Hearing Loss: Poorly Recognized but Often Preventable

John Eichwald, MA

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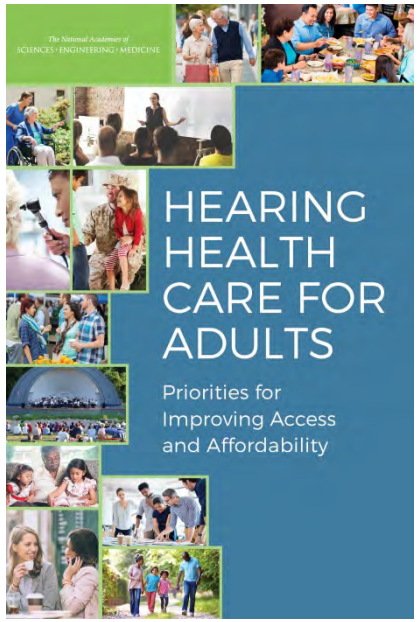
National Center for Environmental Health

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Hearing Health Care for Adults
Priorities for Improving Access and Affordability

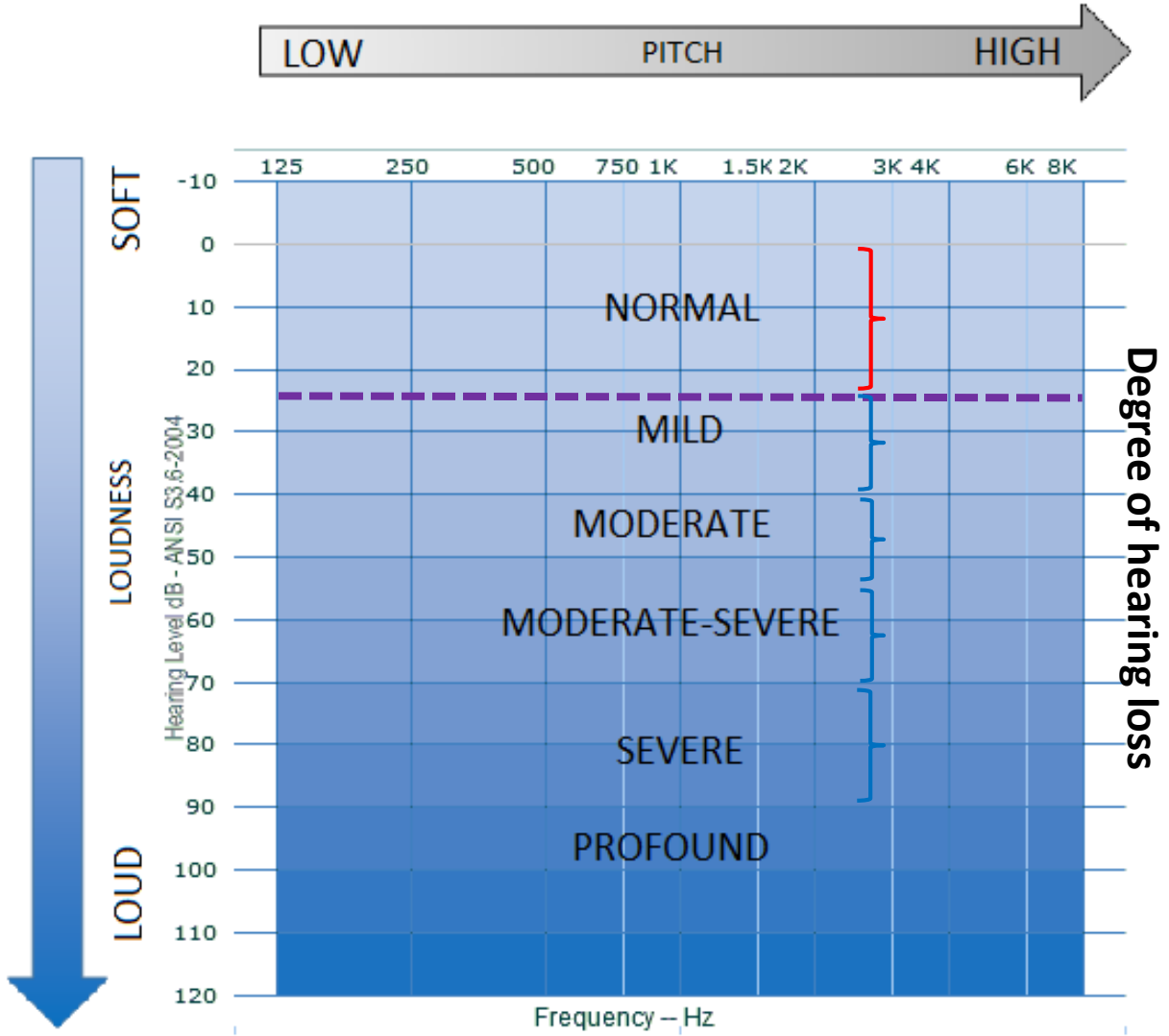


Recommendations for CDC and other partners

- **Strengthen efforts to collect, analyze, and share data on adult hearing loss and the effects of hearing loss and its treatment on patient outcomes**
- **Promote hearing health in regular medical visits**
- **Improve public information on hearing health and hearing-related technologies and services, and promote public awareness about hearing and hearing health care**

National Academies of Sciences, Engineering, and Medicine. 2016.
Hearing Health Care for Adults: Priorities for Improving Access and Affordability.
Washington, DC: The National Academies Press.

Audiometric Measurement of Hearing Loss (Adults)



Pitch, or frequency, is measured in Hertz (Hz)

Loudness, or sound intensity, is measured in decibels (dB)

Simulation of Hearing Loss: Normal Hearing

- **Normal Hearing** 

"When the sunlight strikes raindrops in the air, they act as a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors."

Audio files courtesy of NIOSH

Simulation of Hearing Loss: Mild Hearing Loss

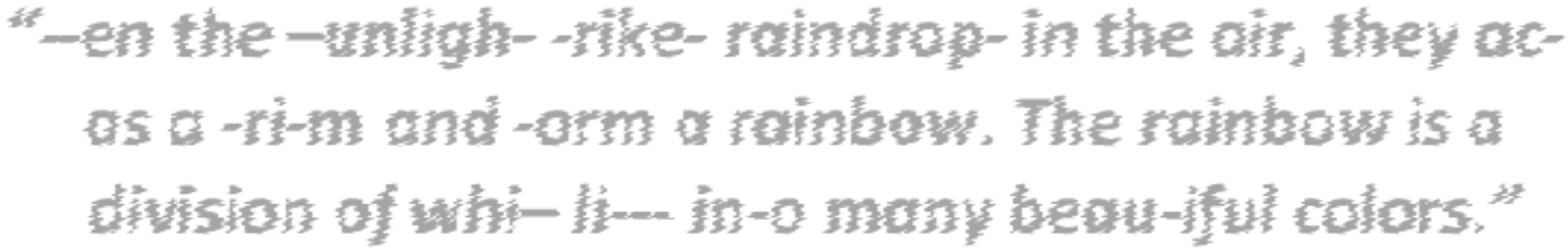
- **Mild Hearing Loss** 

"When the -unlight –trike- raindrop- in the air, they act as a pri-m and form a rainbow. The rainbow is a division of whi-- ligh- into many beautiful colors."

Audio files courtesy of NIOSH

Simulation of Hearing Loss: Moderate Hearing Loss

- **Moderate Hearing Loss**



Audio files courtesy of NIOSH

Simulation of Hearing Loss: Moderate Hearing Loss With Noise

- **Moderate Hearing Loss in Noise**

Audio files courtesy of NIOSH

Noise-Induced Hearing Loss Among Adults

Centers for Disease Control and Prevention

MMWR

Morbidity and Mortality Weekly Report

Early Release / Vol. 66

February 7, 2017

Vital Signs: Noise-Induced Hearing Loss Among Adults — United States 2011–2012

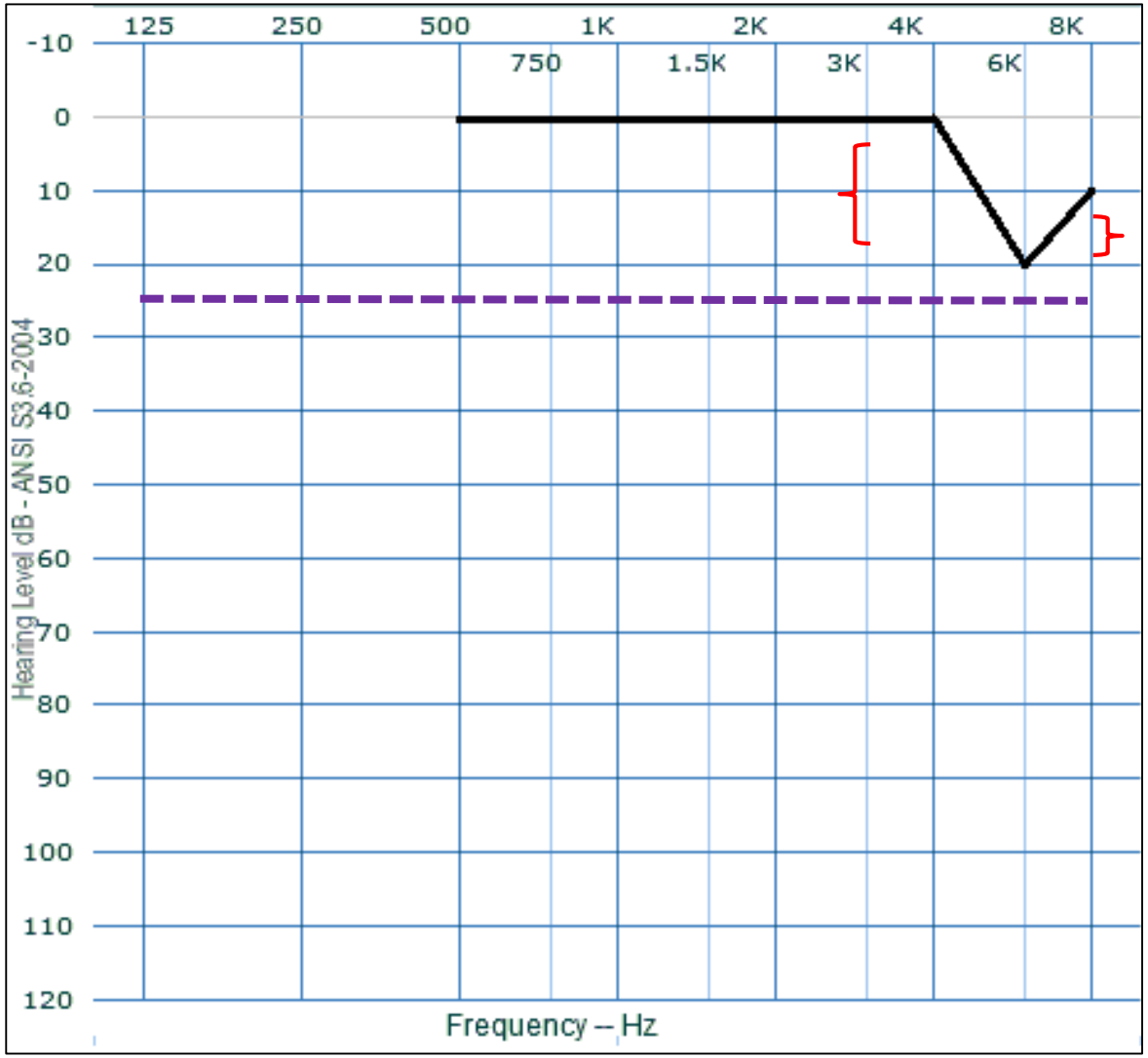
Yulia I Carroll, MD, PhD[1]; John Eichwald, MA[1]; Franco Scinicariello, MD[2]; Howard J. Hoffman, MA[3]; Scott Deitchman, MD[4]; Marilyn S. Radke, MD[5]; Christa L. Themann, MA[6]; Patrick Breysse, PhD[4]

- **Includes a media release, fact sheet, website content, a town hall webinar and multiple social media tools**
  - Most provided in English and Spanish

www.cdc.gov/vitalsigns/hearingloss/index.html

Noise-Induced High-frequency Audiometric Notch

- **Audiometric notch suggests hearing damage from exposure to loud noise levels**
- **Defined as**
  - Any threshold at 3, 4, or 6 kHz that exceeds the average threshold in the frequencies, 500 Hz and 1 kHz by 15 dB HL and the threshold at 8 kHz is at least 5 dB HL better (lower) than the maximum threshold at 3, 4, or 6 kHz

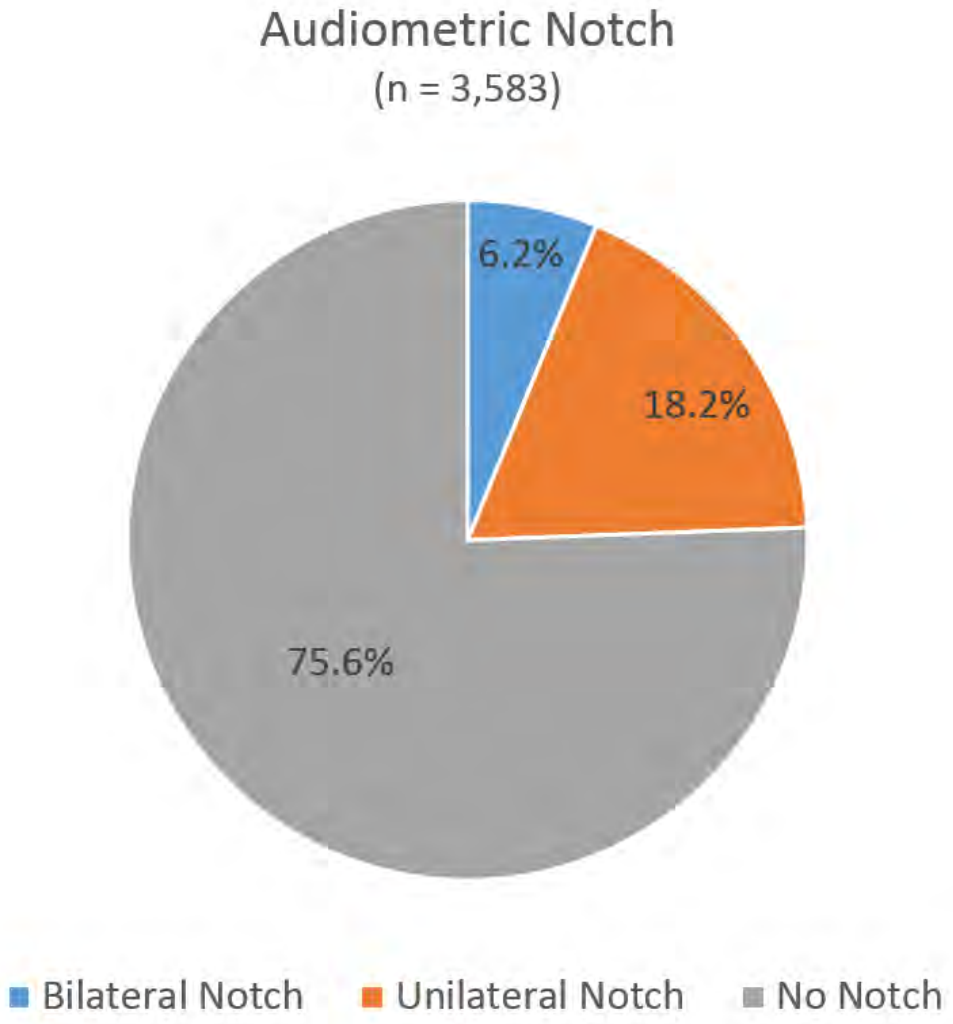


HL: Hearing loss

Carroll YI, Eichwald J, Scinicariello F, et al. *MMWR*. 2017 Feb 10;66(5):139 - 144.

