

# Unilateral and Mild Hearing Loss in Children

Jennifer Maceda  
Audiology LEND Trainee

# Unilateral and Mild Hearing Loss

- Children can be at risk for academic, speech-language, and social-emotional difficulties (Madell & Flexer, 2008)
- May appear “normal,” making it difficult to convince parents of the necessity of early intervention strategies to ensure future success

# Definitions

- **Permanent Mild Bilateral Hearing Loss**: 500, 1000, and 2000 Hz pure tone average (PTA) between 20 dB and 40 dB in both ears OR PTA greater than 25 dB at two or more frequencies above 2000 Hz in both ears
- **Permanent Unilateral Hearing Loss**: one normal hearing ear (PTA of 15 dB or better) and one ear with PTA of 20 dB or worse

(Eichwald & Gabbard, 2008)

# Incidence

- Newborn estimates:
  - > 0.36 to 1.30 per 1000 for mild bilateral hearing loss
  - > 0.8 to 2.7 per 1000 for unilateral hearing loss
- School-age estimates:
  - > 10 to 15 per 1000 for mild bilateral
  - > 30 to 56 per 1000 for unilateral

(Ross, 2006)

# Unilateral Hearing Loss

- Language may appear to develop normally (Bess & Tharpe, 1984)
- Average age for first word often within normal limits, but first 2-word utterances delayed (McKay)
- Before newborn hearing screening, typically identified at school age (Bess & Tharpe, 1984)
- Unable to take advantage of binaural hearing → difficulty in background noise and localizing sound sources (Bess & Tharpe, 1984)

# Unilateral Hearing Loss

- Difficulties in noise can interfere with normal language development, necessary auditory figure-ground and auditory discrimination skills
- Can have significant educational difficulties
- 1/3 failed at least one grade; 50% failed a grade and/or needed resource assistance (Bess & Tharpe, 1984)

# Unilateral Hearing Loss

- Can appear inattentive, disinterested, and aloof
- Teacher perception of them is poorer than that of their peers; were given lower scores on all 5 areas of SIFTER compared to normal-hearing kids
- Verbal IQ often poorer than relative IQ
- Children with severe to profound UHL have lower IQs on the Wechsler Intelligence Scale for Children-Revised than those with less severe UHL

# Mild Hearing Loss

- Can negatively affect language development by affecting subtle speech cues including prosody, stress, and grammatical rules (Northern & Downs, 2002)
- With 30 dB hearing loss, can miss 25-40% of classroom discussion; with 35-40 dB hearing loss can miss as much as 50% (Anderson & Matkin, 1998)



# Mild Hearing Loss

- Studies have found these children were not performing at expected academic levels
- Academic performance behind peers especially in areas of vocabulary, reading comprehension, and language use
- Receptive vocabulary, verbal ability, and reasoning more than 1 standard deviation below the mean

(Tharpe, 2008)

# Mild Hearing Loss

- ◉ Difficulty in noise → Need more favorable SNR than normal hearing peers
- ◉ May exert more energy than peers to listen in class, thus less energy or attention capacity for processing what they hear, taking notes, and other activities (Tharpe, 2008)

# Counseling

- May be difficult to convince parents that there is a hearing loss
- Simulating hearing loss can be a wake-up call to parents
- Explain specific difficulties they have and why
- Examples:
  - > both will have difficulty with distance and background noise
  - > Mild: trouble hearing whisper & soft voices, low-level environmental sounds, may miss certain speech sounds
  - > Unilateral: inability to locate sounds, difficulty when speech is directed toward “bad” ear

# Counseling

- Once parents understand the difficulties that may be encountered, strategies to help the child can be discussed
- Written material can be extremely helpful, especially for parents to pass on to child's teacher
- Parent support groups are a wonderful resource

