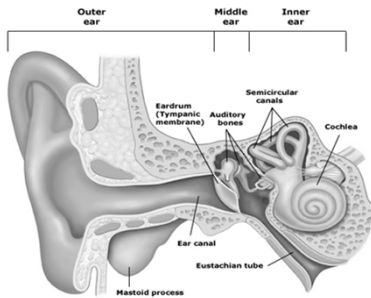


Hearing Loss, Noise Exposure and Prevention

Teresa J. Garcia M.S., CCC-Audiology
University of Wyoming
Division of Communication Disorders

Normal Anatomy



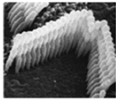
- <http://www.youtube.com/anatomy>

Why is it important?

- Over 30 million people are at risk of suffering from noise-induced hearing loss in the work place, recreational activities, and at home.
- It is the number one hazard found in the work place in the United States.
- Noise-induced hearing loss can be prevented with the proper knowledge.

NIHL (Noise-Induced Hearing Loss)

Hearing loss as a result of prolonged or sudden exposure to loud noise.



When our ears are exposed to levels of noise over 85 dB, the tiny hair cells in our cochlea can become disorganized and damaged from too much and too harsh of vibrations.



Once the hair cells break, they will **NEVER** grow back, this causes hearing loss.

From David J. Lim, Functional Structure of the Organ of Corti: A Review, Hearing Research, 22 (1986) 117-146 Elsevier

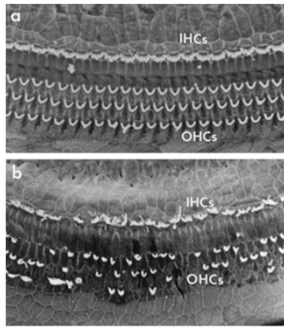
Signs of Damage

- A plugged sensation in your ears
- Ringing in your ears (tinnitus)
- May experience a temporary hearing loss (temporary threshold shift).
 - If this occurs a person's hearing should return within 16 to 48 hours.

What happens when you are exposed to noise?

- Continuous exposure:
 - A gradual hearing loss is the most likely to occur.
 - Permanent tinnitus may result.
 - The effects of noise exposure are cumulative

Damage



Signs of hearing loss

- Difficulty hearing in background noise
- Difficulty hearing speech from a distance
- Misunderstanding what is said
- Thinking others are mumbling
- Others complaining that TV is too loud
- Women and children's voices are often the most difficult to hear

What does hearing loss sound like?

Hearing loss from noise exposure affects the higher frequencies first, making it difficult to hear sounds that are important for understanding speech.

What does hearing loss sound like?

• <http://www.youtube.com/watch?v=1EJ4g3J6cJM>

How Loud is too Loud?



How loud?

Information from Oregon Symphony Players Association www.oregonsymphony.org

- Oboe
- Clarinet
- Timpani and bass drum rolls
- Flute
- Trombone
- Symphonic music peak on stage
- Rock music peak

How long is safe?

Sound level	Hours per day	
	NIOSH	OSHA
85dBA	8	
86dBA	6	
88dBA	4	
89dBA	3	
90dBA	2	8
94dBA	1	
95dBA	0.75	4
100dBA	0.25	2
105dBA	0.08 ("5min)	1
110dBA	0	0.5
115dBA	0	0.25
120dBA	0	0.12

NIOSH-National Institute for Occupational Safety and Health
OSHA-Occupational Safety and Health Administration

Prevention



Video

- http://www.youtube.com/watch?v=8fy3Aykl0_E&feature=share

Prevention

- For every 3dB reduction in noise = twice the exposure time

Sound level	Hours per day	
	NIOSH	OSHA
85dBA	8	
86dBA	6	
88dBA	4	
89dBA	3	
90dBA	2	8
94dBA	1	
95dBA	0.75	4
100dBA	0.25	2
105dBA (~5min)	0.08	1
110dBA	0	0.5
115dBA	0	0.25
120dBA	0	0.12