1 in 4 US Adults Have Evidence of Noise-Induced Hearing Loss

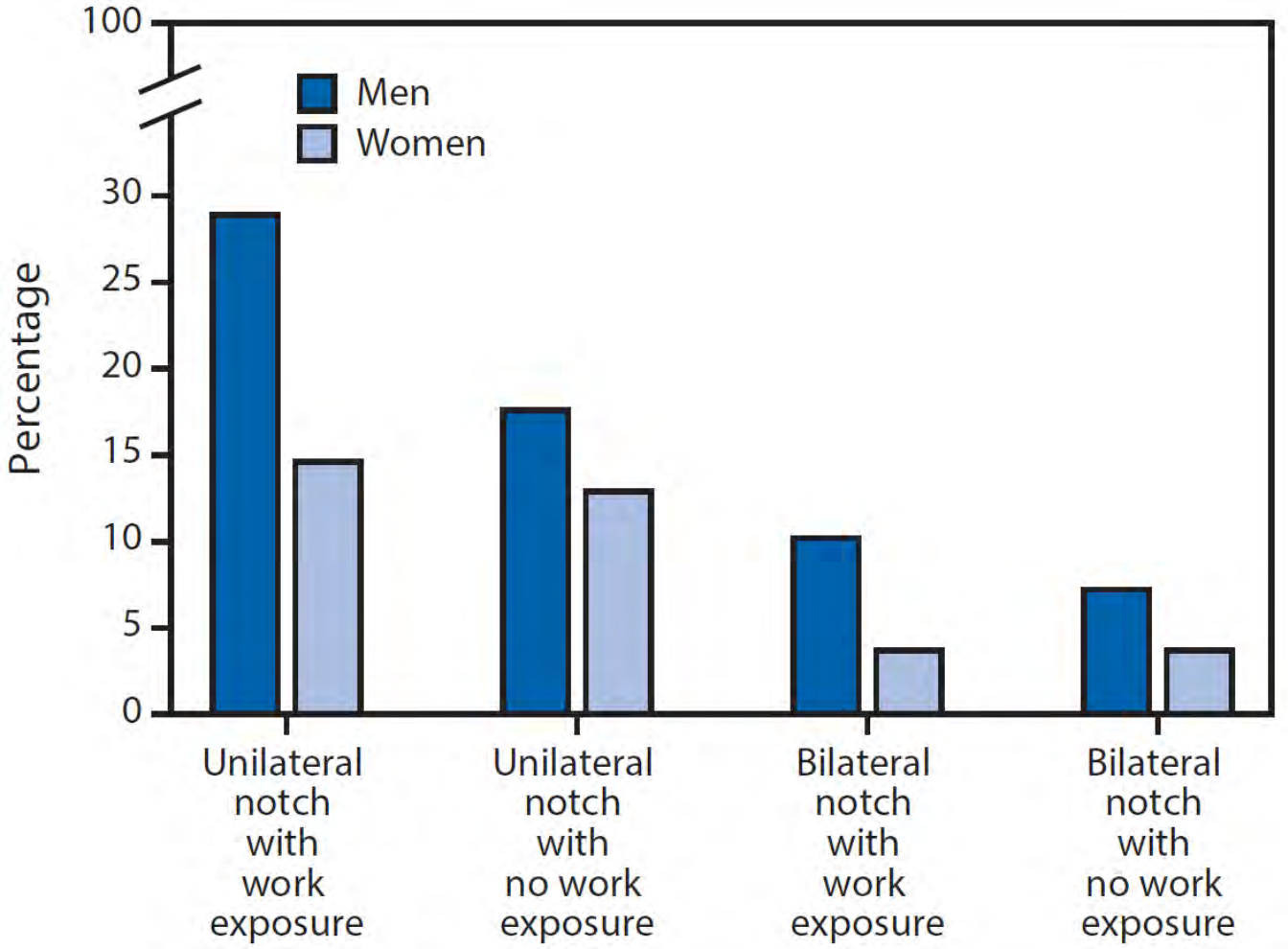
- **24% or 39.4 million U.S. adults**
- **3/4 of hearing loss is one-sided (unilateral)**



Carroll YI, Eichwald J, Scinicariello F, et al. *MMWR*. 2017 Feb 10;66(5):139 - 144.

1 in 5 with Audiometric Notch Report
No Exposure to Noise at Work

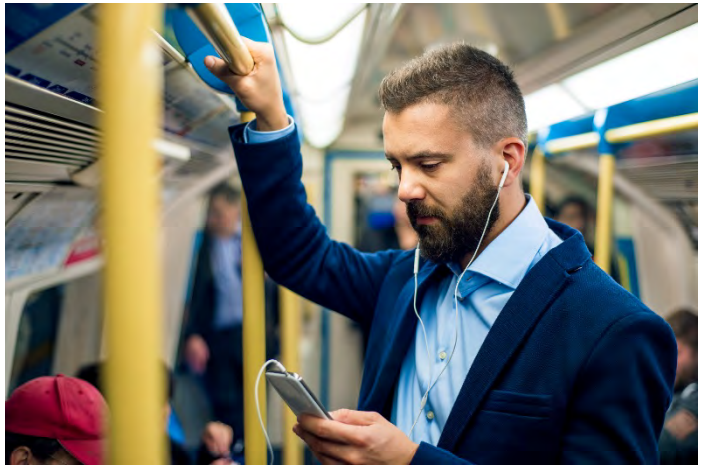
- **33% reported exposure to noise at work**
  - Twice as likely to have audiometric notch
- **20% reported *no* exposure to noise at work**
  - Males = 25%
  - Females = 17%



Carroll YI, Eichwald J, Scinicariello F, et al. *MMWR*. 2017 Feb 10;66(5):139 - 144.

Loud Sounds At Home or In Community Cause Hearing Damage

- 21 million adults in the U.S. likely have hearing damage from loud sound sources at home or in their communities
- Noise sources include power tools, recreational vehicles, and listening to music more than 10 hours per week

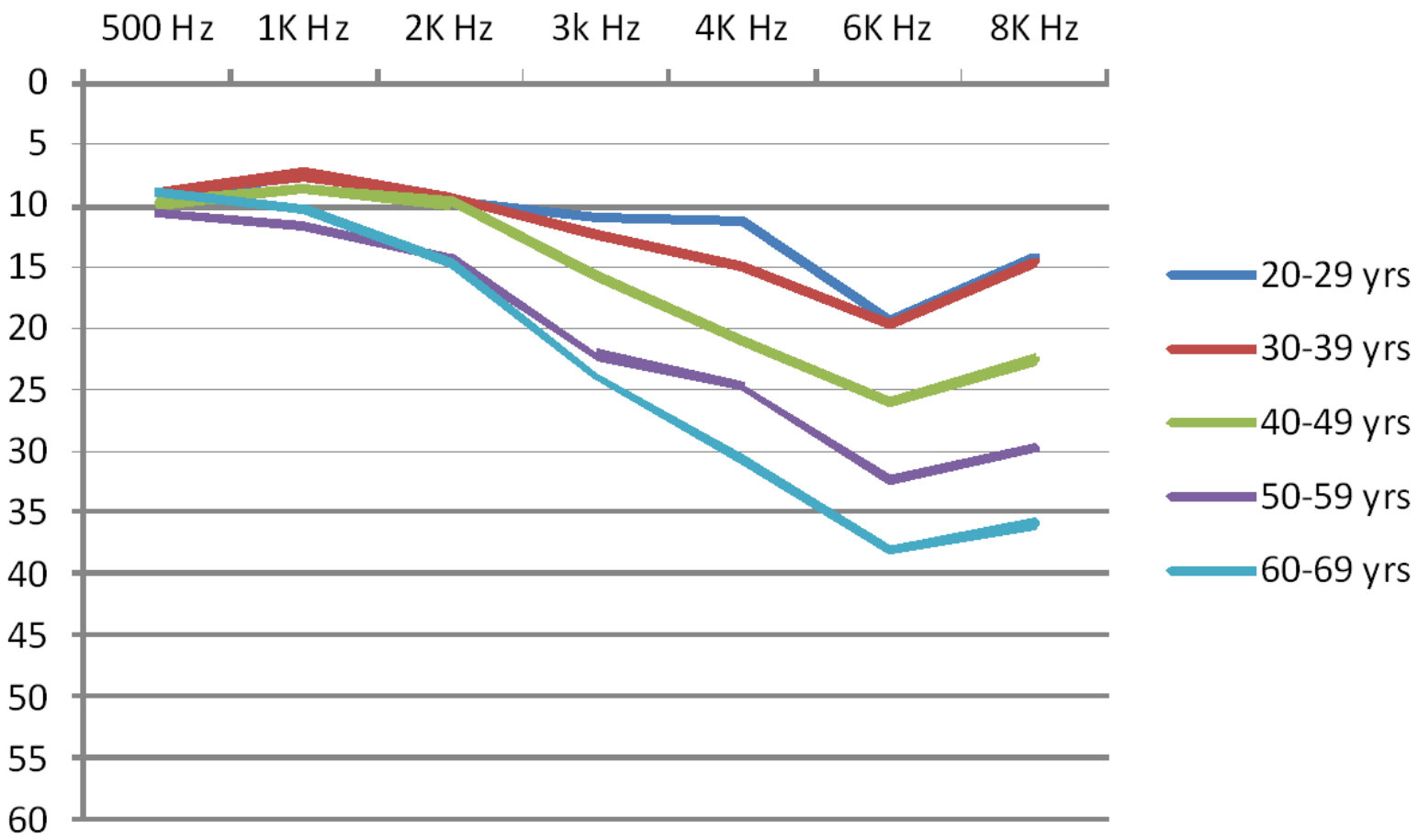


Damage Accumulates Over Time

- **Presence of notch in one or both ears:**
  - Age 20–29 years = **19%**
  - Age 30–39 years = **25%**
  - Age 40–49 years = **29%**
  - Age 50–59 years = **27%**
  - Age 60–69 years = **21%**

Carroll YI, Eichwald J, Scinicariello F, et al. *MMWR*. 2017 Feb 10;66(5):139 - 144.

Damage Accumulates Over a Lifetime



Unilateral Notch, Males and Females (Left Ear)

Unrecognized Hearing Loss Occurs Frequently

- People with auditory damage caused by noise frequently do not recognize it
- One in four people who reported “excellent” or “good” hearing had an audiometric notch
- 70% of adults exposed to loud noise in the past 12 months never or seldom wore hearing protection

Prevention of Hearing Loss

- **Move away or shorten the exposure time**
  - Avoid loud sound sources (e.g., loudspeakers)
- **Turn the volume down**
  - Reduce listening time as well
- **Wear hearing protection**
  - Needs to fit well to effectively reduce exposure

Carroll YI, Eichwald J, Scinicariello F, et al. *MMWR*. 2017 Feb 10;66(5):139 - 144.

Health Providers Can Help Detect and Prevent Hearing Loss

- **Ask about hearing and noise exposures**
- **Examine hearing during regular medical and wellness visits**
- **Refer for hearing evaluation and treatment**

Carroll YI, Eichwald J, Scinicariello F, et al. *MMWR*. 2017 Feb 10;66(5):139 - 144.

Child and Adolescent Hearing Health

Deanna K. Meinke, PhD, CCC-A

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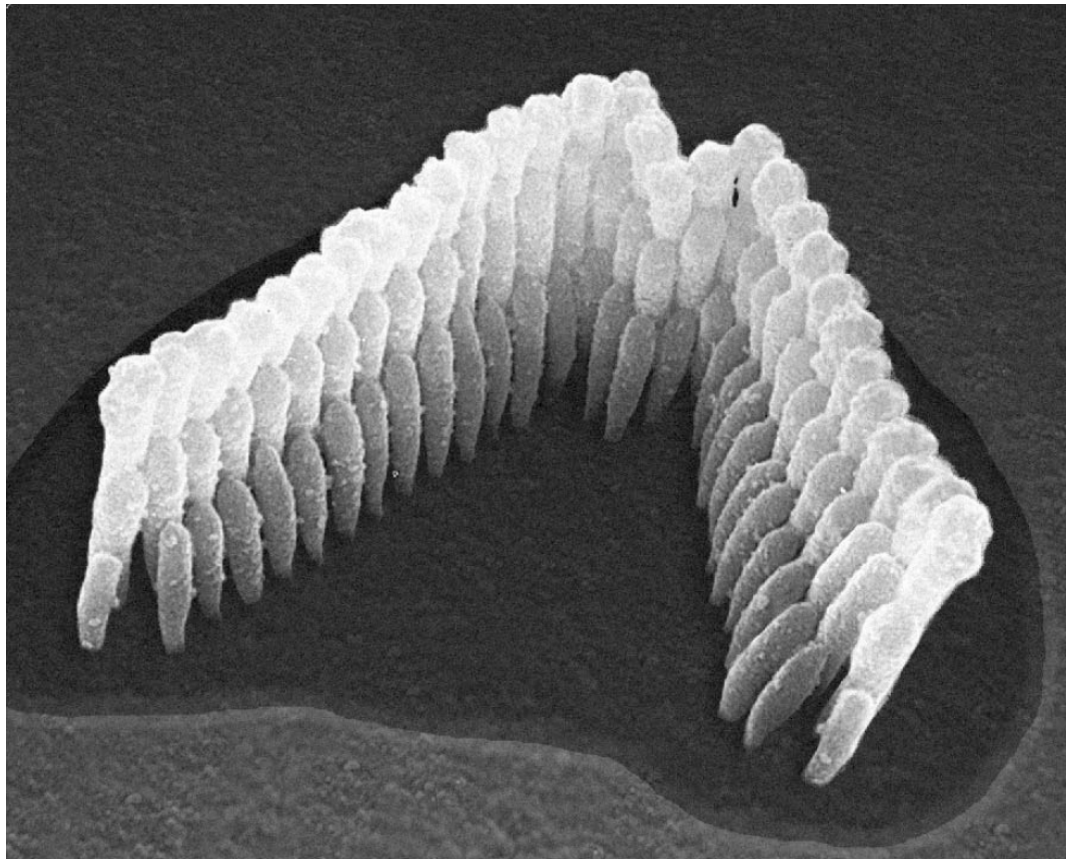
University of Northern Colorado

