ARTICLE:
- Citation: Utility of Lumbar Puncture for First Simple Febrile Seizure Among Children 6-18 Months of Age
- Country: USA
- Funding Sources: None disclosed

PURPOSE:
- Research Question(s): To evaluate the rate of bacterial meningitis among otherwise healthy infants 6-18 months of age who presented to a pediatric ED with first simple febrile seizure. Secondarily to determine the rate of compliance with the AAP recommendations for LP and practice trends among pediatric ED physicians regarding LP for those children.

- Hypothesis: It is hypothesized that the rate of meningitis in this patient population will be low and that many PEM physicians do not comply with the AAP recommendations.

DESIGN:
- Study Design: Retrospective cohort review of consecutive patients admitted to an urban, tertiary-care pediatric ED serving 50,000+ patients per year.

SETTING / SUBJECTS:
- Urban, children’s hospital serving 50,000+ patients per year
- All patients ages 6-18 months presenting with first simple febrile seizure within 12 hours after the seizure were included.
- Exclusion criteria included underlying seizure disorder, presence of VP shunt, trauma or clinical suspicion of meningitis (bulging fontanel, petechiae or ill appearance).

METHODS:
- Utilizing chart review via a text-screening tool, the researchers searched their charting database for keywords to identify patients from 1995-2006. This was important as it bridged the time when the pneumococcal vaccine (Prevnar) came into wide clinical use.
- Rates of meningitis defined as CSF pleocytosis >7 cells/mm3 were determined.
• Bacterial meningitis was defined as growth from CSF specimen obtained within 1 week after the ED visit for seizure, CSF pleocytosis with growth of a pathogen from any blood sample obtained within 1 week after ED visit for seizure,

• Rate of LP performance were also tabulated.

DATA ANALYSIS:
• Proportions and CI were calculated for pleocytosis and meningitis rates by using Bayesian credible intervals based on Jeffrey’s prior.
• Linear regression models were used for LP performance rates over time.

RESULTS:
• Brief answers to research questions: Of 564,544 ED visits during the time-frame set out by the authors, they identified 4328 potentially eligible patients of which 704 cases of FSFS were identified. 188 (27%) were under 12 months of age. Data regarding immunizations was present in 80% of charts. Eight percent were admitted to the hospital (pyelonephritis, pneumonia and dehydration were the most common admit diagnosis). LP was attempted on 271 (38%) of the cases and was successful in 260 cases.

• CSF pleocytosis was found in 10 of 260 cases (3.8%) and NO pathogen was recovered on any CSF. All 10 cases of CSF pleocytosis yielded a contaminant (5 non-Staph aureus staphylococci, 2 Strep viridans, 2 Micrococcus sp and 1 Enterococcus faecalis). None of the other patients returned to the hospital with a diagnosis of bacterial meningitis.

• LP performance decreased significantly above 12 months of age. For children less than 12 months, the LP performance rate was 70% and 25% for children older than 12 months. LP performance decreased over time for both groups.

• Limitations: This study was retrospective in design and carried out at one large urban childrens hospital, potentially limiting it’s generalizability. Vaccination rates were high for this patient population. Vaccine recommendations changed during the course of this study (adding Prevnar for the protection from pneumococcus, a known meningitis pathogen).

IMPLICATIONS FOR PRACTICE:
• Many PEM physicians have questioned the AAP guidelines that strongly recommend an LP for patients under 12 months of age after a FSFS. The AAP also recommends to “consider” LP in children 12-18 months of age. This study indicates that the rate of bacterial meningitis is exceedingly low in this patient population and their data would suggest that most CSF pleocytosis is viral in origin and any bacterial culture that is positive is likely to be a contaminant. Generally speaking, a child >3 months of age who presents with FSFS should be examined closely for clinical signs of meningitis once their post-ictal state has
passed and only those that show signs of meningitis should undergo LP. If a child presents with febrile status epilepticus (not FSFS) the risk of meningitis is higher based on other studies and LP should be performed in this patient population.

LEVEL OF EVIDENCE / DECISION FOR USE:

- Background  Consider Replication  x Ready for use

- Level of Evidence:
  Ia  Evidence obtained from meta-analysis of randomized controlled trials
  Ib  Evidence obtained from at least one RCT
  IIa Evidence obtained from at least one well-designed controlled study without randomization
  xIIb Evidence obtained from at least one other type of well-designed quasi-experimental study
  III  Well-designed non-experimental studies
  IV  Expert committee reports, opinions of experts