Hearing Loss & Healthy Aging: An IOM-NRC Workshop

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Prevalence of Hearing Loss in the United States, 2001-2008

Hearing loss defined as a better-ear PTA of 0.5-4kHz tones > 25 dB
Hearing Loss & Hearing Aid Use
Prevalence in the U.S., 1999-2006

Arch Int Med, 2012
Prevalence of Hearing Aid Use

• **United States** *(Arch Int Med, 2012)*
  - 26.7M adults ≥ 50 years with hearing loss
  - 3.8M use hearing aids
  - **Overall rate of HA use: 14.2%**

• **England and Wales** *(NICE Report, 2000)*
  - 8.1M with hearing loss
  - 1.4M use hearing aids
  - **Overall rate of HA use: 17.3%**
Age-Related Hearing Loss (ARHL)

Basic Public Health Questions

• What are the consequences of ARHL for older adults?

• What are the options for treating ARHL and what is their impact on older adults?

• How can ARHL be effectively addressed in the community?
John Smith, 72 y.o.
Age-Related Hearing Loss (ARHL)

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Healthy Aging
Hearing Loss & Healthy Aging

*Common Cause* or *Modifiable Risk Factor*

- **Hearing Loss**
- **Cognitive & Physical Functioning**
- **Common pathological process?**
“Sunday”

Principles of Auditory Physiology

#1 Hearing depends on *peripheral transduction* & *central processing* of sound
Principles of Auditory Physiology

#2 Auditory functioning can be measured at multiple levels

- Peripheral cochlear function
- Otoacoustic Emissions
- Pure Tone Audiometry
- Speech Discrimination Score
- Central Auditory Measures (Speech in Noise, Dichotic Listening)
- Subjective Hearing & Communicative Function

Central Cortical Function
Principles of Auditory Physiology

#3 “Hearing loss” reflects impairments in peripheral cochlear function that can be assessed with audiometry.

PTA = Pure tone average of 0.5, 1, 2, & 4 KHz tones.
"Effortful listening"

Hearing Loss & Cochlear impairment

Decreased hearing sensitivity & poor frequency resolution

“Sunday”
Hearing Loss & Healthy Aging

Common Cause or Modifiable Risk Factor

- Cognitive Load
- Brain structure/function
- Social Isolation
- Cognitive & Physical Functioning

Common pathological process
Age-Related Hearing Loss (ARHL)

Basic Public Health Questions

• What are the consequences of ARHL for older adults?

• **What are the options for treating ARHL and what is their impact on older adults?**

• How can ARHL be effectively addressed in the community?
Options for Addressing ARHL

Topics to be Discussed

- Education & Counselling
  - Hearing needs assessment
  - Rehabilitative strategies
- Hearing health care workforce
  - Audiologists, Hearing aid dispensers, Community health workers
- Hearing technologies
  - Hearing aids vs. PSAP’s
  - Hearing loop systems & Hearing assistive devices
Age-Related Hearing Loss (ARHL)  
*Basic Public Health Questions*

- What are the consequences of ARHL for older adults?
- What are the options for treating ARHL and what is their impact on older adults?
- How can ARHL be effectively addressed in the community?
How can ARHL be effectively addressed in the community?

*Topics to be Discussed*

- Understanding & approaching hearing loss in the context of healthy aging
  - Collaborative strategies for research, education, & awareness

- Delivery models of hearing health care & insurance coverage
  - Developing accessible models of care
  - 3rd party reimbursement

- Innovations in hearing technologies
  - Developing affordable & innovative technologies
  - Open wireless standards
Approaching ARHL in Context of Healthy Aging

- Optimal hearing understood to be critical for daily functioning
- Expanded, transparent options for hearing health care
- Coverage for hearing health care services

Present Status of ARHL in Society
- Inconsequential, poorly understood, & stigmatized
- Technology & models of care not meeting needs of many individuals

Current insights into importance of hearing to healthy aging

Aging society with baby boomers

Workshop Catalyzes Change

Rapid progress in technology & wireless connectivity