

Systematic literature review of cortical auditory-evoked potentials to determine accurate hearing thresholds for early intervention

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Objectives: To explore the utility of Cortical Auditory-Evoked Potentials (CAEP). CAEP testing for accurately measuring hearing thresholds for early diagnosis and intervention with hearing aid (HA)/cochlear implant (CI) fittings in young children for whom present methods are not adequate.

Background: Early diagnosis and intervention is critical to providing the best outcomes. However, there is a subset of these infants for whom accurate information cannot be obtained for fitting HAs. These infants will remain without correct amplification until older ages and thus potentially have poorer outcomes.

Methods: This systematic literature review was conducted spanning articles published from January 2002-February 2019. Searches were completed of English literature in Medline, CINAHL, and PubMed. Keywords included cortical evoked potential or cortical auditory evoked potential, in combination with hearing aid, aided, or auditory prosthesis. This search yielded 92 articles. To determine all relevant literature, the authors then read the articles and independently assessed whether the focus of the article was on CAEP for the age range of 0-12 months. This resulted in 18 original articles, which were thoroughly read and analyzed.

Results: Recent clinical literature states that CAEPs can be used to determine audibility with HAs and CIs earlier than before, as well as make adjustments when needed to improve audibility. Using CAEPs allows for significantly earlier referrals for CI evaluation based on insufficient objective responses. CAEPs also allow the monitoring of auditory maturation in infants following the use of amplification, as well as providing a counselling tool to demonstrate to families the importance of using consistent amplification.

Conclusions: Earlier and more accurate clinical decisions can be made using CAEPs, allowing for more consistent HA use, as well as earlier referrals to CI services when required, leading to better overall outcomes for these infants.