

Presentation Type:

Oral Presentation

Reduction in Abdominal Hysterectomy Surgical Site Infection Rates After the Addition of Anaerobic Antimicrobial Prophylaxis

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Background: Antimicrobial prophylaxis is one of the strongest surgical site infection (SSI) prevention measures. Current guidelines recommend the use of cefazolin as antimicrobial prophylaxis for abdominal hysterectomy procedures. However, there is growing evidence that anaerobes play a role in abdominal hysterectomy SSIs. We assessed the impact of adding anaerobic coverage on abdominal hysterectomy SSI rates in our institution. **Methods:** The University of Iowa Hospitals & Clinics is an 811-bed academic medical center that serves as a referral center for Iowa and neighboring states. Each year, ~33,000 major surgical operations are performed here, and on average, 600 are abdominal hysterectomies. Historically, patients have received cefazolin only, but beginning November 2017, patients undergoing abdominal hysterectomy received cefazolin + metronidazole for antimicrobial prophylaxis. Order sets within the electronic medical record were modified, and education was provided to surgeons, anesthesiologists, and other ordering providers. Procedures and subsequent SSIs were monitored and reported using National Healthcare Safety Network (NHSN) definitions. Infection rates are calculated using all depths (superficial, deep and organ space) and by deep and organ space only, as this is how they are publicly reported. We used numerator (SSIs) and denominator (number of abdominal hysterectomy procedures) data from the NHSN from January 2015 through September 2019. We performed an interrupted time-series analysis to determine how the addition of metronidazole was associated with abdominal hysterectomy SSIs (all depths, and deep and organ

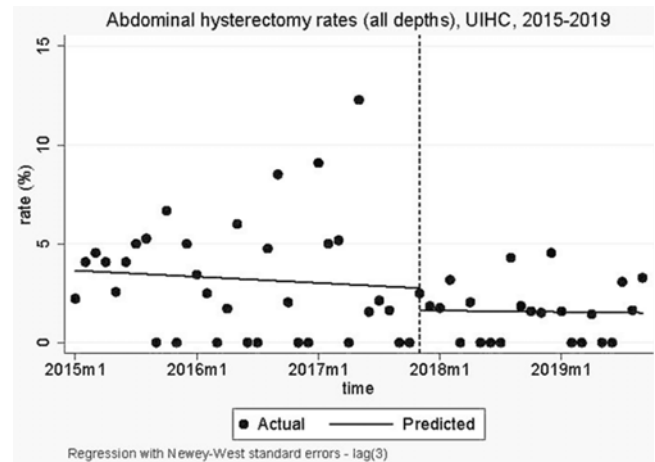


Fig. 2.

space). **Results:** From January 2015 through October 2017, the hysterectomy SSI rates were 3.2% (all depths) and 1.5% (deep and organ space). After the adjustment was made to antimicrobial prophylaxis in November 2017, the rates decreased to 1.6% (all depths) and 0.6% (deep and organ space). Of the SSIs with pathogens identified, the proportion of anaerobes decreased from 59% to 25% among all depths and from 82% to 50% among deep and organ-space SSIs. The rate of SSI decline after the intervention was statistically significant ($P = .01$) for deep and organ-space infections but not for all depths ($P = .73$). **Conclusions:** The addition of anaerobic coverage with metronidazole was associated with a decrease in deep and organ-space abdominal hysterectomy SSI rates at our institution. Hospitals should assess the microbiology of abdominal hysterectomy SSIs and should consider adding metronidazole to their antimicrobial prophylaxis.

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Reductions in Positive *Clostridioides difficile* Events Reportable to NHSN With Adoption of Reflex EIA Testing in 13 Atlanta Hospitals

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Background: US hospitals are required to report *C. difficile* infections (CDIs) to the NHSN as a performance measure tied to payment penalties for poor scores. Currently, only the charted CDI test results performed last in reflex testing scenarios are reported to the NHSN (CDI events). We describe the reduction in NHSN CDI events from the addition of a reflex toxin enzyme immunoassay

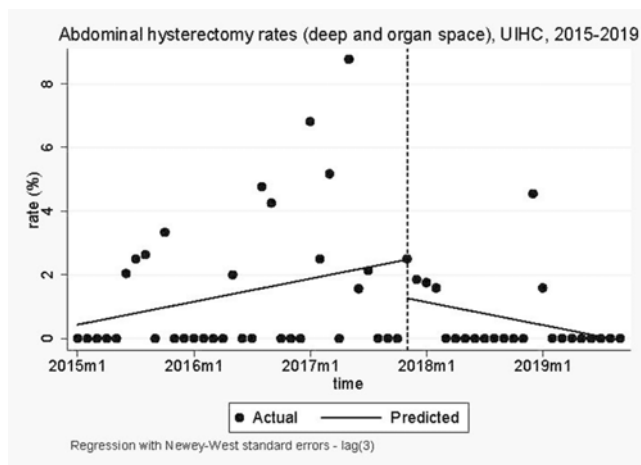


Fig. 1.

