Responding to the needs of families of children with unaidable mild and borderline hearing losses

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RIDBC

- The Royal Institute for Deaf and Blind Children (RIDBC) provides quality and innovative education and other services to achieve the best outcomes for current and future generations with hearing and/or vision loss throughout Australia.
- RIDBC Jim Patrick Audiology Centre (JPAC) specialises in paediatric audiological assessment and diagnosis for children enrolled at RIDBC and from the broader community.

Mild/Minimal Hearing Loss

- Bilateral hearing loss of less than 40 dB HL.
- Not necessarily suited to hearing aid fitting due to mildness or limited range of frequencies, eg, low frequency (<1000Hz), high frequency (>2000Hz), “cookie bite” audiogram.

Incidence

- Estimates of the incidence of minimal sensorineural hearing loss vary widely, depending on definitions used.
- Bess (1999) estimated incidence at 5.4% of the Nashville school age population (including unilateral hearing loss).
- Wake et al (2006) identified <1% of a sample of Melbourne school children (excluding unilateral hearing losses).

Academic progress

- Bess et al (1998) assessed the basic skills of children with minimal hearing loss compared to their normally hearing peers.
- Grade 3 children with minimal hearing loss experienced more difficulty in specific areas including reading, word analysis, spelling and science.
- There was no academic difference in grades 6 and 9, although these children experienced more fatigue, higher levels of stress and issues with social support and self esteem.

Listening in noise

- Crandell (1993) assessed speech recognition ability of those with minimal hearing loss (thresholds between 15-30dBHL) and those with normal hearing.
- Whilst there was no differences in ability in quiet, as the SNR worsened, the hearing impaired children experienced more difficulty.

Extra effort in listening

- Bourland-Hicks and Tharpe (2002) demonstrated that children with minimal to moderate hearing loss needed to make more of an effort when listening to speech in both quiet and background noise than their normally hearing peers.
- This impacts on their ability to perform other tasks (eg, processing information).

Discrimination and recall

- Wake et al (2006) determined that children with slight/mild sensorineural hearing loss displayed poorer phonologic discrimination and performed substantially less well in nonsense word repetition.
- This implies that these children may experience difficulty discriminating and recalling unfamiliar words.

What are the implications?

- Although children with minimal hearing loss usually have essentially normal spoken language, they will often need to expend more effort in order to understand speech clearly, particularly in even low levels of noise. They may have poorer recall for what they hear and will struggle with unfamiliar words in particular. These pressures are likely to increase as children grow and schooling becomes more complex and demanding.

Unilateral successes

- In response to the expressed needs of parents, RIDBC has been running a program for families of children with unilateral hearing loss, including information seminars, since 2004.
- The program has been well attended by over 100 families.
- We have learnt that parents of children with unilateral hearing loss need as much support and information as parents of other hearing impaired children.

Mild and Minimal hearing loss

- Unlike unilateral hearing losses, which are frequently identified through UNHS, many mild and minimal hearing losses are diagnosed later in childhood.
- Referral pathways are less well defined.
- These children rarely meet criteria for ongoing educational support programs and may be unsuitable for hearing aid fittings at an early age.
- As a result parents often receive minimal information counselling and support.

Mild and Minimal hearing loss

- Despite this lack of information and support, parents are often required to be the main advocates for children with unaidable mild and minimal hearing losses.
- In response to this perceived parental need, RIDBC has introduced a program of information and support for parents.

Simple Rationale

- Equip and support parents with the knowledge, and motivation to promote and monitor their child's language and listening.
- Educate parents in strategies to minimise the impact of their child's unaided hearing loss.
- Parents are "alert but not alarmed".
- Provide assistance should the child begin to fall behind.
- Provide support to parents as needed.

Individualised support

- RIDBC Jim Patrick Audiology Centre provides ongoing audiological care, in concert with any services being provided by Australian Hearing, such as FM fittings
- RIDBC Assessment Unit is available to assess speech and language and general development.
- When it is determined that a child's development is being affected by their mild/minimal hearing loss, individual intervention services are available from RIDBC.

