

Managing mild permanent childhood hearing impairment identified through the newborn hearing screening programme

Aanisah Soomro, Clinical Scientist (aanisah.soomro@uhbw.nhs.uk)
Children's Hearing Centre, University Hospitals Bristol and Weston

Introduction

The newborn hearing screening programme (NHSP) aims to identify infants with a moderate or worse permanent childhood hearing impairment (PCHI). In the Bristol, North Somerset and South Gloucestershire (BNSSG) region, approximately 2% of babies are born with mild sensorineural hearing loss. There is a lack of consensus on the management of these children and currently no national guidelines. This study aims to evaluate:

- the relationship between newborn auditory brainstem response (ABR) thresholds and confirmed behavioural hearing thresholds
- the proportion of children fitted with hearing aids and the age at fitting
- the effect of intervention using speech testing and aided thresholds for those fitted with hearing aids

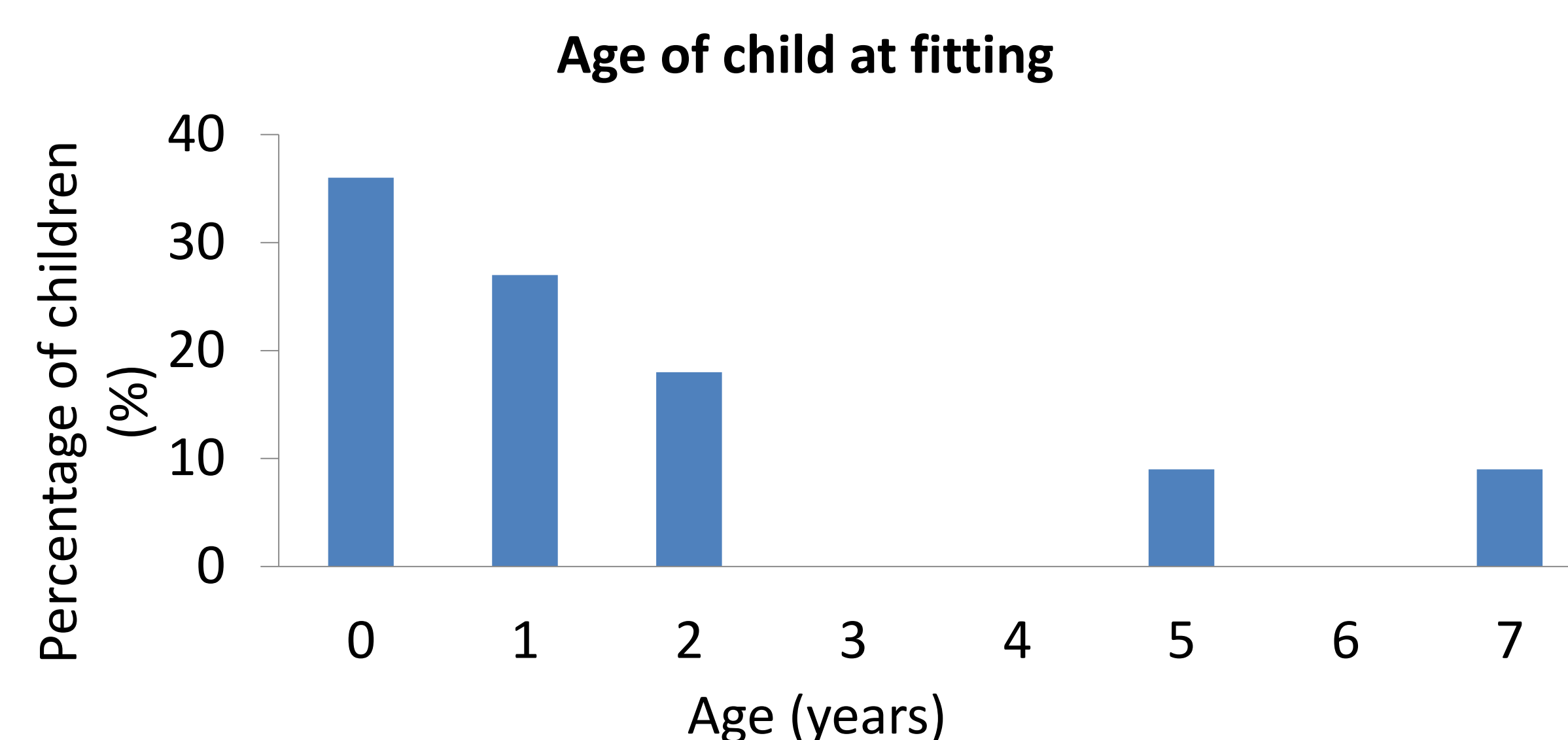
Method

Eighteen children (born between January 2012 and December 2022) with congenital unilateral (n= 5) and bilateral (n= 13) mild PCHI were identified from Smart4Hearing (S4H).

