Visitor Restriction Policies and Practices in Children’s Hospitals: Results of an Emerging Infections Network Survey

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2309. Epidemiology of Meningitis and Encephalitis in Infants and Children in the United States from 2011 to 2014

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Session: 251. Pediatric Potpourri
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Background. Large epidemiological studies evaluating the etiologies, management decisions and outcomes of infants and children with meningitis and encephalitis in the United States (US) are lacking.

Methods. Infants (<1 year old) and children (1–17 years) with meningitis or encephalitis by primary or secondary discharge ICD-9 diagnosis codes available in Premier HealthcareData, 2001–2010, were analyzed. ICD-9 discharge data includes discharge diagnoses, diagnostic and treatment procedures, medications, and cost information from over 700 geographically diverse US hospitals. Descriptive statistics were used to describe the characteristics, etiologies, management decisions and outcomes of study population. Statistical comparisons were made between infants and children.

Results. A total of 6,665 patients with meningitis or encephalitis were identified: 3,030 (45%) infants and 3,635 (55%) children. Infants were more likely than children to be hospitalized (91.1% vs 76.3%, P < 0.01) and have lumbar puncture done as an inpatient (22.0% vs 17.0%, P < 0.01). Overall, the most common etiology was enterovirus (35.5%); followed by unknown (15.4%, 23.2%), bacterial meningitis (869, 13.0%), noninfectious (209, 3.1%), herpes simplex virus (HSV) (103, 1.5%), other viruses (47, 0.7%), arboviruses (36, 0.5%), and fungal (3, 0.03%). Overall, empirical antibiotics (97.7% vs. 87.6%, P < 0.001) were more likely to be administered in infants than in children and the use varied by etiologies. Adjunctive steroids were utilized more frequently in children than in infants (11.8% vs. 3.6%, P < 0.001). The overall median length of stay in infants and children was 3 and 2 days, respectively; the longest duration was seen in those infants and children with HSV (20 days/6.5days), and with bacterial meningitis (1days/10 days), respectively. Overall, inpatient mortality and readmission rates were low (<1% in both infants and children).

Conclusion. Viruses are the most common cause of meningitis and encephalitis in infants and children and are treated with antibiotic therapy in the majority of cases.

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2310. Quality of Life Following Childhood Bacterial Meningitis in Luanda, Angola

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Background. Survivors of childhood bacterial meningitis (BM) from low-income countries are at increased risk of sequelae. How BM survivors’ daily life is affected in the developing world, is not known. We aimed to investigate the quality of life among pediatric survivors of BM in Luanda, Angola assessing both physical and psychosocial health-related quality of life (HRQOL).

Methods. Survivors from two BM treatment trials (ISRCTN62824827; NCT01540838) from Luanda Children’s Hospital were called to follow-up visits in January 2017 with a median duration of 26 months after BM. We administered Pediatric Quality of Life Inventory (PedsQL23,24) 4.0 Generic Core Scales and Infant Scales, designed to measure HRQOL in children, to patients and/or parents. The long form was administered to 64 and 32 families, and the infant scores to 8 and 3 care-givers. Details; both groups were excluded from further analyses. 104 (61%) reported being somewhat familiar with the details of their BM and 92 (88%) had a BM in all inpatient units. Age-based BM were reported by 77/104 (74%), symptom-based by 101 (97%), and outbreak-specific by 78 (75%). BM were also implemented in the emergency department by 5 (5%), outpatient clinic by 9 (9%), day surgery by 6 (6%), or radiology by 3 (3%). Symptom-based BM were seasonal in 24 (24%) of facilities, with 71 (70%) implementation of BM to families (97, 96%) vs. 89 (87%) and through signage in care areas by 65 (64%). Communication of BM to staff occurred by email for 79 (77%), by meetings for 56 (55%) and by signage in staff only areas for 50 (49%). Enforcement was the responsibility of nursing (82,80%), registries (59), 58%, unit clerks (54, 53%), the infection prevention team (32, 31%), or clinicians (16, 16%). The effectiveness of BM was assessed by 63 (62%) through active surveillance of hospital acquired respiratory infections; 29 (28%) used active surveillance of healthcare worker exposures and 30 (29%) used patient/family satisfaction. BM vary in scope, implementation, enforcement, and physician awareness in pediatric facilities. A prospective multi-visit evaluation of outcomes would facilitate the adoption of uniform guidance.

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2312. Epidemiology of Serious Bacterial Infections in a Cohort of Infants in the Military Health System from 2005 to 2015

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Background. Management of suspected serious bacterial infection (SBI) in infants less than 3 months old is a challenge faced by all who care for neonates. Understanding the epidemiology of SBI is required to help guide management decisions. Recent publications have challenged the previously accepted distribution of infection by specimen source and identified pathogens.

Methods. We conducted a retrospective analysis of the Department of Defense (DOD) Military Health System (MHS) database to identify SBI cases among term infants, less than 90 days of age born between January 1, 2005 and September 30, 2015. We defined an SBI case as any infant with positive cultures for an accepted pathogen from blood, urine or cerebrospinal fluid (CSF). Infants with multiple positive cultures represent a single case. Infants with asymptomatic neonatal sepsis or premature birth were excluded by ICD9 code.

Results. There were 678,214 live births during the study period. Out of 3496 infants with positive cultures, 1963 were excluded based on nonpathogenic isolates, and ICD-9 codes. Of the 1533 episodes of SBI there were 278 episodes of bacteremia, 57 of meningitis, and 1427 of urinary tract infection (UTI). The study period incidence was 2.3 cases/1000 live births. There was a significant trend down from 3.4 cases/1000 live births to 1.7 cases/1000 live births over the study period (P < 0.0001, Figure 1) which was primarily driven by decreasing Escherichia coli (E. coli) UTI. The most common pathogens were E. coli (52.1%), Group B Streptococcus (GBS) (8.0%), and Enterococcus (16.3%). E. coli accounted for 60.1% of UTIs, 10.5% of meningitis, and 19.8% of bacteremia. GBS accounted for 32.7% of bacteremia, 22.8% of meningitis, and 27.3% of UTIs. There were no cases of Listeria.

Conclusion. In this retrospective review of SBI in a large cohort of infants, the case incidence was found to be 2.3/1000 live births. The most common pathogens were E. coli and GBS. Consistent with recent studies we found no cases of Listeria, however, GBS accounted for a higher percentage of bacteremia and meningitis cases. The significant down trend in incidence over the study period warrants further investigation to assess possible ways to protect infants from this common source of morbidity and mortality.