

# DEAFNESS

## Common Names

- Include *hearing impairment* and *hard-of-hearing*
- The medical term *hearing impairment* is controversial to some who refute the implication of a disability, particularly those who consider themselves part of the Deaf Culture.
- Hearing loss is measured along a continuum and while *deafness* usually refers to a more profound hearing loss than *hard-of-hearing*, how a person classifies himself is a personal decision that reflects more than just the ability to hear.

## Causes/Etiology

- Hearing loss is caused by a variety of different biological causes which may affect any of the structures needed for hearing

Cause	Some examples
Long-term exposure to environmental noise	<ul style="list-style-type: none"><li>➤ Living near airports or freeways</li><li>➤ Misuse of personal electronic audio devices</li></ul>
Genetic	<ul style="list-style-type: none"><li>➤ Connexin 26 deafness (congenital)</li><li>➤ Stickler syndrome (dominant gene syndrome)</li><li>➤ Pendred syndrome (recessive gene syndrome)</li></ul>
Disease or illness	<ul style="list-style-type: none"><li>➤ Measles may cause nerve damage</li><li>➤ Meningitis may cause nerve or cochlear damage</li><li>➤ Autoimmune disease may target the cochlea</li><li>➤ Mumps may cause sensorineural hearing loss</li><li>➤ AIDS or HIV</li><li>➤ Chlamydia may cause hearing loss in newborns</li><li>➤ Fetal Alcohol Syndrome</li><li>➤ Premature birth</li><li>➤ Syphilis transmitted to infant from the mother</li><li>➤ Otosclerosis (hardening of parts of the middle ear)</li></ul>
Medications	<ul style="list-style-type: none"><li>➤ Aminoglycosides can cause irreversible damage to the ear and are therefore limited in their use</li><li>➤ Diuretics, aspirin and certain antibiotics can cause reversible hearing loss</li><li>➤ Abuse of narcotic pain killers (e.g. Vicodin)</li></ul>

Physical trauma	<ul style="list-style-type: none"> <li>➤ Damage to the ear itself</li> <li>➤ Damage to the parts of the brain responsible for processing aural information</li> <li>➤ Single exposure to extremely loud noises</li> </ul>
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### Incidence

- FAS caused hearing loss in up to 64% of infants born to alcoholic mothers
- Premature birth causes sensorineural hearing loss approximately 5% of the time
- Maternal syphilis transmitted to the fetus causes hearing loss approximately 1/3 of the time
- Overall prevalence of deafness is unknown and is complicated by an inexact definition of what is considered deafness and what is considered hard-of-hearing
- Hearing loss is greater in men than women
- According to the National Institute on Deafness and Other Communication Disorders, approximately 28 million Americans experience some form of hearing impairment
- Incidence of hearing loss increases with age: approximately 2 or 3 of 1,000 children are born deaf or hard-of-hearing. By the age of 18, hearing loss affects 17 of 1,000 children

### Characteristics

- Hearing sensitivity is generally indicated by the quietest sound that an individual can detect, called the hearing threshold
- In human beings, hearing impairment refers to people who have relative insensitivity to the sounds in the speech frequencies
- Hearing loss is divided into three categories:
  - Sensorineural hearing loss is caused by damage or malfunction of the inner ear or parts of the brain that control auditory processing
  - Conductive hearing loss is caused by damage or malfunction of the middle or outer ear system (e.g. ear drum or ear canal)
  - Mixed hearing loss is caused by both sensorineural and conductive causes
- Hearing loss may be ranked in terms of severity: mild, moderate, severe or profound
- There may be different amounts of loss at different frequencies, making it virtually impossible to accurately describe the amount of hearing loss in percentages or rankings
- The amount of hearing loss may not correspond to one's identification with the Deaf culture, which may be considered a declaration of personal identity rather than an explanation of hearing ability

## Categorization of Deafness

Classification System	Code
ICD-10	H90-H91
DSM-IV	none
IDEA	Deaf/hard of hearing

## Deficits

- The age at which hearing impairment develops is crucial to spoken language acquisition
- Post-lingual impairments are far more common than pre-lingual impairments
- Pre-lingual impairments may cause delays with language development as the child is unable to access audible/spoken communication; **however**, children born into signing families have no delay in language development and communication
- Children, particularly those with pre-lingual hearing loss, may experience delayed social development and/or social rejection from their peers
- These delays and deficits are generally not seen in children who are part of the Deaf culture and have been introduced to sign language as a primary form of communication

## Long-term Developmental Outcomes

- Some hearing loss is reversible or temporary
- Post-lingual hearing loss may gradually progress from mild to a more severe hearing loss
- Although some medical treatments exist to restore hearing, most of these treatments are controversial and have variable efficacy

## Assessment approaches

- According to a Gallaudet University handout on assessment of deaf individuals, it is important to use assessment tools that have been standardized on deaf individuals or have norms for deaf students
- It is also important to assess the student in his or her preferred mode of communication
- The Universal Nonverbal Intelligence Test (UNIT) is a commonly used nonverbal cognitive measure that can be used to assess deaf individuals
- The DAS-II includes procedures for administration in American Sign Language
- Other measures may be adapted for use with deaf children by omitting certain parts or altering administration procedures (alterations should be noted on the protocol)
- The methods used to assess deaf children depends greatly on the child's level of language development in either spoken or sign language

### **Interventions and Treatments**

- It is important to remember that most deaf and hard-of-hearing children are not cognitively different than other children
- Interventions for other disabilities (e.g. learning disabilities) should follow the same principals and require the same types of goals as with hearing children with alterations to accommodate for the hearing impairment (e.g. writing down information rather than repeating it verbally)
- The use of visual stimuli is encouraged to help the child organize material visually, such as color-coded words or pictorial categories
- Some children benefit from the use of a cochlear implant, which has been found to be effective in many cases of pre- and post-lingual hearing loss; however, there is controversy surrounding cochlear issues as to whether cochlear implants address the overall health and psycho-emotional well-being of pre-lingually deaf children
- Other assistive technologies such as hearing aids and alarms using light instead of sound are available to people who are hearing impaired

### **Contributions of the Schools Psychologist**

- School psychologists can contribute to the educational achievement of deaf children by raising awareness of the facts surrounding deaf students
- It is important to remember that deaf or hard-of-hearing students are not cognitively, socially or emotionally different than other children, but that they may be perceived as such by peers, teachers or other professionals
- School psychologists can be aware of the potential for socio-emotional difficulties if a deaf child experiences rejection from hearing or deaf peers regarding his or her use of spoken or sign language
- School psychologists must ensure proper assessment of deaf children using guidelines such as those stated by Gallaudet University; in particular, it is important that to pay special attention to find ways to examine the linguistic development of deaf children since the use of some traditional, verbal methods may be inappropriate

### **Resources for Parents, Teachers and Professionals**

- The NASP special interest group for school psychologists working with deaf students
- National Association of the Deaf – [www.nad.org](http://www.nad.org)
- Gallaudet University website – [www.gallaudet.edu](http://www.gallaudet.edu)
- American Society of Deaf Children – [www.deafchildren.org](http://www.deafchildren.org)