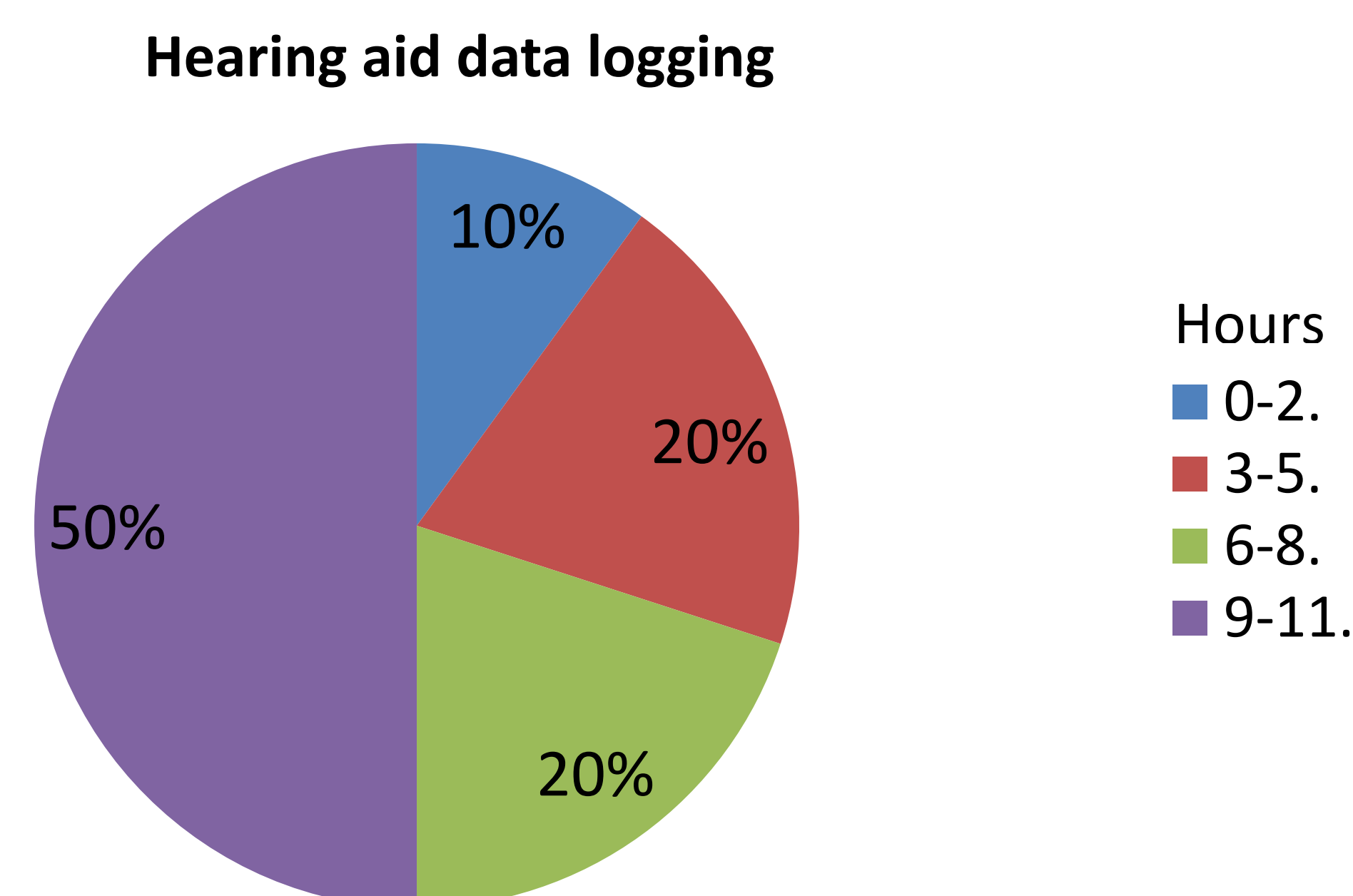
- ABR thresholds were compared to thresholds obtained through behavioural audiometry
- the age at which hearing aids were fitted was determined and hearing aid use was ascertained from data logging
- hearing aid benefit was identified by comparing aided and unaided audiograms and speech test scores

Results

Eleven children identified with unilateral (n= 2) and bilateral (n= 9) mild hearing loss were aided. The age of hearing aid fitting for each child is shown in the graph below:



The proportion of children and hearing aid use (in hours) is shown in the chart below:



