534. *Clostridium difficile* Reduction: An Agent-Based Simulation Modeling Approach to Evaluating Intervention Comparative Effectiveness at Pediatric Hospitals

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Session: 59. Healthcare Epidemiology: Updates in *C. difficile*

**Background.** *Clostridium difficile* surveillance data are lacking from pediatric facilities and there are few pediatric-centered guidelines or studies evaluating *C. difficile* targeted pediatric interventions. Compared with the adult setting, *C. difficile* control in pediatric healthcare facilities is also further complicated by epidemiologic variability across the age spectrum and increased patient-to-patient and patient-to-family interactions.

**Methods.** We conducted an agent-based simulation model of *C. difficile* transmission at a freestanding children's hospital. The 80-bed hospital model included interactions between the physical environment, patients, visitors, family caregivers, nurses, and physicians. The model was then used to evaluate the comparative effectiveness of nine infection control interventions and six multiple-intervention bundles at reducing hospital-onset *C. difficile* infections and asymptomatic *C. difficile* colonization.

**Results.** The most effective two-intervention bundle, composed of daily cleaning with sporicidal disinfectant and an asymptomatic *C. difficile* screening protocol, reduced hospital-onset *C. difficile* infection by 62.0% and asymptomatic colonization by 88.4%. Six of the nine single-intervention strategies also significantly reduced both outcomes, including daily and terminal cleaning, asymptomatic *C. difficile* screening, healthcare worker and patient hand hygiene, and reducing room transfers. The remaining three single-intervention strategies, visitor hand hygiene and visitor and healthcare worker contact precautions, did not significantly reduce either measure.

**Conclusion.** This is the first mathematical model to evaluate pediatric *C. difficile* transmission. Hospitals can achieve a high rate of reduction for hospital-onset *C. difficile* infections by prioritizing implementation of a small number of interventions with high fidelity.

**Disclosures.** All authors: No reported disclosures.

535. Transmission of *Clostridium difficile* (CD) From Patients ≤2 Years of Age in a Pediatric Oncology Setting

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Session: 59. Healthcare Epidemiology: Updates in *C. difficile*

**Background.** For *Clostridium difficile* infection (CDI), has been identified as a risk factor for CA-CDI, rendering it vital to explore the epidemiology and determinants of acquisition in babies.

**Methods.** In this prospective cohort study, healthy infants attending a demographically diverse suburban pediatric practice were enrolled at birth and followed through their 2-month, 6-month, and 12-month well child visit. At each visit, stool samples were collected, and questionnaires including interim exposure to potential risk factors for CD acquisition were administered. stool was inoculated on pre-irradiated CFFA agar with a graduated loop. Among CD isolates, toxin genes were identified by PCR.

**Results.** Fifty infants were recruited; 90% of samples and questionnaires were completed. The average gestational age was 39 weeks and 46% were male. Twenty-eight (56%) infants had at least one sample positive for CD during the study: cross sectional incidence was 0.50 at birth; 9/17 (49%) at 2 months; 22/43 (51%) at 6 months; 6/37 (16%) at 1 year. Of those with positive stool cultures, risk factors for CD acquisition were administered. Stool was isolated on pre-irradiated CFFA agar with a graduated loop. Among CD isolates, toxin genes were identified by PCR.

**Conclusion.** Asymptomatic carriage of toxigenic CD occurred in over half of healthy infants during the first year of life, and several had a high organism burden that could increase the risk for transmission. While daycare attendance was more common among colonized infants, the majority of infants who were CD+ had no daycare exposure.

**Disclosures.** All authors: No reported disclosures.

536. *Clostridium difficile* Colonization in the First Year of Life

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Session: 59. Healthcare Epidemiology: Updates in *C. difficile*

**Background.** Recent years have witnessed an explosive increase in communitary-associated *Clostridium difficile* infection (CA-CDI) in adults. Contact with infants, a population known to be asymptomatically colonized by *C. difficile* (CD), has been identified as a risk factor for CA-CDI, rendering it vital to explore the epidemiology and determinants of acquisition in babies.

**Methods.** In this prospective cohort study, healthy infants attending a demographically diverse suburban pediatric practice were enrolled at birth and followed through their 2-month, 6-month, and 12-month well child visit. At each visit, stool samples were collected, and questionnaires including interim exposure to potential risk factors for CD acquisition were administered. stool was inoculated on pre-irradiated CFFA agar with a graduated loop. Among CD isolates, toxin genes were identified by PCR.

**Results.** Fifty infants were recruited; 90% of samples and questionnaires were completed. The average gestational age was 39 weeks and 46% were male. Twenty-eight (56%) infants had at least one sample positive for CD during the study: cross sectional incidence was 0.50 at birth; 9/17 (49%) at 2 months; 22/43 (51%) at 6 months; 6/37 (16%) at 1 year. Of those with positive stool cultures, risk factors for CD acquisition were administered. Stool was isolated on pre-irradiated CFFA agar with a graduated loop. Among CD isolates, toxin genes were identified by PCR.

**Conclusion.** Asymptomatic carriage of toxigenic CD occurred in over half of healthy infants during the first year of life, and several had a high organism burden that could increase the risk for transmission. While daycare attendance was more common among colonized infants, the majority of infants who were CD+ had no daycare exposure.

**Disclosures.** All authors: No reported disclosures.

537. Engaging the Bedside Nurse in Reducing *Clostridium difficile* Infection Through an Innovative Patient Care Rounding Program

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Session: 59. Healthcare Epidemiology: Updates in *C. difficile*

**Background.** Bedside nurses comprise the largest personnel group in a hospital and are intimately familiar with a patient’s day to day clinical status. They can be an effective group to engage and empower to assist with hospital-wide *Clostridium difficile* infection (CDI) reduction efforts. The objective of this study was to evaluate the impact of a nursing driven intervention bundle on CDI rates at a 365-bed community hospital.

**Methods.** Daily nursing led CDI and invasive line assessment rounds were implemented in April 2017. Nurses were empowered through a pre-approved protocol to place symptomatic patients in isolation and order a test for *C. difficile*. Additionally, patient care rounds that included nursing leadership, the antibiotic stewardship program physician director, infection preventionist and bedside nurses