Hearing Loss and Aging
(If you’d stop mumbling, I would hear just fine!)

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DISCLOSURES

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www.hearingloss.org
What’s needed to hear in a loop?

- hearing aid or cochlear implant with a telecoil
- Loop Listener with headphones
How do you know if your hearing aid has a telecoil? Look for a button.
Hearing loss and benefits of hearing aids are misunderstood.

Turn up your hearing aid!

He said, “Your money or your life” not your money or your wife!

Hearing loss and benefits of hearing aids are misunderstood.
Program

• How we hear
• Prevalence of Hearing Loss (HL)
• Effects of HL on aging adults
• Treatment of Hearing loss with hearing aids
• Hearing Aids & Purchase advice
• Solutions when hearing aids are not enough

• Additional materials – indicated by: *See Handout
  * Available via Dropbox – email jsterkens@hearingloss.org

www.hearingloss.org
How We Hear

Outer Ear

Middle Ear

Inner Ear

www.hearingloss.org
How we really hear…
With normal hearing all the vowels and the consonants are audible.
Hearing Test – high pitch hearing loss

With high tone hearing loss few of the consonants are audible. The complaint? “I can hear but not understand!”
How we understand speech

• The vowels carry 80% of speech intensity
• The consonants carry 80% of speech intelligibility

Th. P.ck.rs d.d n.t pl.y .n th. S.p.rb.wl
The Packers did not play in the Superbowl
How we understand speech

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I .o.e .o ..o. .u.i.. i. .y .a..e.

I love to grow tulips in my garden
I think you need a hearing test.

Why in the heck do I need a hairy chest?
Common causes of hearing loss?

At birth .................................................................3-4%
Ear infection .......................................................... 12%
Ear injury.................................................................. 5%
Loud brief noise........................................................ 10%
Long-term noise exposure ...................................... 24%
• Other (such as sudden hearing loss) .... 17%
**Getting older............................................................ 28%**

Source: Nat’l. Center for health statistics, data from the National Health Interview Survey Series 10, #188, 1994
Show of Hands:
Hearing loss is the most prevalent sensory loss in older adults

30% - adults ages 65-74 & 47% adults 75+ and older

Prevalence of hearing loss
(35 Million)
Medical Conditions that can cause hearing loss in older adults

- Diabetes
- Cardiac Disease
- Kidney Disease
Some life prolonging treatments can cause hearing loss

- Aminoglycoside Antibiotics
- Chemotherapy and Head Radiation
- Loop Diuretics
Hearing Loss and Physical Function

• **Psychosocial Function**
  * Hearing loss linked to increased risk of depression ¹) and loneliness ²)
    ¹) Saito, et al., *J.American Geriatrics Society*, 2010
    ²) Gopinath, et al., *Age and Aging*, 2012

  * Increased social isolation linked to hearing loss
    Wallhagen et al., *JAGS*, 2001

• **Physical Function**
  * Hearing loss is linked to increased risk of falls
    Viljanen et al., *JAGS*, 2009
    Lin and Ferruci, *Archives of Internal Medicine*, 2012

  * Greater levels of hearing loss associated with poorer function
    Chen et al, *JAGS*, 2014

• **Driving Ability**
  * Individuals with hearing loss more likely to stop driving
    Gilotra et al., *Clinical & Experimental Ophthalmology*, 2001

  * Hearing loss associated with significantly poorer driving performance in the presence of auditory distractors)
    Hickson et al., *JAGS*, 2010
Perhaps the biggest reason why hearing loss should be a concern for those of us involved with aging adults:

- Recent studies confirm a definite and positive link between hearing loss and dementia
- The more hearing loss, the higher the likelihood of a person developing dementia

*Archives of Neurology* February, 2011
Johns Hopkins and the National Institute on Aging
Hearing Loss & Healthy Aging

Common Cause? or Modifiable Risk Factor?