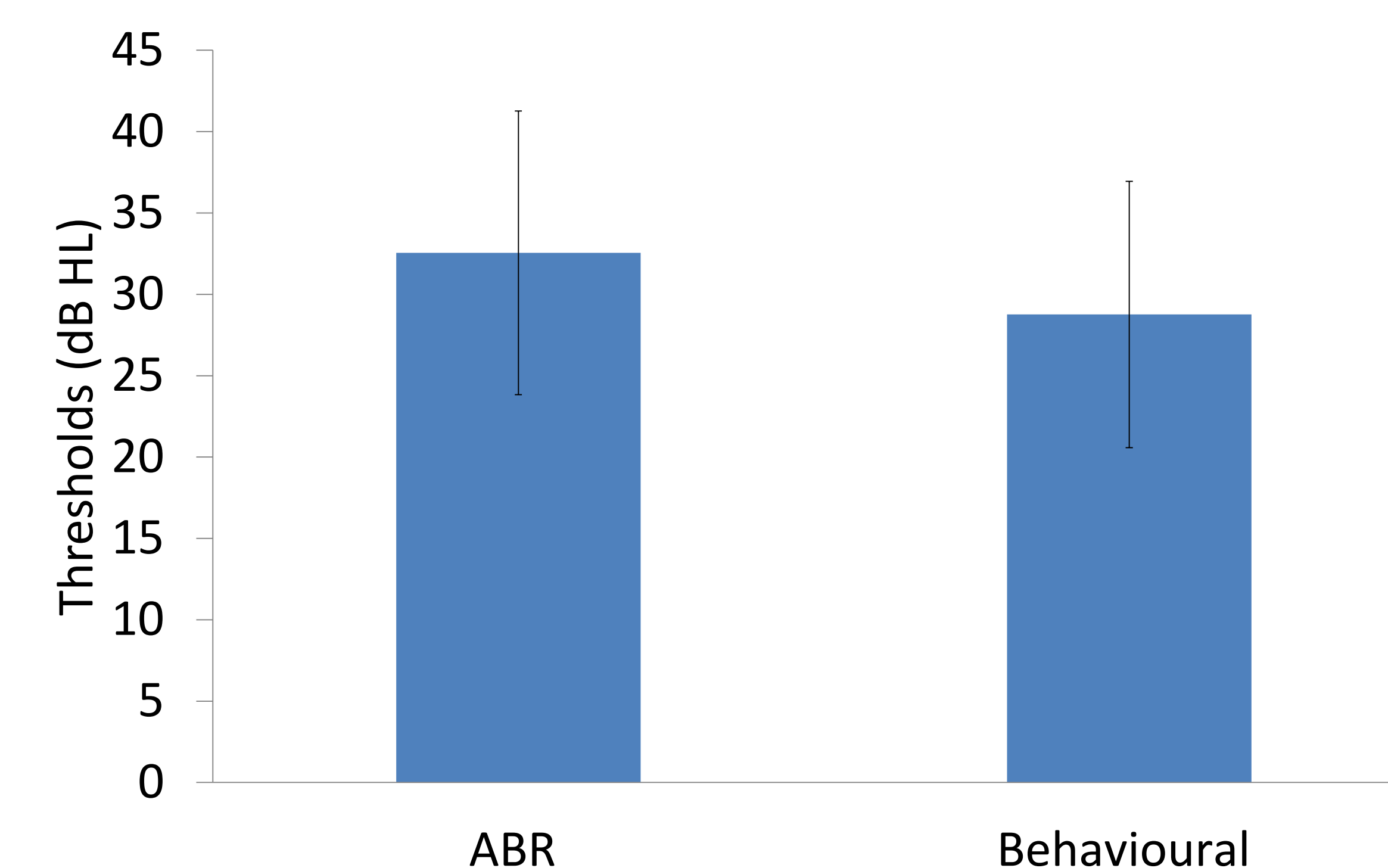
Hearing aid benefit

| | Unaided | Aided |
|---------------------------|---------|-------|
| Speech scores (dB A) | 40 | 25 |
| Aided audiometry (dB SPL) | 38 | 26 |

In children with bilateral mild hearing loss, an average improvement of 15 dB A in aided and unaided speech scores was observed. Aided audiometry showed an improvement of 12 dB SPL.

Audiological certainty of ABR thresholds

Thresholds obtained at birth through ABR were similar to thresholds obtained through behavioural audiometry (mean difference = 4 dB HL). This is shown in the graph below (+/- 1 SD):



Conclusion

ABR thresholds determined at birth are similar to thresholds obtained through behavioural audiometry. ABR is therefore a good predictor for behavioural thresholds in the mild PCHI group and therefore aiding should be considered from the point of diagnosis.

The majority of babies with mild PCHI were fitted under the age of 1 and demonstrated good levels of hearing aid use.

Outcome measures showed an improvement in aided audiometry and aided speech scores demonstrating good access to speech.

In summary, there is benefit to aiding mild PCHI losses and this should be considered from the point of ABR.