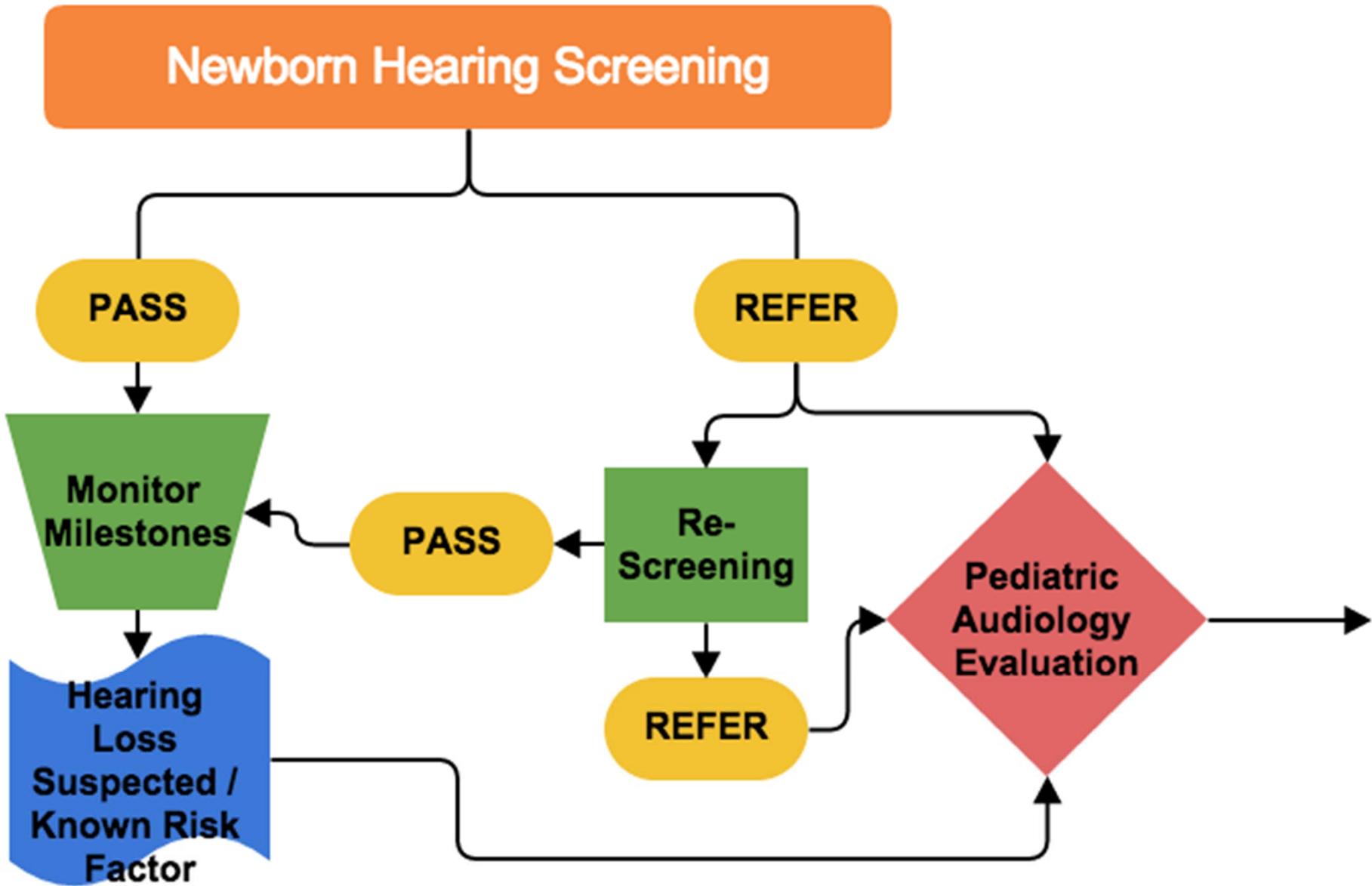
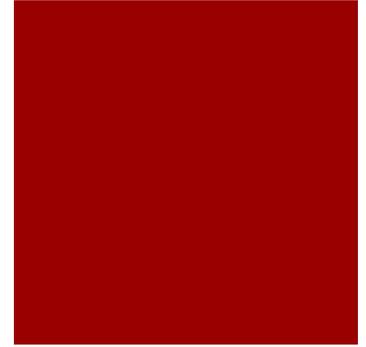




EHDI 101

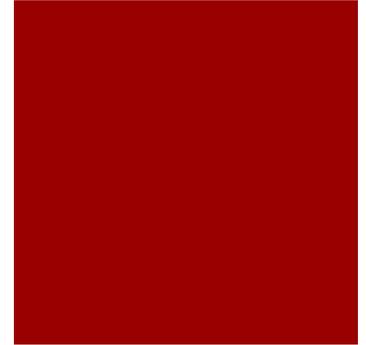


What is Screening? (A Public Health Concept)



