

Healthy Ageing 101 Presents:

Older Adults & Hearing Loss: Why Management is Key to Healthy Ageing

Tuesday January 23rd, 2024

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Baycrest Hearing Services



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Outline & learning objectives

- Learn about nature of age-related hearing loss and effects on daily life
- Understand risks and impacts of untreated hearing loss in older adults
- Learn about hearing loss management options
- What can we do better? Some recommendations and examples



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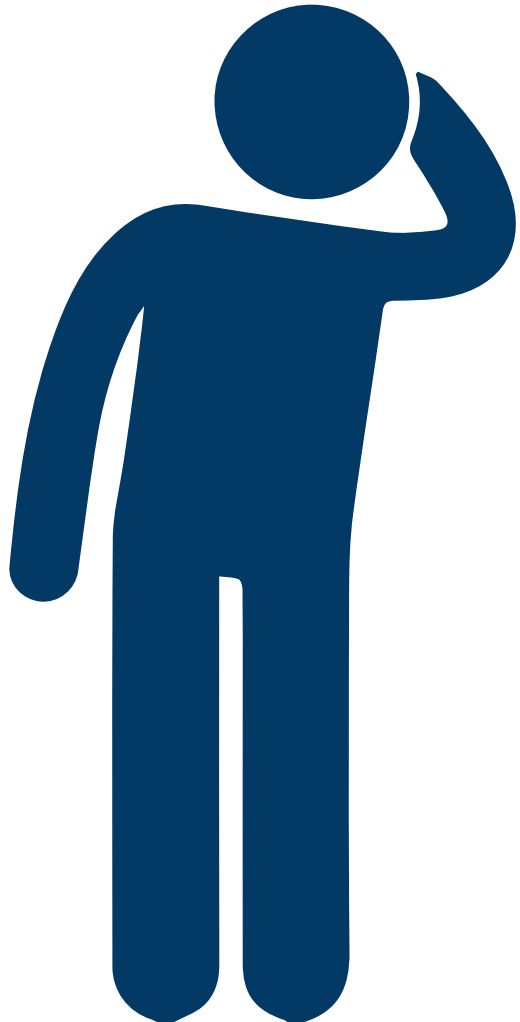
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Hearing loss



Highest Global Burden of Disease



Most Prevalent Chronic Health Condition in Older Canadians



Affects 50% of People Over 70 & 80% of People Over 80

Sensory Loss is Highly Associated with Dementia

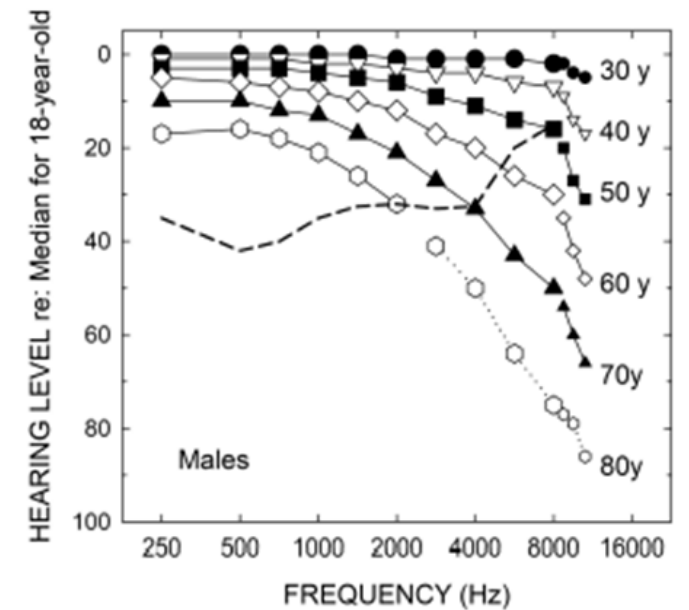
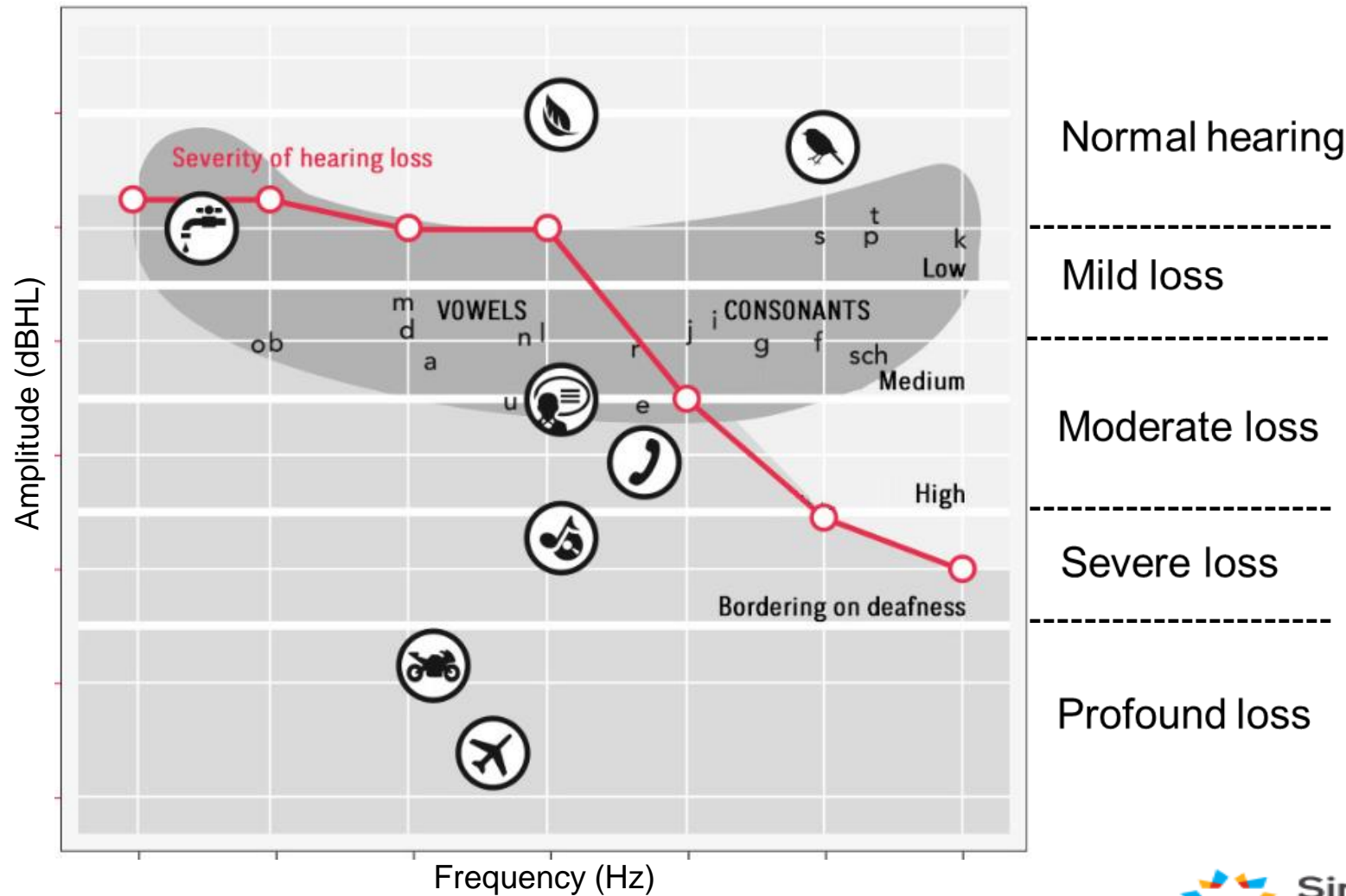


