



# Rates of Positive Cerebrospinal Fluid, Blood, and Urine Cultures in Febrile Infants Less Than 60 Days Old: A Retrospective Chart Review

Eric J Morley MD, Jeff Lapoint DO, Linnea Wittick MD, Susan Wojcik MS, Richard Cantor MD, William Grant Ed.D

State University of New York - Upstate Medical University, Department of Emergency Department, Syracuse, New York

## Intro

Newborn children ( $\leq 60$ -days-old) who present to the emergency department with fever are subjected to several invasive procedures as part of their work-up including blood cultures, bladder catheterization, and often lumbar puncture. The practice of performing these test stems from historically high rates of occult serious bacterial infection (SBI), in children less than 2-months-old, who have fever over 100.4°F and do not appear clinically ill. The advent and widespread use of the *H. influenza* and *S. pneumoniae* vaccines has dramatically decreased the incidence of SBI in older children. The primary objective of this study is to determine the current rate of positive cerebrospinal fluid (CSF), blood, and urine cultures in febrile children less than 2-months-old.

## Methods

This study is a retrospective chart review performed from 2006 – 2008. The study was performed in an academic tertiary care center which sees approximately 20,000 children per year. A structured data extraction form was used. The electronic medical record was queried for all children less than 60-days-old who had urine, blood, or CSF culture performed. Emergency department notes were read for all children. Inclusion criteria were age  $\leq 60$  days-old, recorded temperature of 100.4° F in the emergency department or by history, and the work-up had to be done for fever or sepsis. Exclusion Criteria included a work-up done outside the emergency department, the presence of a VP shunt, multiple visits to the emergency department in the past week, and antibiotics prior to the ED visit.

## Results

135 children met were enrolled. 36.3% were  $\leq 28$ -days-old and 43.7% were female. 0/88 (0%) CSF cultures were positive, 7/135 (5.2%) blood cultures were positive (4/7 were likely contaminants), and 13/133 (9.8%) urine cultures were positive. The table below gives a description of culture results for all patients with any positive culture.

Patient	CSF Culture Organism	Blood Culture Organism	Urine Culture Organism
23 day old ♂	Not performed	Coagulase (-) Staph.	Negative
3 day old ♀	Negative	Staph. Epidermidis	Negative
42 day old ♂	Not performed	Coagulase - Staph.	Negative
24 day old ♀	Negative	Negative	E. Coli
17 day old ♂	Negative	Negative	B Hemolytic Strep
4 day old ♀	Negative	Negative	Enterococcus
32 day old ♀	Not performed	Negative	E. coli
39 day old ♀	Negative	Negative	E. coli
44 day old ♀	Negative	Negative	E. coli
13 day old ♂	Negative	E. coli	E. coli
34 day old ♂	Negative	E. Coli	E. coli
40 day old ♀	Negative	Negative	E. coli
18 day old ♂	Negative	Negative	E. coli
46 day old ♂	Not performed	Negative	E. coli
48 day old ♂	Not performed	Negative	E. coli
28 day old ♂	Negative	Strep. hemolyticus	Negative
6 day old ♀	Negative	Staph. Epidermidis	Klebsiella

## Conclusions

1. Bacterial CSF infections are rare and future, large prospective study should be done to re-examine which patients in this population require a lumbar puncture.
2. Urinary tract infection is a very important cause of fever in this age group.