## Ways for Parents to Help a Child with Mild or Unilateral Hearing Loss at Home (Madell & Flexer, 2008)

- Try to make eye contact when speaking to your child
- Get your child's attention before talking to him/her
- Help your child localize sound if he/she is having difficulty
- Look for cues that your child understands what you are saying
- Raise your voice slightly and face him/her when you are at a greater distance
- Make the home listening friendly. Try to reduce things that cause unneeded noise. Use carpeting and cloth curtains. Use corkboards instead of magnetic boards. Replace buzzing fluorescent lights. Operate noisy appliances (dishwasher, washing machine) when your child is not home or sleeping
- If your child has hearing loss in one ear, always be aware of where her normal hearing ear is facing. It should always be facing you or those talking to him/her. Think about this when your child is at dinner, in the car, etc.
- Do not have the TV or radio on while eating dinner or at other times when you are talking with your child
- Create a quiet listening environment while your child is watching TV
- Do not give your child instructions from another room. He/She will likely hear your voice, but not understand what you are saying
- If your child wears a hearing aid, make sure it is functioning properly at all times. Hearing aids that do not work are much worse than no hearing aids at all
- Teach your child's siblings things that you have learned about helping him/her

# Community Based Organization

- SHINE (Serving Hearing Impaired Newborns Effectively)
  - > Part of Early Steps
  - > 3 providers in Miami-Dade, including Lynn Miskiel
  - > Goal is to provide family education and patient monitoring. Provide un-biased information about hearing loss, technology options, communication options, education options, and communication strategies
  - > Regularly evaluate language using SKI-HI language development scale
  - > Bilateral hearing loss-visits twice a month. Unilateral hearing loss-visits once a month.

# Advocacy Action Plan

- ◉ Individual
- ◉ Community
- ◉ Policy

# References

- Bess, F. & Tharpe, A.M. (1984). Unilateral hearing impairment in children. *Pediatrics*, 74(2), 206-216.
- Borton, S.A., Mauze, E., & Lieu, J.E.C. (2010). Quality of life in children with unilateral hearing loss: A pilot study. *American Journal of Audiology*, 19, 61-72.
- Cone, B.K., Wake, M., Tobin, S., Poulakis, Z., & Rickards, F.W. (2010). Slight-mild sensorineural hearing loss in children: Audiometric, clinical, and risk factor profiles. *Ear & Hearing*, 31(2), 202-212.
- Eichwald, J. & Gabbard, S.A. (Guest Eds.) (2008). *Seminars in Hearing: Mild and Unilateral Hearing Loss in Children*, 29(2), 137-228.
- Holstrum, W.J., Gaffney, M., Gravel, J.S., Oyler, R.f., & Ross, D.S. (2008). Early intervention for children with unilateral and mild bilateral degrees of hearing loss. *Trends in Amplification*, 12(1), 35-41.
- Madell, J.R. & Flexer, C. (2008). *Pediatric Audiology: Diagnosis, Technology, and Management*. Thieme Medical Publishers, Inc.: New York, NY.
- McKay, S. Management of young children with unilateral hearing loss. *The Volta Review*, 106(3), 299-319.
- Ross, D.S. (2006). Mild and unilateral hearing loss in children. Centers for Disease Control and Prevention: Early Hearing Detection and Intervention.
- Tharpe, A.M. (2008). Unilateral and mild bilateral hearing loss in children: Past and current perspectives. *Trends in Amplification*, 12(1), 7-15.
- Tharpe, A.M. (2007). Unilateral hearing loss in children: A mountain or a molehill? *The Hearing Journal*, 60(7), 10-16.
- Tharpe, A.M. & Bess, F. (1999). Minimal, progressive, and fluctuating hearing loss in children: Characteristics, identification, and management. *Pediatric Clinics of North America*, 46(1).
- Wake, M., Tobin, S., Cone-Wesson, B., Dahl, H., Gillam, L. et al. (2006). Slight/mild sensorineural hearing loss in children. *Pediatrics*, 118, 1842-1851.