Greater Risk of Falls With Even Mild Hearing Loss



Modifiable Risk Factors for Dementia

Age-related Hearing Loss and Speech Understanding



Median pure-tone hearing thresholds for males by decade from ISO-7029 (2017)

Hearing and Cognition work together

Participating in conversation depends on:

Hearing

- Perceiving sound (passive)

Cognition

- Listening (active) - paying ATTENTION
- Comprehending - making sense of information we hear
- Remembering - storing & retrieving information



When bottom-up signal processing (audition) degrades, top-down (cognitive) processing becomes more important



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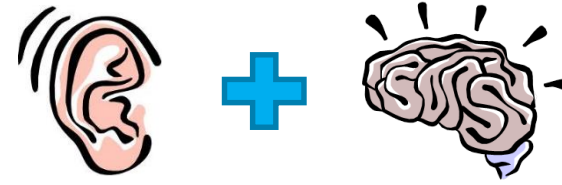
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Age-related hearing loss:



“I can hear people talking, but can’t make out the words”

Combination of changes to peripheral, central auditory and cognitive systems

Peripheral changes:

- Sensitivity loss (audiogram)
- Spectral processing disrupted

Central auditory processing changes:

- Decreased temporal & frequency resolution
- Decreased binaural integration between hemispheres

Cognitive changes:

- Attentional difficulties
- Inhibition of unwanted sound declines (hearing in noise)
- Processing speed slows (difficulty following fast speech)
- Working memory declines



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Role of cognition in conversation

- Why chief complaint of older listeners is hearing in noise!



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Social Isolation



- Hearing is a social sense; hearing loss impacts communication and connection with others
- Social connection is a key factor in healthy aging (*Holt-Lunstad et al, 2010*)
- Association between hearing loss and social isolation is commonly accepted and profoundly important (*Lin, 2013*)
- Isolation and loneliness impact morbidity and mortality through both psychological and physiological pathways (*Lin, 2013; Cacciopo et al, 2011*)
 - Affects well-being and can lead to depression (dementia risk factor)
 - Older adults with strong social networks maintain higher cognitive abilities and have reduced risk of developing dementia (*Fratiglioni et al., 2004*)

Prevalence of hearing loss



Hearing loss prevalence among Canadians 45–85 yrs old (better ear 4 frequency PTA > 25 dB HL) from CLSA, 2021

	Age (y)	(Row %)		Age (y)	(Row %)
Males	45-49	2.8	Females	45-49	2.2
	50-54	5.6		50-54	3.0
	55-59	8.8		55-59	6.3
	60-64	16.2		60-64	10.2
	65-69	27.8		65-69	16.7
	70-74	38.3		70-74	29.2
	75-79	57.1		75-79	46.4
	80-85	75.9		80-85	64.8

- Affects majority of Canadians over 75 years
- Despite being highly prevalent among older adults, hearing loss goes largely unreported and unidentified (*Goman & Lin, 2016*)