Parent Groups

- Any parents of infants and children with minimal sensorineural or chronic / permanent conductive hearing loss.
- Hearing aids have not been fitted, although in some cases they may have been recommended.
- FM systems may be in use.

Parent Groups

- Likely to attract three distinct groups of parents.
- Hearing aids are not an option.
- Hearing aids are an option but the parents are still making a decision.
- Hearing aids are an option but the decision has been taken not to fit at this time.

Referrals

- Depend on the child's age.
- Infants are most likely to be referred by diagnostic services within SWISH.
- Older children are likely to be referred by Australian Hearing or by primary diagnostic services.
- No medical referral is required.

Pre-presentation Survey

- Ideally to be completed and returned to us prior to the parent group, with a copy of the child's audiogram.
- Provides us with background information about the child's hearing loss and associated history.
- To help parents determine their goals in attending the session.

Pilot group

- Profiles – parents of children with newly diagnosed hearing loss, over 4 years of age.
- Presentation shared by two audiologists, taking approximately two hours, with a tea break half way through, allowing time for parents to network.
- Parents provided with handouts - a copy of the talk and literature reiterating and broadening information provided in the talk.

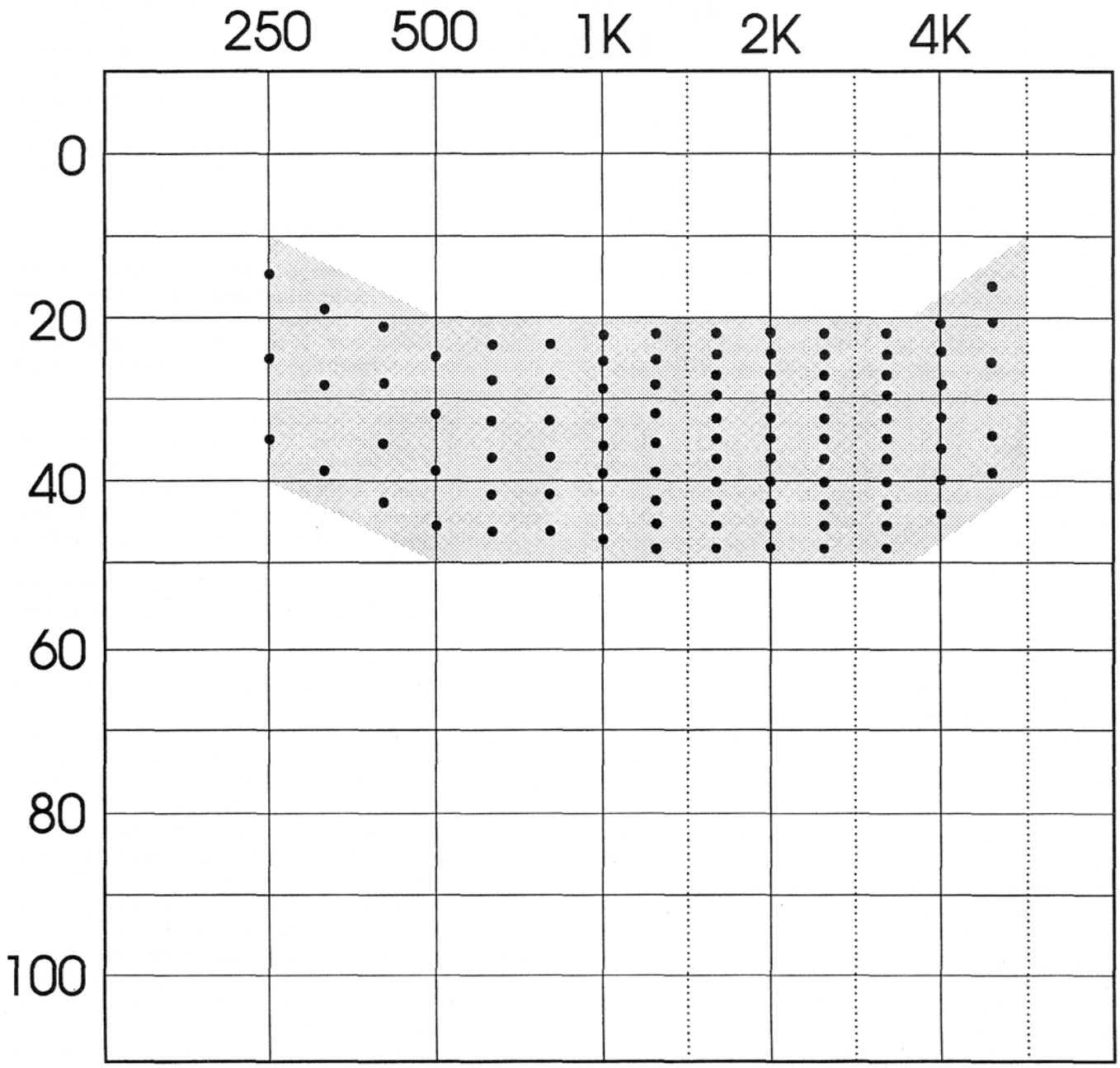
Topics covered

- The anatomy of the ear and how we hear.
- Types and causes of hearing loss.
- Investigation of aetiology.
- Audiogram explained including threshold, slope and severity of hearing loss.
- Addressing concerns around “why my child’s hearing loss was missed”.

Topics covered

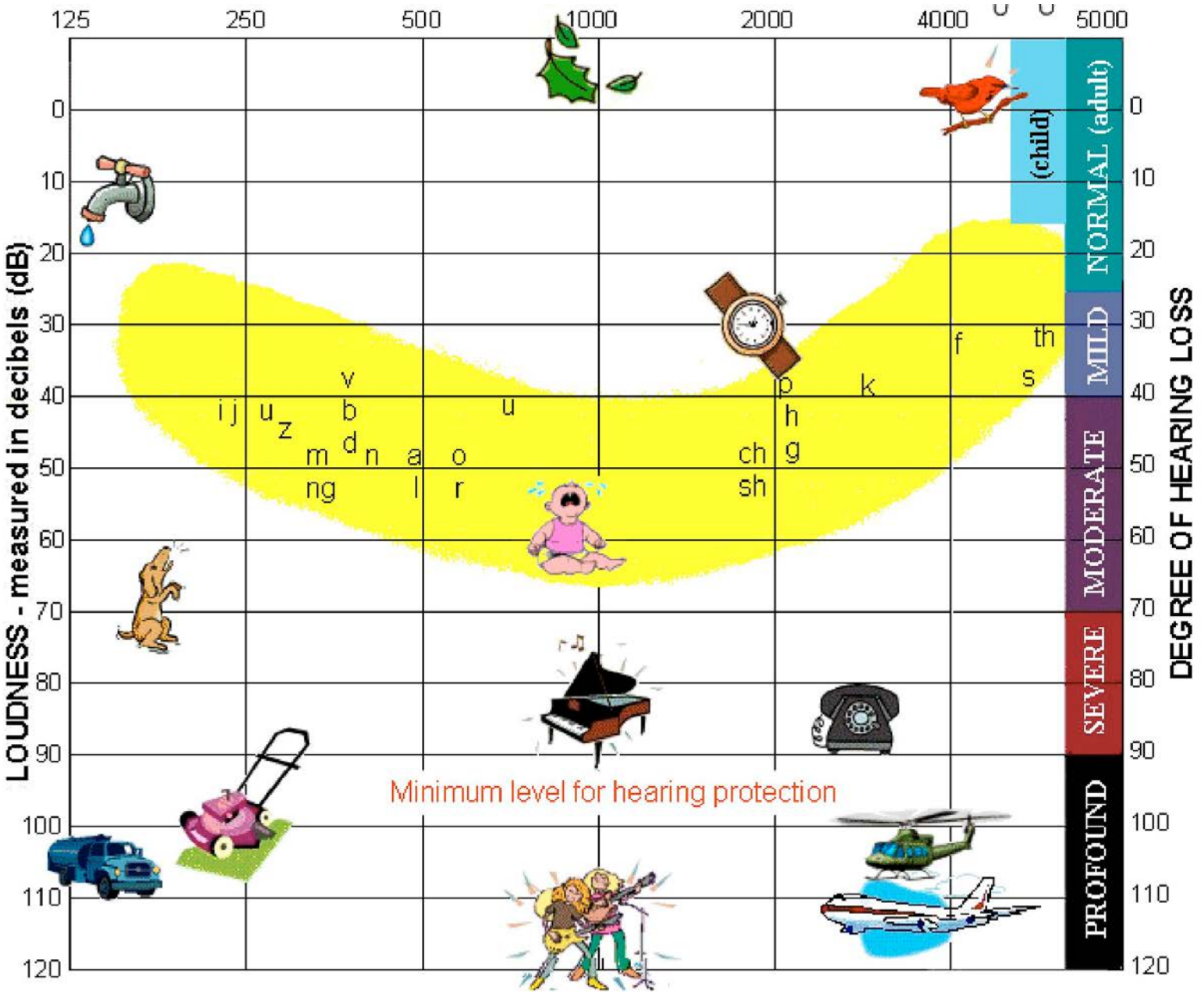
- What can my child hear – demonstrated using a “count the dots” audiogram.