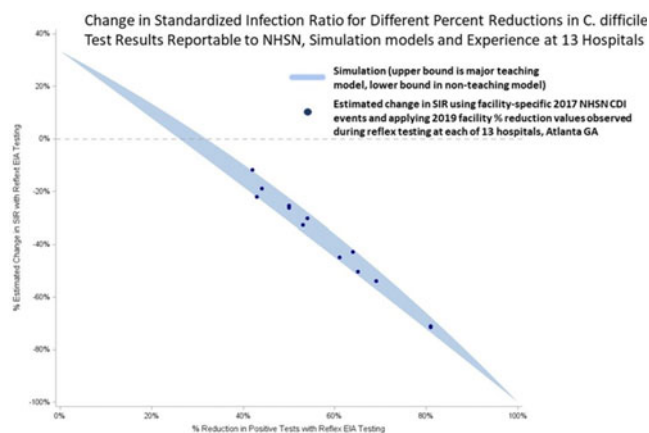


Fig. 2.

(EIA) after a positive nucleic acid amplification test (NAAT) in teaching and nonteaching hospitals, and we estimate the impact on standardized infection ratios (SIR). **Methods:** Reporting of all CDI test results, by test method, occurred during April 2018–July 2019 to the Georgia Emerging Infections program (funded by the Centers for Disease Control and Prevention), which conducts active population-based surveillance in an 8-county Atlanta area (population, 4 million). Among facilities starting reflex EIA testing, results were aggregated by test method during months of reflex testing to calculate facility-specific reduction in NHSN CDI events (% reduction; 1-[no. EIA+/no. NAAT+]). Differences in percent reduction between facilities by characteristic were compared using the Kruskal-Wallis test. We simulated expected changes in the SIR for a range of reductions, assuming equal effect on both community-onset (CO) and hospital-onset (HO) tests. Each facility's historical NHSN CDI events prior to reflex testing were used to estimate changes to facility-specific SIRs by reducing values by the corresponding facility's percent reduction. **Results:** Overall, 13 acute-care hospitals (bed size, 52–633; ICU bed size, 6–105) started reflex testing during the study period (mean, 7 months, 15,800 admissions, 66,400 patient days), resulting in 550 +NAAT tests reflexing to 180 +EIA tests (pooled mean 58% reduction). Percent reduction varied (mean, 67%; range, 42%–81%) but did not differ between larger (≥ 217 beds) and smaller hospitals (61 vs 50% reduction; $P > .05$) or by outsourced versus inhouse testing (65% vs 54% reduction; $P > .05$). Simulations identified a threshold reduction at which point effect on HO counteract the effects on CO events enough to reduce the SIR; thresholds for nonteaching and teaching were 26% and 32% reduction, respectively (Fig. 1). The estimated reductions in facility-specific SIRs using measured percent reductions on historic NHSN CDI events closely paralleled the simulation, and the mean estimated change in SIR was -46% (range, -12% to -71%) (Fig. 1). **Conclusions:** Although the magnitude of the effect varied, all 13 facilities experienced dramatic reductions in CDI events reportable to NHSN due to reflex testing; applying these reductions to historical NHSN data illustrates anticipated reductions in their facility-specific SIRs due to this testing change.

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Regional Impact of a CRE Intervention Targeting High Risk Postacute Care Facilities (Chicago PROTECT)

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Background: Carbapenem-resistant *Enterobacteriaceae* (CRE) are endemic in the Chicago region. We assessed the regional impact of a CRE control intervention targeting high-prevalence facilities; that is, long-term acute-care hospitals (LTACHs) and ventilator-capable skilled nursing facilities (vSNFs). **Methods:** In July 2017, an academic-public health partnership launched a regional CRE prevention bundle: (1) identifying patient CRE status by querying Illinois' XDRO registry and periodic point-prevalence surveys reported to public health, (2) cohorting or private rooms with contact precautions for CRE patients, (3) combining hand hygiene adherence, monitoring with general infection control education, and guidance by project coordinators and public health, and (4) daily chlorhexidine gluconate (CHG) bathing. Informed by epidemiology and modeling, we targeted LTACHs and vSNFs in a 13-mile radius from the coordinating center. Illinois mandates CRE reporting to the XDRO registry, which can also be manually queried or generate automated alerts to facilitate interfacility communication. The regional intervention promoted increased automation of alerts to hospitals. The prespecified primary outcome was incident clinical CRE culture reported to the XDRO registry in Cook County by month, analyzed by segmented regression modeling. A secondary outcome was colonization prevalence measured by serial point-prevalence surveys for carbapenemase-producing organism colonization in LTACHs and vSNFs. **Results:** All eligible LTACHs ($n = 6$) and