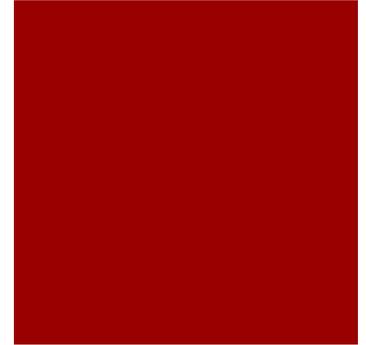
- Screening is a process for identifying those at risk for a disorder.
 - Does not determine presence of the disorder
 - Does not determine the specifics of the disorder
- Generally applied to populations with low likelihood of having the disorder (i.e., general, “healthy” population)
 - The vast majority will pass
- So why don't we screen for every known disorder?
- Why don't we perform comprehensive diagnostic testing on everyone?

To Screen or Not to Screen: 6 Criteria



- Is the problem sufficiently serious?
- Is effective treatment available?
- Does an effective screening test exist?
- Does early identification and intervention lead to significantly better outcomes?
- Are the screening costs acceptable?
- Is there a system in place to make the screening process effective?

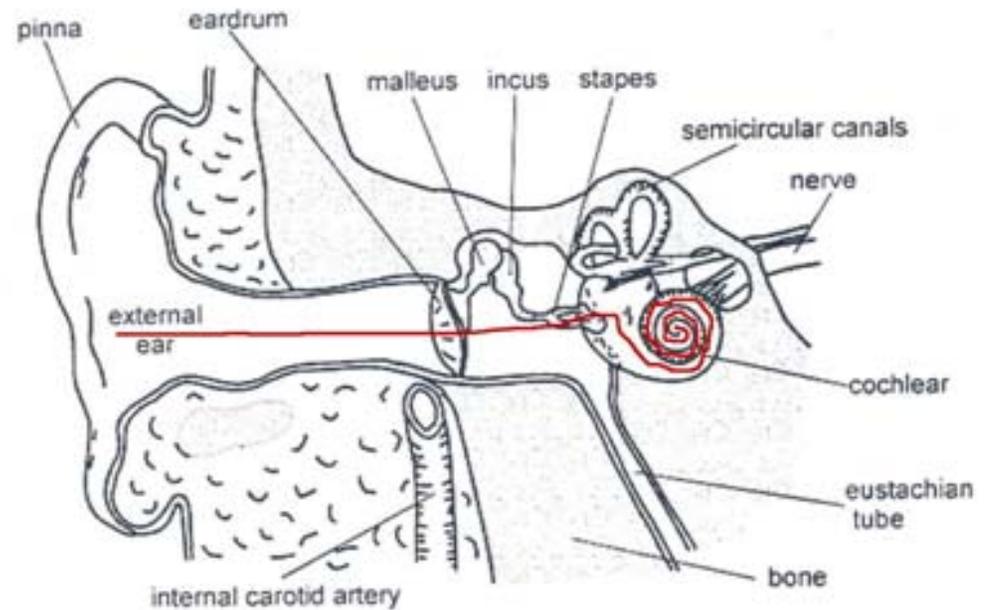
Is Newborn Hearing Screening Perfect?



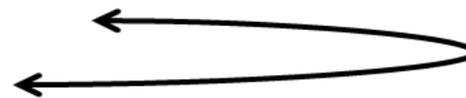
- As with many screening tests, each of our options (OAE and AABR) have some shortfalls.
- For the program to be successful, babies must obtain diagnostic evaluations and early intervention (otherwise, all our hard work screening is for nothing!)
- We need comprehensive support from all providers to help families make the next steps from screening referral to diagnostic evaluation to EI 100% of the time.

Newborn Hearing Screening

- ▶ Otoacoustic Emission (OAE)