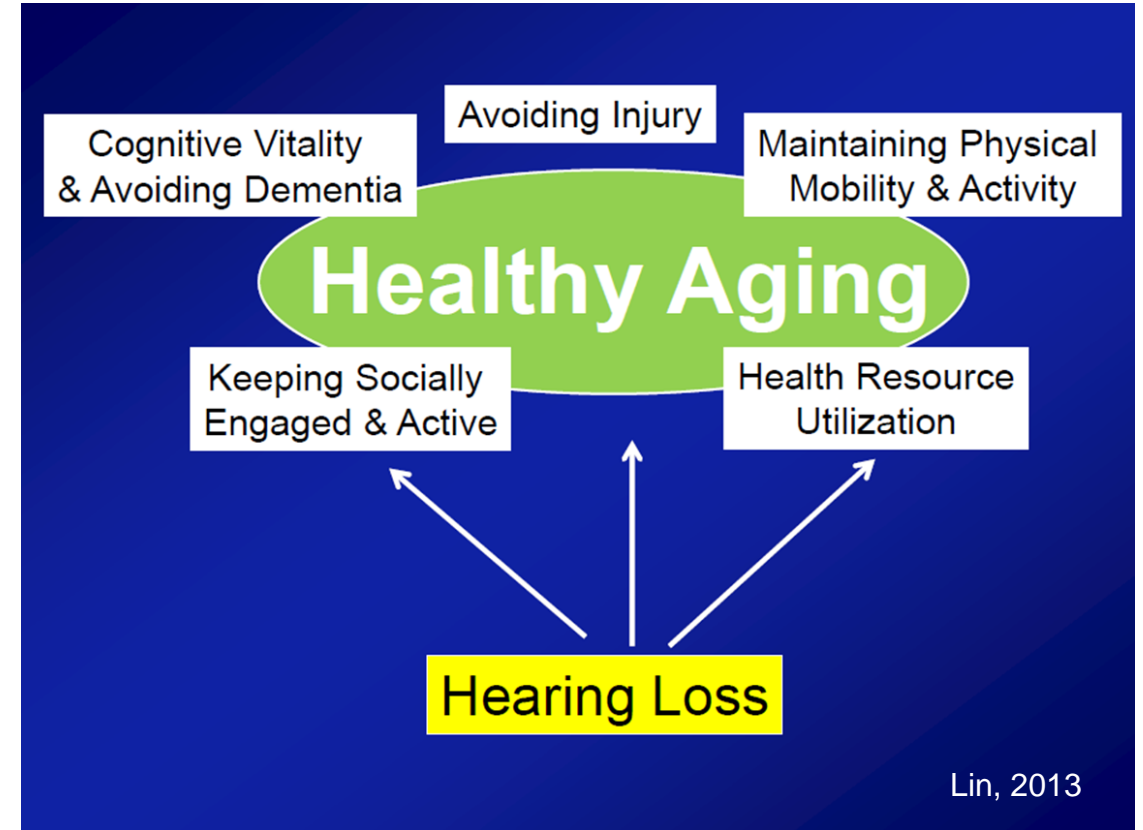
Why does this matter?

From: Mick PT, Hämäläinen A, Kolisang L, Pichora-Fuller MK, Phillips N, Guthrie D, Wittich W.

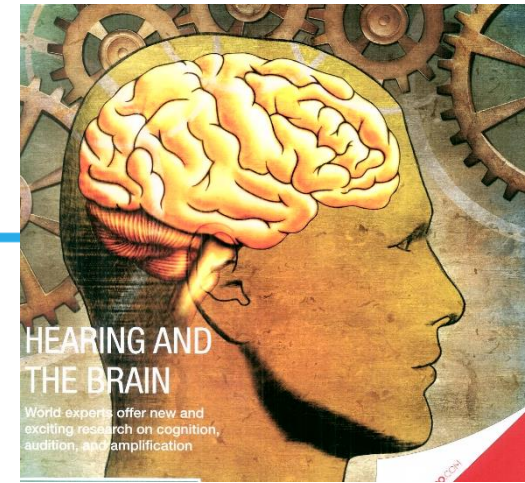
The Prevalence of Hearing, Vision, and Dual Sensory Loss in Older Canadians: An Analysis of Data from the Canadian Longitudinal Study on Aging. *Can J Aging*. 2021 Mar;40(1):1-22. doi: 10.1017/S0714980820000070. Epub 2020 Jun 17. PMID: 32546290.

Negative impact of hearing loss on health of older adults

- Communication, socialization and quality of life (*World Health Organization, 2021*)
- Mental health/depression (*Lawrence et al, 2020*)
- Physical health:
 - Frailty (*Kamel et al., 2014*)
 - Falls (*Lin & Ferrucci, 2012*)
 - Difficulty in performing ADLs (*Gopinath et al, 2012*)
 - Difficulty walking (*Li et al., 2012*)
 - Increased health care use and hospitalization (*Genther et al, 2013*)
 - Increased mortality (*Choi et al, 2024*)
- Cognition/dementia (*Loughrey et al, 2018; Lin et al, 2011*)



Hearing loss and cognitive decline/dementia



- Though both decline with age, disproportionately high amount of hearing loss in those with dementia (*Kay, 1964; Weinstein & Amsel, 1986; Uhlmann et al, 1989; Gold et al, 1996*)
- Alzheimer's patients with hearing loss decline more rapidly than those with good hearing (*Peters et al., 1988; Baltes & Lindenberger, 1997; Gates et al, 1996*)
- Landmark epidemiological studies show untreated hearing loss is independently associated with accelerated cognitive decline and incident dementia in older adults; the more severe the hearing loss, the greater the risk
 - every 10dB of HL over 25dBHL = 20% increase in risk of developing dementia (*Lin et al, 2011*)

