854. Impact of Antimicrobial Stewardship and Rapid Diagnostics in Children with Staphylococcus aureus Bacteremia

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Background. Rapid diagnostic testing (RDT) in combination with antimicrobial stewardship programs (ASPs) has been associated with improved outcomes in adults with *Staphylococcus aureus* bacteremia (SAB). Data in children are lacking. In January 2017, Atrium Health implemented a pediatric ASP with blood culture RDT. The objective of this study was to determine the impact of those interventions.

Methods. This was a retrospective, multicenter, quasi-experimental study of children ≤18 years with monomicrobial SAB from March 2015 to August 2016 (pre-intervention; PRE) and March 2017 to August 2018 (post-intervention; POST). The primary outcome was time to an optimal antibiotic. Secondary outcomes included time to effective antibiotic, total antibiotic exposure in the first 5 days, duration of bacteremia, infectious diseases (ID) consultation, time to central line removal, hospital and pediatric ICU length of stay (LOS), need for vasopressors or intubation, recurrence of SAB within 90 days, and inpatient mortality.

Results. Of 101 patients with SAB, 32 and 36 met inclusion criteria for the PRE and POST groups, respectively. The median time to optimal antimicrobial therapy decreased by 23 hours (PRE 44.3 hours vs. POST 21.3 hours; $P = 0.008$). Duration of bacteremia (65h vs. 40.9 hours; $P = 0.028$) and mortality (12.5% vs. 0%; $P = 0.044$) was also significantly reduced. Differences in median time to effective therapy (7 hours vs. 5.1 hours; $P = 0.74$), total antibiotic exposure in the first 5 days (160.4 hours vs. 152 hours; $P = 0.4$), hospital LOS (9.9 vs. 8.5 days; $P = 0.25$), and pediatric ICU LOS (7 vs. 4 days; $P = 0.11$) did not meet statistical significance, but trended downward. The POST group had more patients with ID consultation (78% vs. 89%, $P = 0.23$) and shorter time to central line removal (68 hours vs. 20 hours; $P = 0.037$). There was no difference in the need for vasopressors (3 vs. 3 patients; $P = 0.99$) or intubation (2 vs. 4 patients; $P = 0.68$). Throughout the study period, recurrence of SAB only occurred in one patient (PRE).

Conclusion. Concurrent implementation of RDT and an ASP in pediatric patients with SAB decreased time to optimal antimicrobial therapy, duration of bacteremia, and mortality. RDT coupled with timely feedback from an ASP contributed to improved SAB management and clinical outcomes in children.

Disclosures. **All Authors:** No reported Disclosures.

855. Evolution of Group B Streptococcal Capsular Type V Invasive Infections in Neonates and Young Infants: A Whole Genome Sequencing Study

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Background. Since 1970 group B *Streptococcus* (GBS) has been a frequent cause of sepsis or meningitis in young infants. Capsular polysaccharide type V was first recognized in 1990 and has increased to the point where it now causes ~15% of GBS infections. GBS type V strains are almost entirely sequence type 1 (ST1) in adult infections. To understand the emergence of type V GBS, we compared infant strains before 1990 to more contemporary isolates from young infants and adults.

Methods. Thirty-five strains isolated from blood or CSF of infants <90 days of age (Houston, 1979–1996) were compared with the following previously sequenced type V, ST1 strains: (1) 14 from infant blood or CSF from Center for Disease Control and Prevention (CDC) (2015–2017), (2) 193 blood ST1 isolates from adults (Houston, 1992–2013), and (3) 516 invasive isolates from the CDC (2015–2017). Isolates were sequenced using an Illumina MiSeq instrument followed by molecular typing, antimicrobial resistance gene determination, and phylogenetic analysis. Antimicrobial susceptibility testing (AST) was performed using disk diffusion and E-test.

Results. The majority (29/35) of Houston young infant strains were ST1. Type V GBS strains isolated prior to 1990 were more likely to be of ST-2 or ST-26 (5/10) compared with those from 1990 or later (24/25 and 14/14 CDC infant invasive type V). Tetracycline resistance was identified in 83% (29/35) while macrolide resistance (MR) occurred in only 23% (8/35) of the strains. Compared with early neonatal isolates, MR was significantly more frequent among contemporary neonatal (12/14, 86%, $P < 0.0001$) and adult (502/710, 71%, $P < 0.0001$) ST1 GBS. Phylogenetic analysis showed two distinct clades defined, in part, by MR. A high-frequency MR (340/360, 94%) clade was defined by the presence of *erm(B)* on Tn*3872* while the low-frequency MR clade (159/350, 45%) was more diverse in mobile elements contributing to MR. The majority (27/29) of early neonatal ST1 GBS strains were observed in the low-frequency MR clade.

