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Bright Star Authorship Group

Session:  P-60. Pediatric Antimicrobial Stewardship (inpatient/outpatient pediatric focused)

Background. Overuse of blood cultures can lead to false positives and unnecessary antibiotics. Our objective was to describe the implementation and 12-month impact of a multi-site quality improvement collaborative to reduce unnecessary blood cultures in pediatric intensive care unit (PICU) patients.

Methods. In 2018, 14 PICUs joined the Blood Culture Improvement Guidelines and Diagnostic Stewardship for Antibiotic Reduction in Critically Ill Children (Bright STAR) Collaborative, designed to understand and improve blood culture practices in PICUs. Guided by a multidisciplinary study team, sites 1) reviewed existing evidence for safe blood culture reduction, 2) assessed local practices and barriers to change, and 3) developed and implemented new blood culture practices informed by local context. We facilitated and monitored project progress through phone calls, site visits, and collaborative-wide teleconferences. We collected monthly blood culture rates and monitored for delays in culture collection as a safety balancing metric. We compared 24 months of baseline data to post-implementation data (2-14 months) using a Poisson regression model accounting for the site-specific patient days and correlation of culture use within a site over time.

Results. Across 14 sites, there were 41,996 pre-implementation blood cultures collected over 238,182 PICU patient days. The mean pre-implementation site-specific blood culture rate was 19.42 cultures/100 patient days (range 9.59 to 48.18 cultures/100 patient days). Post-implementation, there were 12,909 blood cultures collected over 118,600 PICU patient days. The mean post-implementation rate was 14.02 cultures/100 patient days (range 5.40 to 37.57 cultures/100 patient days), a 23% decrease (relative rate 0.77, 95% CI 0.60, 0.99, p = 0.04). In 12 months post-implementation, sites reviewed 463 positive blood cultures, and identified only one suspected delay in culture collection possibly attributable to the site’s culture reduction program.

Bright STAR Collaborative Site Blood Culture Rate 100 Patient Days

Conclusion. Multidisciplinary teams facilitated a 23% average reduction in blood culture use in 14 PICUs. Future work will determine the impact of blood culture diagnostic stewardship on antibiotic use and other important patient safety outcomes.

Disclosures. James C. Fackler MD, MD, Rubicon Health LLC (Other Financial or Material Support, Founder)

1351. Pediatric Antibiotic Use in the North Carolina Medicaid Population

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Session:  P-60. Pediatric Antimicrobial Stewardship (inpatient/outpatient pediatric focused)

Background. Antibacterial resistance is increasing in the United States, with antibiotic use as the main driver. The majority of antibiotic use occurs in the outpatient setting, as of the 7th School prescribing states are located in the Appalachian region of the country. Overall, the state of North Carolina (NC) has prescribing rates that are at the national average, but the geographic, patient and provider-level characteristics associated with antibiotic prescribing within the state are unknown.

Methods. We used NC Medicaid claims from 2013-2018 to identify oral antibiotics prescribed to children, defined as individuals < 21 years. Antibiotics were identified using National Drug Codes. Overall rates of antibiotic prescribing were reported as the number of prescriptions per 1000 children overall and stratified by age, sex, race/ethnicity and residence in a metropolitan area. Provider characteristics and setting type were identified using existing variables in the Medicaid dataset. A geographic information system was used to graphically depict rates of antibiotic use by county.

Results. Rates of prescribing decreased from 724/1000 children in 2013 to 578/1000 children in 2018. Across all study years there were differences in prescribing rates by sex, race/ethnicity, age and residence in a metropolitan area. (Table) Bacteriurias were more common in children who were younger (0-2), white non-Hispanic, female and living in non-metropolitan areas. Prescribing rates were geographically heterogeneous, with the highest rates in the western mountain region and declining across a west to east gradient. (Figure) Most (62%) antibiotic prescriptions were written in the primary care setting. Pediatricians prescribed 48% of all antibiotic courses.

Antibiotic Prescriptions Per 1000 Children, by Demographic Group (2013-2018)

Conclusion: Although NC is not a high-prescribing state in general, we found notable difference in prescribing based on key demographic characteristics. These results are consistent with prior reports from other Appalachian states including Kentucky, West Virginia and Tennessee. Rates of prescription were highest in non-metropolitan areas overall but GIS mapping revealed a marked west-east gradient. These data suggest that specific Appalachian characteristics, rather than rurality alone, may be associated with excessive antibiotic prescribing.

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1352. Pediatric azithromycin prescriptions in a healthcare system from 2016-2018

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Session:  P-60. Pediatric Antimicrobial Stewardship (inpatient/outpatient pediatric focused)

Background. In 2017, the Centers for Disease Control and Prevention (CDC) estimated that 30% of all antibiotics prescribed in outpatient clinics are unnecessary, with children receiving more antibiotics than any other age group. Among those antibiotics being prescribed, azithromycin is one of the most commonly prescribed antibiotics.

Methods. We reviewed antimicrobial prescribing data of children 0 to 19 years of age who visited West Virginia University (WVU) Health system which is the flagship institution for the state. We reviewed information of patients who were prescribed azithromycin by healthcare providers between January 2016 and December 2018. We included prescribing data from urgent care centers, outpatient clinics and emergency departments. The primary visit diagnosis associated with the visit was reviewed.

Results. During the study period there were 29,983 visits identified during which antibiotics were prescribed and azithromycin was prescribed in 40.6% of those visits. The majority of visits occurred between the months of October through February (54.4%), with December having the most visits. There were 11,934 unique patients identified and only 26.5% of these patients were marked as allergic to penicillin (PCN) or amoxicillin. The distribution of the age groups for azithromycin prescriptions is shown in figure 1. The age group of 11-19 years had the highest azithromycin prescription rate (38.7%) and the most common diagnosis for this group was pharyngitis. The distribution of the common diagnoses associated with azithromycin prescriptions can be seen in figure 2 and acute otitis media (AOM) was the most common diagnosis (23.6%).
1353. Pediatric Urinary Tract Infections: A Choosing Wisely Initiative to Advance Antimicrobial Stewardship and Diagnostic Accuracy in the Emergency Department

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Session: P-60. Pediatric Antimicrobial Stewardship (inpatient/outpatient pediatric focused)

Background. Urinary tract infection (UTI) is a common diagnosis in the pediatric emergency department (ED) that often results in empiric antibiotic treatment prior to culture results. A 2016 cohort study from our centre found that 47% of children diagnosed with a UTI and prescribed antibiotics had a negative urine culture. None of these patients were notified of the misdiagnosis or told to discontinue antibiotics.

Conclusion: Acute otitis media and pharyngitis accounted for almost half of the diagnoses associated with azithromycin prescriptions. Treatment guidelines for both conditions recommend PCN-based therapy as first-line treatment unless there is a history of PCN allergy. Only a quarter of the patients had allergy documented to PCN or amoxicillin and, therefore, azithromycin would be considered a suboptimal antimicrobial choice. These results provide us with a stewardship opportunity to nudge providers to select appropriate antimicrobial based on diagnosis and history of allergy.

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