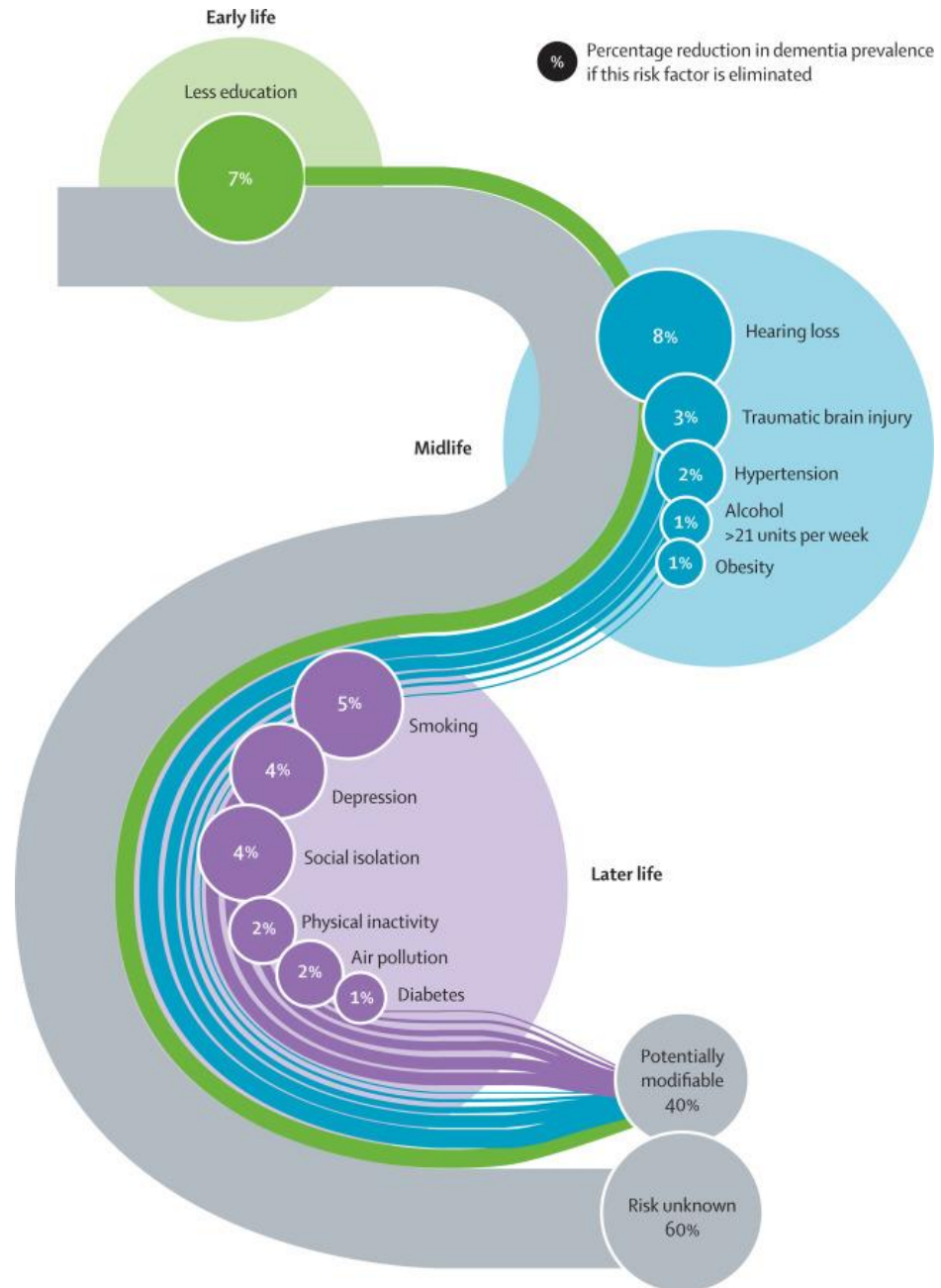


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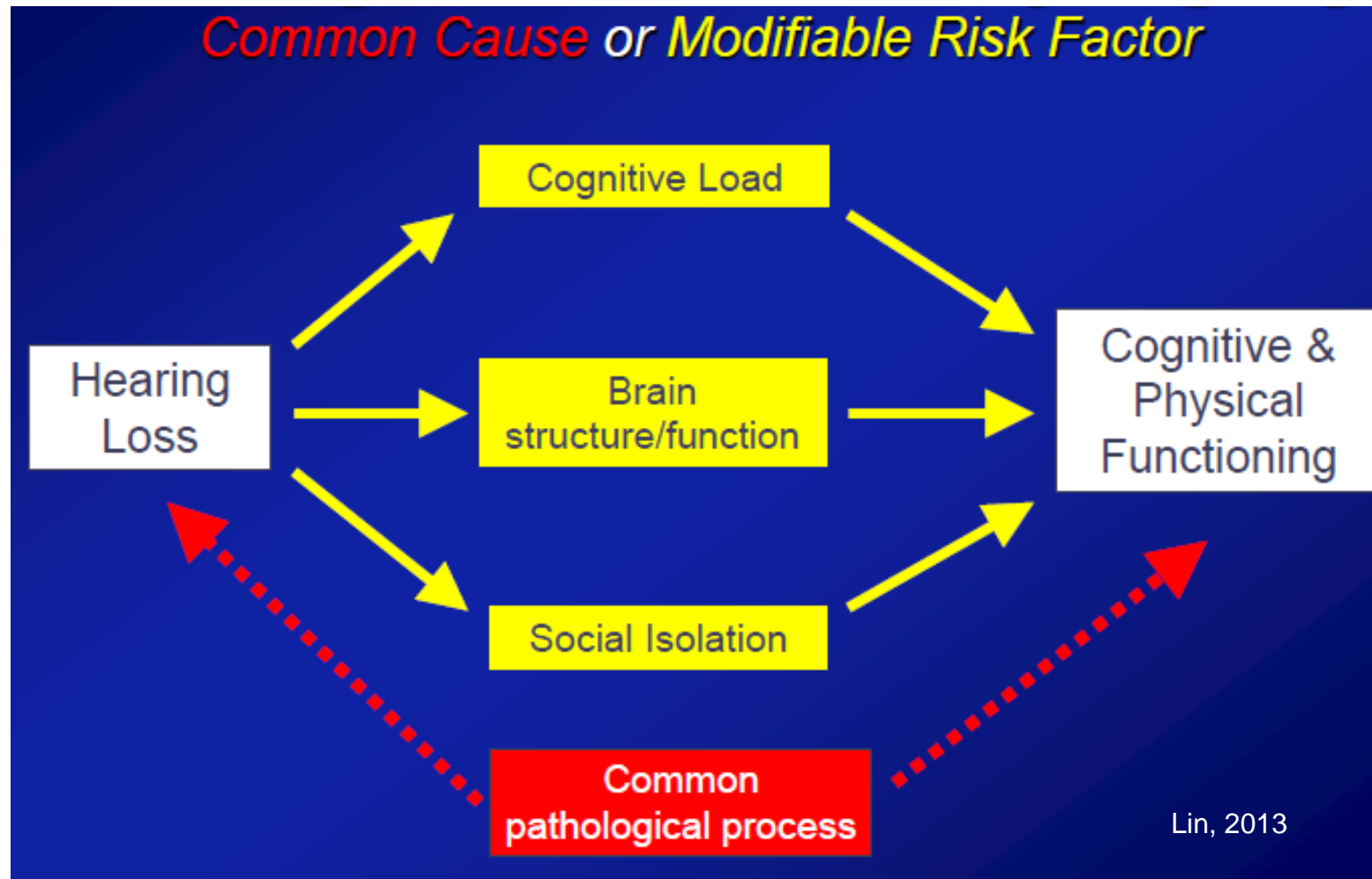
Life-course model of contribution of potentially modifiable risk factors for dementia

