

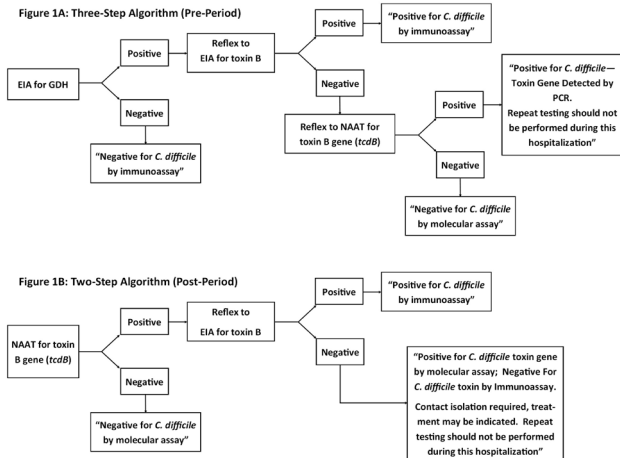
751. Impact of Changing from a Three-step to Two-step Testing Algorithm for the Diagnosis of *Clostridioides difficile*

Jonathan Lapin, PharmD¹; Vasilios Athans, PharmD, BCPS, BCIDP¹; Shawn Binkley, PharmD¹; Tiffany Lee, PharmD¹; Sonal Patel, PharmD¹; Melissa Richard-Greenblatt, PhD²; Laurel Glaser, MD, PhD²; Keith W. Hamilton, MD¹; Stephen Saw, PharmD¹; ¹Hospital of the University of Pennsylvania, Philadelphia, PA; ²University of Pennsylvania, Philadelphia, PA

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Background. The optimal method for laboratory diagnosis of *Clostridioides difficile* infection (CDI) remains undefined and national guidelines do not make a recommendation for a preferred diagnostic algorithm. Aiming to improve infection control measures, the Hospital of the University of Pennsylvania changed its testing process for the diagnosis of CDI from a 3-step to a 2-step algorithm (Figure 1) in September 2018. Starting an algorithm with nucleic acid amplification testing (NAAT) has been hypothesized to lead to potential diagnostic uncertainty if the result is positive by NAAT alone, as this test cannot distinguish between active infection and colonization.

Three-Step and Two-Step Diagnostic Testing Algorithms



Methods. This retrospective, single-center, quasi-experimental study included patients ≥ 18 years of age that tested positive for *C. difficile* between May 1st, 2018 and January 31st, 2019. The study period encompassed 4 months prior to the algorithm change, a 1-month washout immediately following the change, and the subsequent 4 months. The primary outcome was proportion of patients who tested positive for *C. difficile* and received targeted treatment for CDI. Secondary outcomes included total number of patients who tested positive for *C. difficile* and received targeted treatment for CDI, duration of treatment for CDI, and hospital length of stay.

Results. Sixty-nine patients in the pre-group (3-step) and 75 patients in the post-group (2-step) tested positive for *C. difficile*. A higher proportion of patients in the post-group tested positive by NAAT alone (59.4% vs. 73.3%). CDI severity and prior history of CDI were similar between groups. The primary outcome occurred in 89.9% of patients in the pre-group and 83.8% in the post-group ($p=0.213$). Sixty-two patients in each group received targeted treatment for CDI ($p=0.213$), median treatment duration was 15 (IQR 11.25-25.75) and 14 (IQR 11-25) days ($p=0.505$), and median hospital length of stay was 9 (IQR 3-15) and 6 (IQR 3-20) days ($p=0.690$) in the pre-group and post-group, respectively.

Conclusion. Although there was a higher percentage of patients in the post-group that tested positive for *C. difficile* by NAAT alone, there was no difference in the proportion or total number of patients who received targeted CDI treatment between time periods.

Disclosures. All Authors: No reported disclosures

752. Costs Attributable to *Clostridioides difficile* Infection in the Presence of Differential Mortality

John Sahrman, MS¹; Dustin Stwalley, MA²; Margaret A. Olsen, PhD, MPH²; Holly Yu, MSPH³; Erik R. Dubberke, MD, MSPH¹; ¹Washington University, St. Louis, Missouri; ²Washington University in St. Louis, St. Louis, MO; ³Pfizer, Inc, Collegeville, Pennsylvania