Cognitive Load

Social Isolation

Common aging process

Bottom Line: Hearing loss speeds up cognitive decline.
Good news:

A 25-yr-long study by Helene Amieva, PhD (J of Am Geriatrics Society -Oct 2015) concluded:

People >65 years, who opted to treat hearing loss, experienced a rate of cognitive decline at a level similar to their peers without hearing loss.

This study confirmed Dr. Frank Lin’s results that HL Is associated with cognitive decline and that using hearing aids – attenuated the cognitive decline in adults presenting with hearing loss.
And how can Hearing Loss not be associated with cognitive decline?

- It is hard to remember someone’s name… if the introduction was not heard
- It is difficult to remember a previous conversation… when that conversation was only partially heard
- One cannot be compliant when… the request was not heard
- How can you discuss a television program if… the television dialogue or the news was not heard?
Typical hearing loss symptoms

✓ Misunderstanding conversations or questions
Typical hearing loss symptoms

✓ Misunderstanding conversations or questions
✓ Inconsistent responses to soft or distant speech
✓ Frequent requests for repetitions or clarifications
✓ Favoring an ear or cupping hand behind the ear to hear
✓ Turning up TV or radio (particularly when in own room)
✓ Withdrawal from conversations in background of noise (Especially in the dining room or at group gatherings)
✓ Difficulty hearing in poor acoustical environments such as church or larger gathering spaces/lectures
So what to do about hearing loss? It depends...

• The degree of hearing loss
• The needs of the person with hearing loss
• Individual motivation

One thing is certain: It is important that hearing loss is addressed early. Hearing aids can only work with the hearing left, so the earlier detection, the easier it will become to adjust to them.

• Yet only 1 in 4 with significant HL seek treatment
• After waiting 7-10 yrs
• Only 12% of those with significant hearing loss use their hearing aids
Self-Assessment

• Smart phone app by Unitron – “uHear”

• Practical – and includes Questionnaire
  Hearing Test
  Speech in Noise test

www.hearingloss.org
Quick Hearing Check

The validity and reliability of the BHI Quick Hearing Check.
*Hearing Review, 17*(12), 12 – 28

(*See Handout*)
BHI Quick Hearing Check (Better Hearing Institute)
Paper and Pencil 15Q “hearing test”:

If BHI Score >20 refer for audiology consult

I have trouble hearing conversations in a noisy background such as a crowded room or restaurant

I get confused about where sounds come from

I misunderstand some words in a sentence and need to ask people to repeat themselves
Do You Think You Have a Hearing Loss?

Are you afraid to know for sure?
Many people might notice they have a hard time hearing in certain situations but don’t do anything about it, at least not immediately. This could be for many reasons. Maybe it’s denial—they’re afraid they might find out they actually do have a hearing loss. Or they’re not sure if their hearing is just the way it is.

I hear just fine most of the time so I don’t have a hearing loss, do I?
The only way to know for sure is to get your hearing checked. Other people sometimes suspect we have a hearing loss before we do ourselves, so if someone

(*See Handout)
Some Low cost options
Pocketalker
(Handheld amplification device for one-on-one conversations)
Use a Smart phone with a sound amplification app
(Such as: SoundAMPR, Jacoti Listen App. uHear)
Use of PSAPs: Personal Sound Amplification Product

- “Over the Counter “hearing aids” (Cost <$100-500) - FDA is creating an OTC category
- PSAPs are becoming more sophisticated and many look & work very much like hearing aids
- **But: Require on-your-own “tech-savvy users”**

Hearing Aids:

[Image of hearing aids and phone with applications]
“It’s a special hearing aid. It filters out criticism and amplifies compliments.”
Important hearing aid features:

• 1. Noise suppression &

• 2. Directional microphones
  1+2 make listening more comfortable – but do not improve understanding

• 4. Rechargeability – good for those with dexterity issues

• 3. Volume Control - Remote Control - App
  RC is good if user has dexterity issues and will allow volume changes
  Having a volume control has been shown to improve user satisfaction