Dementia prevention, intervention, and care:
 2020 report of the Lancet Commission. Livingston et al, Lancet.
 Aug 8;396(10248):413-446. doi: 10.1016/S0140-6736(20)30367-
 6. Epub 2020 Jul 30

Lancet Commission meta-analysis reports on dementia prevention and care

- 40% dementia risk factors are potentially modifiable
- Hearing loss is *the leading potentially modifiable risk factor for dementia*, accounting for 8% of risk
- Recommended action: Encourage use of hearing aids for hearing loss and protect ears from excessive noise exposure

What's the link?



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Can hearing aids help to slow cognitive decline?



Growing body of evidence from large population-based studies that hearing aid use may delay or slow cognitive decline through reduced social isolation and depression or neurobiological effects of sensory deprivation

New RCT Evidence: ACHIEVE (Aging and Cognitive Health Evaluation in Elders), multi-year randomized controlled trial (RCT) examining effects of best-practice hearing care interventions on cognitive decline in older adults (n=977, three-year follow-up (*Lancet* 2023))

Key findings:

- In older adults at increased risk for cognitive decline, providing hearing aids and counseling **slowed cognitive decline by 48% over 3 years** compared to control group receiving non-hearing intervention
- Optimized hearing care can have positive impact on long-term cognitive health

Hearing intervention versus health education control to reduce cognitive decline in older adults with hearing loss in the USA (ACHIEVE): a multicentre, randomised controlled trial, Lin FR, Pike JR, Albert MS, et al. *Lancet* 2023; published online July 18. doi: 10.1016/S0140-6736(23)01406-X



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What's the message?



Evidence is increasing and promising that hearing aid use supports cognitive health

- Still cannot talk about causality
- Use constructive messages emphasizing benefits of good hearing to motivate people to act, e.g. 'Hearing better helps you to think and remember better'

'I'm having trouble hearing. Does this mean I'll develop dementia?'

Not everyone with hearing loss will develop dementia. Many people with hearing loss will never develop dementia.

There are many other risk factors to dementia; some we can control and some we cannot.

There is some evidence that treating hearing loss may help delay cognitive decline for individuals at risk.

Hearing aids do support healthy aging and overall well-being and can help you hear and communicate better.

Phonak ECHHO

Hearing is key to healthy aging and living well



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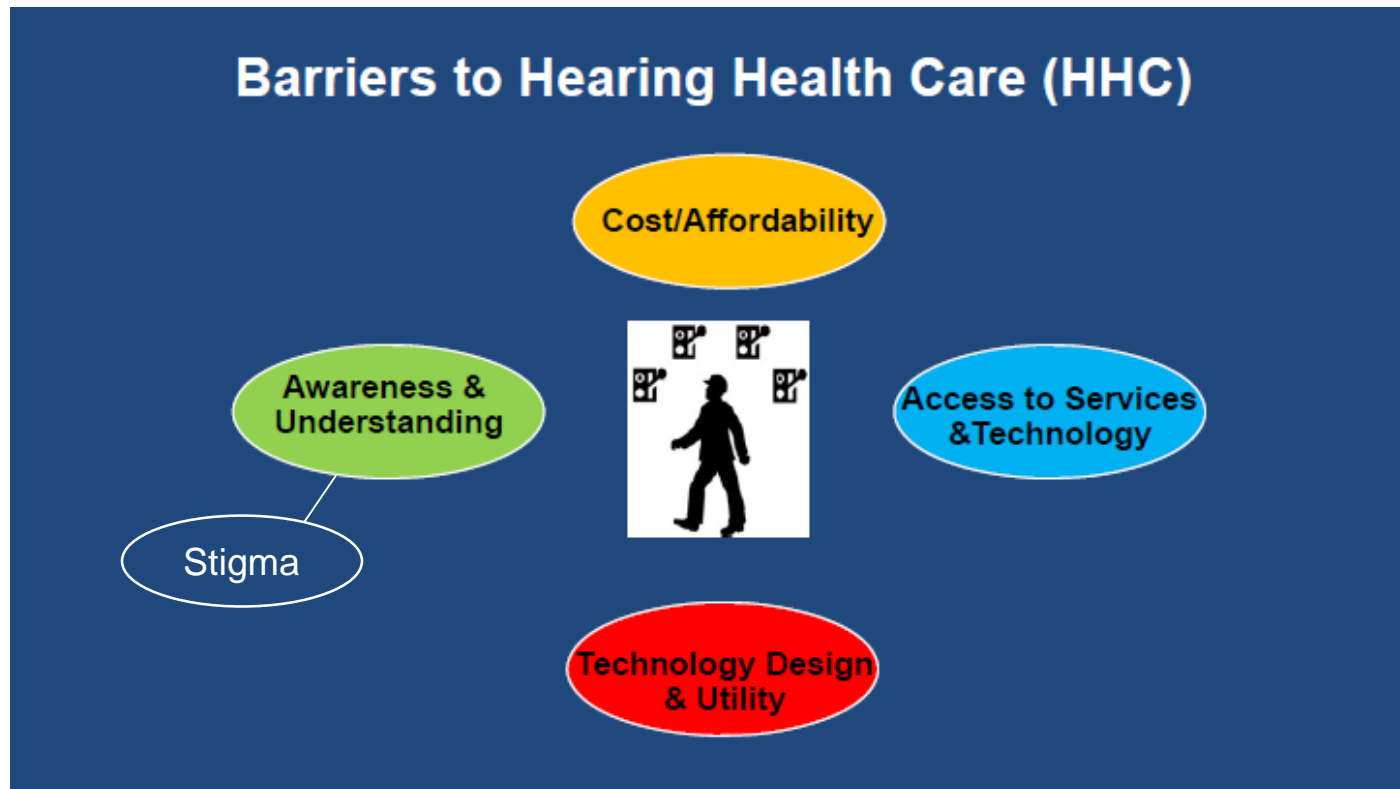
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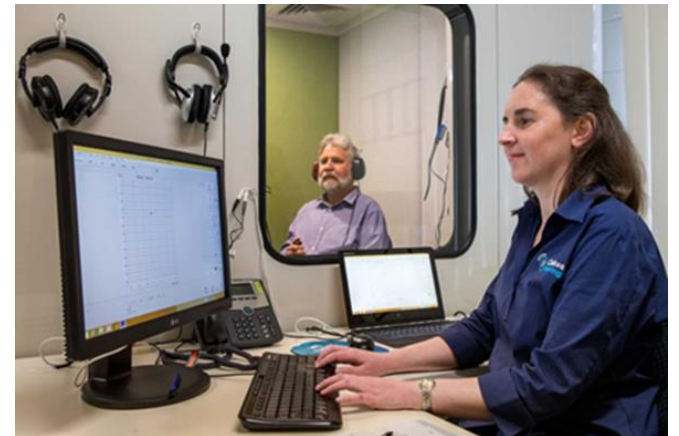
Why such reluctance to get help for hearing loss?

