Defining Hearing Loss

- Deaf and hard of hearing describe hearing loss
- Unilateral (loss in one ear) and bilateral (loss in both ears)
- IDEA defines deafness as a hearing impairment that is so severe that the student is impaired in processing linguistic information through hearing, with or without amplification, and that adversely affects the student’s educational performance
- The severity of hearing loss is measured through decibels (dB)
  - Deaf = 70-90 dB
  - Hard of hearing = 20-70 dB
- Congenital deafness is a rare condition
- Deaf community prefers term “deaf child” to hearing impaired

Prevalence of Hearing Loss

- Low incidence disability
- In 2006, 71,589 students with hearing loss between the ages of 6 and 21 received some type of special education services (U.S. Dept. of Ed.)
- Preschool programs (ages 3 to 5) served another 8,123 children, equivalent to about 1% of the total number of young children in preschools

The Hearing Process

- Hearing Process: Audition
- Sound waves are vibrations in the air
- Sound is measured in units that describe the frequency and intensity of these vibrations
  - Intensity: measured in decibels (dB)
  - Frequency: measured in hertz (Hz)
- Results are charted on audiograms

Characteristics

- Speech and English language development
  - Delays in language development
  - Communication options:
    - Oral/Aural
    - Manual communication
      - Sign language and finger spelling
        - American Sign Language (ASL)
        - Manually coded English
      - Total or simultaneous communication

Academic Achievement

- Because educational curricula are so language-based, communication and learning are strongly linked
- There are rising numbers of students with hearing loss from diverse backgrounds
- Students who are hard of hearing are among the least appropriately served group

Social and Emotional Development

- Communication barriers affect a student’s social and emotional development
- Four factors affect this development:
  - parent-child interaction
  - peers and teachers
  - awareness of social cues
  - an increasing sense of isolation and loneliness

Determining the Causes

- Congenital - present at birth
- Acquired - developed after birth
- Genetic causes
- Prenatal causes
  - Hypoxia (lack of oxygen)
  - Rubella
  - Other illnesses, such as toxoplasmosis, herpes virus, syphilis, and cytomegalovirus (CMV)
  - Premature infants
- Postnatal causes
  - Bacterial meningitis
  - Acute otitis media (ear infection)
- Postlingual causes
  - Trauma to skull, excessive noise

Determining the Presence

- Diagnostic Assessment
  - Screen all newborns for hearing loss before 1 month of age
  - Evaluate all infants who screen positive before 3 months
  - Early intervention (initiated before 6 months)
- Medical personnel
  - Otologist (physician)
  - Audiologist (measures hearing)
- Hearing aids
- Cochlear implants

Determining the Nature of Specially Designed Instruction and Services

- Educational evaluation
- How hearing is tested
  - Audiometer
  - Audiogram (behavioral)
  - Typanography
  - Speech audiometry

Partnering for Special Education and Related Services

- Using interpreters in educational settings
- Determining Supplementary Aids and Services
  - Managing the Listening Environment (acoustics)
    - Sound-field amplification system
    - Loop systems
  - Assistive Technology
    - Closed captioned technology
  - Computers and the Internet
    - C-print : Real time speech translations

Planning for Universal Design for Learning

- Communication methods
- Total Communication fallen out of favor
- Debates over Manual Coded English
- Bilingual/Bicultural model
- Lesson planning
- Planning for Other Educational needs
  - Most students with hearing loss attend public schools
  - Must make an effort to preserve deaf culture

Measuring Students’ Progress

- Problems assessing students with hearing loss
- Reading and writing assessments
  - Cloze procedure
  - Oral Reading test
  - Story retelling
  - Writing assessment
- Making accommodations for assessment
  - Assistance before test on new forms of testing
  - Longer time period
  - Interpreting the directions
  - Changing the format and content (rephrasing)
<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0–15 dB) <em>Normal</em>—There is no impact on communication.</td>
</tr>
<tr>
<td>10</td>
<td><em>Slight</em>—In noisy environments, faint speech is difficult to understand.</td>
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<tr>
<td>20</td>
<td>(16–25 dB) <em>Mild</em>—Faint or distant speech is difficult to hear, even in quiet environments. Classroom discussions are challenging to follow.</td>
</tr>
<tr>
<td>30</td>
<td>(26–40 dB) <em>Moderate</em>—Conversational speech is heard only at a close distance. Group activities in a classroom present a challenge.</td>
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<tr>
<td>40</td>
<td>(41–55 dB) <em>Moderate-severe</em>—Only loud, clear conversational speech can be heard, and group situations present great difficulty. Speech is intelligible, though noticeably impaired.</td>
</tr>
<tr>
<td>50</td>
<td>(56–70 dB) <em>Severe</em>—Conversational speech cannot be heard unless it is loud; even then, many words cannot be recognized. Environmental sounds can be detected, though not always identified. Speech is not always intelligible.</td>
</tr>
<tr>
<td>60</td>
<td>(71–90 dB) <em>Profound</em>—Conversational speech cannot be heard. Some loud environmental sounds may be heard. Speech is difficult to understand or may not be developed at all.</td>
</tr>
<tr>
<td>90</td>
<td>(91+ dB) <em>Profound</em>—Conversational speech cannot be heard. Some loud environmental sounds may be heard. Speech is difficult to understand or may not be developed at all.</td>
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</tbody>
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