

**Presentation Type:**

Poster Presentation - Top Poster Abstract

**Subject Category:** Antibiotic Stewardship

**Capitalizing on Implementation Science to Advance Antimicrobial Stewardship and Health Equity in Treating Pediatric UTI's**

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**Background:** Pediatric urinary tract infections represent the most common pediatric infection with increasing gram-negative antibiotic resistance. Overutilization of antimicrobials including third generation cephalosporins are known drivers of this resistance. Antimicrobial stewardship (AS) efforts have recently shown that antibiotic selection may be influenced by patient race. Implementation science (IS) can provide frameworks and strategies to improve antimicrobial utilization and equity. **Methods:** This was a pre/post study of 2 geographically different children's hospitals general pediatric floors assessing the impact of a set of implementation strategies developed to improve provider knowledge of best practice antimicrobials (based on local susceptibilities for treatment of UTI's) and influence uptake of best practice prescribing. IS strategies included provider education, local clinical champion and opinion leader involvement, leadership involvement, local policy changes, and stakeholder co-design of decision support tools (a clinical pathway, a specific ITI antibiogram, and a dynamic order set). No education was provided regarding racial differences in prescribing habits. Outcomes were measured utilizing a portion of the RE-AIM Framework of assessing adoption of "Right" antibiotic, order set adoption, and equitable reach (racial differences in prescribing). **Results:** Hospital A and B had a first-generation cephalosporin prescription rate of 29.7% (n=441) and 20.6% (n=557) pre implementation and 44.6% (n=84) and 47.5% (n=118) post (p < 0.001). Both hospitals also saw a significant reduction in third-generation cephalosporins. In Hospital A, APRN's were more likely to prescribe a first generation cephalosporin (52.4%) than a DO (42.1%) or MD (26.4%) pre-implementation (p=0.004). In Hospital B, APRN's were less likely to prescribe first generation cephalosporins (5.4%) than a DO (28.9%) or MD (19.4%) pre-implementation (p=0.004). No statistical significance was seen post implementation for antimicrobial selection by provider type for either hospital. Based on race, both hospitals had Black and Other patients receiving more first-generation cephalosporins while white patients were more likely to receive third-generation cephalosporins (p=0.033) pre implementation. No statistical significance was seen post implementation for antimicrobial selection based on race. No improvement was seen in order set utilization. **Conclusion:** With order set utilization not improving with implementation of new dynamic order set, other strategies such as education, clinical champion and opinion leader involvement, and provision of a local UTI antibiogram were likely contributors to the improvement in best antimicrobial for treatment of UTI's. Further mixed method research is warranted to improve understanding of the relative performance of our strategies, especially the lack of provider adoption of the novel dynamic order set.

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**Molecular and Epidemiological Characterization of Pediatric and Adult C. difficile Infection in Canadian Hospitals, 2015-2022**

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**Background:** The molecular and epidemiological landscape of C. difficile infection (CDI) has evolved markedly in the last decade; however, limited information is available contrasting differences between adult and pediatric populations. We describe a multicenter study evaluating healthcare-associated (HA) and community-associated (CA) adult and pediatric-CDI identified in the Canadian Nosocomial Infection Surveillance Program (CNISP) network from 2015 to 2022. **Methods:** Hospitalized patients with CDI were identified from up to 84 hospitals between 2015-2022 using standardized case definitions. Cases were confirmed by PCR, cultured, and further characterized using ribotyping and E-test. We used two-tailed tests for significance (p<0.05). **Results:** Of 30,817 cases reported, 29,245 were adult cases [HA-CDI (73.2%), CA-CDI (26.8%)] and 1,572 were pediatric cases [HA-CDI (77.7%), CA-CDI (22.3%)]. From 2015 to 2022, HA-CDI rates decreased 19.7% (p=0.007) and 29.4% (p=0.004) in adult and pediatric populations, respectively (Figure 1). CA-CDI rates remained relatively stable in the adult population (p=0.797), while decreasing 60.7% in the pediatric population (p=0.013). Median ages of adult and pediatric patients were 70 (interquartile range (IQR), 58-80) and seven (IQR, 3-13) years, respectively. Thirty-day all-cause mortality was significantly higher among adult vs. Pediatric CDI patients (11.0% vs 1.4%, p < 0.0001). No significant differences in other severe outcomes were found. Ribotyping and