- Most people wait 10 years to do something about their hearing loss (*Simpson et al, 2019*)
- < 20% of older adults who might benefit from hearing aids use them (*Chien & Lin, 2012*)



How do I get help for hearing loss?

- See a **doctor** (GP, ENT) for medical clearance
 - wax, infection, pathology needing investigation or treatment
 - + referral to audiology, if needed
- See an **Audiologist** for assessment and management:
 - Hearing test (OHIP with doctor's referral at Baycrest)
 - Assessment of communication needs
 - Hearing aid/assistive device prescription
 - Dispensing of device(s)
 - Counselling and education (individual and group)



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Hearing help NOT one size fits all

Options:

- **Technology**

- Hearing aids, cochlear implants and wireless connectivity
- Assistive technology, e.g. PockeTalker; phones; TV

- **Behavioral communication strategies**

- counseling re. coping strategies
- use of visual cues & speech reading training
- optimizing audition and listening skills
- assertiveness training

- **Environmental modifications/Accessibility**

- reduce noise and reverberation
- good lighting, etc.
- room technology



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What can we do better?



Get more sound to the brain sooner, to maintain communication function!

- Early identification: screen for hearing loss in primary care in middle age
- Request referral for hearing assessment if necessary
- Raise public awareness about links between hearing loss and associated health issues
- Counsel and encourage help-seeking for hearing loss
- Counter negative attitudes with benefits to health and QOL
- Address stigma by expanding and explaining treatment options – more than hearing aids!
- Follow WHO recommendations to integrate hearing care within primary care, with goal of optimizing functioning and health
- Advocate to policy makers for funding for hearing rehab services along with technology in national and provincial health care programs



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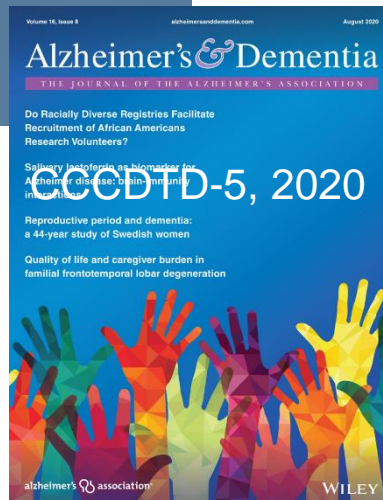
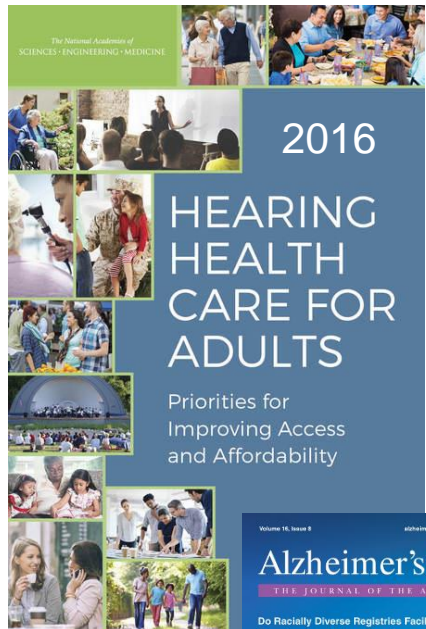


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Calls to action



<https://www.who.int/publications/i/item/world-report-on-hearing>



WORLD REPORT ON HEARING



Recommends universal hearing screening

- Regularly over age 50 years
- Annually over age 65 years



Promoting universal hearing screening for older adults - at Baycrest and beyond

- Online hearing screening tool piloted in Baycrest Memory Clinic to inform neurologists re patients' hearing status
- Included in admission assessment for programs with clients at high risk for dementia
- Customized screening tool on Hearing Services website as portal to in-person and virtual services via discussion with audiologist re:
 - Screening results
 - Readiness to take action
 - Management options and resources

Do you think you have hearing loss?

Check your hearing in less than 5 minutes!