• 4. Telecoil* for listening on the telephone, in a hearing loop and with other ADA systems to make hearing possible in public venues

* The telecoil feature is usually free/a low cost option
Additional (optional) features

• 5. Bluetooth devices –
  Can connect to cell phones, though some are tricky to “pair,”
  its use not easy to master and will add to the cost

• 6. TV “streamer” – streams TV sound direct into
  ears & (IMHO) one of the most user appreciated features

Note: The user’s needs, ear-canal anatomy, type &
degree of loss, earwax issues, dexterity, net cost
outlay etc. dictates model of hearing aid
Buying Hearing Aids in Washington  
(What to expect)

Audiologists and Hearing Instrument Specialists (HIS) are licensed to sell hearing aids in Washington. Both are trained to test hearing, fit and adjust hearing aids. Audiologists have a master’s or doctoral degree in audiology. They are trained to interpret test results from a medical perspective and to use advanced testing to determine the need for further medical treatment. HIS are qualified to fit and adjust hearing aids and to recognize problems that require referral to an audiologist or medical doctor. Your primary care physician and people you know who use hearing aids, may be a good resource for choosing a dispensing professional.

The Hearing Evaluation

A screening or hearing exam—Hearing screenings are quick pass/fail tests designed to let you know if you need further hearing evaluation. Hearing exams determine the degree, type and configuration of your hearing loss. They are conducted in a sound proof booth, and must be done prior to your being fitted with hearing aids. A proper hearing exam will include testing your comprehension of spoken words, and should include Speech in Noise testing as well.

Your audiogram—An audiogram is a graph that displays the results of the hearing exam. Pure tone audiometry is used to identify hearing thresholds (the softest heard) at different pitches in both ears. An audiogram also displays comprehension results of spoken words in both quiet and in noise. Pure tone and speech comprehension audiometry, as depicted on an audiogram, provide information needed for proper hearing aid fitting.

Types of Hearing Loss

Sensorineural Hearing Loss occurs when the cochlea and/or the auditory nerve is damaged or malfunctioning, making it unable to accurately send information to the brain. Almost always permanent, nearly always improved with modern hearing aids.

Conductive Hearing Loss occurs when there is a problem with the Outer or Middle Ear that interferes with sound passing to the Inner Ear. Causes include infections, impacted ear wax (cerumen), fluid buildup, a damaged eardrum, or abnormal bone growth in the Middle Ear. An exam by an Ear-Nose & Throat (ENT) physician is suggested.

Mixed Hearing Loss means both Sensorineural and Conductive loss are present. While the sensorineural component is likely permanent, the conductive component may or may not be and warrants an ENT physician examination.

(*See Handout)
Consumer Advice:

• Request audiologist follow “Best Practices” Protocol and Real Ear Probe Microphone measurements:
  http://audiologist.org/_resources/documents/publications/clinical/
  Hearing_aid_fittings_best_practices_for_the_busy_audiologist.pdf

• Does the audiologist/provider offer a trial period? (Usually 30 day–some 60 or 90 days – negotiable)

• Are “Get more from Hearing Aids” classes offered?

• If “top of the line” HAs are recommended – ask to try/compare with a set of more “basic” hearing aids

Spouses or family can help (a LOT!)
Other (low cost) recommendations:

Employment of good meeting strategies

- Seating arrangements
  (Use a circle / sit around a table – to allow lip-reading)
- Captions for movies or videos on TV
  Seattle City Council requires TVs in business to activate captions
- “Like the Mic” – when using PA systems
- Coach presenters on clear speaking habits and passing the mic around (Yes, this takes practice)
Where are hearing aids helpful?

Hearing aids are most useful in quieter situations (offices and homes) and in small groups, though individual hearing ability varies widely.

