing Amplifier
- Research suggests some models are comparable to hearing aids for speech in noise signal processing.

# PSAPS



# PSAPS: Pros and Cons

## Pros:

- Affordable: typically less than \$1000.
- Wide price range, many under \$500
- Over the counter and easy to purchase
- Good option for those interested in hearing devices, but not ready for hearing aids
- Some pair to smartphones

## Cons:

- Not FDA regulated
- Not appropriate for moderate to severe hearing loss, or greater
- Comfort: PSAPS are non-custom devices and finding one that fits comfortably might be difficult
- Less fine-tuning available compared to hearing aids
- May not allow audio streaming

# Hearables: Smart Device for the Ear

*Do NOT amplify sound*

- Vital sign monitoring (temperature, heart rate, oxygen level)
- Tracks activity and provides language translation during face-to-face communication
- Pairs with iPhone and smart home devices
- Headphones or earbuds
- Designed for listening enhancement, *not for treating hearing loss*
- Not regulated by the FDA

# Hearables

- Often less than \$200 for a pair
- Available hearables: Apple Airpods 2, Samsung Galaxy Buds, Waverly Labs Pilot, Nuheara IQbuds Boost



# Assistive Listening Devices (ALDs)

ALDs are used by individuals with hearing loss to provide extra support in certain environments when hearing aids or other listening devices are not sufficient.

- FM systems, infrared, induction loop systems
- Alerting devices for home phones, alarms, doorbells, smoke alarms
- TV Ears, sound bar (\*not technically considered ALDs)
- Personal amplifiers (“pocket talker”)

# Assistive Listening Devices (ALDs)



Thank you!



# Sources

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