By proceeding, you agree to the terms of our [Privacy Statement](#).

Check My Hearing!

<https://www.shoebonline.com/baycrest/>

Reed M, Freedman M, Mark Fraser AE, Bromwich M, Santiago AT, Gallucci CE, Frank A. Enhancing Clinical Visibility of Hearing Loss in Cognitive Decline. J Alzheimers Dis. 2022;86(1):413-424. doi: 10.3233/JAD-215377. PMID: 35068463.



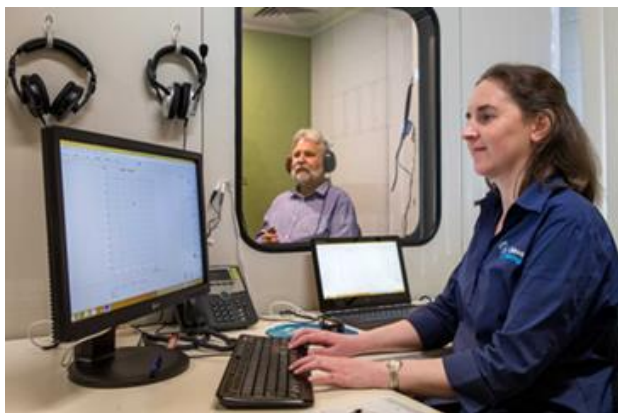
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Expanded Management Options



Screening tool portal for optional

- Phone consultation with audiologist →
- **In-clinic services**
- **Online services**

Tech support available!

Online:

Baycrest Hearing Help. Learn from an audiologist about behavioral communication strategies, assistive devices, speechreading, etc.

<https://bit.ly/3AaFgyp>



Hard of Hearing Club peer support group - Discuss challenges and solutions with others with hearing loss

<https://bit.ly/HearingClub>



Assistive devices from Baycrest or other suppliers

<https://bit.ly/3I2qOdt>



Lip reading training

<https://bit.ly/ReadOurLips>



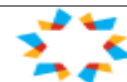
Auditory brain training exercises

<https://bit.ly/HearingRehabilitation>



Tinnitus therapy

<https://bit.ly/TinnitusSupport>



Hearing Help groups for education and peer support

- An opportunity to share problems and support one another
- Provides partners for practicing communication skills
- Fosters participation and social interaction



Baycrest Hard of Hearing Club



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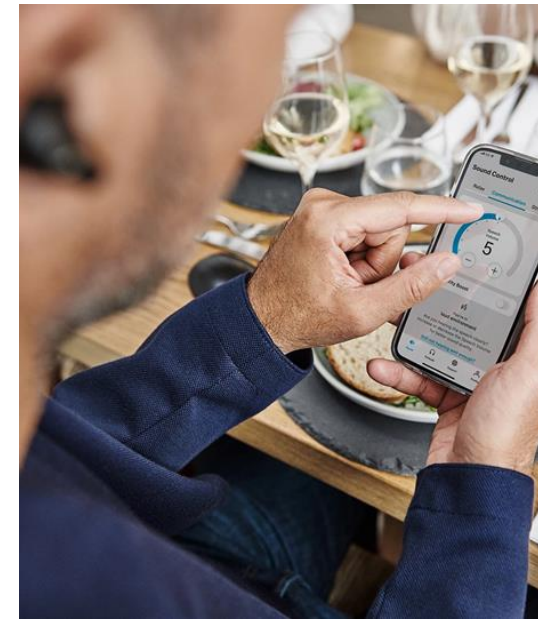
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Affordable solutions: Over the counter devices (OTCs)



Over the Counter self-fitting amplification technology offers an alternative to costly hearing aids for adults with mild hearing loss

- Available on-line but not easily accessed or self-fitted by older adults
- FDA regulated in USA but not yet in Canada



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Accessible, community-based hearing care

HEARS: Hearing Equity through Accessible Research Solutions

- Evidence-based, community hearing care program tailored to low income older adults
- Rehab intervention: education, counselling + choice of 2 low-cost OTC devices
- Goals: improved communication, social participation, quality of life
- Key features = accessible, affordable hearing care



- Johns Hopkins team developed Baltimore HEARS pilot, 2015
- Toronto HEARS, adapted for Ontario, 2017
- New Brunswick HEARS, adapted for NB, 2021
- Johns Hopkins HEARS RCT, 2022

Nieman CL, Betz J, Garcia Morales EE, et al. Effect of a Community Health Worker–Delivered Personal Sound Amplification Device on Self-Perceived Communication Function in Older Adults With Hearing Loss: A Randomized Clinical Trial.
JAMA. 2022;328(23):2324–2333. doi:10.1001/jama.2022.21820

Hearing is vital for healthy aging!



- Hearing is a social sense, keeping us connected to family and friends
- Social activity has preventive positive effect on mental, physical and cognitive health

Thank you!



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Additional Resources

- **Defy Dementia podcast, Episode 1: Lightening the Load with Vision and Hearing**
<https://www.baycrest.org/podcast/episode-1>
- **Hearing Loss and Cognition: What We Know and Where We Need to Go**, Powell DS, Oh ES, Reed NS, Lin FR, Deal JA. Front Aging Neurosci. 2022 Feb 28;13:769405. doi: 10.3389/fnagi.2021.769405. PMID: 35295208; PMCID: PMC8920093.
- **Hearing aids, counselling may slow cognitive decline for some seniors, new study finds**
<https://www.cbc.ca/news/health/hearing-aids-cognitive-decline-dementia-1.6909911>
- **Baycrest Hearing Screening Tool:** <https://www.shoebonline.com/baycrest/>
- **Baycrest Hearing Services website:** <https://www.baycrest.org/Baycrest/Healthcare-Programs-Services/Clinical-Services/Hearing-Services>
- **WHO World Report on Hearing:**
<https://www.who.int/publications/i/item/world-report-on-hearing>

