Reviewer's report

Title: Tone burst-evoked otoacoustic emissions in neonates: normative data

Version: 1 Date: 19 January 2008

Reviewer: Michael Epstein

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Major Compulsory Revisions

1. The first major problem with the present manuscript is that it seeks to propose pass criteria for infant screening without ever demonstrating that this criteria will indeed catch infants with hearing loss. Although it is not clear to me whether the specific procedure used here would catch infants with hearing losses, I have collected TBOAEs on listeners with cochlear impairment without difficulty at about 10-15 dB SL even when impairments at least as great as 50 dB HL are present. In other words, at test levels around 70 peSPL, you may actually get reasonably strong TBOAEs from fairly impaired ears. I do agree that it is likely that the SNR for these patients is likely to be lower than for normal ears, it is not clear to what extent this is the case without specific data answering this question.

2. It is not at all clear to me that SNR is an appropriate criteria at all for passing or failing a screening. Using SNR as the criteria, infants who are noisy (fussy, breathing heavier, etc.) may fail despite their having the same OAE level (or an even greater one) as a quieter infant. Often, SNR is used to determine whether data collection has succeeded, but not necessarily as an assessment of the healthiness of the ear. Additionally, no clear information is given about the distribution of the OAE levels and the noise levels. We would have to know how likely it is for an infant to have a relatively low (but healthy) OAE and be noise enough to fail the +3 dB SNR criteria. We need two distributions--how many healthy ears will pass given the variability in noise and how many unhealthy ears will pass given the variability in noise--in order to decide whether this criteria is reasonable.

3. Given these first two issues, I think it may be best to reframe these data as simply some normative information on normal hearing infants' TBOAEs without claims as to how this information may be used for clinical classification. I believe that the data are helpful and interesting, but not sufficient to justify specific clinical practice.

4. Far too little information is given regarding the stimuli and the means of measuring noise. There is no description of the windowing, averaging, binning, etc. Without this information, it is difficult to determine what the results actually mean. In particular, I have little understanding of your means for measuring noise based on the manuscript.

5. The brief tone burst used here (without windowing?) is going to generate a
large amount of spectral spread. Please provide some information regarding the bandwidth of this spread and whether that is expected to affect the results. There is discussion regarding the improved frequency specificity of this stimulus over a click, but no quantification. Also, depending on the windowing, the RMS level will vary, which would be helpful to know for comparison with other work.

Minor Essential Revisions

1. On Table 1, I am not certain what you mean by "Stimulus Repetition Rate." I assume this means the number of times per second the sound is presented. If this is the case, then Epstein and Florentine (2005) should be 12.2 rather than 50.

Discretionary Revisions

1. On Figure 2, the data are provided with error bars +/- 2 SEs. In this case, standard error tells us how sure you are regarding the group population mean. It is of much greater interest to the reader to know what the distribution of your population is. In other words, plotting with error bars that show +/- 1 standard deviation would give a clearer sense of the variability of individuals and whether this type of test is suitable as a screening tool. If the distribution is small, it makes an excellent test, if the distribution of the OAE levels and noise levels are very large, it is difficult to set very good criteria.

2. I recommend caution when comparing prevalence rates across studies. The percentage of ears with OAEs present will vary wildly depending on the procedure used for making the measurements.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.