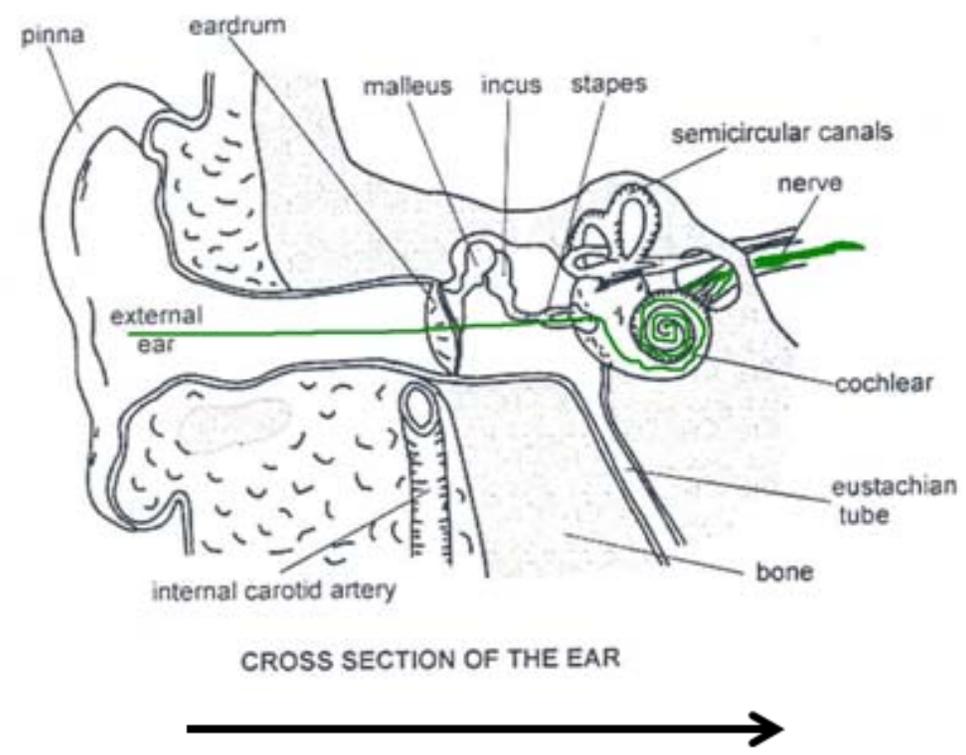
CROSS SECTION OF THE EAR



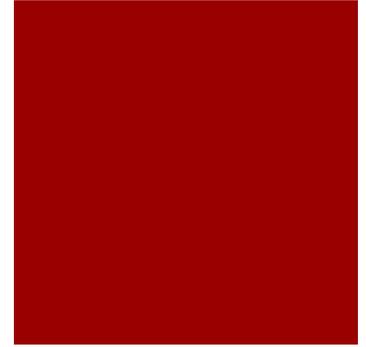


Newborn Hearing Screening

- Automated Auditory Brainstem Response (AABR)



Limitations of the OAE and AABR



- OAE:
 - Very sensitive debris in external and middle ear.
 - Does not identify babies with neural hearing loss (usually NICU populations)

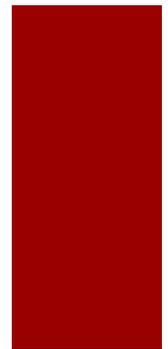
- AABR:
 - While it usually overcome the effects of outer and middle ear issues, it misses those with less than 35 dB hearing loss, or those with atypical hearing loss configurations.
 - More susceptible to electrical interference

0 to 6 months

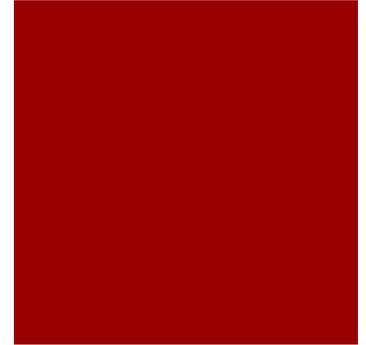
Otoacoustic Emissions (OAE)



Auditory Brainstem Response (ABR)



Otoacoustic Emissions (OAE)



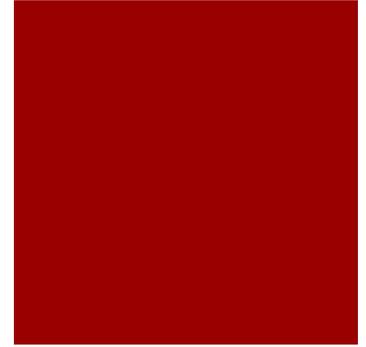
- Quick
- Non-invasive
- Completed at any age (even adults)
- Infant/child can be awake
- Gives good indication of how cochlea is working
- If normal, vast majority of children have normal hearing

Auditory Brainstem Response (ABR)

- Electrodes placed on the head
- Insert earphones in the ears
- Different sounds are played at different volumes
- Electrodes pick up responses to sound from auditory nerve
- A series of unique waveforms are viewed and compared to normative data
- Baby must be sleeping!

