



COUNTY OF SAN LUIS OBISPO HEALTH AGENCY
Public Health Department
CHILD HEALTH AND DISABILITY PREVENTION PROGRAM

Child Health and Disability Prevention Program Audiometric Screening Training



COUNTY OF SAN LUIS OBISPO

www.slocounty.ca.gov

OBJECTIVES

By the end of the training, participants will be able to:

- Understand CHDP requirements for equipment and the screening environment
- Describe the components and the proper use/care of the audiometer
- Know how to condition, recondition and screen using Play Audiometry
- Identify the different types of hearing loss
- Document results of audiometric screening



CHDP HEARING SCREENING REQUIREMENTS

- Hearing screen at each comprehensive health assessment visit beginning at age 3
- Calibrate audiometer once a year
 - Keep sticker on audiometer
- Use a pure tone air conduction audiometer for ages 3 to 21
- Use play audiometry method for children ages 3 to 6, special needs children and older children who appear to be shy



CHDP RECOMMENDATIONS FOR PROVIDERS

- Complete a CHDP approved training course in Play Audiometry
 - Certificate is good for 4 years
 - Conduct a screen within 1 year after certification
 - If no screening is performed within 1 year, it is recommended to get re-certified



COMPREHENSIVE HEALTH ASSESSMENT

Screening Requirements: During the comprehensive health assessment, if a child is at risk for hearing loss, they can be identified by:

- Reviewing family and medical history for any risk factors
- Clinical observation for any structural defects or abnormalities
- Behavioral observation for possible hearing loss or speech and language delay
- Perform a hearing screen using a pure tone air conduction audiometer



HOW HEARING LOSS AFFECTS A CHILD

- It interferes with their ability to communicate
- It inhibits their normal speech development
- It isolates the child from family and friends
- It is associated with self-esteem issues
- It can cause poor academic performance



IMPORTANCE OF ONGOING ASSESSMENT

- The World Health Organization states 60% of hearing loss in children 15 years of age or younger are attributed to preventable causes –

These include treatable infections such as meningitis, measles, mumps and chronic ear infections.

- Ongoing assessments can detect developmental delays that can be addressed immediately -

Some of these issues can be addressed during ongoing assessments to ensure appropriate interventions and prevent hearing loss in the long run.



ANATOMY & PHYSIOLOGY OF THE EAR

How the Ear Works (03:25)

<https://www.youtube.com/watch?v=qgdqp-oPb1Q>

Hearing and How it Works (03:27)

<https://www.youtube.com/watch?v=fIIAxGsV1q0>



PROBLEMS OF THE OUTER EAR

- **Cerumen or wax build up** - When there is a build up of wax that can cause earache and mild deafness.
- **Otitis externa (“Swimmer’s Ears”)** - It is caused by an increased accumulation of moisture build up in the ear canal during baths, swimming, or showers. It can cause itchiness, feeling of fullness in the affected ear, earache and drainage.
- **Foreign body in ear canal** - Anything that gets stuck in the ear other than earwax. It could be a toy, insect, food, or paper.
- **Lesions of ear canal** - Tumor that forms in the outer ear canal that can be benign or malignant.



PROBLEMS OF THE OUTER EAR



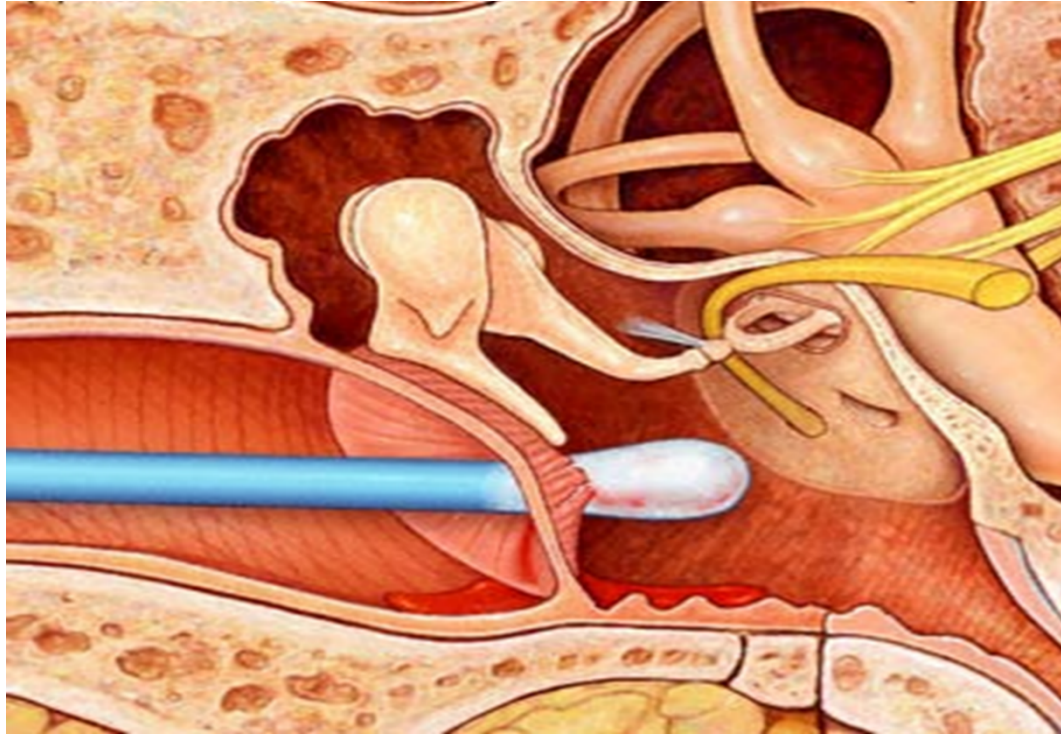
Congenital atresia – A birth defect where there is an absence of external ear canal.