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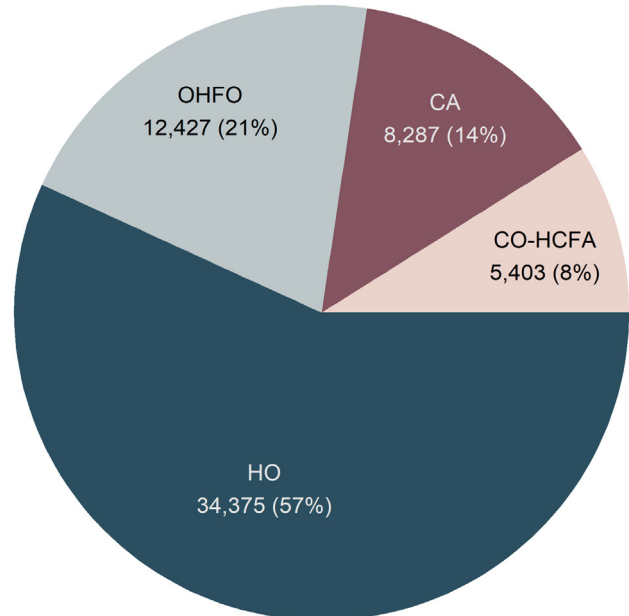
Background. CDI imposes a major burden on the U.S. healthcare system. Obtaining accurate estimates of economic costs is critical to determining the cost-effectiveness of preventive measures. This task is complicated by differences in epidemiology, mortality, and baseline health status of infected and uninfected individuals, and by the statistical properties of costs data (e.g., right-skewed, excess of zeros costs).

Methods. Incident CDI cases were identified from Medicare 5% fee-for-service data between 2011 and 2017 and classified into standard surveillance definitions: hospital-onset (HO); other healthcare facility-onset (OHFO); community-onset, healthcare-associated (CO-HCFA); or community-associated (CA). Cases were frequency matched 1:4 to uninfected controls based on age, sex, and year of CDI. Controls were

assigned to surveillance definitions based on location at index dates. Medicare allowed costs were summed in 30-day intervals up to 3 years following index. One- and 3-year cumulative costs attributable to CDI were computed using a 3-part estimator consisting of a parametric survival model and a pair of 2-part models predicting costs separately in intervals where death did and did not occur, adjusting for underlying acute and chronic conditions.

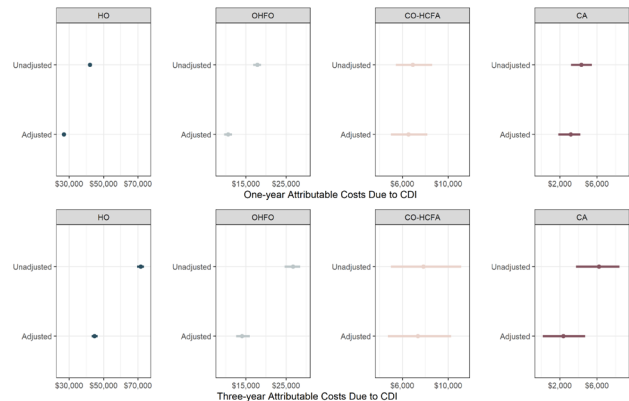
Results. 60,492 CDI cases (Figure 1) were matched to 241,968 controls. Three-year mortality was higher among CDI cases compared to matched controls for HO (45% vs 26%) and OHFO (42% vs 36%), whereas mortality was slightly lower for CDI cases compared to controls for those with community onset (CO-HCFA: 28% vs 32%; CA: 10% vs 11%). One- and 3-year attributable costs due to CDI are shown in Figure 2. Adjusted 1-year attributable costs amounted to \$26,954 (95% CI: \$26,154–\$27,939) for HO; \$10,539 (\$9,564–\$11,518) for OHFO; \$6,525 (\$5,012–\$8,171) for CO-HCFA; and \$3,171 (\$1,841–\$4,200) for CA. Adjusted 3-year attributable costs were \$44,736 (\$43,063–\$46,483) for HO; \$13,994 (\$12,529–\$15,975) for OHFO; \$7,349 (\$4,738–\$10,246) for CO-HCFA; and \$2,377 (\$166–\$4,722) for CA.

Figure 1. Proportion of Cases by CDI Surveillance Definitions



Abbreviations: HO: hospital-onset; OHFO: other healthcare facility-onset; CO-HCFA: community-onset, healthcare-associated; CA: community-associated.

Figure 2. Estimates of Costs Attributable to CDI by CDI Surveillance Definitions at One and Three Years after Onset



Top panels: One-year cost estimates. Bottom panels: Three-year cost estimates. Abbreviations: HO: hospital-onset; OHFO: other healthcare facility-onset; CO-HCFA: community-onset, healthcare-associated; CA: community-associated.

Conclusion. CDI was associated with increased healthcare costs across surveillance definitions in Medicare fee-for-service patients after adjusting for survival and underlying conditions.

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