Co-director, Dangerous Decibels®

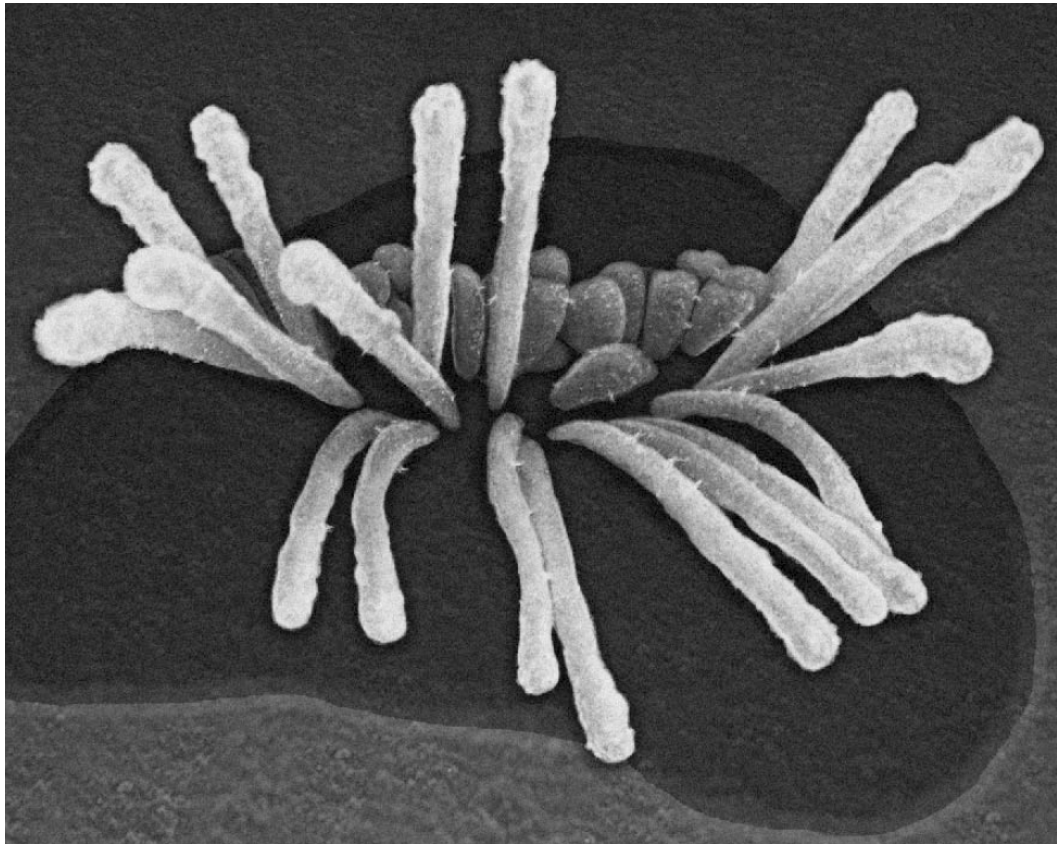
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Auditory System Damage: Cochlear

Healthy Hair Cell Bundle

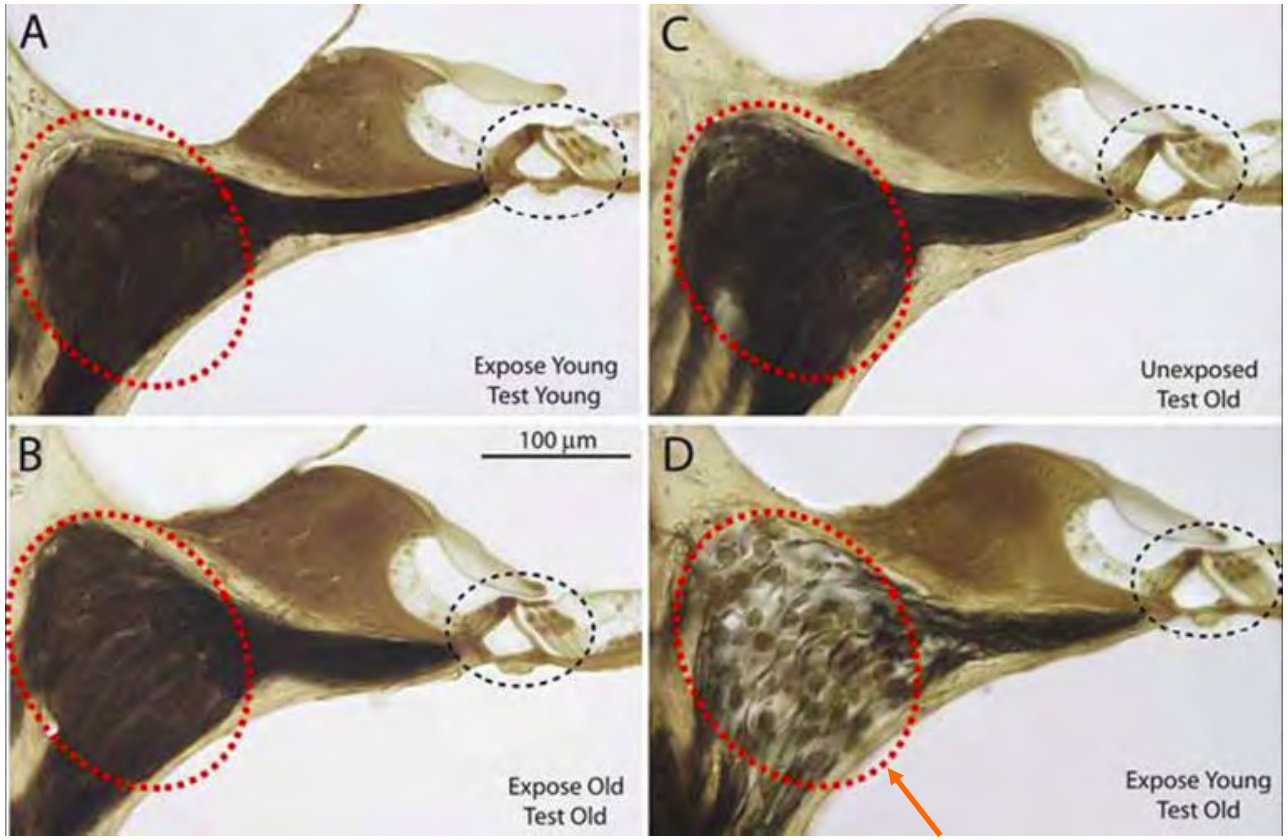


Noise Damaged Hair Cell Bundle



Auditory System Damage: Nerve Synapses

- Cochlear neurons targeted by noise and may accelerate age-related hearing loss
- Spiral ganglion of mouse with decreased density of neurons after noise exposure when young
- "Hidden" hearing loss



Kujawa SG, Liberman MC. *J Neurosci*. 2006 Feb 15;26(7):2115 - 23.
Kujawa SG, Liberman MC. *J Neurosci*. 2009 Nov 11;29(45):14077 - 85.

Risk of Hearing Damage Relates to Both Loudness and Length of Time Exposed

- Noise exposure integrates A-weighted sound pressure level (decibels) and duration of listening
- Permissible exposures are based on adult occupational noise exposures with some degree of acceptable risk for repeated exposures over 40 years
- Exposure limits for children are unknown

Decibels

+

Time

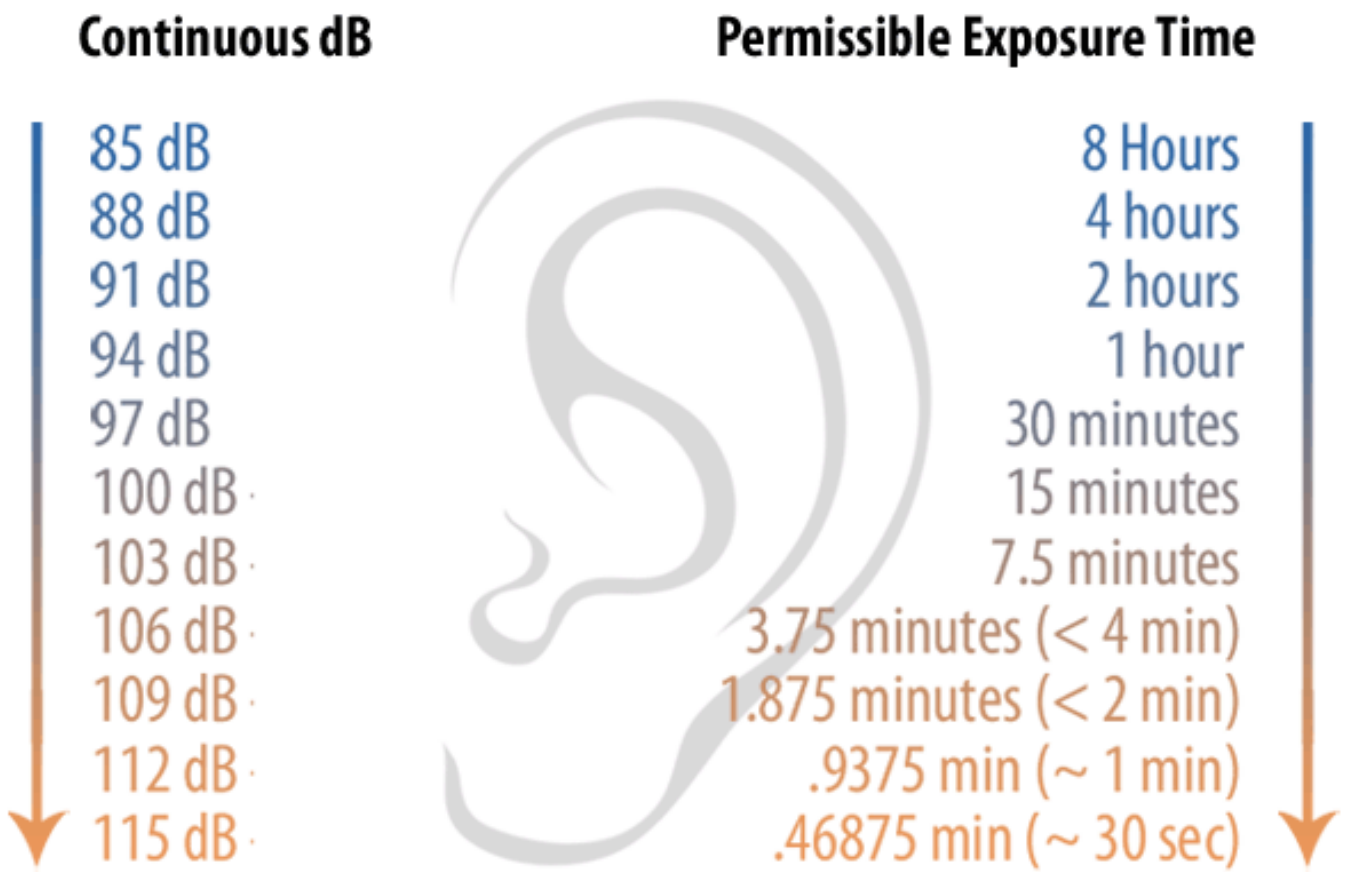
=

Damage

www.dangerousdecibels.org/education/information-center/decibel-exposure-time-guidelines/

Kujawa SG, Liberman MC. *J Neurosci*. 2009 Nov 11;29(45):14077 - 85.

Noise Risks: Level + Time



www.dangerousdecibels.org/education/information-center/decibel-exposure-time-guidelines/
www.cdc.gov/niosh/docs/98-126/pdfs/98-126.pdf

Noise Exposure Associated with No Risk of Hearing Loss

Decibels (A-weighted)	Allowable Duration (hours / minutes)
70 dBA	24 hours
75 dBA	8 hours (480 minutes)
85 dBA	47 minutes
95 dBA	4.5 minutes
105 dBA	0.5 minutes
115 dBA	0 minutes
Integrated with equal energy rule: 3 dB exchange rate; 40-year exposure lifetime	

U.S. EPA. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. EPA/ONAC 550/9-74-004. Washington, DC:U.S. Environmental Protection Agency, 1974.
Berglund, B., Lindvall, T. and Schwela, D.: 1999, Guidelines for Community Noise, World Health Organization (WHO), Geneva.

High-Level Impulse Noise: Risk of Immediate Hearing Damage

Retail Firecracker Display

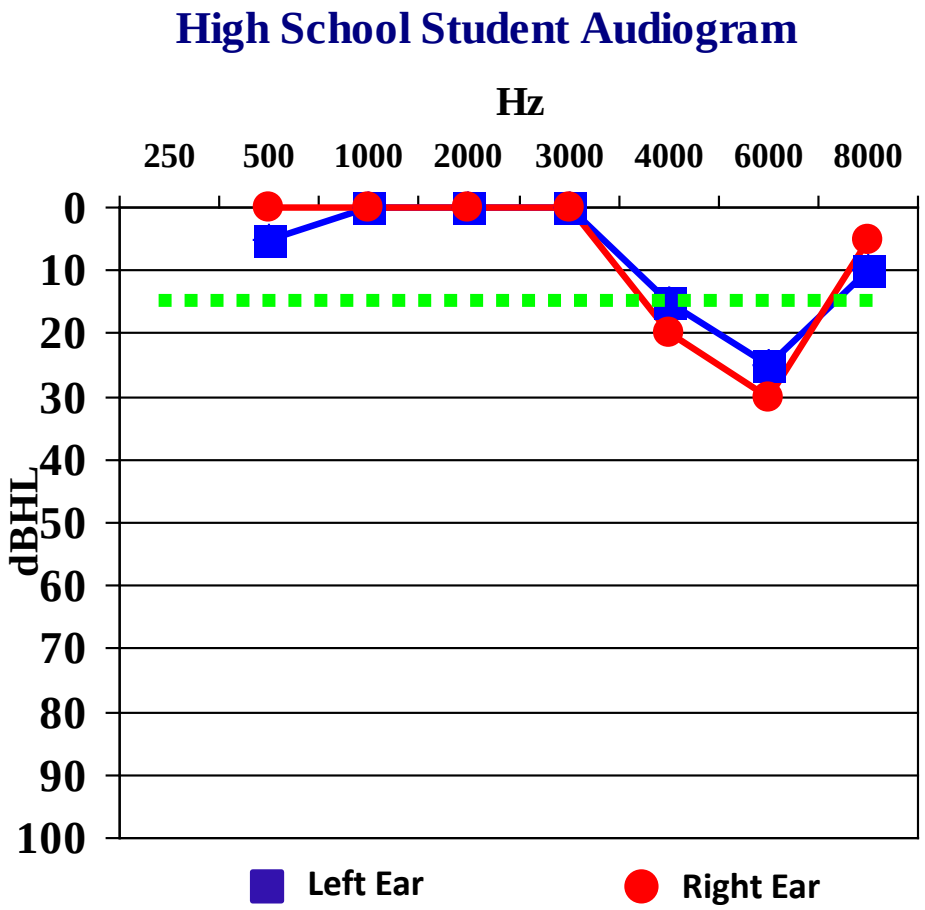
- **Acoustic trauma:** Risk of immediate mechanical damage to the unprotected auditory system from high-level impulse or impact noise
  - 140 dB peak SPL for adults (NIOSH)
  - 120 dB peak SPL for children (WHO)
  - Firecrackers:
    - At 1 meter: 162 dB peak SPL

SPL: Sound pressure level

Flamme GA, Liebe K, Wong A. *Noise Health.* 2009 Oct-Dec;11(45):223-30.
Lankford JE, Meinke DK, Flamme GA, et al. *Int J Audiol.* 2016;55 Suppl 1:S51-8.
Meinke DK, Murphy WJ, Finan DS, et al. *Int J Audiol.* 2014 Mar;53 Suppl 2:S16-25.