Conclusion. Infant invasive disease due to type V GBS before 1990 consisted of more diverse STs but is now almost exclusively ST1. Differences in the frequency of MR between early neonatal and contemporary type V ST1 GBS suggest MR may, at least in part, have driven the expansion of type V ST1 GBS.

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856. Invasive Haemophilus influenzae Disease in Children: A Canadian MultiCenter Study on Emerging Serotypes

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Session: 85. Pediatric Bacterial Diseases

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Background. Our objective was to describe the serotype distribution and clinical spectrum of invasive *Haemophilus influenza* (Hi) disease in children admitted to participating centers within the Paediatric Investigator's Collaborative Network on Infections in Canada (PICNIC).

Methods. All cases of Hi bacteremia were identified from the PICNIC Database of Gram-negative bacteremia (2013–2017). Disease was defined as complicated if the following occurred: (a) >2 sites were affected, (b) surgical intervention was required, (c) organ failure, (d) ICU admission, (e) seizures, (f) sensory or motor deficits, (g) treatment-related complications, or (h) death.

Results. There were 98 cases of Hi bacteremia. Male to female ratio was 64:34 and median age was 12 (IQR: 7–48; range 0–216) months. Hi serotypes included: a ($N = 31$; 32%), b ($N = 9$; 9%), f ($N = 15$; 13%), c ($N = 1$;1%), e ($N = 1$; 1%), nontypeable ($N = 34$; 35%) and unknown ($N = 7$; 7%). Clinical foci included: bacteremia without a focus ($N = 19$; 19%), meningitis ($N = 29$; 30%), cellulitis ($N = 8$; 8%), septic arthritis ($N = 6$; 6%), pneumonia ($n = 33$; 34%), epiglottitis ($N = 1$; 1%), and endovascular infection ($n = 3$; 3%). Complicated disease occurred in 29 (30%) cases; there was one (1%) death. Where serotyping was available, complication rates were: 42%, 22%, 100%, 0%, 33%, and 21% for Hia, Hib, Hic, Hie, Hif and nontypeable Hi, respectively. Factors associated with complicated disease were: age <5 years ($P = 0.009$), bacteremia without a focus ($P = 0.006$) and a CNS focus ($P < 0.001$). Hia was the leading serotype in meningitis (55%; $P = 0.022$). Nontypeable Hi was most frequent in pneumonia cases (56%; $P = 0.003$) and never caused cellulitis (0% vs. 14%; $P = 0.023$). Neonatal disease ($N = 5$) was predominantly caused by nontypeable Hi (80%; $P = 0.040$). Of note, 26 (27%) of our Hi isolates were ampicillin resistant.

Conclusion. In the era of efficacious conjugate Hib vaccines, serotype has emerged as the leading cause of typeable Hi disease in Canada and is highly associated with meningitis, especially in young children. Strategies for preventing Hi disease need to target this emerging serotype and efforts should be focused toward developing an effective vaccine for serotype a disease.

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883. Evidence from a Multistate Cohort: Enrollment in Affordable Care Act Qualified Health Plans Results in Viral Suppression

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Background. In individual states, the Patient Protection and Affordable Care Act has been associated with improved viral suppression (VS) rates for AIDS Drug Assistance Program (ADAP) clients or low-income people living with HIV (PLWH). This study aims to assess whether this association is consistent in multiple states (Nebraska, South Carolina, Virginia).

Methods. The multistate cohort included ADAP clients who were eligible for ADAP-funded Qualified Health Plans (QHPs). Data were collected from 2014 through 2015. A log-binomial model was used to estimate the association of demographics (age, race/ethnicity, sex, AIDS, rurality, HIV risk factor, previous VS) and healthcare delivery factors (income, previous ADAP plan, previous HIV care engagement) with QHP enrollment prevalence and 1-year risk of VS.

Results. For the cohort ($n = 7{,}800$; 5% NE, 36% SC, 59% VA), 52% enrolled in ADAP-funded QHPs with enrollment ranging from 35% to 63% by state. Enrollment in ADAP-funded QHPs in 2015 was higher for those who had ADAP-funded QHPs in 2014 (adjusted prevalence ratio [aPR] 3.28; 95% confidence interval [CI] 3.21–3.35) and those who were engaged in care in 2014 (aPR 1.16; 95% CI 1.05–1.27), and it was lower for those with a rural residence (aPR 0.91; 95% CI 0.81–1.00). Of those who were consistently engaged in care ($n = 4{,}597$), as defined by one viral load in 2014 and one viral load in 2015 separated by at least 180 days, those who received medications from