

## BACTERIAL MENINGITIS AND PEDIATRIC SENSORINEURAL HEARING LOSS IN THE PCV13 ERA.

**INTRODUCTION:** Bacterial meningitis is the most common cause of postnatally-acquired sensorineural hearing loss (SNHL). Prognostic associations are lacking for pediatric SNHL due to *Streptococcus pneumoniae* bacterial meningitis after the introduction of updated pneumococcal vaccine (PCV13) in 2010.

**OBJECTIVES:** To assess clinical presentation of meningitis based on bacterial etiology in children and identify associations with post-meningitic SNHL in children after 2010. To describe rates of *S. pneumoniae*-associated post-meningitic SNHL based on three time periods: pre-PCV, post-PCV7 and post-PCV13.

**METHODS:** A retrospective review was performed for patients 18 years and younger diagnosed with meningitis after January 1, 2010. Patients were identified by history of positive CSF bacterial culture or FilmArray Meningitis/Encephalitis Panel (MEP) assay. Clinical data were stratified by bacterial etiology, analyzed for clinically relevant characteristics, and compared with previously reported rates of post-meningitic SNHL.

**RESULTS:** In a cohort of 147 patients with positive CSF cultures, 91 (61.9%) met inclusion criteria. Sixty-eight (age 23 months, 59% male) had audiograms after diagnosis and were divided into four subgroups based on bacterial etiology: *S. pneumoniae* (n=17), Group B streptococcus (GBS, n=25), *Haemophilus influenzae* (n=10), and Other (n=16). Of those with hearing evaluations, SNHL was reported in 14 patients (20.6%), most frequently in the *H. influenzae* population (n=4/10, 40%). Five (29.4%) *S. pneumoniae* patients and one (4%) GBS patient were found to have SNHL. Children in the PCV13 vaccination era had a similar rate of post-meningitic SNHL (20.6%) as historical pediatric cohorts in the pre-PCV vaccination time period (23.8%), and the PCV7 vaccination time period (35%) (p=0.34).

**CONCLUSION:** Despite advances in vaccine development for *S. pneumoniae*, SNHL remains a common long-term complication of this disease. Further research into predicting and preventing this outcome is necessary.