Bilateral Noise-Induced Hearing Loss: Continuous Noise Exposure

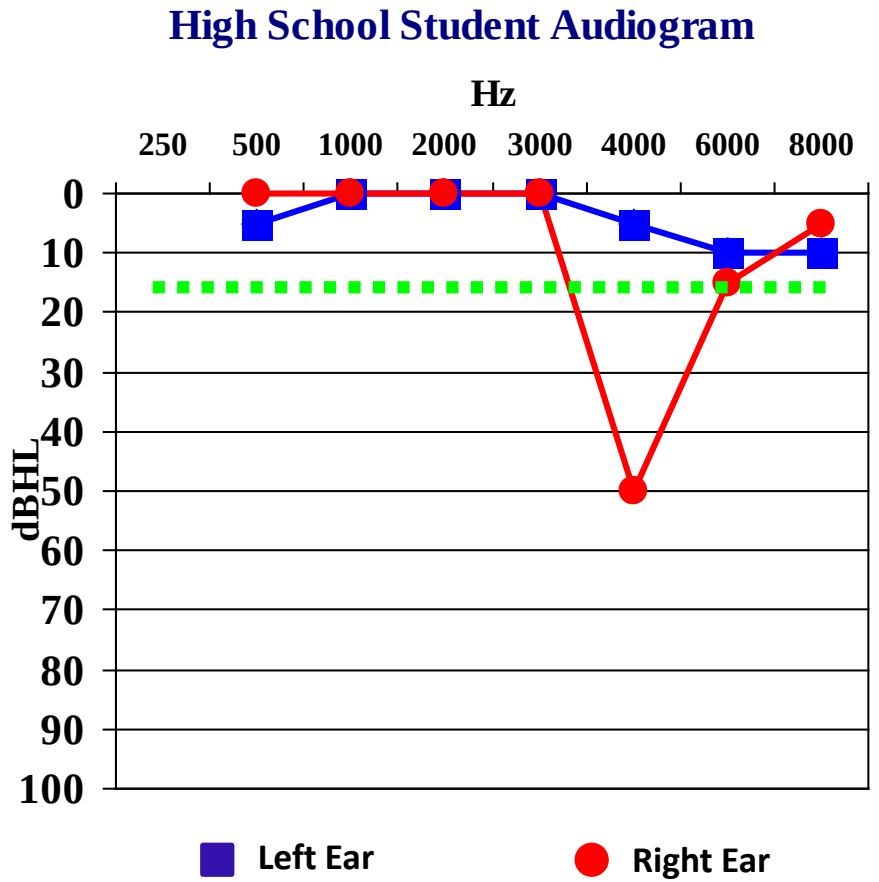
- **Bilateral noise notch evident in high school student audiogram**
- **The Niskar et al. noise notch criteria includes *all* of the following:**
  - Thresholds <15 dBHL at 500 and 1000 Hz
  - A notching at 3000, 4000, or 6000 Hz of at least 15 dB poorer than the poorest threshold at 500 or 1000 Hz
  - Recovery of at least 10 dB at 8000 Hz compared to the poorest threshold at 3000, 4000, or 6000 Hz



Niskar AS, Kieszak SM, Holmes AE, et al. *Pediatrics*. 2001 Jul;108(1):40-3.
Meinke DK, Dice N. *Am J Audiol*. 2007 Dec;16(2):S190-202.

Unilateral Noise-Induced Hearing Loss: Acoustic Trauma (Firecracker)

- Unilateral noise notch evident in high school student audiogram
- Attributed to a firecracker blast occurring close to the right ear



Niskar AS, Kieszak SM, Holmes AE, et al. *Pediatrics*. 2001 Jul;108(1):40 - 3.
Meinke DK, Dice N. *Am J Audiol*. 2007 Dec;16(2):S190 - 202.

Noise-Induced Hearing Loss: Youth 12–19 years

- **Significant increase in the prevalence of noise-induced audiometric notch among female youths in 2005-2006**

DATA YEAR	DATA SOURCE	MALES	FEMALES
1943	Baltimore Maryland High School	**15%**	**5%**
1988–1994	NHANES	**20%**	**12%**
2005–2006	NHANES	**17%**	**17%**

Loch WE. Incidence and permanency of tonal dips in children. *Laryngoscope*, 1943: 53(5), 347 - 356.
Niskar AS, Kieszak SM, Holmes AE, et al. *Pediatrics*. 2001 Jul;108(1):40 - 3.
Henderson E, Testa MA, Hartnick C. *Pediatrics*. 2011 Jan;127(1):e39 - 46.

Noise-Induced Hearing Loss in Youth: Is Hearing Screening Working?

- **School-based hearing screenings are inadequate for the early identification of noise-induced hearing loss**
  - 22 different hearing screening protocols are used in schools in the United States
  - Nearly 80% unable to detect early noise-induced hearing loss in youth
  - Middle and high school students are less likely to have a hearing screening performed

Meinke DK, Dice N. *Am J Audiol.* 2007 Dec;16(2):S190-202.

Noise-Induced Tinnitus

- **Tinnitus is an early indicator of noise-induced hearing loss**

- **Most common cause of persistent tinnitus is noise exposure**
- **Recreational and occupational noise exposure increased odds of tinnitus**
- **Prevalence of tinnitus in US teens (ages 12–19 years)**
  - 7.5% or about 2.5 million adolescents, reported tinnitus lasting 5 minutes or more in preceding 12 months
  - 4.7% or 1.6 million adolescents, reported chronic tinnitus

NHANES: National Health and Nutrition Examination Survey

Griest SE, Bishop PM. *AAOHN J.* 1998 Jul;46(7):325 - 9.
Mahboubi H, Oliaei S, Kiumehr S, et al. *Laryngoscope*. 2013 Aug;123(8):2001 - 8.

Personal Audio Systems (Music Players)

- **Average maximum output levels**
  - 97–103 decibels A-weighted (dBA)
- **Risk estimates for youth based on listening time**
  - 14%–30% at risk of music-induced hearing loss
- **Males listen louder than females**
  - Males: mean 80.6 dBA
  - Females: mean 75.3 dBA
- **Volume settings below 60% of maximum permit unlimited listening**

Punch JL, Elfenbein JL, James RR. *Am J Audiol*. 2011 Jun;20(1):69-82.
Portnuff CD, Fligor BJ, Arehart KH. *J Am Acad Audiol*. 2011 Nov-Dec;22(10):663-77.

Longstanding Need for Hearing Health Promotion

- **Noise and Hearing Loss. NIH Consensus Statement 1990**
  - *"A comprehensive program of education regarding the causes and prevention of noise-induced hearing loss should be developed and disseminated, with specific attention directed toward educating school-age children."*

- **Healthy People 2020**
  - *Increase the proportion of elementary, middle, and senior high schools that provide school health education in ways to prevent vision and hearing loss to promote personal health and wellness.*

www.healthypeople.gov/2020/topics-objectives/topic/educational-and-community-based-programs/objectives
National Institutes of Health Consensus Development Panel. Noise and Hearing Loss: NIH Consensus Development Conference Consensus Statement. Vol 8. Bethesda, MD: National Institutes of Health; January 22-24, 1990:3-5.

Application of Health Communication Science to Promote Hearing Health

- **The goal is to *change behavior***

- **3 levels of behavior change theories**
  - Intrapersonal
  - Interpersonal
  - Community-level
- **Application of theory provides a framework to change individual knowledge, attitudes, beliefs, and behaviors**

Rimer BK, Glanz K, National Cancer Institute. *Theory at a Glance: A Guide for Health Promotion Practice.* 2005. NIH Publication No. 05-3896. pp 1 - 49.
Sobel J, Meikle M. *Semin Hear.* 2008 29(1): 081 - 089.

Evidence-Based Dangerous Decibels® Program

- **Intervention program for the prevention of noise-induced hearing loss and tinnitus**
- **Shown to be effective in the U.S., New Zealand, and Brazil**
  - Randomized trials and observational studies
  - Documented changes in knowledge, attitudes, and behaviors for youth and adults

Modeling hair bundle damage from sound exposure

Griest SE, Folmer RL, Martin WH. *Audiol.* 2007 Dec;16(2):S165 - 81.
Martin WH, Griest SE, Sobel JL, et al. *Int J Audiol*. 2013 Feb;52 Suppl 1:S41 - 9.
Knobel KA, Lima MC. *Int J Audiol*. 2014 Mar;53 Suppl 2:S35 - 42
Reddy R, Welch D, Ameratunga S, et al. *Int J Audiol.* 2017 Jan 12:1 - 12.

Developed with grant support from CDC

Evidence-Based Dangerous Decibels® Program

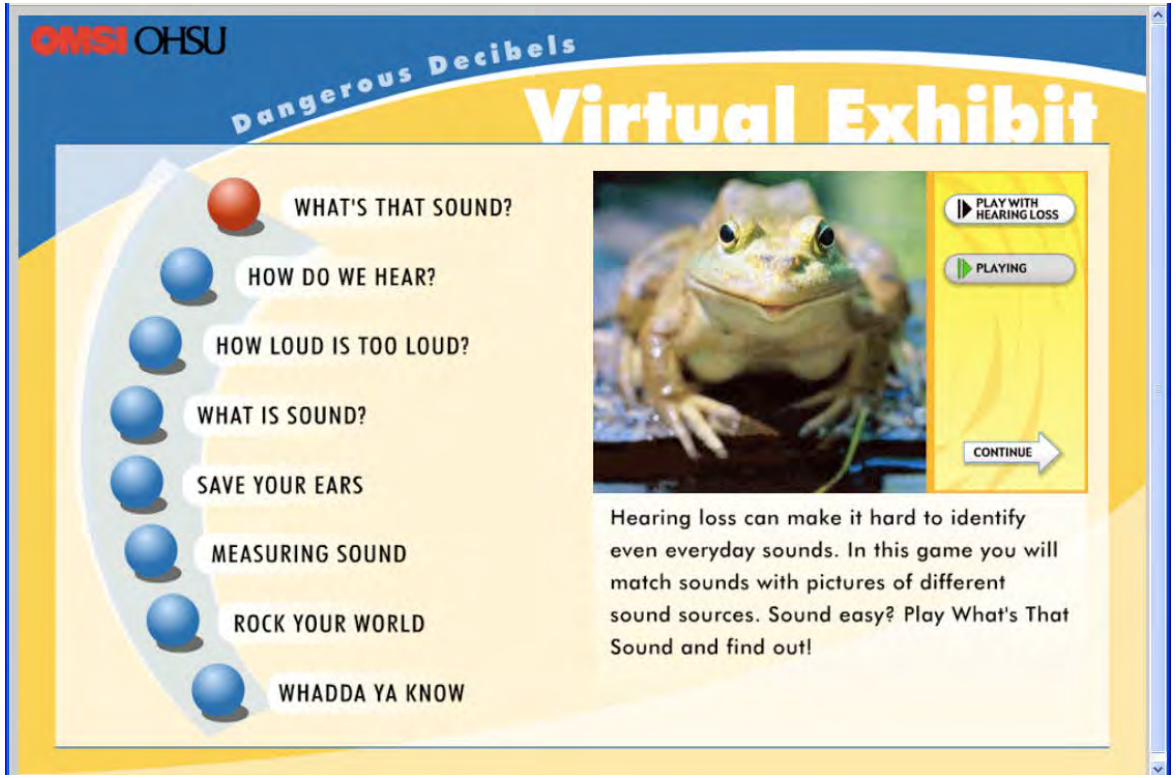
- **Originally developed for youth, and now adapted for adults and the military**
- **Shown to be self-sustaining in U.S. Native American communities**
- **Incorporates three strategies for hearing loss prevention**

Griest SE, Folmer RL, Martin WH. *Audiol.* 2007 Dec;16(2):S165 - 81.
Martin WH, Griest SE, Sobel JL, et al. *Int J Audiol*. 2013 Feb;52 Suppl 1:S41 - 9.
Martin WH, Sobel JL, Griest SE, et al. *Am J Prev Med.* 2017 Mar;52(3S3):S268 - S270.

Developed with grant support from CDC

Dangerous Decibels® Resources

Web-based games and activities



Jolene: educational manikin measures music listening levels

Developed with grant support from CDC

Martin, WH. *Semin Hear* 2008; 29(1): 102 - 110.
Martin WH, Martin GY. *Hearing loss: 9th International Congress on Noise as a Public Health Problem (ICBEN).* Foxwoods, CT. 2008.

Hearing Health Among Adults

William J. Murphy, PhD

Research Physicist

Hearing Loss Prevention Research Cross Sector

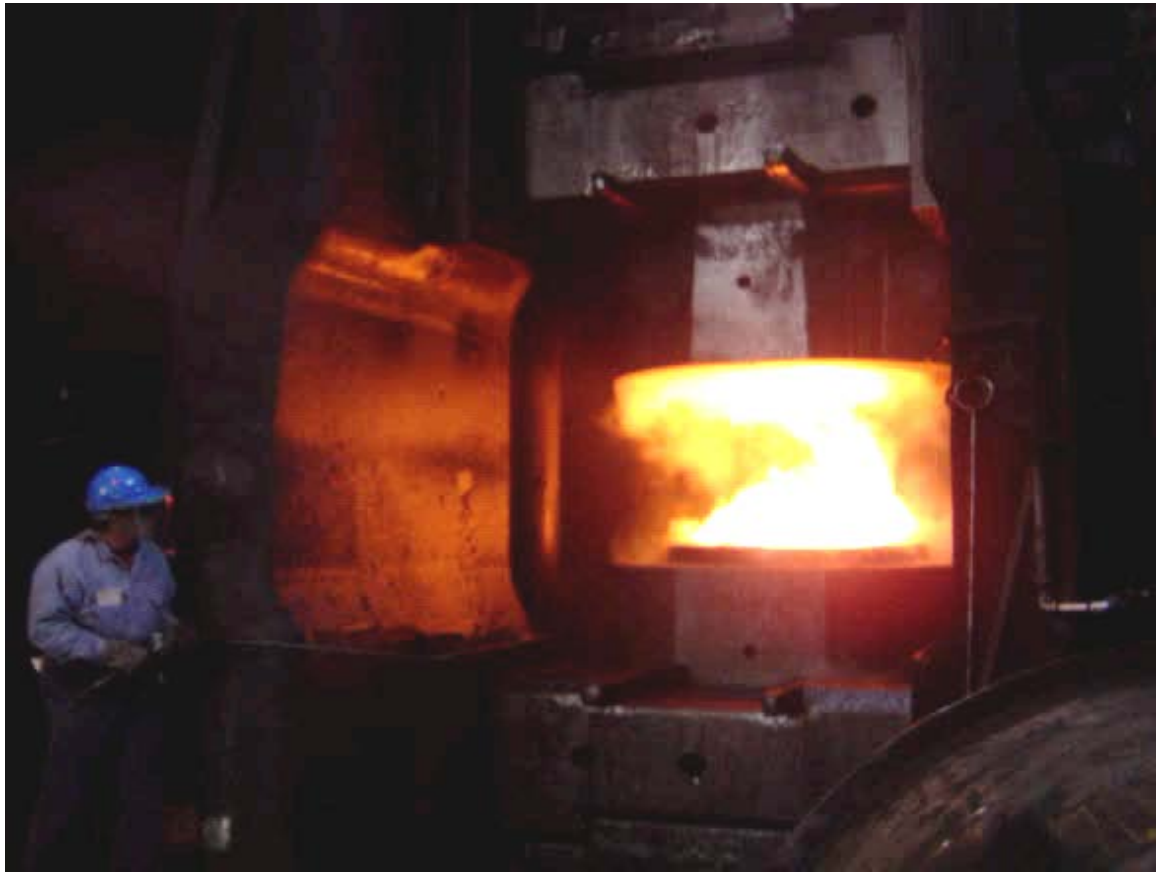
National Occupational Research Agenda

National Institute for Occupational Safety and Health

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Hearing Loss Risk Factors

- **Continuous noise (>85 dB SPL)**
- **Impulsive noise (not continuous)**
- **Ototoxic chemicals**
- **Physiologic factors**
  - Individual susceptibility to noise exposure
  - Long-term aftereffects of noise exposure



