JCIH Recommendations for Otoacoustic Emission and Automated Auditory Brainstem Response Testing 10 Years Later

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Abstract

Hearing-screening and re-screening protocols are addressed in the 2007 Joint Committee on Infant Hearing (JCIH) Position Statement. A decade later, we continue educate stakeholders on the key principals:

- Infants in the well-infant nursery who fail automated ABR testing should not be rescreened by OAE testing and "passed," because such infants are presumed to be at risk of having a subsequent diagnosis of auditory neuropathy/dyssynchrony.
- Separate protocols are recommended for NICU and well-infant nurseries. NICU infants admitted for more than 5 days are to have auditory brainstem response (ABR) included as part of their screening so that neural hearing loss will not be missed.
- For rescreening, a complete screening on both ears is recommended, even if only 1 ear failed the initial screening.

The 2007 JCIH statement has impacted the use of otoacoustic emission testing for inpatient newborn hearing screening over the last decade. In Illinois, there has been a dramatic decline in the use of otoacoustic emissions for inpatient hearing screening. However, the use of otoacoustic emission screening for outpatient has not had a corresponding decline especially after the use of automated auditory brainstem response testing on the initial screening. The poster will review the JCIH recommendations, provide an analysis of 10 years of inpatient hearing technology used in screening data and 10 years of outpatient data on technology used for hearing screening. Are providers adhering to national recommendations? What does this mean for the hearing health of infants?

Background

In 2007, the Joint Committee on Infant Hearing (JCIH) released its last position statement. The statement was published in the Journal of Pediatrics. That statement gave overall guidelines for how and why infant hearing needs to be completed and also updated some positions from its 2000 statement. Within this statement is a recommendation as to which form of hearing screening should be used: auditory brainstem response (ABR) screening or otoacoustic emission (OAE). According to the statement, "use of OAE as a screening tool is likely to result in a higher fail rate in the immediate post-birth period as compared with AABR." Therefore, the intention is to move away from using OAE during the inpatient stay of newborns and to use ABR screening instead.

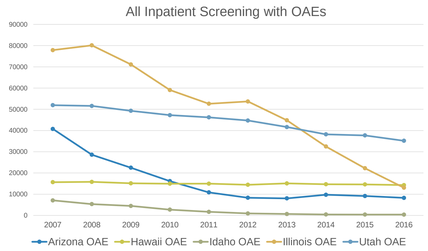
Objectives

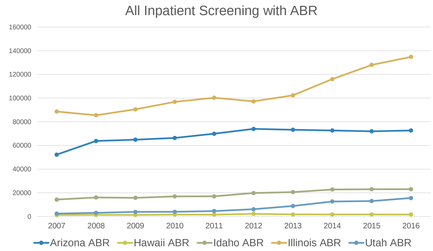
- To determine how quickly states adjusted to the recommendation for screening equipment in 2007.
- To determine if this recommendation had any affect on the number of babies who passed screening.
- To determine if any of the states analyzed still have adjustments to make in order to meet the JCIH recommendations.

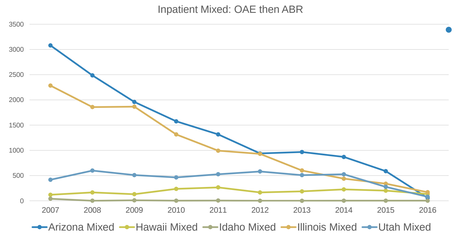
Methods

- Other states using HiTrack (EHDI-IS) were contacted for collaboration in the analysis (Arizona, Hawaii, Idaho, Montana, and Utah). All but Montana were able to participate
- Each state ran a standardized report in HiTrack to pull data for OAE Result Outcomes, AABR Result Outcomes, and Mixed Result Outcomes. Data for both inpatient (IP) and outpatient (OP) was extracted.
- The report was pulled using the Technology Summary feature in HiTrack and a calendar year used as the selection criterion. The criteria was further defined as having all facilities included and the groupings as single. The years that were selected were 2007-2016. At the time this data was collected, 2017 data had not been finalized by any state.
- The data was analyzed on a state-by-state basis, before being compiled into charts for ease of reading. A line graph was chosen because it was the most viable for viewing all of the data at once and it could include all of the states in a functional way while allowing the data to compared quickly and easily.

Results

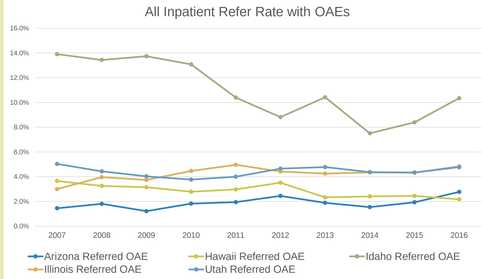


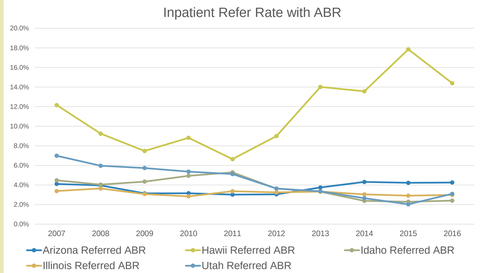


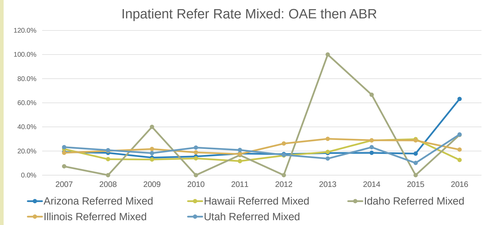


- Most states decreased use of OAEs inpatient over the last 10 years.
- Some states, particularly Illinois, had an increased usage of ABR screening over the last 10 years; Illinois' use of screening ABR increased by 38%.
- The state with the most change was Illinois and the state with the least change was Hawaii. Arizona, Utah, and Idaho have all shown a decrease in the use of OAEs as an inpatient screening tool.
- The use of a two-stage protocol mirrored the decline of OAE only usage.

Results







- For OAE screening in Arizona, Hawaii, Illinois, and Utah, refer rates were stable for the past decade; Idaho data showed a significant decrease in the overall refer rate with OAEs.
- Arizona and Hawaii saw increases in ABR refer rates, while Idaho, Illinois, and Utah noted a decline in refer rates.
- For two-stage screening, refer rates increased in more recent years, which may be due to a decrease in the number of infants screened with this protocol.

Conclusions

- There has been progress towards meeting the current 2007 JCIH recommendation to use screening ABR, rather than OAE.
- The increased use of ABR screening has also led to fewer infants referring prior to discharge from the hospital.
- The shift in practices can also lead to an increase in identifying infants with auditory neuropathy spectrum disorder who were not detected by OAE testing.
- With the increased use of ABR screening the refer rates for states included in this data review showed a lower overall refer rate.

Future Ideas

- Establish a consistent collaboration group amongst states using the same EHDI-IS.
- Collaborate with birthing facilities on the utilization of the Newborn Hearing Screening Training Curriculum.
- Investigate the possibility of a recertification opportunity using the Newborn Hearing Screening Training Curriculum.
- Set aside staff time for program planning based on the anticipated on the JCIH 2018 Statement.