Managing Disease Risk in Hearing Healthcare Delivery

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Managing Disease Risk: An Evolving Challenge in Hearing Healthcare
The Baby Boomer Bump – 2000 Census

The graph shows the U.S. population against age in years, with a peak in the Baby Boomer generation around age 40.
The Baby Boomer Bump – 2010 Census

U.S. Population

Baby Boomer Bump

Age in Years

2000

2010
The Baby Boomer Bump – 2015 Projection

U.S. Population

Age in Years

2000
2010
2015 Projection
The Baby Boomer Bump – 2015 Projection

U.S. Population

Age in Years

- 2000
- 2010
- 2015 Projection
What Does This Mean for Me?

• Prevalence of Communicatively Significant Hearing Loss in 2010:
  • 1 in 5 60-70 year olds (6,000,000)
  • 1 in 2 70 – 80 year olds (8,500,000)
  • 3 in 4 80+ year olds (8,900,000)

• Served by
  • 1300 ENTs
  • 1300 Audiologists
  • 600 Neurotologists / Otologists
  • 900 Hearing Instrument Dispensers
In Theory…

• In 2010 each professional would need to see 900 new patients to meet demand
• 2015 we would need to see 1103 new patients to meet demand
  • Would it not be nice if each of us sold 2200 hearing aids / year??? $$
But We Don’t…

• Less than 1 in 5 hearing impaired individuals purchase hearing aids

• Most wait 5-10 years before purchasing
  • Cost / benefit
  • Alternatives
    • Internet
    • ALDs
    • PSAPs
Direct to Consumer Devices

• Technology can solve problems of mild to moderate hearing loss?
  
  • Consumer Electronics Industry versus the Hearing Aid Industry

• Audiology fits where?
What Are the Rolls of ENT and Audiology?

• ENT:
  • Disease prevalence will increase with population
  • Implantable devices will increase

• Audiology:
  • Greater demand for hearing aids that work!
    • Part of the solution – but the whole solution?
  • OTC Hearing aids for mild to moderate hearing loss?
Ear Disease and Hearing Loss

Population Projections - 2010

Based on projected population percentages calculated by Lin et al. 2011
Ear Disease and Hearing Loss

Population Projections - 2010

- All Hearing Loss
- All Ear Disease

Age in Years

- 20–29
- 30–39
- 40–49
- 50–59
- 60–69
- 70–79
- 80+

Numbers:
- 0
- 2,000,000
- 4,000,000
- 6,000,000
- 8,000,000
- 10,000,000
- 12,000,000
- 14,000,000
Ear Disease and Hearing Loss

Population Projections - 2010

- All Hearing Loss
- All Ear Disease

Age in Years
- 20–29
- 30–39
- 40–49
- 50–59
- 60–69
- 70–79
- 80+

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Today, ear disease is encountered less frequently in hearing aid seeking adults.
FDA Preferred Model for Ear Disease Surveillance

Adults seeking relief from hearing loss…

100%

What is the cost of using this model? Time, Money, Accessibility?
FDA Preferred Model for Ear Disease Surveillance

Adults seeking relief from hearing loss…

What is the cost of using this model? Time, Money, Accessibility?
FDA Waiver Model for Ear Disease Surveillance

Adults seeking relief from hearing loss…

1. Audiologist / HIS
2. Red Flag Criteria Disease?
   - ENT
   - Hearing Aids

3. ?? %
4. Benign??
Can Audiologists Assess Ear Disease Risk?

Adults seeking relief from hearing loss…

- Audiologist Evaluation
- Red Flag or Other Risk Indicator
- Benign
- Hearing Aids / Communication Management
- Independent Assessment by Audiologists, Otolaryngology & Neurotology Physicians

Zapala, et al. (2010)
FDA Waiver Model for Ear Disease Surveillance

Adults seeking relief from hearing loss…

- Audiologist / HIS
  - Red Flag Criteria Disease?
  - Hearing Aids
  - ENT
  - VA Experience: Only 1.7% of Individuals over the age of 50 years had disease needing ENT Management
  - ?% Benign?
Standardizing Ear Disease Risk Assessment for Audiologists

The creation of PEDRA
Professional Ear Disease Risk Analytics (PEDRA)

1. Structured Interview
2. Simple Standardized Physical Examination
3. Algorithmic Disease Detection Analytics
4. Real-Time Estimate of Ear Disease Risk
First Job For Audiology

- Identify ear disease accurately and refer

  - Evidence is growing that we do as good as Neurotology in this area
Consumers Seek Affordable, Accessible Solutions to Hearing Loss

Direct to Consumer Sales

Consumer

- PSAPs
- Hearable
- Hearing Aids
Consumer Ear Disease Risk Assessment (CEDRA)

- Questionnaire designed for hearing aid seeking consumers
- Asks questions about health status and ear disease symptoms
- Provides a prediction of ear disease risk in real time
Interim CEDRA Results

• Initial risk probability algorithm
  • Developed from a cohort of 192 cases of disease and age related hearing loss
  • Cross validated in a cohort of 54 similar cases

• Performance validation
  • 90% of ear disease cases identified
  • 71% of age related hearing loss cases accurately identified
Summary

• The FDA preferred method:
  • From a systems approach - produces a bottleneck and must change

• Audiology based disease detection and referral is a necessity

• We have to plan for consumers access to OTC hearing devices
  • Disease detection
  • Communication improvement
Future of Audiology: Evolve or Die

• There is a strong societal need and growing demand for Audiology

• There are profound changes coming down the road

• We need to carefully retool for the next several decades:
  • We need to focus on services of value
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