Questions? (Submit through Q&A)



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Website:

<https://sinaigeriatrics.ca>

Twitter:

@SinaiGeriatrics

LinkedIn:

Healthy Ageing and Geriatrics Program (Sinai Health and University Health Network)

Upcoming Healthy Ageing 101 Schedule

February 16, 2024 12-1pm EST (*Friday)

Urinary Incontinence in Older Adults

Speaker: **Dr. Dean Elterman** (Urologist, University Health Network)

March 19, 2024 12-1pm EST

Older Adults Living with Serious Mental Illness

Speaker: **Dr. Sophiya Benjamin** (Geriatric Psychiatrist & Co-ED, GeriMedRisk)

April 19, 2024 12-1pm EST (*Friday)

Managing Chronic Pain in Older Adults

Speaker: **Dr. Paul Tumber** (Anesthesiologist and Pain Management Consultant)

Visit our website for more information <https://sinaigeriatrics.ca/healthy-ageing101/>

Additional slides (if needed for discussion)

Managing the Environment

Three Principles:

1. Distance

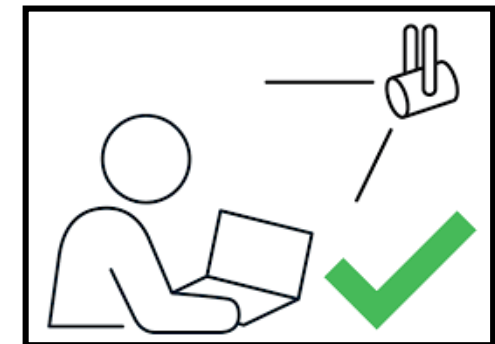
- Close to speaker (within 1-2 m); away from background noise
- Same room!

2. Noise and Reverberation

- Turn off/down TV, music
- Choose a quiet place to talk
- Reduce reverberation: smaller room with carpeting, acoustic tile, drapes and padded furniture to absorb echoes

3. Lighting

- Good lighting helps lip reading, visual cues



Tips for restaurants

- Check noise level rating on websites (e.g. TripAdvisor, Yelp)
- Choose a restaurant with carpeting, curtains, low ceilings, tablecloths that absorb sound and reduce reverberation
- Go early when less busy and noisy
- Make a reservation, asking for a quiet table in corner or beside wall
- Booths with high backs help to block out noise and absorb sound
- Sit in a well-lit area (for lip reading)
- Sit away from music source (speakers or band); request loud music be turned down
- Choose the best seat for you at the table; ideally next to someone willing to fill you in on conversation
- Use technology, e.g. remote mic with hearing aids; smartphone mic close to speaker



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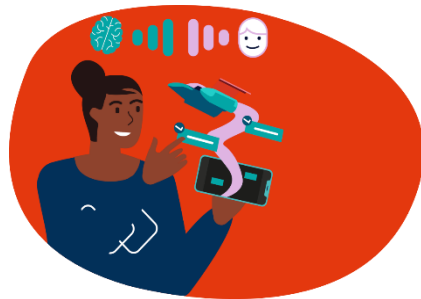
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Auditory training

- Listening exercises that can help train the brain to listen to, understand and follow conversation more effectively
- Practice understanding speech in noise, fast speech and multiple talkers to help strengthen listening and comprehension skills using computerized exercises and games
- Examples:



Amptify <https://amptify.com/>



LACE <https://laceauditorytraining.com/>

LACE
LISTENING AND COMMUNICATION
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Do you think you have hearing loss?

Check your hearing in less than 5 minutes!



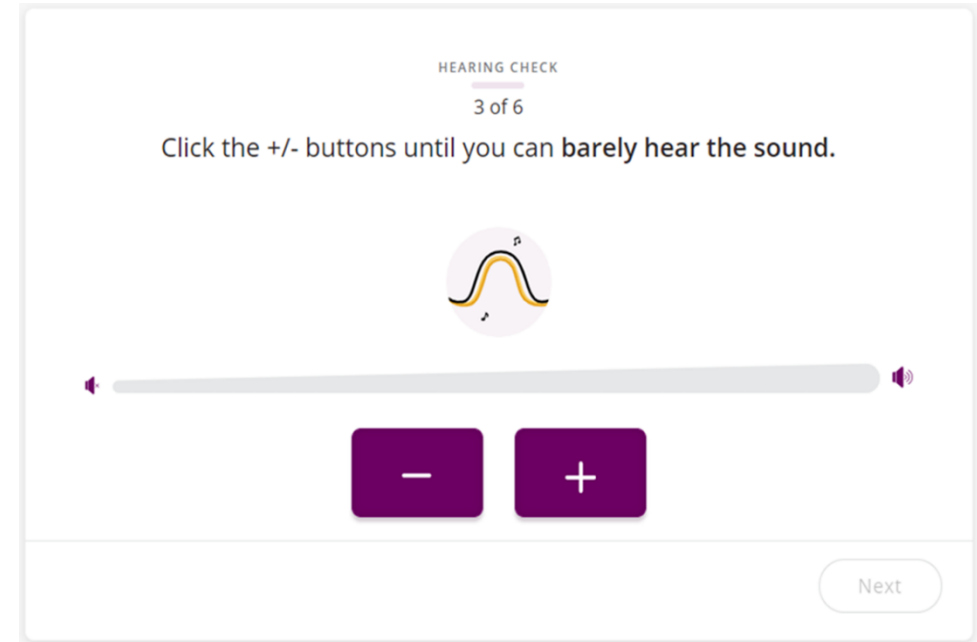
By proceeding, you agree to the terms of our [Privacy Statement](#).

Check My Hearing!

<https://www.shoeboxonline.com/baycrest/>

HEARING CHECK
3 of 6

Click the +/- buttons until you can barely hear the sound.



Next

Your results suggest you may have **hearing loss.**

[How do you calculate my results?](#)

