

Figure 1: Community-onset and Healthcare facility-onset *C. difficile* Infections and number of reporting hospitals located within hospital referral regions reporting to the National Healthcare Safety Network, July 1, 2015 – June 30, 2018.

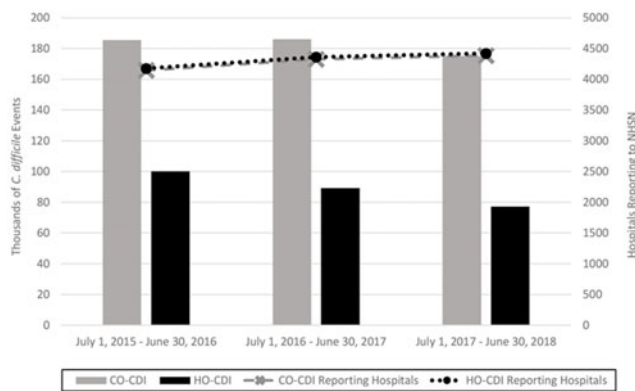


Fig. 1.

Figure 2: Hospital-identified (community-onset and hospital-onset) *C. difficile* infection reported to the National Healthcare Safety Network by hospital referral region standardized infection ratios over 3 consecutive years: July 1, 2015 – June 30, 2016

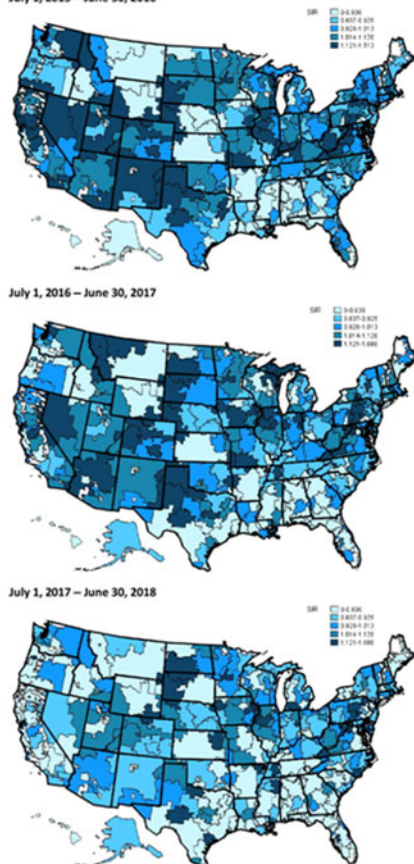


Fig. 2.

defined as positive *C. difficile* stool tests collected on or before hospital day 3 (where admission was day 1), reported by acute-care hospitals to the CDC NHSN over 3 years: year 1, July 1, 2015–June 30, 2016; year 2, July 1, 2016–June 30, 2017; year 3, July 1, 2017–June 30, 2018. Healthcare facility-onset CDI (HO-CDI) was similarly defined but with stool collection after hospital day 3. Hospital referral regions (HRRs) were defined by the *Dartmouth Atlas of Health Care*, and they represent 306 healthcare

markets. Standardized infection ratios (SIRs) were calculated using separate multivariable models for (1) CO-CDI events in an emergency department/observation unit (ED/Obs), (2) CO-CDI events among inpatients, and (3) HO-CDI, accounting for facility-level factors. They resulted in ratios of observed to predicted infections, similar to established methods. SIRs were pooled within each facility to create a hospital-identified SIR by summing observed and predicted events for CO-CDI events in both testing locations and HO-CDI events, then pooled by HRR by summing all facility observed and predicted events within the region. Data from facilities not within an HRR were excluded. **Results:** Total CO-CDI (ED/Obs and inpatient) and HO-CDI events decreased, even as the number of reporting facilities slightly increased over the 3-year period (Fig. 1). Among 306 HRRs in year 3, the median number of hospitals was 10 (IQR, 6–17), with a median of 526 (IQR, 272–1,002) hospital-identified CDI events per HRR. Variables significantly associated with CDI incident rate and included in SIR models 1–3 included *C. difficile* test type, hospital type, teaching affiliation, hospital bed size, and presence of an ED/Obs unit. Intensive care unit capacity was included in models 2 and 3, and the ratio of hospital admissions to emergency department encounters in model 1. Pooled mean HRR hospital-identified *C. difficile* SIRs decreased each year (0.972, 0.914, and 0.838), and decreases also varied by HRR (Fig. 2). **Conclusions:** National decreases in a combined hospital-identified *C. difficile* SIR are widespread but may be more aggregated in particular regions. Although SIR adjustments were limited to facility-level factors, aggregation of CDI SIR by HRR may be useful for infection preventionists and public health authorities to further understand regional CDI patterns.