dB: Decibels
SPL: Sound pressure level

Excessive Noise Exposures

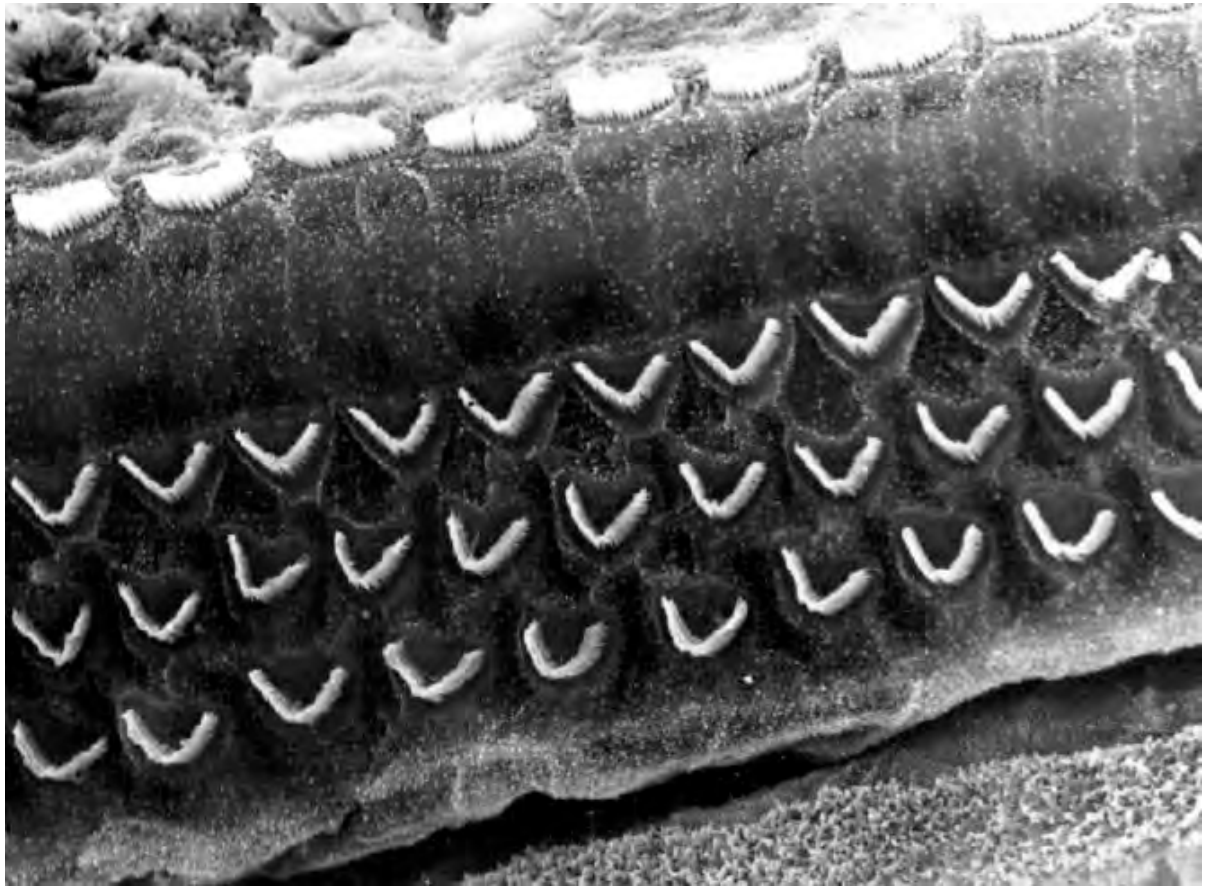
- **Impulse and impact noise peak sound pressure level (SPL)**
  - Police, military, security (140 to 175 dB peak SPL)
  - Forge worker, blacksmith (120 to 150 dB peak SPL)
  - Firecrackers and fireworks (120 to 165 dB peak SPL)
- **Continuous noise exposures (at work and home)**
  - Manufacturing factory noise (80 to 105 dB SPL)
  - Firefighters, loggers (90 to 110 dB SPL)
  - Construction workers (70 to 120 SPL)
  - Lawn care workers(70 to 95 dB SPL)

dB: Decibels

Flamme GA, Liebe K, Wong A. *Noise Health*. 2009 Oct-Dec;11(45):223-30.
Flamme GA, Wong A, Liebe K, et al. *Noise Health.* 2009 Oct-Dec;11(45):231-42.
www.cdc.gov/nceh/hearing_loss/infographic/

Ototoxic Substances Damage Hearing in Different Ways

- **Examples of substances that can affect hearing**
  - Medications (e.g., aminoglycoside antibiotics)
  - Solvents (e.g., toluene, styrene)
  - Heavy metals (e.g., lead, mercury)
  - Asphyxiants
  - Pesticides



Normal Outer/Inner Hair Cells

Images from Lataye R, Campo P. *Neurotoxicol Teratol*. 1997 Sep-Oct;19(5):373 - 82.

Ototoxic Substances Damage Hearing in Different Ways

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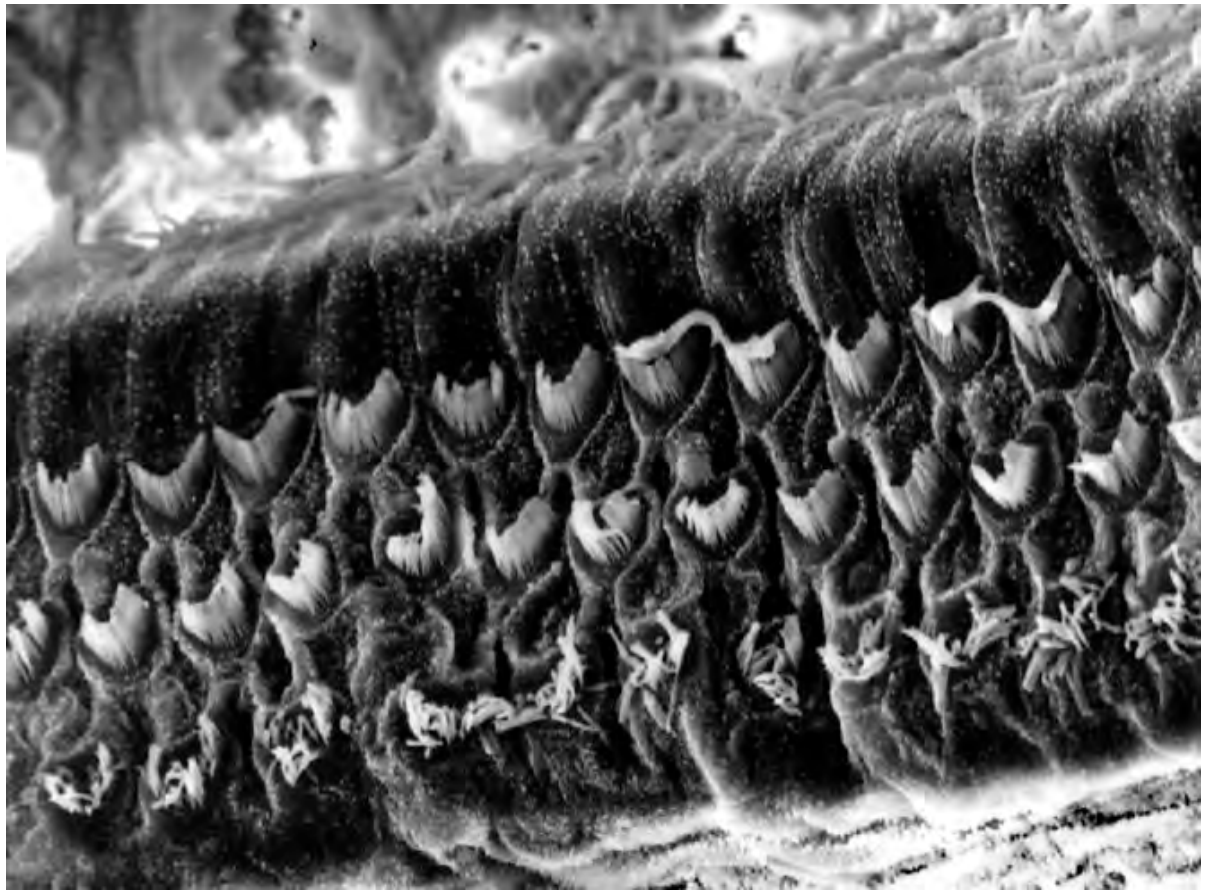
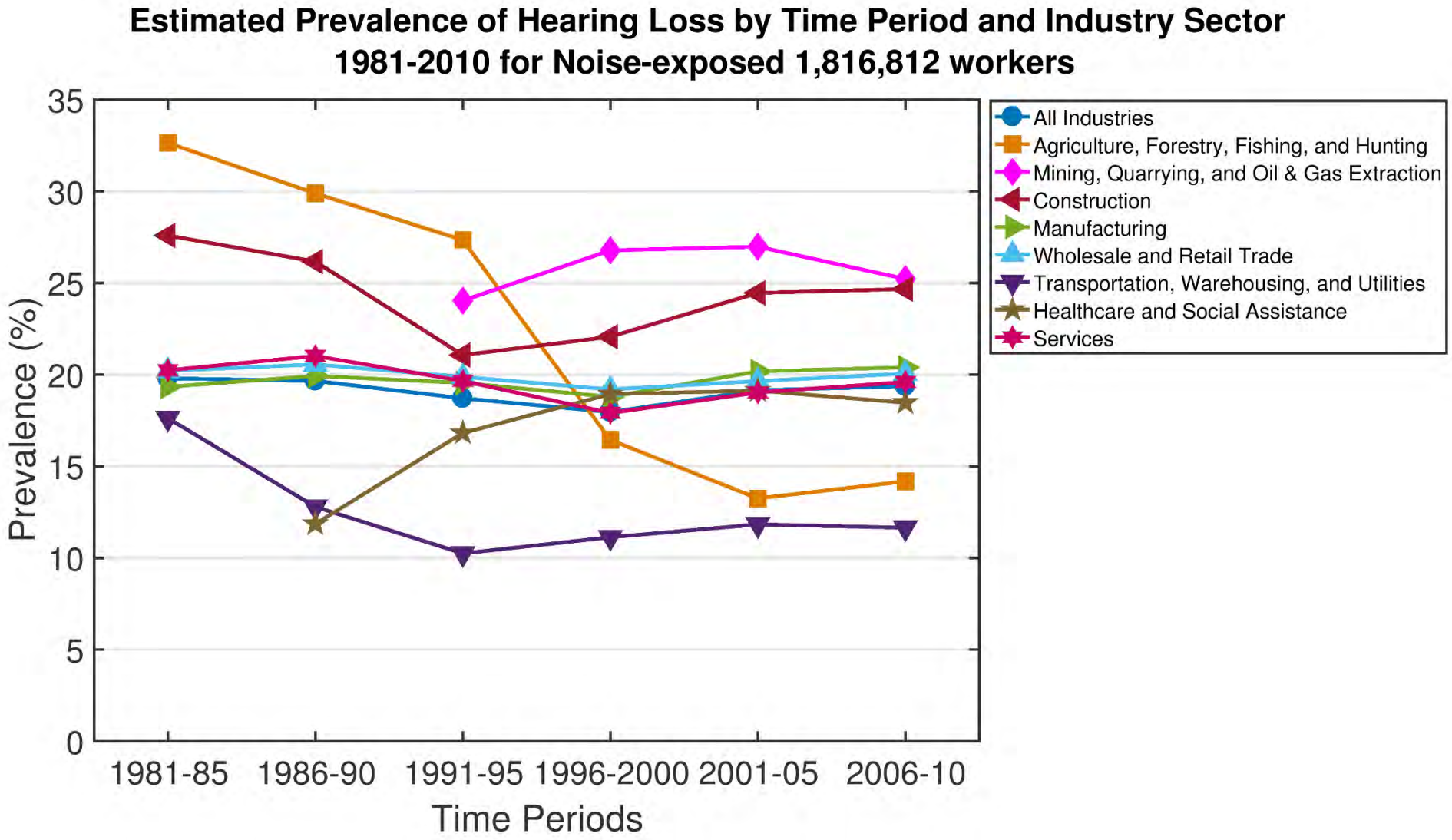


Damaged Outer/Inner Hair cells

Images from Lataye R, Campo P. *Neurotoxicol Teratol*. 1997 Sep-Oct;19(5):373 - 82.

Occupational Hearing Loss Prevalence Varies Between 12–25%



Masterson EA, Deddens JA, Themann CL, et al. Am *J Ind Med.* 2015 Apr; 58(4):392 - 401.

Some Industries Sectors Still Have High Levels of Noise Exposure

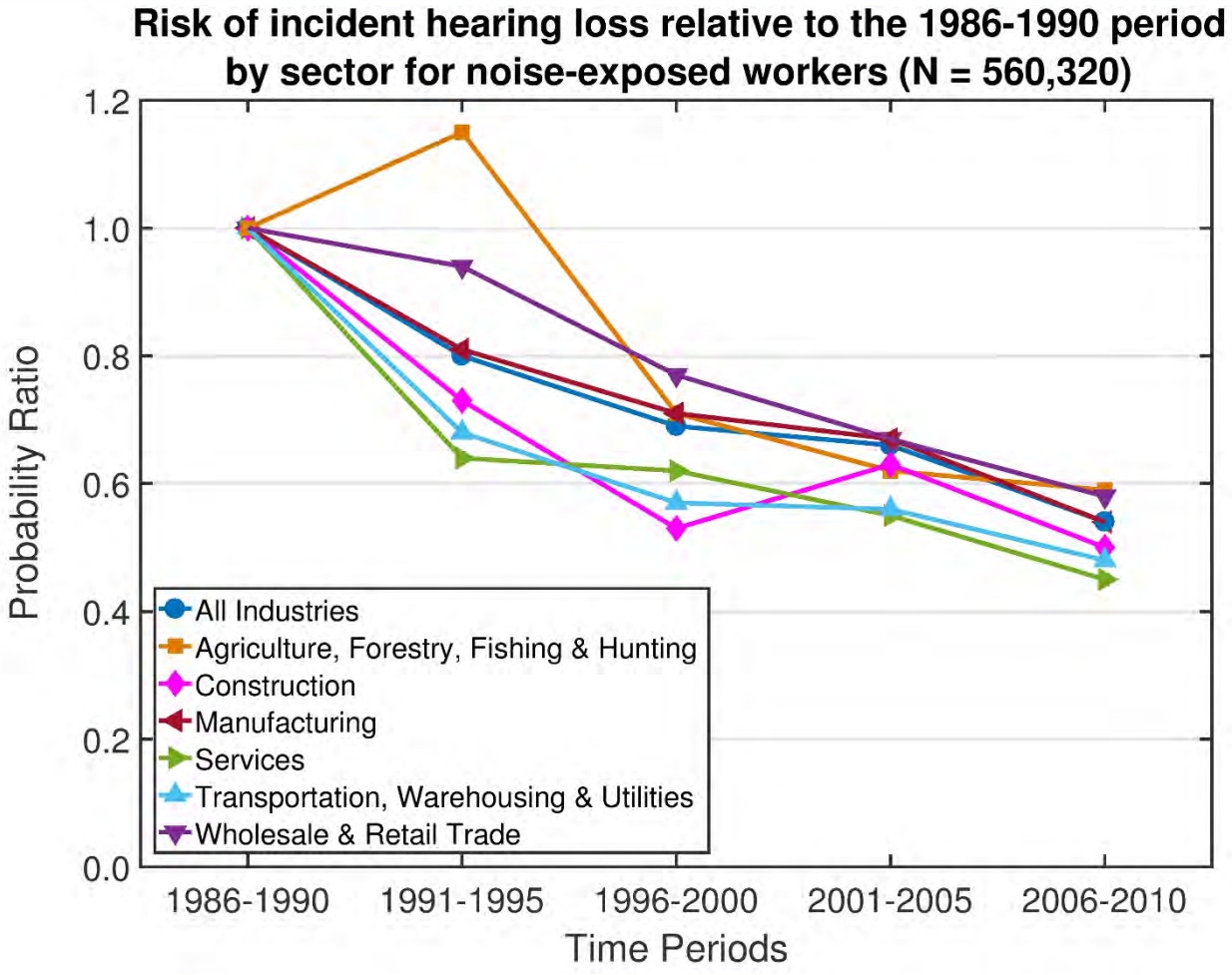
Prevalence of workers self-reported hazardous noise exposure

