# ESTIMATION OF AN AUDIOGRAM USING CHIRP STIMULUS IN CHILDREN WITH SENSORIONEURAL HEARING LOSS.

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## Aims

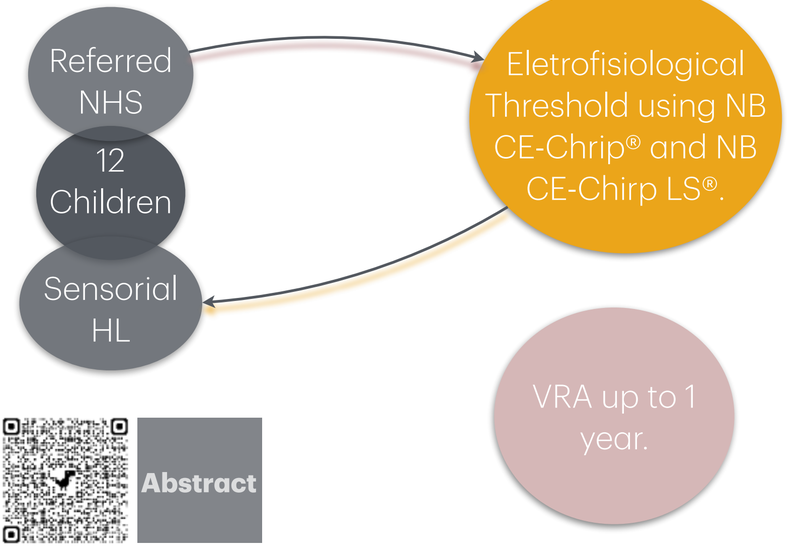
To analyze an audiogram estimation using electrophysiological thresholds with NB Chirp LS stimulation in children with sensorineural hearing loss.

1- to compare and correlate the auditory thresholds estimated through ASSR and the ABR- FS, using NB Chirp LS stimuli in children, age 1-6 months old, with sensorineural hearing loss;

2- to compare and correlate the auditory thresholds estimated by ASSR and ABR-FS with behavioral auditory thresholds, obtained up to 1 year old.

Hypothesis: with the technological advances of NB CE-Chirp® stimuli, there are minor differences among thresholds estimated with electrophysiological procedures and behavioral hearing assessment, bringing better accuracy and stronger correlation between both tests.

## Methods




Abstract

## Results

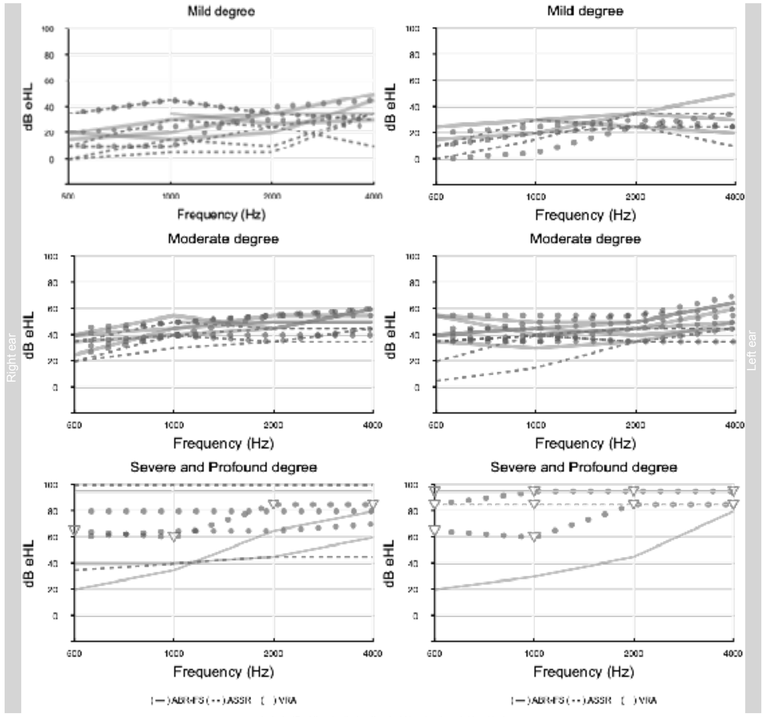



Figure 1 - Configuration of auditory thresholds, in cases with different degrees of sensorineural hearing loss, obtained through ABR-FS (thick solid line), ASSR (dotted line) and VRA (Continuous line with circle or triangle). Thresholds recorded in estimated decibel hearing level (dB eNA) for the electrophysiological thresholds and in decibel hearing level (dB NA) for the VRA.

Hering loss degree:
39,1% - Mild 39,1% - Moderate
13% - Severe 8,7% - Profound

Table 1 - Comparison and correlation of electrophysiological auditory thresholds with ABR-FS and ASSR and behavioral thresholds using VRA.

| FREQUENCIES (HZ) | ABR-FS - ASSR | | ABR-FS - VRA | | ASSR - VRA | |
|---|---|---|---|---|---|---|
| [a]Threshold Comperison | (Z) | p | (Z) | p | (Z) | p |
| 500 | -2,62 | 0,01** | 0 | 1,00 | -2,73 | 0,01** |
| 1000 | -2,99 | 0,00** | -0,35 | 0,72 | 1,63 | 0,10 |
| 2000 | -2,99 | 0,00** | -0,39 | 0,69 | -2,70 | 0,00** |
| 4000 | -3,76 | 0,00** | -1,23 | 0,22 | -3,13 | 0,00** |
| [b]Threshold correlation | N | (*p*) | N | (*p*) | N | (*p*) |
| 500 | 15 | 0,69** | 19 | 0,47* | 19 | 0,77** |
| 1000 | 16 | 0,93** | 18 | 0,58* | 19 | 0,88** |
| 2000 | 15 | 0,93** | 19 | 0,70** | 19 | 0,88** |
| 4000 | 19 | 0,81** | 23 | 0,79** | 19 | 0,85** |

Caption:[a] the Wilcoxon test; (Z) - comparison coefficient; [b]Spearman test; (*p*)- correlation coefficient; p - level of statistical significance ($p \leq 0.05$* or $p \leq 0.01$**).

## Conclusion

It is possible to estimate an audiogram using either ABR-FS and ASSR, in children with sensorineural hearing loss, from mild to profound degree, in the first year of life. There was a strong correlation between auditory behavioral threshold and electrophysiological tests when NB CE-Chirp LSⓇ and NB CE-ChirpⓇ was applied, mainly at 1000 and 2000 Hz. It was observed a greater correlation between behavioral auditory thresholds and those estimated by ASSR.