

Presentation Type:

Poster Presentation

The Impact of Enhanced Antimicrobial Stewardship Support on Antibiotic Starts in Long-Term Care Facilities

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Background: The Tufts Medical Center Antimicrobial Stewardship (ASP) Team has partnered with the Massachusetts Department of Public Health (MDPH) to provide broad-based educational programs (BBEP) to long-term care facilities (LTCFs) in an effort to improve ASP and infection control practices. LTCFs have consistently expressed interest in individualized and hands-on involvement by ASP experts, yet they lack resources. The goal of this study was to determine whether “enhanced” individualized guidance provided by an ASP expert would lead to antibiotic start decreases in LTCFs participating in our pilot study. **Methods:** A pilot study was conducted to test the feasibility and efficacy of providing enhanced ASP and infection control practices to LTCFs. In total, 10 facilities already participating in MDPH BBEP and submitting monthly antibiotic start data were enrolled, were stratified by bed size and presence of dementia unit, and were randomized 1:1 to the “enhanced” group (defined as reviewing protocols and antibiotic start cases, providing lectures and feedback to staff and answering questions) versus the “non-enhanced” group. Antibiotic start data were validated and collected prospectively from January 2018 to July 2019, and the interventions began in April 2019. Due to staff turnover and lack of engagement, intervention was not possible in 2 of the 5 LTCFs randomized to the enhanced group, which were therefore analyzed as a nonenhanced group. An incidence rate ratios (IRRs) with 95% CIs were calculated comparing the antibiotic start rate per 1,000 resident days between periods in the pilot groups. **Results:** The average bed sizes for enhanced groups versus nonenhanced groups were 121 (± 71.0) versus 108 (± 32.8); the average resident days per facility per month were 3,415.7 ($\pm 2,131.2$) versus 2,911.4 (± 964.3). Comparatively, 3 facilities in the enhanced group had dementia unit versus 4 in the nonenhanced group. In the per protocol analysis, the antibiotic start rate in the enhanced group before versus after the intervention was 11.35 versus 9.41 starts per 1,000 resident days (IRR, 0.829; 95% CI, 0.794–0.865). The antibiotic start rate in the nonenhanced group before versus after the intervention was 7.90 versus 8.23 antibiotic starts per 1,000 resident days (IRR, 1.048; 95% CI, 1.007–1.089). Physician hours required for ASP for the enhanced group totaled 8.9 (± 2.2) per facility per month. **Conclusions:** Although the number of hours required for intervention by an expert was not onerous, maintaining engagement proved difficult and in 2 facilities could not be achieved. A statistically significant 20% decrease in the antibiotic start rate was achieved in the enhanced group after interventions, potentially reflecting the benefit of enhanced ASP support by an expert. **Funding:** This study was funded by the Leadership in Epidemiology, Antimicrobial Stewardship, and Public Health (LEAP) fellowship training grant award from the CDC.

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Tube Feeding: A Risk Factor for *Clostridioides difficile* Infection Among Long-Term Care Facility Residents Hospitalized at a Tertiary-Care Hospital in Detroit

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Objective: We investigated the epidemiology of *Clostridioides difficile* infection (CDI) in long-term care facility (LTCF) patients admitted to a tertiary-care center in Detroit.

Methods: A retrospective case-control study was conducted of LTCF residents who were hospitalized with CDI at the Detroit Medical Center between January 1, 2009, and December 31, 2016. Case patients (LTCF residents admitted with CDI) were compared to 2 sets of inpatient controls. The first set of controls included inpatients presenting from the same LTCFs without CDI (control A). Second set included inpatients admitted from non-LTCF (home, community, hospital) who acquired CDI > 48 hours after admission or those who acquired CDI within 48 hours of admission but were exposed to an acute-care hospital within 4 weeks prior to admission (control B). Cases were matched (1:3 ratio) to the 2 sets of controls (control A and control B) based on year of admission. Matched multivariable analyses using conditional logistic regression were performed to identify independent predictors of CDI. **Results:** In total, 85 cases were matched to 2 sets of controls. For the first multivariate logistic regression model performed on cases and control A ($n_1 = 255$), significant risk factors identified included tube feeding (OR, 3.60; 95% CI, 1.43–9.02; $P = .006$) and albumin ≤ 2.5 g/dL (OR, 4.98; 95% CI, 2.02–12.31; $P < .001$). For the second multivariate logistic regression model performed on cases and control B ($n_2 = 255$), significant risk factors identified included Charlson comorbidity index score (OR, 1.25; 95% CI, 1.12–1.40; $P < .001$), tube feeding (OR, 3.63; 95% CI, 1.81–7.25; $P < .001$), prior use of PPI (OR, 0.37; 95% CI, 0.20–0.68; $P = .001$), prior use of H2 blockers (OR, 0.34; 95% CI, 0.16–0.69; $P = .003$), and prior use of antibiotics (OR, 0.12; 95% CI, 0.06–0.24; $P < .001$). Cases were more likely to have complicated CDI (OR, 7.02; $P < .001$) and recurrent CDI (OR, 2.63; $P = .02$) when compared to control B. **Conclusions:** Patients who acquired CDI at LTCFs experienced more severe CDI and were at greater risk for recurrent CDI than patients with other healthcare-associated CDI. For the regression model performed on cases and control A as well as that performed on cases and control B, tube feeding was the only variable that consistently predicted CDI among LTCF patients.

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