- **76% of miners**
- **55% of lumber and wood**
- **48% of rubber, plastics and leather**
- **46% of utilities**
- **45% of repair and maintenance**
- **44% of construction trades**

Tak SW, Davis RR, Calvert GM , *Am J Ind Med* 2009. 52:358 - 371

Hearing Loss Due to Occupational Exposure Is Decreasing

- **From 2004 to 2015, fewer workers have had occupational hearing loss**
  - Reduction from 28,000 to 18,000
- **However, 22 million workers are exposed to hazardous levels of noise (NHANES)**



OSHA: Occupational Safety and Health Administration NHANES: National Health and Nutrition Examination Survey

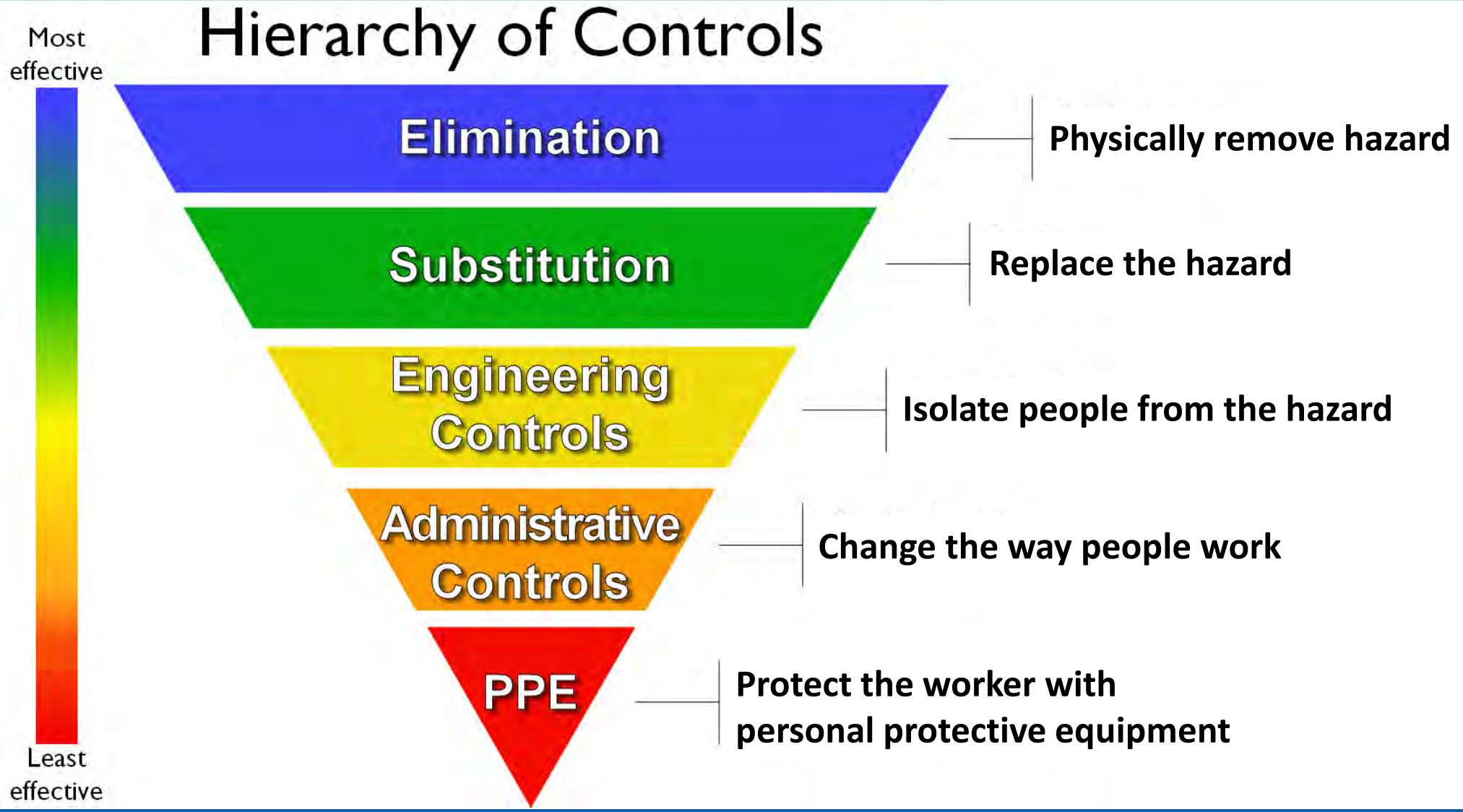
Masterson EA, Deddens JA, Themann CL, et al. *Am J Ind Med.* 2015 Apr; 58(4):392-401.Tak SW, Davis RR, Calvert GM. *Am J Ind Med.* 2009 52:358 - 71.

Current U.S. Hearing Impairment Statistics

- **Estimated 31%, or 61.1 million people, in the US have high-frequency hearing impairment (>25 dB average @ 3, 4, and 6 kHz)**
- **Men had more than twice the prevalence of high-frequency hearing impairment (28% or 26.9 million) as did women (11% or 11.1 million)**
- **Significant risk factors include**
  - Age 60-69 years
  - Non-Hispanic White
  - Non-Hispanic Asian
  - Occupational noise very loud (>5 years)
  - Less than high school education

Hoffman HJ, Dobie RA, Losonczy KG, et al. *JAMA Otolaryngol Head Neck Surg.* 2017 Mar 1;143(3):274-285.

Engineering Control of Noise



www.cdc.gov/niosh/topics/hierarchy/

Interventions and their Effectiveness

- Audiometric screening and testing
- Fit testing for hearing protection devices
- Buy Quiet programs
- NIOSH and NHCA Safe-in-Sound Award for Excellence in Hearing Loss Prevention
- Evidence-based best practices and systematic reviews

NIOSH: National Institute for Occupational Safety and Health
NHCA: National Hearing Conservation Association

New Technology Can Improve How Hearing Is Tested

- **Wireless technology**
  - Eliminates the need for expensive testing booths
  - Removes barriers for safety and health professionals to conduct annual audiometric screening
- **Mobile devices**
  - Test speech intelligibility in addition to audiometric screening
  - Train and educate people about hearing health

Audiometric Headphones

Meinke DK, Norris JA, Flynn BP, et al. *Int J Audiol*. 2017;56(sup1):41 - 51.

Fit-Testing Can Improve How Hearing Protection Is Used

Noise Reduction Ratings (NRR) do not represent what individual users achieve

- **Surveys of hearing protector use indicate less than half of users achieve an adequate level of protection**
- **Fit-testing informs the user how well their protectors work through a Personal Attenuation Rating (PAR)**
- **Accurate ratings for advanced hearing protection device technology**

Murphy WJ, Themann CL, Murata TK. *Int J Audiol.* (2016). 55:11 688-698
Byrne DC. Murphy WJ, Krieg EF, et al. *J. Occup. Environ. Hyg.* (2017). 14:4 294-305

What is Buy Quiet?

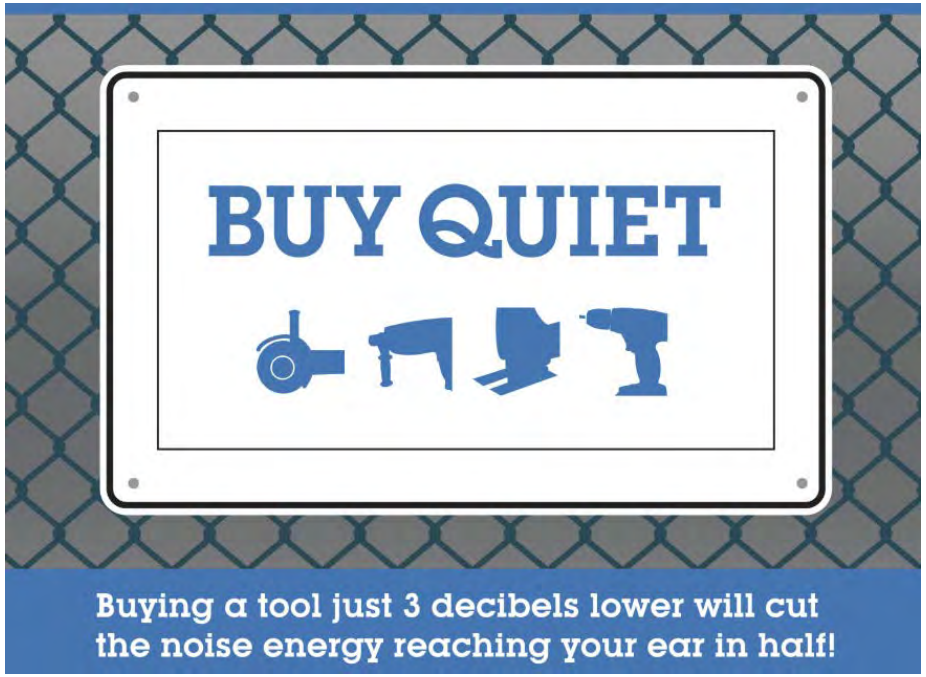
A prevention initiative which

- **Encourages companies to use quieter machinery and tools to reduce worker noise exposure**
- **Provides information on equipment noise levels, so companies can buy quieter products**
- **Encourages manufacturers to design quieter equipment by creating demand for quieter products**

www.cdc.gov/niosh/topics/buyquiet/default.html
wwwn.cdc.gov/niosh-sound-vibration/

Benefits of Buy Quiet

- **Reducing the risk of hearing loss**
- **Reducing the long-term costs of audiometric testing, personal protective equipment, and workers' compensation**
  - When purchasing products, for each decibel quieter, conservative estimates show $100 in savings
  - This savings is applicable across a variety of machinery and equipment
- **Helping companies comply with OSHA and other noise regulation requirements**



Additional Benefits of Buy Quiet

- **Quieter workplace improves**
  - Employee communication
  - Worker safety
- **Quieter tools and products reduce the impact of noise on the community**
  - Noise annoyance is a factor is many types of outdoor work

Buying a tool just 3 decibels lower will cut the noise energy reaching your ear in half!

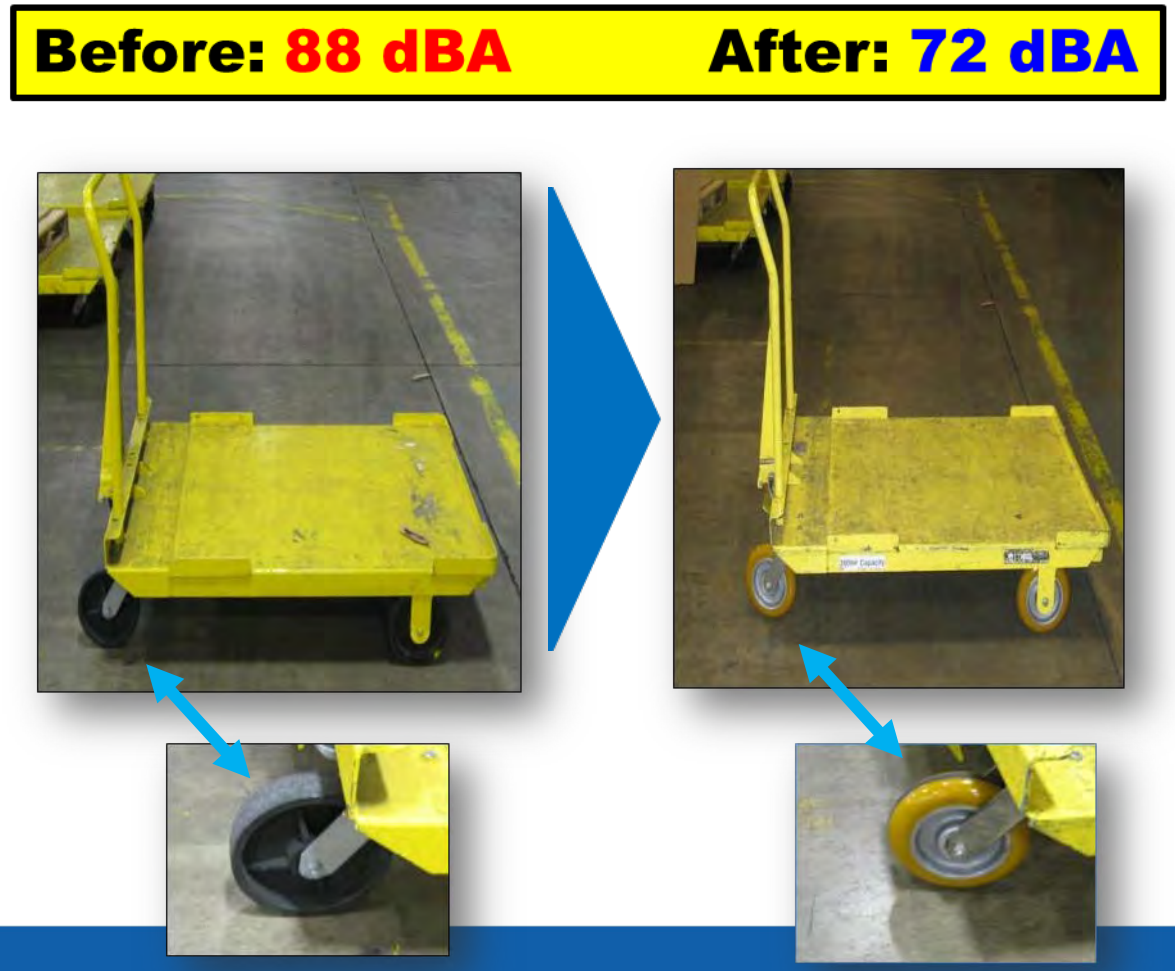
OSHA: Occupational Safety and Health Administration

Safe-In-Sound Excellence in Hearing Loss Prevention Award™

- Recognize excellence and innovation in hearing-loss prevention
- Promotes solutions for noise control and hearing-loss prevention
- Program partnered with National Hearing Conservation Association
- Ninth year of the program

