

# Combined AABR and OAE for Universal Newborn Hearing Screening

Carlos Duran, MD<sup>1,2</sup>, Katherine Tullis PHD<sup>2</sup>

<sup>1</sup>Neonatology / Pediatrics, Christiana Care Health System, Newark, DE, United States and <sup>2</sup>Delaware EHD Advisory Committee, <sup>3</sup> Director DE Newborn Screening Program

## Introduction

- Universal Newborn Hearing Screening was implemented in Delaware in 2002.
- Delaware passed law mandating Universal Newborn Hearing Screening at all birthing hospitals.
- In 2007 advisory board recommends OAE and AABR combined (tandem) for newborn screening.
- There is no agreed best practice for which test to do for all well newborns.
- Delaware has tracked the results of OAE and AABR testing, and eventual outcome.

## Objective

- To determine the best screening test for the DE population
- To determine if AABR alone will miss any significant hearing loss.
- To assess outcome of pass AABR fail OAE test babies

## Methods

- All babies having combined OAE and AABR testing in 2011 and 2012 were monitored until they were diagnosed as D/HOH or normal hearing.
- All babies with pass AABR and failed OAE in one or both ears were investigated.
- Charts were reviewed in all these babies diagnosed as having hearing loss.

## Results

- Five of six birthing hospitals in Delaware performed tandem newborn hearing screen.
- 12,369 Delaware newborns had tandem hearing screening in 2011-2012
- There were 2864 NICU babies tested and 9,505 “well newborns” tested.
- There were 613 babies who passed AABR but failed OAE for a failure rate of 4.9%
- ~~476 (78%) babies were diagnosed as having normal hearing~~
- 113 (16%) were lost to follow up.
- 4 babies (0.6%) were diagnosed with hearing loss.
- All diagnosed babies had mild (<35dB) hearing loss.

### Details of babies diagnosed with hearing loss

- 1- Abnormal ear canal, mild conductive hearing loss
2. Abnormal ear canal, family history of hearing loss
- 3-NICU baby with gross motor delay and flat tympanogram
- 4-Mild conductive loss, tubes being placed.

## Conclusions

- Tandem hearing screen is feasible to use for universal hearing screen
- AABR in our population did not miss any significant hearing loss
- AABR by itself is an adequate newborn hearing screening tool in DE
- Babies with failed OAE, passed AABR did not have any significant hearing loss, and all should have been worked up because of risk factors present.

## Discussion

- AABR alone is a good screening tool, and there is minimal to no benefit by adding OAE as a screening tool.
- No screening test will pick up all abnormalities, and AABR alone may be better since it will diagnose babies with auditory neuropathy.

## Outcome

- DE advisory board recommends AABR for universal newborn screening.
- Loss to follow up improved with single screen testing