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Evaluating the impact of mandatory public reporting on participation and performance in a program to reduce central line–associated bloodstream infections: Evidence from a national patient safety collaborative



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Comprehensive Unit-based Safety Program

Background: It is not clear whether mandatory reporting influences the efforts and performance of hospitals to prevent hospital-acquired infections. This study examines whether mandatory reporting impacted participation and performance in reducing central line–associated bloodstream infections (CLABSIs) in a national patient safety collaborative.

Methods: We analyzed 1,046 adult intensive care units (ICUs) participating in the national On the CUSP: Stop BSI program. We used a difference-in-difference approach to compare changes in CLABSI rates in states with no public reporting mandate, recent mandates, and longer-standing mandates. Chi-square tests were used to examine the differences in the participation rate.

Results: States enacting a law requiring mandatory public reporting of CLABSI rates around the time of the national program had the highest hospital participation rates (approximately 50%). Compared with units in states with no reporting requirement, units in the states with voluntary reporting systems or with longer periods of mandatory reporting experience had higher CLABSI rates at baseline and greater reductions in CLABSI in the first 6 months. State groups with mandatory public reporting of CLABSI showed a trend toward greater reduction in CLABSI after 1 year of program implementation.

Conclusion: Mandatory reporting requirements may spark hospitals to turn to proven infection prevention interventions to improve CLABSI rates. Reporting requirements do not teach sites how to reduce rates. ICUs need both motivation and facilitation to reach consumer expectations for infection prevention.

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Hospital-acquired infections (HAIs) are a significant cause of morbidity and mortality in the United States (US).¹ Central line–associated blood stream infections (CLABSIs) are among the most common and lethal.² Over the last decade, consumer advocacy and political groups have driven many states to legislate that HAI data be publicly reported. Some other states have taken to requesting

that hospitals report HAI data on a voluntary basis, whereas the remaining states have no position regarding public reporting of these data.

Increased demands for publicly available HAI data have created a wave of quality improvement activities as hospitals scurry to meet the expectations of lawmakers and consumers. The intention of these mandates is to provide more discerning information for the public about what the potential risks of infection are for patients receiving care from a given health care provider. The implicit aim is to have transparency in reporting serve as a catalyst for hospitals to improve infection prevention practices and reduce the occurrence of HAIs. However, there is no clear connection between the presence of mandatory reporting and subsequent improved processes or reductions in infections.^{3–10} Nonetheless, hospitals must find means to comply with the law. CLABSIs may be the most straightforward of the HAIs to measure because of the clear,

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relatively uncontested definitions provided by the Centers for Disease Control and Prevention (CDC); it was, therefore, included as one of the first reportable HAIs.^{1,11} There is also robust evidence regarding low-cost practices that prevent these infections, making them a good target for elimination.¹²

Each piece of legislation passed has underscored challenges with data quality, resource constraints associated with data collection and reporting, and the need for standard, centralized data collection mechanisms.^{2,5,11,13–15} To address gaps in compliance with evidence-based practices and regulatory requirements, a great number of hospitals have turned to peer learning structures and sought participation in multihospital patient safety collaboratives.^{3–10,16} Around the same time period when hospitals in many states were facing impending legislation mandating public reporting of HAIs, the Agency for Healthcare Quality and Research and Sandler Foundation funded a national CLABSI prevention collaborative. Implementation of the On the CUSP: Stop BSI national program was associated with a 43% reduction in the overall rate of CLABSI among >1,000 participating adult intensive care units (ICUs) in 44 states, Washington, DC, and Puerto Rico.¹⁷

In this article, we evaluate the impact of mandatory public reporting on participation and performance in the On the CUSP: Stop BSI program. The results of these analyses provide important insights into the potential association between mandatory public reporting and uptake of the national CLABSI program and implications for ICU performance of mandatory and voluntary reporting programs. The lessons learned may be relevant to other efforts focused on eliminating healthcare-associated infections.