Mueller & Killion, 1990.



Topics covered

- What can my child hear – demonstrated using a “count the dots” audiogram.
- Audiogram including everyday sounds and speech sounds.


125
250
500
1000
2000
4000
5000
LOUDNESS - measured in decibels (dB)
DEGREE OF HEARING LOSS
0
10
20
30
40
50
60
70
80
90
100
110
120
(child)
NORMAL (adult)
MILD
MODERATE
SEVERE
PROFOUND
i j u z v b d m n ng a l o r u ch sh p h g k f th s
Minimum level for hearing protection

Topics covered

- What can my child hear – demonstrated using a “count the dots” audiogram.
- Audiogram including everyday sounds and speech sounds.
- Importance of monitoring hearing, protecting it from excessive noise and proactively treating colds and middle ear infections.
- Middle ear issues - in view of their frequency in children and the possibility that preexisting loss will be worsened.

Topics covered

- Effects of mild hearing loss including reported studies covering effects on speech and language, hearing in noise, auditory memory and fatigue.
- Hearing aids – where and when to access and how to know whether aid fitting is appropriate.
- Managing listening in the classroom environment.
- Signal to Noise Ratio and how this can be improved to benefit the child with a mild loss.
- FM aids and sound field distribution systems.

Topics covered

- Good communication strategies for home and classroom.
- Equipping parents to advocate for their children, and children to speak up for themselves.
- Importance of monitoring and encouraging appropriate language development.
- Websites for further information and parent support.

Feedback

- Feedback form - includes statements with which the attending parents need to indicate their level of agreement. Also plenty of space for further comment.
- Following the pilot session, almost exclusively positive feedback about the relevance and usefulness of the information presented.

Feedback

- All parents agreed (some strongly) that the session would lead to them making some changes.
- Most thought and felt differently about their child's hearing loss.
- Most of the parents appreciated the opportunity the group provided to meet other parents of children with mild/minimal loss.

- “I was very informed & am happy to have come.”
- “The session was very informative and provided me with some excellent strategies to assist in the class room.”
- “I now feel equipped and somewhat in control of being able to determine what is best for our child and where I need to source the information.”

Future plans

- Modification of talk following first presentation.
- Second group later this year – allowing time for wider advertising of its availability.
- Will we identify that this is only of interest to families in the early post diagnosis period?
- Follow up with previous parents to determine whether they have gained longer term benefits.

Implications for UNHS

- Mild hearing losses can be missed by UNHS and can develop or deteriorate subsequent to the screening. Screening programs must promote vigilance in the parents of children who pass their screen.
- Not all children who are diagnosed with hearing loss as a result of UNHS will be fitted with hearing aids as infants, but all parents need to be able to make informed decisions.