1. Effective range for many is under 10’ ( & for some < 3-5’)
2. In large public places hearing aids make all sounds louder, limiting benefit to the user.
3. And some hearing loss is so severe – that understanding speech is very limited –
In many public places – speech is difficult to hear due to:

- Reverberation (echoing)
- Distance & Time delays
- Background Noise
Why the complaints?

PWHL and “Aging Ears” require a boost in volume as well as an improvement in Signal-to-Noise ratio (SNR)

This SNR improvement can only be improved by:

1. Moving closer
2. Using a PA system to increase volume (but even that is often not enough)
3. Using an Assistive Listening System (ALS) as mandated by the Americans with Disabilities Act (or the “ADA”)
Using a public Assistive Listening System requires a telecoil

• Only telecoils can link to a variety of assistive technology in public venues where the ADA requires the installation of Assistive Listening Systems (ALS).

Where are these systems to be installed?

• “…where audible communication is integral to use of the space”

In what spaces are ALS to be installed?

• Classrooms, courtrooms, public meeting rooms, auditoriums, theaters, stadiums, convention centers, churches and more

• Where?

Where PA systems are in use

The original ADA law (1990) & the updated ADA Standards (2010) are written to the benefit of HA users as by mandating hearing loops and neckloops.

Yet hearing aid users aren’t told about the ADA & the benefit of having a telecoil in a hearing aid.
Assistive Listening Systems are like having an “extra set of "ears."

... that can be moved across the room and placed next to the talker’s mouth.
Consumer Desire for Telecoil Information

When asked, “If you are hard of hearing, do you believe audiologists and dispensers should be required to counsel their clients on telecoils prior to fitting them with hearing aids?” 95% of survey respondents answered “YES.”

When asked, “If you are hard of hearing, would you like to see a law requiring such telecoil counseling in your state?” 92% of survey respondents answered “YES.”

97% of experienced users: would never buy a hearing aid without a telecoil

Yet, audiologists and hearing care providers not consistently counsel on the benefits of telecoils

Kochkin et al (2014)
Governor Inslee signs Senate Bill 5210 into law
April 29, 2019

Good News for Hearing Aid Consumers
In April 2019, Governor Inslee signed into law Senate Bill 5210. This law requires any person who engages in fitting or dispensing hearing aids to inform their customers – prior to fitting – about the uses, benefits, and limitations of current hearing assistive technologies, considering solutions that are compatible with the public Assistive Listening Systems required by the Americans with Disabilities Act (ADA).
When consumers have a telecoil they can benefit from ADA recognized Public Assistive Listening Systems

The ADA recognizes 3 Types of systems

1. FM/RF systems
2. Infra red systems

Requires users to self identify & pick up a receiver prior to the lecture/service/show. The law requires 25% of the listening receivers be hearing aid compatible via neckloops

3. Hearing loops, which are user preferred, allow user to use their own programmed hearing aid as the receiver
How to know what kind of ALS is offered?
Sound (Voice from speaker) → Microphone → Hearing Aid Amplifier → Wire → T-coil in Hearing Device

This speaker’s Mic → Becomes the HA Mic
Why do loops benefit hearing aid users?

Sound (Voice from speaker) → Microphone → Wireless connection to the sound system → Clearest Sound possible for the user → T-coil in Hearing Device
Benefits of Loops over other systems

• Broadcast sound in form of magnetic waves *wirelessly* to hearing aids equipped with a telecoil – direct HAC
• No need to pick up a *separate* device
• Hearing loops are inconspicuous and easy to use
• Universal Worldwide system
• No Hygienic concerns with headphones
• Hearing aid is programmed for the user’s hearing loss
• Greatly enhance the utility of hearing aids

[www.hearingloss.org](http://www.hearingloss.org)
Do consumers have preferences as to Type of Assistive Listening System?