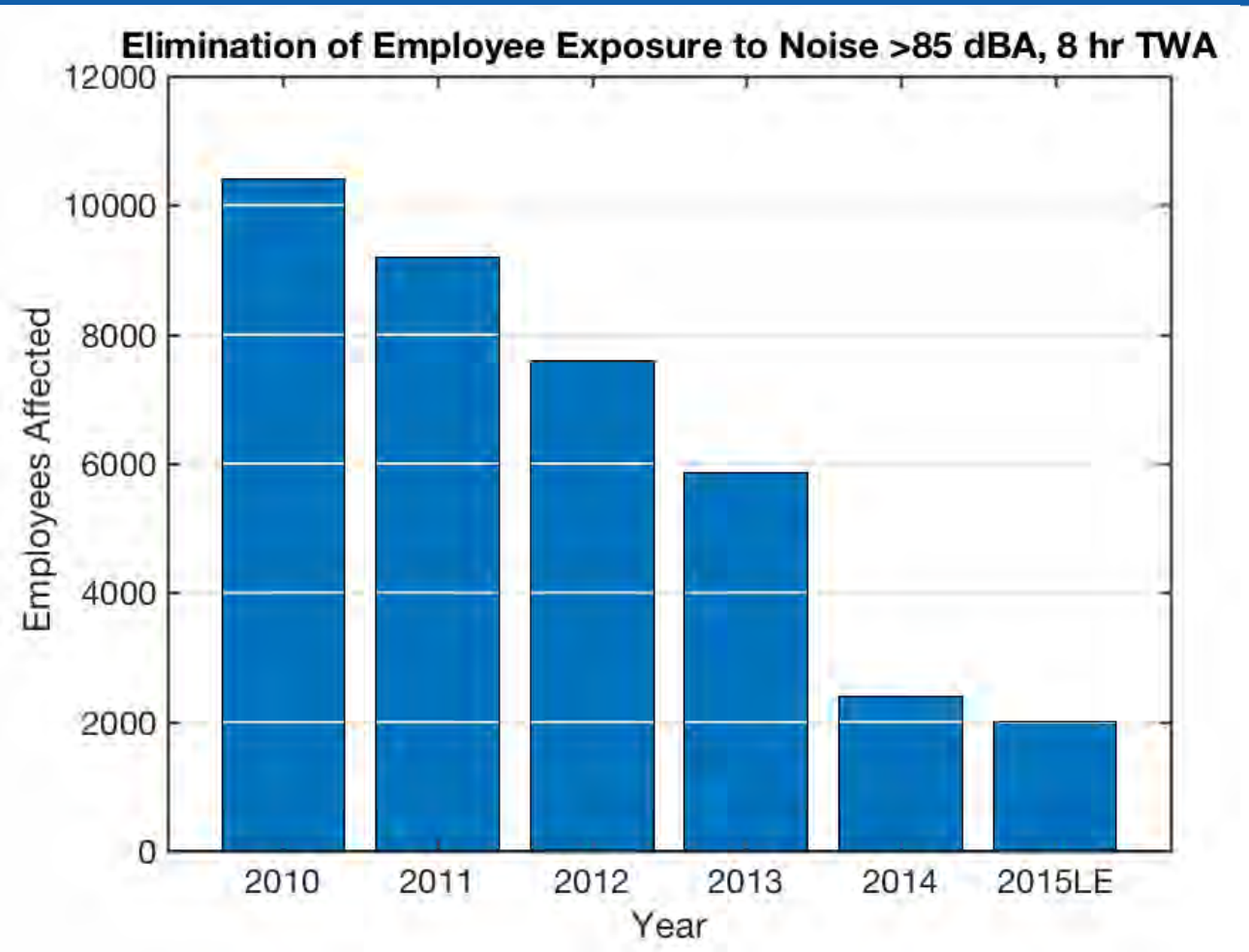
Safe-In-Sound Award Winners

- Since 2009:
  - Twenty organizations awarded
  - Manufacturing, services, innovation, construction sectors all represented
  - Corporations, state and local government entities included
  - Dangerous Decibels® won in 2013



Noise Control Is Achievable and Desirable

- 2009 Pratt & Whitney (jet engine manufacturer) received Safe-In-Sound Award
- 2015 United Technologies (parent company) eliminated hazardous noise exposures for more than 8000 workers
- United Technologies used Buy Quiet to reduce employee exposures



www.safeinsound.us/archive.html#utc

NIOSH Sound Level Meter Application

- **Mobile devices can accurately measure noise exposures**
  - Microphone must be calibrated
- **NIOSH developed the Sound Level Meter App for iOS**
  - www.cdc.gov/niosh/topics/noise/app.html
- **Informs both consumers and workers about noise exposures**

Kardous CA, Shaw PB *J. Acoust. Soc. Am.* 2016. 140:EL327-33.

Hearing Loss Prevention for Both the Workplace and the Home

- **Know your noise exposures: use the app**
- **Find ways to control these exposures**
  - Eliminate, avoid, reduce, protect
- **Wear hearing protection properly and whenever exposures exceed 85 dB SPL**

SPL: sound pressure level

It Works!

Hearing Health Across the Lifespan

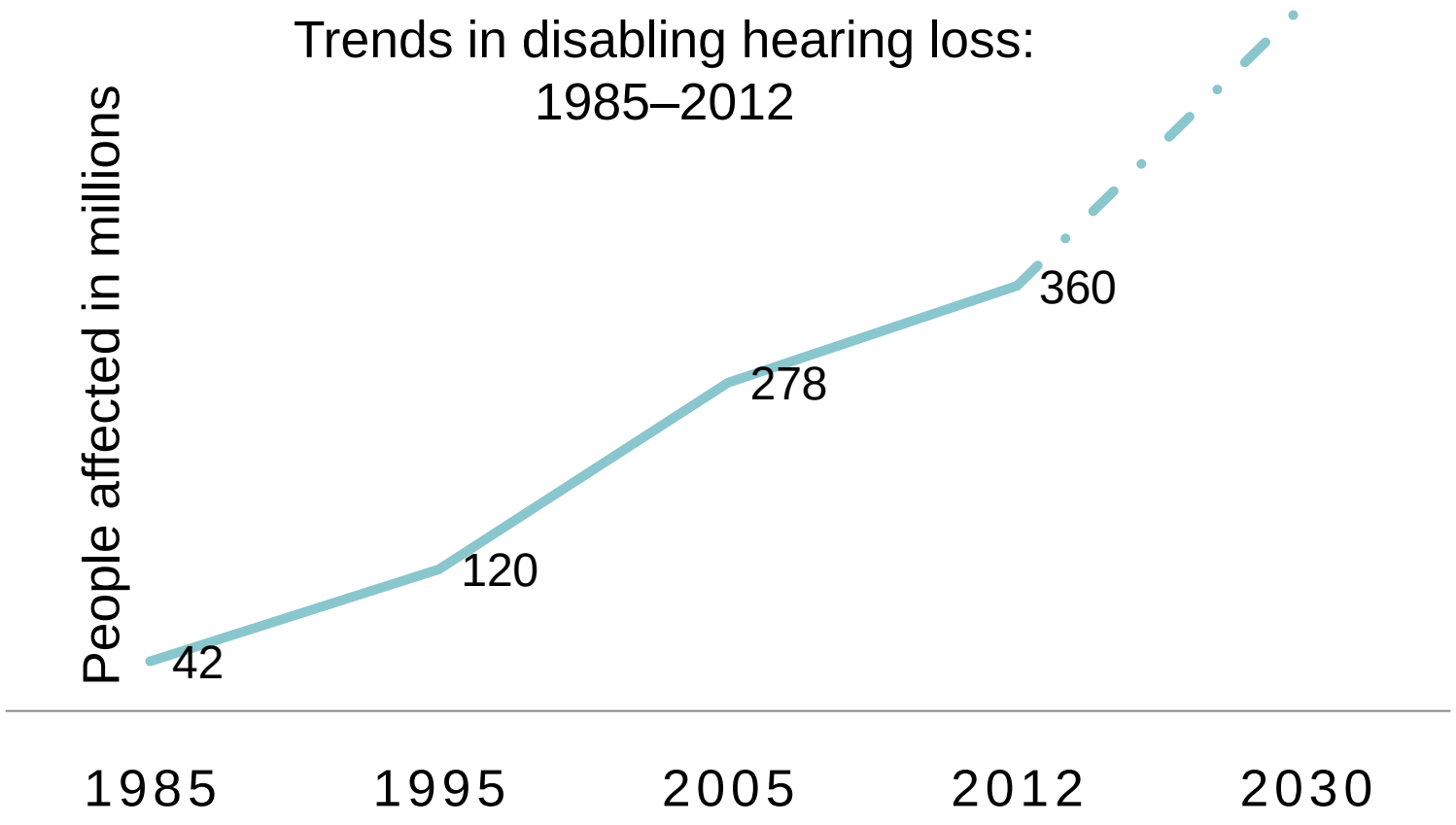
Shelly Chadha, MBBS, PhD

Technical Officer, Programme on Deafness and Hearing

World Health Organization

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Is Hearing Loss an Impending Epidemic?

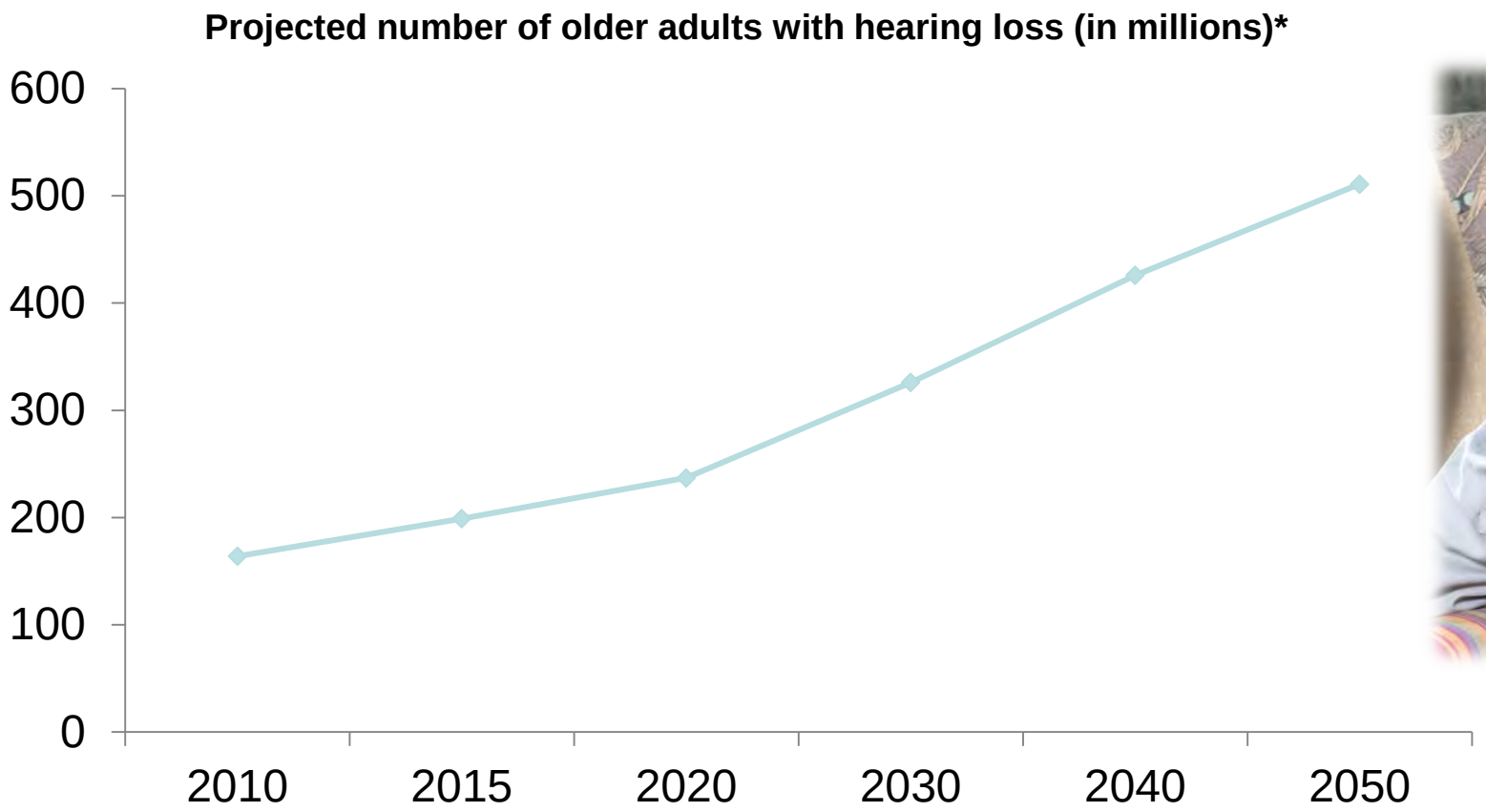


- **360 million live with disabling hearing loss**

World Health Organization

www.who.int/pbd/deafness/estimates/en/

1 in 3 Older Adults Have Hearing Loss



*: projection based on expected population growth and considering a stable prevalence of DHL

www.who.int/pbd/deafness/estimates/en/

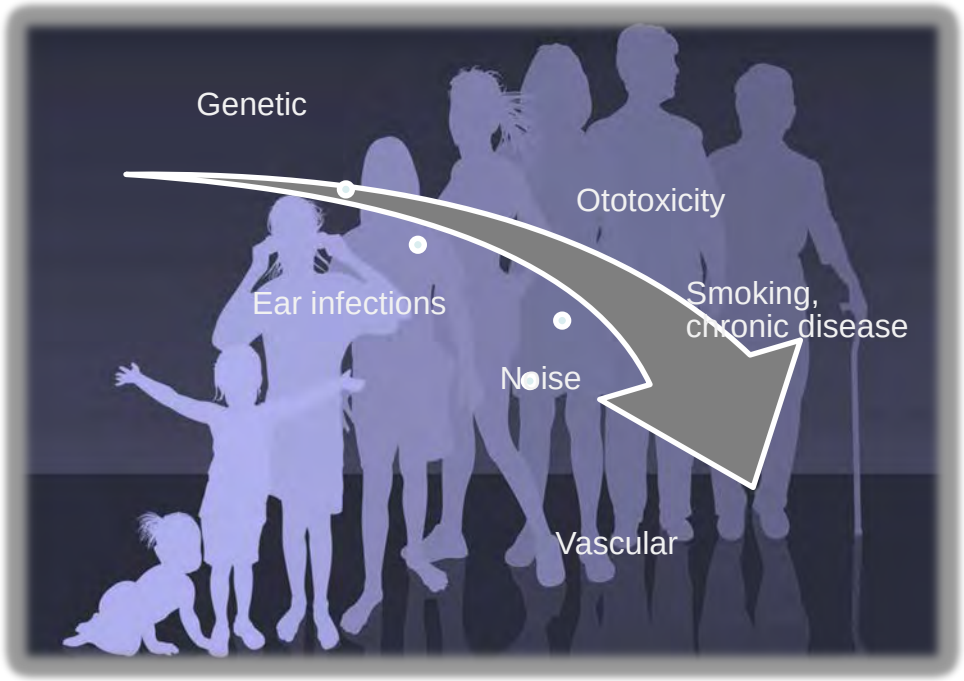
1.1 Billion Young People Are at Risk

- **Over a billion are at risk of hearing loss due to non-occupational exposure to loud sounds, including music.**

www.who.int/pbd/deafness/activities/MLS/en/

Persistence of Other Risk Factors

- Ear infections
- Occupational noise exposure
- Use of ototoxic medicines
- Infectious diseases (rubella, meningitis)
- Chronic diseases and tobacco use
- Birth complications
- Hereditary or genetic hearing loss



www.who.int/mediacentre/factsheets/fs300/en/

Hearing Loss Has Consequences

- **Diminished**
  - Communication
  - Cognition
  - Education
  - Employment
  - Social interaction
  - Emotional well-being
  - Economic productivity

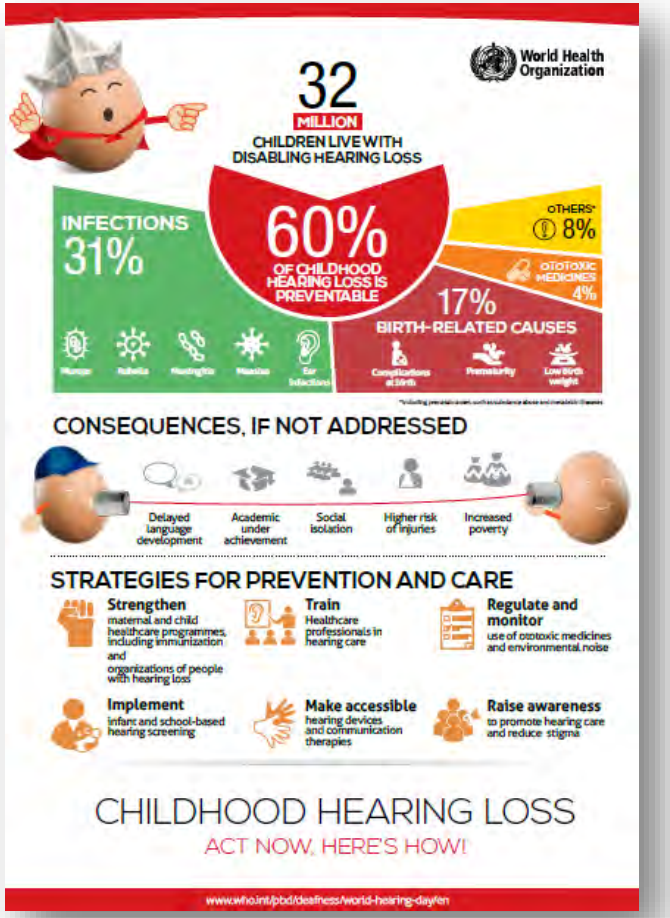
$750 billion

www.who.int/pbd/deafness/world-hearing-day/WHD2017Brochure.pdf?ua=1
apps.who.int/iris/bitstream/10665/254659/1/9789241512046-eng.pdf?ua=1

Can We Control this Epidemic?