METHODS

On the CUSP: Stop BSI national program

The On the CUSP: Stop BSI national program was a quality improvement collaborative with participating ICUs across the US with 3 host organizations: Armstrong Institute for Patient Safety and Quality at Johns Hopkins Medicine, Health Research and Educational Trust, and Keystone Center for Patient Safety and Quality of the Michigan Health and Hospital Association, known together as the National Project Team (NPT). The goals of the program were to reduce the mean CLABSI rate to <1 per 1,000 catheter days in the participating states and to improve local patient safety culture as a foundation for quality improvement efforts.

The program was organized in cohorts of state-level ICUs. State recruitment began in the fall of 2008. Forty-four states, Washington, DC, and Puerto Rico registered ICUs to participate in the program. After registering in the program, participating states were assigned to a cohort. The program included 6 cohorts, with the first cohort beginning in May 2009 and the last in March 2011.

Education, data collection, and coordination functions were centralized and provided by the NPT. Each state hospital association, or state patient safety agency, coordinated the recruitment and involvement of local hospitals. The hospital participation rate ranged from 5.5%–100% across the participating states, perhaps because the various hospital associations had different levels of resources and commitment to bring to recruitment and different relative power in the state and variation in membership size. Program implementation was also structured at the state level. Each state had a state lead who worked directly with the unit-level improvement teams in the state and also the NPT. Each state was assigned a project coordinator from the Health Research and Educational Trust, a data expert from the Michigan Health and Hospital Association, and a team from the Armstrong Institute for Patient Safety and Quality to coach improvement teams and provide support. ICU-level improvement teams in each state

received training together through regular conference calls, semi-annual 1-day face-to-face meetings, and periodic supplemental calls with content experts. A program Web site was set up to provide easy access to all the program materials for the teams (<http://www.onthecuspstophai.org>). Details of the program's collaborative model have been published elsewhere.^{17,18}

Intervention

The major parts of the intervention are as follows: the CLABSI prevention bundle, which is composed of 5 evidence-based practices (appropriate hand hygiene, chlorhexidine skin preparation, full-barrier precautions, avoidance of the femoral site for line placement, removal of unnecessary central lines) and the Comprehensive Unit-based Safety Program, designed to improve teamwork, communication and patient safety, and culture. The Comprehensive Unit-based Safety Program features the following 5 steps: (1) educating staff on the science of improving patient safety, (2) identifying patient safety defects in the unit, (3) partnering with a senior executive to help prioritize safety defects and provide resources, (4) learning from at least one defect per quarter using a structured tool, and (5) implementing teamwork and communication tools (eg, morning briefings, shadowing another profession). The suite of tools and other supports for the interventions used in the program has been published in detail elsewhere^{18–22} and can be accessed online (<http://www.onthecuspstophai.org>).

Data collection

All improvement teams reported their number of CLABSIs and catheter days for up to 12 months before the program began and continued monthly reporting throughout the program period (at least 18 months) using the standardized definitions from the CDC's National Healthcare Safety Network, standardized data collection tools designed by the NPT to maintain high data quality, and a central database. The central database allowed teams to access their own data and generate peer-comparative reports as soon as data were entered into the system. No data regarding individual patients (eg, catheter days for individual patients, where the catheter was inserted) were collected. In addition to the CLABSI data, we also collected participating unit type from the hospitals. Hospital characteristics (eg, rural vs urban hospitals, teaching status, hospital bed size) were obtained from the 2009 American Hospital Association Annual Survey of hospitals.

Aswani et al²³ provided information on whether a state mandate was present for CLABSI monitoring and classified them as mandatory or voluntary and provided information on when the public reporting began for the 14 states that began the public reporting of CLABSI prior to June 2010, when the data for the article were collected. We used those data as a basis to assist in identification of mandatory reporting status for CLABSI in addition to overall HAI reporting status for states. We accessed the US Department of Health and Human Services and CDC Web sites for the information for other states and any updates. If a state's information was unavailable or could not be confirmed on those Web sites, we conducted a search of related key words to find state statutory laws regarding HAIs. Consumer-based sites also provided information on the status of HAI mandates.^{24,25}

Statistical analysis

We included only adult ICUs in the analysis. There were 1,185 adult ICUs from 866 hospitals participating in the On the CUSP: Stop BSI program. We excluded units from Washington State because all the units did not submit unit characteristics data, any baseline CLABSI

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