Steve Frazier
n=337 (2016) 79% of consumers prefer hearing loops over FM or IR
Telecoils and Looping in recent hearing industry media

Inside the Research | March 2019 Hearing Review

By Douglas L. Beck, AuD

It's probably safe to say that the professional advocate for hearing health is Juliëtte Sterkens, AuD. Dr Sterkens, a Speech Pathologist from Phoenix, Arizona School of Health Professions, retired from private practice as a Hearing Loss Association of America (HLAA) Advocate. For her past achievements, she has been included in the Wisconsin Audiology (AAA) President's Hall of Fame and delivered the keynote address from her alma mater. You can bet that the professionals gather, I can say, when Juliëtte Sterkens speaks.

Hearing Loop Victory: If at First You Don’t Succeed, Try, Try Again

Juliëtte Sterkens

America Is Getting in the Loop

By Stephen O. Frazier, Hearing Loss Support Specialist

From Faulti Audiology in Jacksonville, Fla to Kolotus Aud Services in Kailua, Hawaii, care offices are embracing hearing loop/telecoil technology to benefit both their clients and practices. An internet search today for “hearing care and telecoils” will show the dedication of hearing professionals to actively promoting the time-tested technology with their clients.

A PUBLICATION OF THE HEARING LOSS ASSOCIATION OF AMERICA

HLAA

Insiders could have been singing the song, “If at First You Don’t Succeed, Try, Try Again,” long before the concept of a telecoil came into play.

Hearing Loop technology is a mainstay in the hearing loss community. When a hearing loop is in place, a device called a loop microphone is used to transmit a signal via the hearing loop system to a receiver worn by a person with a hearing aid.

From Local to National

The Minnesota Governor’s signing of a Capital Improvement Appropriations Bill last May didn’t go unnoticed. The state’s $20 million in funding is targeted for projects that will provide telecoil access in the public assistance office. The public’s access to hearing loop technology must be enhanced as a matter of urgency.

The Minnesota Access Program was triggered in New York City, the capital of the United States. Why not Minnesota?”
Hearing Loop initiatives around the country

• 39 HLAA member led hearing loop initiatives all receive support from GITHL advocates

New Legal Requirements are emerging

- Consumers in several states are working to change (or have already changed) dispensing, CE and/or ALD laws
  - UT, CA, AZ, NY, IA, IN, DE, MA, NM, CO, WA, WI

Minnesota Law to Expand Hearing Loop Access

By Kim Fishman and Justin R. Burwinkel

Our patients' access to hearing loops has never been greater, as the successes of Minnesota's local activist group, Loop Minnesota, continue to mount. According to the group, the number of hearing loops available in Minnesota doubled in 2017 and new legislation is expected to contribute to this rate of growth going forward.

The Minnesota law, which requires good acoustics and hearing loops in state-funded construction, is the first of its kind and sets a new precedent nationally. The Commission of Deaf, Deafblind & Hard of Hearing Minnesotans celebrated the achievement and its benefit to individuals with reduced ranges of hearing. “From now on, whenever the state helps pay for construction or remodeling of a public gathering space in which it’s important to be able to hear, contractors will be required to consider including good acoustics and hearing loops.” The law applies to all meeting and conference rooms in capital funded buildings, throughout Minnesota, where the intended capacity is for at least 15 listeners.

The respective bills (Senate File 161 and House File 423) were authored by the following State Senators and State Representatives:

- Ann Rest (New Hope)
- John Hoffman (Champlin)
- Julie Rosen (Vernon Center)
- Matt Klein (Mendota Heights)
- Dave Senjem (Rochester)
- Tama Theis (Saint Cloud)
- Jeff Howe (Rockville)
- Tim O'Driscoll (Sartell)
- Paul Anderson (Starbuck)

More legislation is expected to be enacted in 2019. The next step is to educate patients about the availability of hearing loops, so they can advocate for their benefit from switching over to hearing loops. Many patients and their families are not well-informed about the benefits of a hearing loop system and require education to determine the benefit of hearing loops.