- Many of the causes that lead to hearing loss are preventable
- When hearing loss occurs, its impact can be decreased by timely and suitable interventions

How Can We Control this Epidemic?

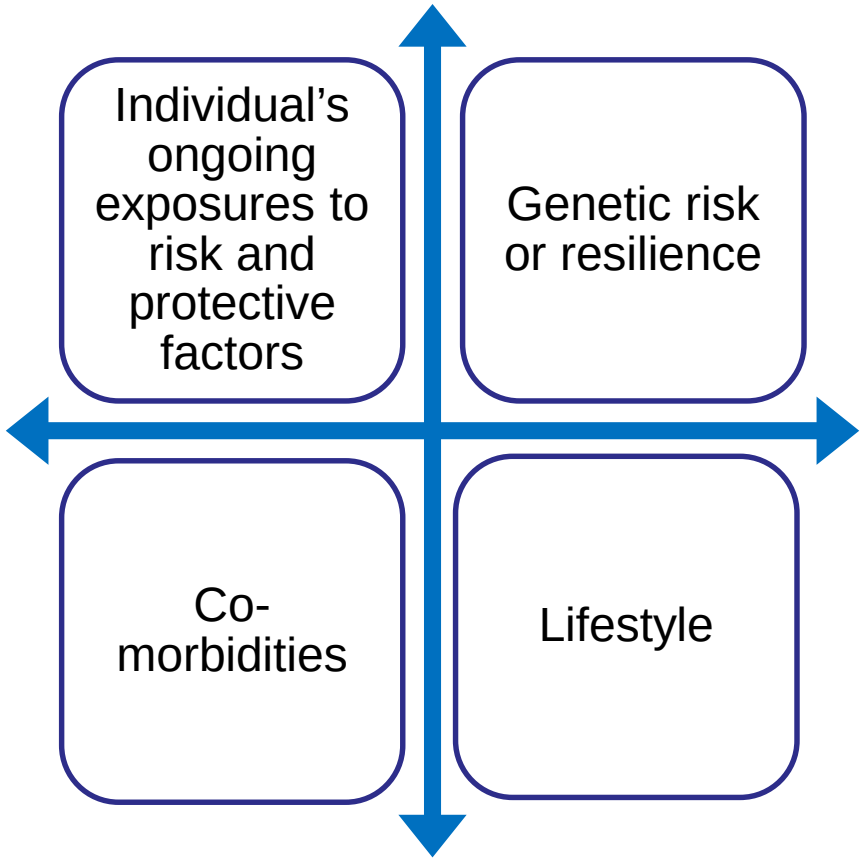


- Treat it as a public health issue
- Apply the life-course lens to hearing loss

Applying the Life Course Lens

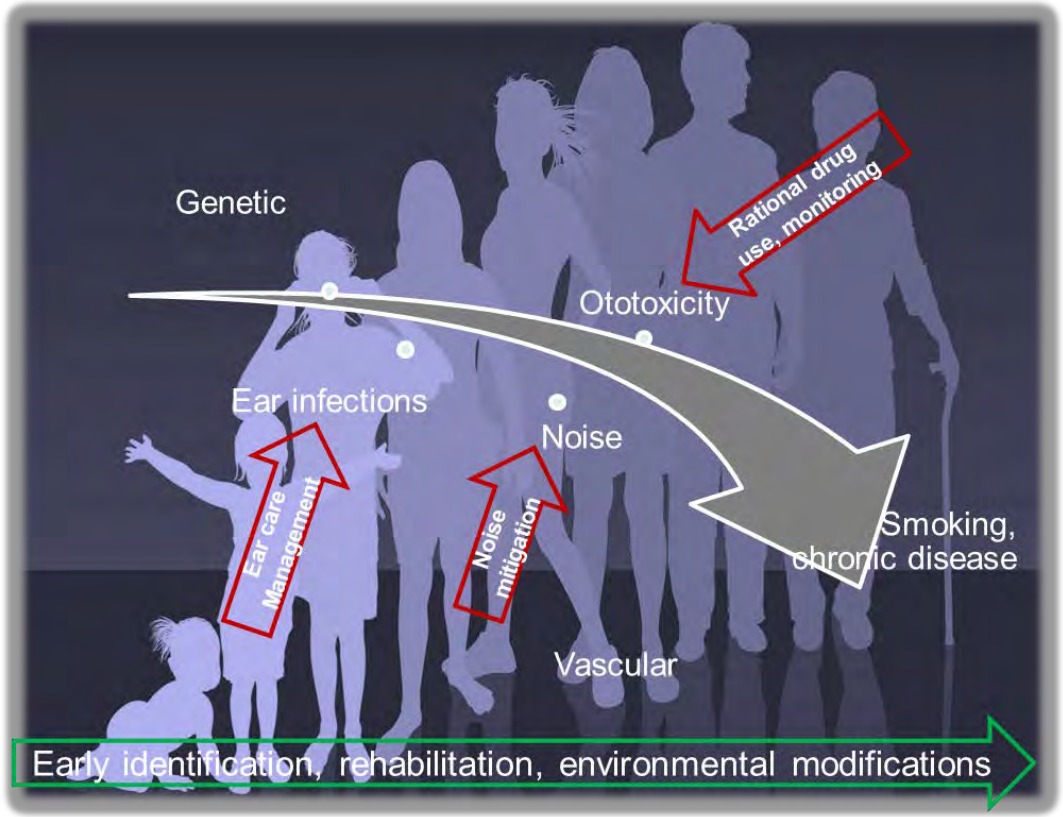
…allows us to understand that many factors affect hearing health over the course of one's life

Trajectories in hearing health will depend on



Understand Risk Factors and Identify Opportunities for Intervention

- **Opportunities for prevention exist**
  - Risk reduction:
    - Noise control
    - Management of ear infections
    - Rational drug use
    - Ear care
  - Addressing co-morbidities
  - Lifestyle changes
- **Early identification and rehabilitation helps**



Address Hearing Loss As a Public Health Issue

Public health approach is a population-based approach.

World Health Organization's Approach

Evidence-based advocacy

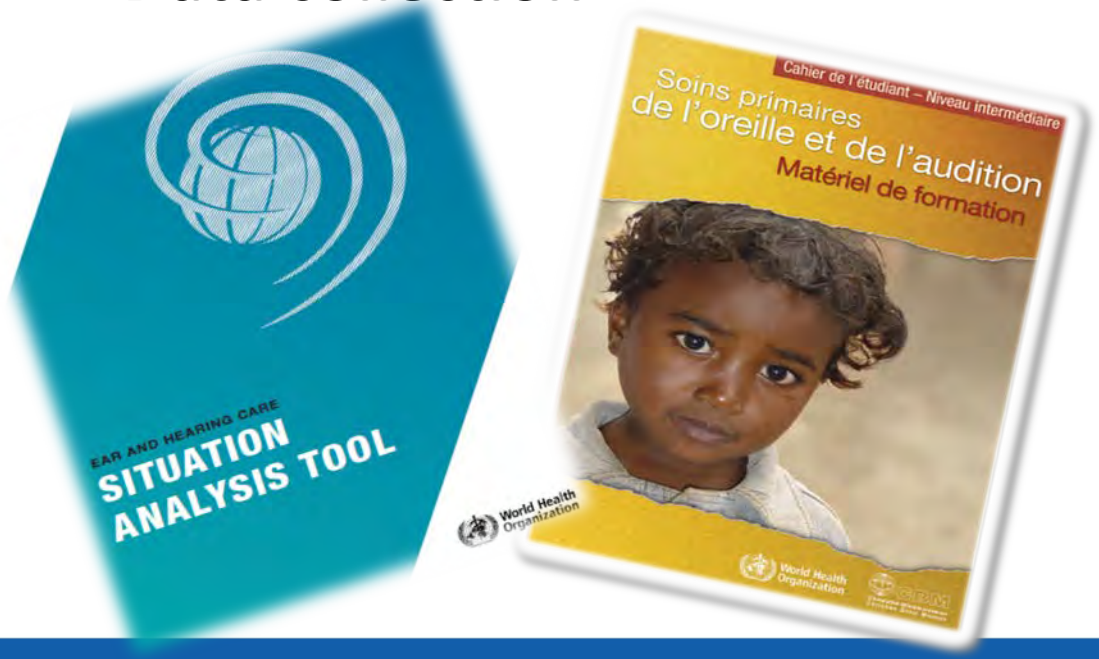
- To raise awareness about hearing loss and hearing care at all levels

Member State support

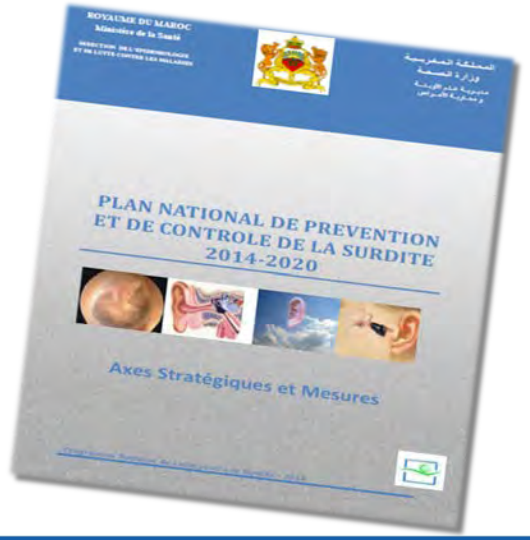
- Providing technical support to countries for development and implementation of ear and hearing care policies and strategies

Support for policy development

- Developing standardized, evidence-based technical tools
- Data collection



- Engaging directly with ministries of health and other stakeholders in countries to develop, implement and monitor strategies for ear and hearing care.



Two Key Advocacy Initiatives

- **World Hearing Day**

World Hearing Day

- **Make Listening Safe**

Make Listening Safe

Key Initiative: Make Listening Safe

Aim: to reduce the growing risk of hearing loss posed by unsafe listening practices in recreational settings:

- **Communication**
  - Raising awareness
  - Promoting behaviour change among users
- **Technology**
  - Safe listening devices
  - Apps for safe listening

www.who.int/pbd/deafness/activities/MLS/en/

Key Initiative: World Hearing Day, 3 March

Aim: to raise awareness about hearing loss at all levels: policymakers, professionals, community….

www.who.int/pbd/deafness/world-hearing-day/en/

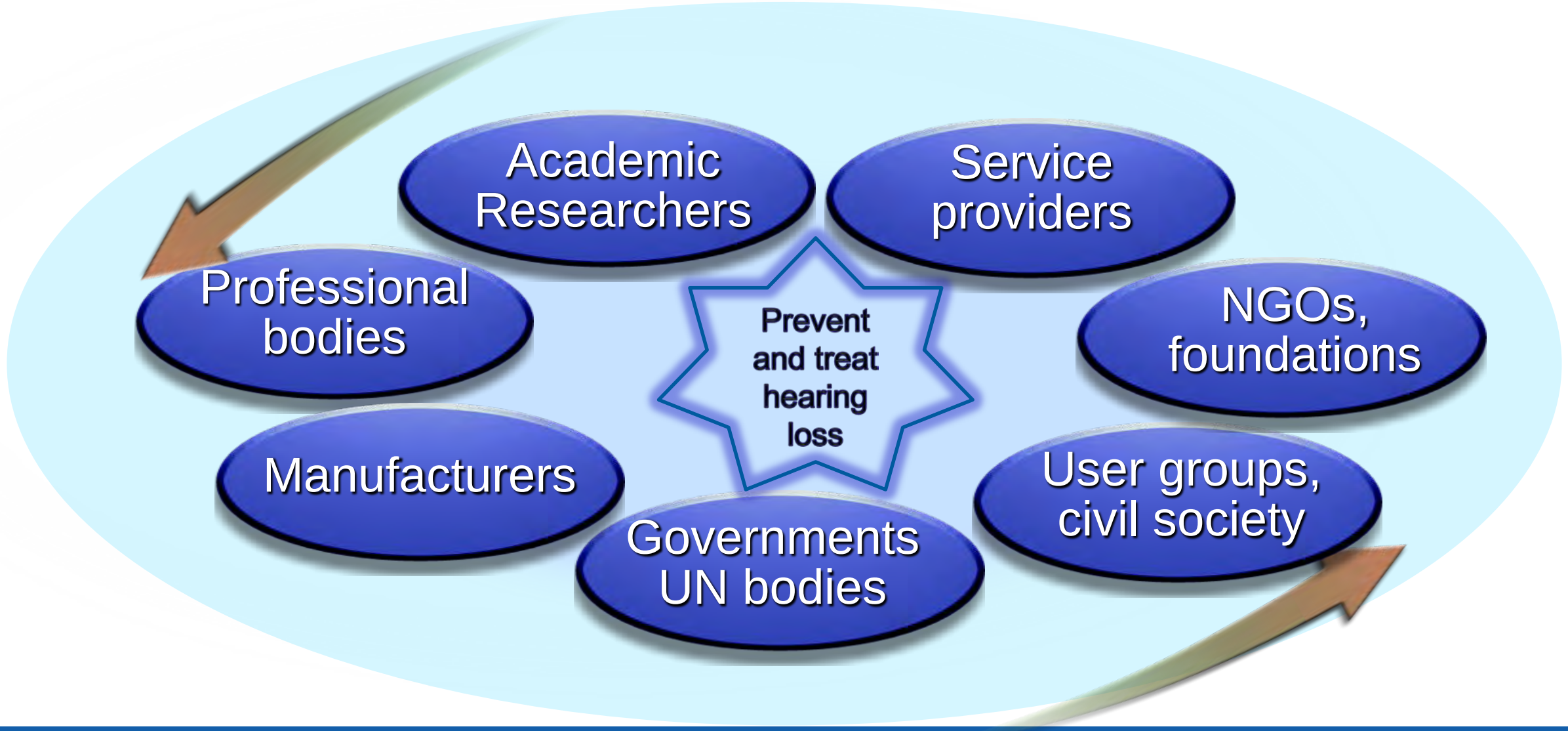
Key Initiative: World Hearing Day, 3 March

- **Themes:**
  - 2015: Make Listening Safe
  - 2016: Childhood hearing loss: act now, here is how!
  - 2017: Action for hearing loss: make a sound investment
  - 2018: To be determined
- **Join the global movement to create greater awareness**

  #worldhearingday

www.who.int/pbd/deafness/world-hearing-day/en/

Be a Part of the Global Movement



Vision

A world in which no one experiences hearing loss due to preventable causes and those with unavoidable hearing loss can reach their full potential through rehabilitation, education, and empowerment.