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Presentation Type:

Poster Presentation

Changes in the Characteristics of Hospitals Participating in the National Healthcare Safety Network (NHSN), 2008–2018

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Background: The NHSN is the nation's most widely used health-care-associated infection surveillance system. Nearly all acute-care hospitals reporting to the NHSN do so in fulfillment of state mandates and/or as required for participation in the CMS Quality Reporting program, since 2011. All NHSN-participating acute-care hospitals (ACHs) reporting in the Patient Safety Component are required to complete an annual survey and to self-report on the hospital's general characteristics, including hospital size and type, and patient volume. Due to the compulsory nature of the survey, the NHSN receives nearly a 100% completion rate each year. Furthermore, hospital-level characteristics are often used by the CDC to develop risk-adjusted summary measures and national benchmarks. This study is the first to evaluate ACH characteristics over an 11-year period. **Methods:** All ACHs that completed an annual survey during 2008–2018 were included. The data were divided into subsets to evaluate consistent reporters, defined as facilities that were enrolled in 2008 and completed surveys through 2018. Medical teaching status is defined as a facility that trains either medical students, nursing students, residents and fellows. Medical teaching status is grouped into 3 categories: (1) undergraduate facility that

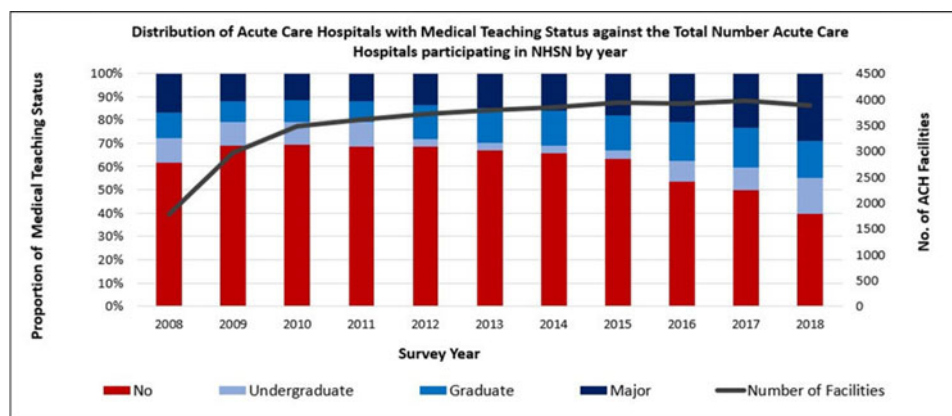


Figure 1: Distribution of Acute Care Hospitals with Medical Teaching Status against the Total Number Acute Care Hospitals participating in NHSN by year

Fig. 1.

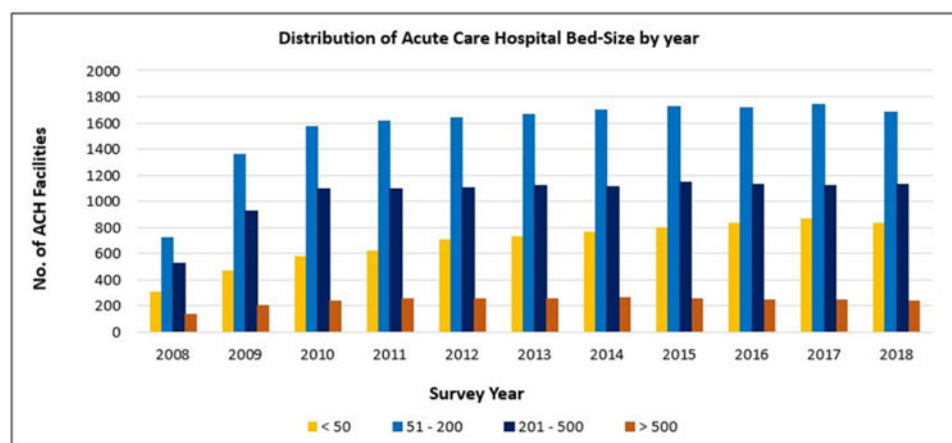


Figure 2: Distribution of Acute Care Hospital Bed-Size by year

Fig. 2.

trains medical school students, (2) graduate facility that trains residents or fellows, and (3) major facility that trains both medical and residents or fellows. We used univariate analyses to assess characteristics of acute-care hospitals (ACHs). **Results:** Overall, the number of ACHs enrolled in the NHSN increased by 119%, from 1,772 in 2008 to 3,883 in 2018. More general acute-care hospitals (89%) were enrolled than all other facility types, with women's and children's hospitals were the least frequently enrolled (0.34%). Hospitals with any level of medical teaching status, increased from 38.5% in 2008 to 60% in 2018 (Fig. 1). We observed a modest reduction in the median hospital bed size of 20 beds. When reviewing hospital bed size by category, ACHs with 51–200 beds made up the largest proportion of hospitals and the number of hospitals within this bed size category has remained above 1,500 since 2010. **Conclusions:** Among all ACHs, the proportion of hospitals affiliated with a medical school increased over the 10-year period. Although hospitals with a major teaching status had been steadily increasing, there were more hospitals using this designation after 2013. Despite the increase in the number of hospitals reporting to NHSN, since 2011, the proportion of hospitals within each bed size category has seen minimal change.

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Changes in the Prevalence of Methicillin Resistance Among Healthcare-Associated *Staphylococcus aureus* Infections, 2009–2018

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Background: *Staphylococcus aureus* has long been an important cause of healthcare-associated infections (HAIs) and remains the second most common HAI pathogen in the United States. Often resistant to several antibiotics, *S. aureus* infections are difficult to treat and can leave patients at risk for serious complications such as pneumonia and sepsis. HAI pathogens and their antimicrobial susceptibility testing (AST) results have been reported to NHSN since its inception in 2005. Previous NHSN surveillance reports have presented national annual benchmarks for antimicrobial resistance phenotypes, such as methicillin-resistant *S. aureus* (MRSA). Whether there have been any significant changes over time in the prevalence of methicillin resistance among *S. aureus*