PROBLEMS OF THE MIDDLE EAR

- **Middle ear fluid infection (otitis media)** - A painful condition in which the middle ear becomes swollen and infected.
- **Perforation of the eardrum** - Caused by punctures produced by foreign objects, extremely loud sudden sounds such as an explosion or gun fire, increased external pressure, or by fluid pressure build up within the middle ear space.
- **Otosclerosis** - Usually happens to young adult and older age group, rare cases in children. It is caused by deposits of a bony substance; the stapes cannot move and the level of the sound reaching the inner ear is reduced.
- **Malformation** - The ossicles of the middle ear may be malformed at birth causing the sound reaching the inner ear to be reduced.



PROBLEMS OF THE MIDDLE EAR



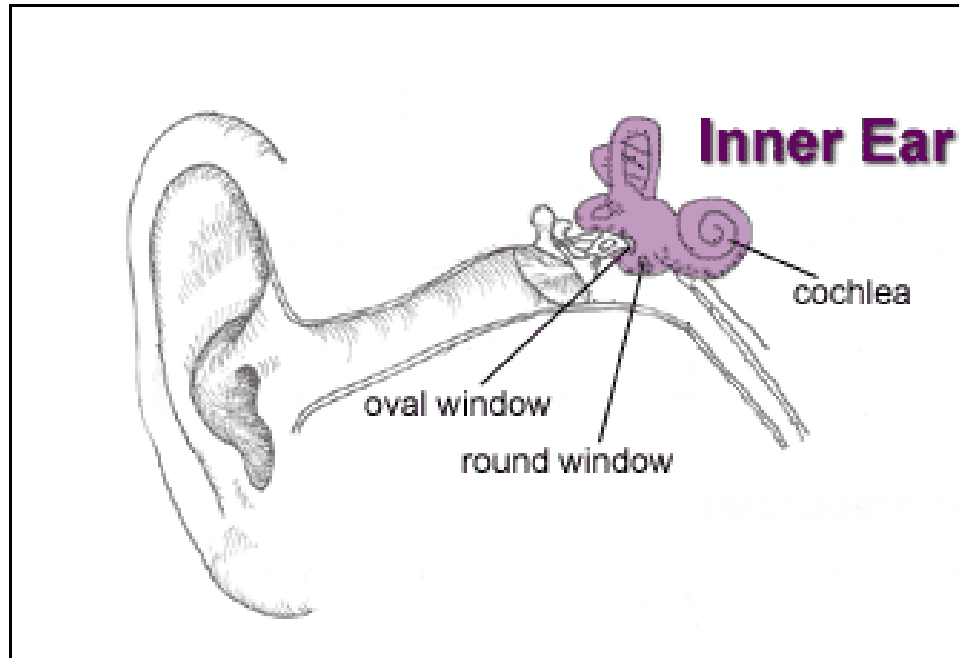
Perforation of the ear drum – this example is caused by a foreign object puncturing the ear drum.

PROBLEMS IN THE INNER EAR

Acoustic Neuroma

Benign paroxysmal positional vertigo

Drug induced-ototoxicity



Meniere disease

Purulent labyrinthitis

Vestibular neuronitis



PROBLEMS OF THE INNER EAR

- **Acoustic neuroma** - Non-cancerous tumor that develops on the nerve that connects the ear to the brain. It grows slowly and causes gradual hearing loss on the side of the affected ear, loss of balance, dizziness and ringing in the ear.
- **Benign paroxysmal positional vertigo** - It causes brief episodes of mild to intense dizziness. It is usually triggered by specific changes in the position of your head.
- **Drug-induced ototoxicity** - A class of antibiotics (Aminoglycosides) can cause ototoxicity. There are different factors that can cause ototoxicity such as high dosage, genetic susceptibility, and if the person is taking other drugs that are also ototoxic during the therapy. These drugs can cause damage to the vestibular portion of the ear. Some can cause permanent hearing loss.



PROBLEMS OF THE INNER EAR

- **Meniere disease** - It is a disease of the inner ear that affects the balance and hearing of a person. It usually results from abnormal amounts of fluid in the inner ear.
- **Purulent labyrinthitis** - It is a bacterial infection of the inner ear that causes hearing loss and loss of vestibular function.
- **Vestibular neuronitis** - It is an infection of the vestibular nerve which causes the nerve to become inflamed and affects the person's sense of balance.



Types of Hearing Loss

- **Conductive**

Caused by outer ear canal or middle ear structure abnormalities. It can also be caused by persistent otitis media with effusion.

- **Sensorineural**

Caused by inner ear structural abnormalities. Causes can include: family history, congenital infections, bacterial meningitis, ototoxic medications, hyperbilirubinemia.



Types of Hearing Loss

Three types of hearing loss (04:33)

<https://www.youtube.com/watch?v=D6hxNW7fHj0>



What's Next?

Please watch the video:
Audiometric Screening and Play Audiometry
by: Steven Rawiszer

Thank you!