In Minnesota, patients can contact the Minneapolis-St. Paul chapter of the National Association of the Deaf, the Minneapolis/St. Paul Ovation Public Library, or the Mill City Museum for more information on training programs and upcoming events. The law is in effect beginning January 1, 2019, but the Minneapolis chapter believes that it is a good time to plan for the pilot project to be completed during the 2019 legislative session.
What if a person doesn’t wear a hearing aid or if their device doesn’t have a telecoil?

They can use a loop listener/receiver
Back in June 2010 – fewer than 25 places were looped in the Fox Valley
Today: Some 750+ looped venues: Incl. 400 churches & 100+ libraries
A few quotes from hearing loop users

• Love it, love it, LOVE IT!!!

Recently attended a meeting at the Convention Center and was able to hear well, even though I sat way in the back!

• Probably the first time in 20 years that I have been able to hear the sermon clearly...

• It is the greatest joy to hear in a loop
Oshkosh Convention Senior EXPO – Out of the Loop – recorded with an iPhone (much how hearing aid users hear)
Oshkosh Convention Senior EXPO – in the Loop
- how hearing aid users would hear, using their telecoil
Progress in Washington State

www.ALDLocator.com
Developments in progress

Time2LoopAmerica.com

ALDLocator app
Handouts:

Let's Loop Worship Centers

By David G. Myers

Imagine yourself as a person with hearing loss attending your place of worship. As you struggle to hear what's going on, you might wonder why the church is not doing enough to help you. In this article, we will explore the benefits of using loop systems in worship settings.

Today's Hearing Loss

Today's hearing loss is not necessarily louder, but it is more difficult to hear. People with hearing loss have difficulty hearing in noisy environments, such as restaurants, cafes, and churches. This is because their hearing loss is not always consistent or predictable.

One of the most important factors to consider is volume. People with hearing loss may find it difficult to hear at lower volumes. As a result, they may turn up the volume on their hearing aids, which can lead to feedback and distortion.

Signal Strength by Frequency

Another problem faced by those with hearing loss is that they have difficulty hearing high-frequency sounds. High-frequency sounds are more likely to be heard by people with normal hearing, but they may be difficult for people with hearing loss to hear.

This is because the inner ear, which is responsible for hearing high-frequency sounds, can be damaged by noise exposure. As a result, people with hearing loss may have difficulty hearing high-frequency sounds, which can make it difficult to hear certain words and phrases.

The Hearing Loss Association of America (HLAA) estimates that there are over 48 million people in the United States who have hearing loss. This number is projected to increase to 50 million by 2020.

By making assistive listening hearing aids compatible, churches are leading the way to doubled hearing aid functionality for people with hearing loss.

From TECHNOLOGIES FOR WORSHIP, May 2010, with permission
Want to learn more?
I can recommend these books:
In closing (1)

Keys to successfully dealing with hearing loss

• “Shop” for the right provider – the perfect HA does not exist
  Interview providers and be sure to visit: www.HearingTracker.com

• Choose providers who follow Best Practices, perform Real-Ear testing, multiple brand devices and (optional) Aural Rehab classes.

• Bring a “2nd set of ears” to all appointments – ask questions

• Ask for recommendations & results in writing

• Getting used to takes time...give it lots of time – WEAR THEM

• Utilize TV, phone accessories, remote mics and remote controls (many users find them very helpful!)
In closing

• Hearing loss is *not* innocuous. Treat hearing loss EARLIER rather than later
• Hearing aids greatly improve QoL – *regardless* of level of technology
• Shortcomings of HAids can be overcome - use Assistive Listening Technology
• **Support the needs of PWHL & the creation of hearing accessible communities** using hearing loops and hearing aid compatible Assistive Listening Systems
• Consider the needs of PWHL and create legislation to ensure consumers are fully informed and receive appropriate services re: Hearing aids and accessories,

Healthy aging requires Healthy hearing
Questions?

Thank you for your attention

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Special thanks to David Myers PhD, Cheri Perazzoli, Linda Remensnyder AuD, Karen MacLennan AuD & many others