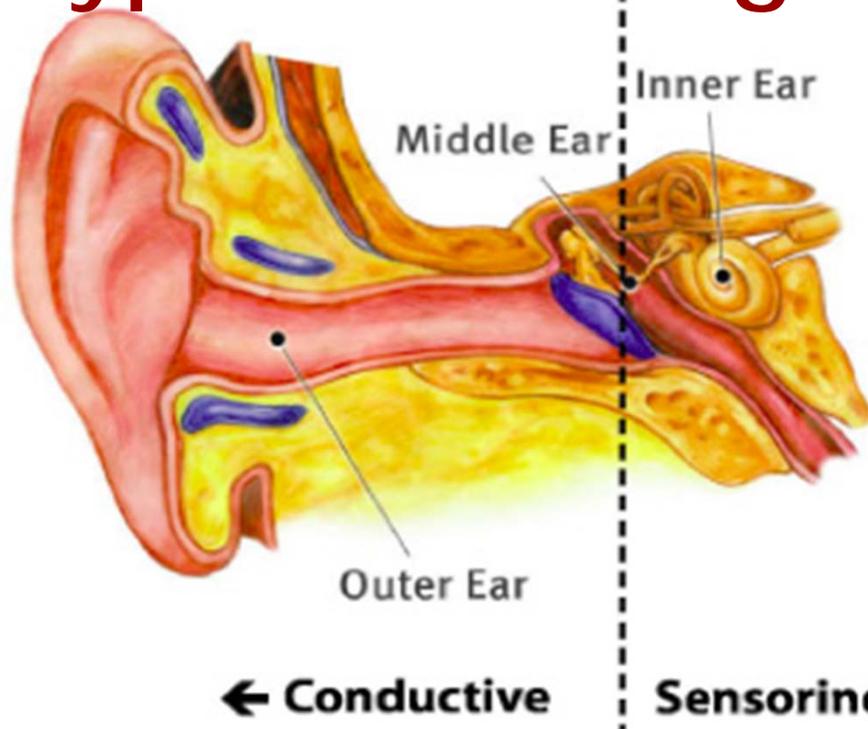


Did you know...?

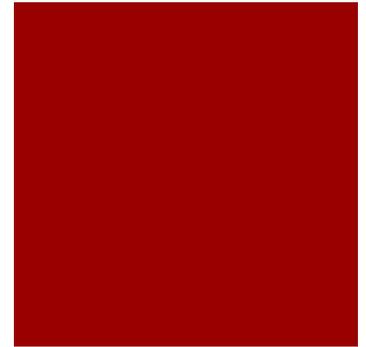


- There are different degrees of hearing loss?
- There are different types of hearing loss?
- You can hear some types of sounds (pitches) better than others?
- You can have hearing loss in one or both ears?
- You can have different types and degrees in each ear?

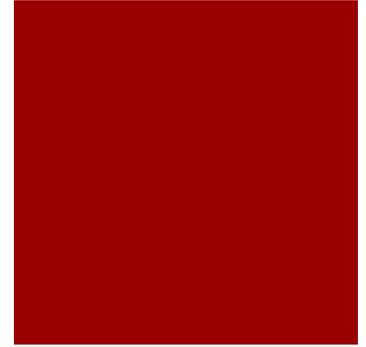
Types of Hearing Loss



- Conductive
 - Outer or middle ear
- Sensory
 - Cochlea
- Neural
 - Auditory nerve
- Mixed
 - Combination of conductive and sensory/neural

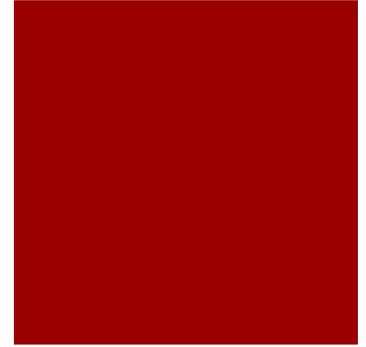


Degrees Hearing Loss



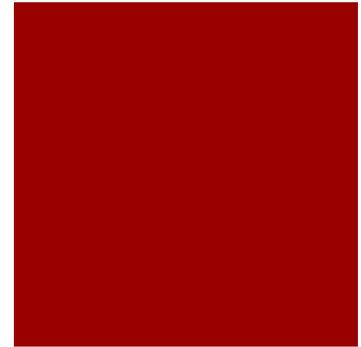
- Range from mild to profound
 - Mild and moderate hearing loss can be hard to detect by observation alone because some sound is still audible
 - (i.e., it's not all or none)
 - Some parents may feel they can **tell** their baby hears them
 - Typical conversation occurs around 40-60 dB, but in order to have normal hearing you must hear sounds at 15 dB or quieter – That's a big difference!
 - For adults, this is often described as being able to hear, but not understand. The speech isn't clear.

About Hearing Loss



- Configuration of hearing loss
 - Hearing loss can be limited to certain pitches
 - May not hear high pitch sounds (s, f, th) well, but have normal hearing for the low pitches (oo, ah, mm)
 - This will result in the observation of being able to **detect** a voice, but not **understand** it (missing pieces)
 - This will result in the ability to hear a car horn, but not running water

Behind-the-Ear (BTE) Hearing Aid



- Makes sounds louder – programmed by pitch by an audiologist to boost the sounds the baby needs to hear better
- Appropriate for any age
- Appropriate for any degree of hearing loss
 - Mild to profound
- Uses an earmold to accommodate growing ears

