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# State-Mandated Reporting of Health Care-Associated Infections in the United States: Trends Over Time

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## Abstract

Over the past decade, most US states and territories began mandating that acute care hospitals report healthcare-associated infections (HAI) to their departments of health. Trends in state HAI law enactment and data submission requirements were determined using systematic legal review; state HAI coordinators were contacted to confirm collected data. As of January 31, 2013, 37 US states and territories (71%) had adopted laws requiring HAI data submission; most were enacted and became effective in 2006 and 2007. Most states with HAI laws required reporting of central line-associated bloodstream infections in adult ICUs (92%), and about half required reporting of methicillin-resistant *Staphylococcus aureus* and *Clostridium difficile* infections (54% and 51%, respectively). Overall, data submission requirements were found to vary across states. Considering the facility and state resources needed to comply with HAI reporting mandates, future studies should focus on whether these laws have had the desired impact of reducing infection rates.

### Keywords

device-associated infections; multidrug-resistant organisms; mandatory reporting; HAI legislation

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CONFLICT OF INTEREST NOTIFICATION

No conflicts of interest have been declared by the authors.

## INTRODUCTION

Healthcare-associated infections (HAI) are largely preventable, result in significant morbidity and mortality as well as have large attributable costs.[1,2] Due to the magnitude of the problem and the longstanding use of standardized HAI measurement definitions developed by the Centers for Disease Control and Prevention (CDC)'s National Nosocomial Infections Surveillance System/National Healthcare Safety Network (NHSN), HAI reporting has emerged as an important component in quality care measurement. In NHSN, each HAI type has specific definitions for surveillance and frequently includes laboratory-confirmed (LabID) event reporting of the infectious organism. Although these definitions were initially used internally for the purposes of local infection prevention efforts, HAI surveillance data are increasingly being used for comparing patient care quality across institutions.

A former survey of state hospital associations found all 50 US states reported some type of effort to reduce HAI[3,4] with the majority focusing on central line-associated bloodstream infections (CLABSI). However, there are other common device-associated infections that are frequently of interest including catheter-associated urinary tract infections (CAUTI) and ventilator-associated pneumonia (VAP). Also of increasing concern are infections caused by multidrug-resistant organisms (MDRO) including methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococci (VRE). *Clostridium difficile* infections (CDI) are also common HAI, which are associated with antibiotic use. CLABSI, CAUTI, MRSA, and CDI are among the HAI indicated on the National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination as being priority areas;[5] progress towards infection rate reduction and increased adherence to prevention practices are reviewed yearly to achieve 5-year targets.

Over the past decade, the majority of states have legally mandated that hospitals provide HAI data to their states' departments of health (DOH);[6] however, a past review found large variation in these mandates in terms of how the data are submitted, whether or not the data are publicly reported, and if facility identifiers are required in the public reports.[7] To our knowledge, no published literature has provided a current, detailed, and systematic review of state mandates in terms of when enacted, key elements of the mandates (e.g., public reporting requirements) and the types of HAI data submission requirements over time. These data are useful to identify trends and allow across state comparisons. The purpose of this public health law review was to systematically categorize state mandates requiring data submission and public reporting of HAI among US states and territories. State mandates were evaluated to establish when different elements of the HAI laws were implemented, as well as when data submission requirements for the different types of HAI began.

## METHODS

A systematic legal review of state-level statutes and administrative regulations was conducted to determine HAI data submission and public reporting requirements by acute care hospitals. The laws and other administrative requirements for the 50 US states and 2 territories (District of Columbia and Puerto Rico) as of January 31, 2013 were reviewed. Lexis Research System databases, online statutory compilations, and administrative

regulation databases were utilized for the searches. Variant forms of the key phrase "healthcare-associated infections" were used to locate state requirements. This included "HAI", "healthcare-associated infection", "healthcare-acquired infection", "facility-acquired infection", and "facility-associated infection". Individual state HAI Web sites and other administrative resources were also reviewed to determine the HAI legal requirements of each state.

For states with mandatory data submission the following information was recorded: date of enactment for the first law mandating HAI data submission (for any HAI); date the HAI law became effective and enforceable; year data submission was first legally required for any HAI (i.e., when deadlines were imposed); year of state HAI prevention program implementation; requirement of hospitals in states with HAI laws to submit data to NHSN; and inclusion of public reporting provisions in the HAI law. States considered to have implemented HAI prevention programs included those with formally designated programs as well as those with some form of HAI prevention and reporting efforts but not yet formally designated as a defined program.

Data pertaining to specific HAI, including device-associated infections (CLABSI, CAUTI, and VAP) and infections caused by MDROs (MRSA, VRE, and *C. difficile*), were collected. For each infection type, the first year of required data submission in adult intensive care units (ICUs) was determined. Additionally, for those states in which hospitals were required to submit CLABSI data, it was determined whether submission was required in pediatric and/or neonatal ICUs. Information collected for MDRO infections included LabID event reporting and/or surveillance, as well as for MDRO infections that were reported in aggregate.

In order to ensure that the data collected was an accurate representation, state HAI Coordinators (i.e., individuals responsible for coordinating HAI prevention work within each state) were contacted via email. The HAI Coordinators were identified using the CDC state-based HAI prevention website (http://www.cdc.gov/hai/state-based/index.html). For each state, information that had been recorded during the systematic legal review was described and confirmation was sought from the HAI Coordinators. If the information was not correct, or if information had not been found, they were asked to provide the correct information. When necessary, follow-up emails were sent or they were contacted by telephone. Initial emails were sent during February 2013 and all responses were received before the end of March 2013. HAI Coordinators were not asked to identify relevant legislation, nor were they asked to confirm information about HAI law effective dates or public reporting provisions. Descriptive analyses were performed in SAS 9.2 (SAS Institute, Cary NC).

## RESULTS

### Mandatory HAI data submission laws

As of January 31, 2013, 37 out of 52 US states and territories (i.e., District of Columbia and Puerto Rico) had adopted laws requiring submission of HAI data (Table 1). HAI

coordinators in 32 out of 37 states (86%) provided email verification of collected data; data for Georgia, New Hampshire, Nevada, Puerto Rico, and South Carolina were not confirmed.

Table 2 shows the years that HAI laws were enacted and became effective for each state. Among states with laws, the majority first enacted those laws in 2006 and 2007 (54% for both years). Similarly, the majority of HAI laws became effective in 2006 and 2007 (52% for both years). The exact dates (i.e., month and day) of HAI law enactment or approval could not be determined for Georgia and New Mexico. Among the remaining 35 states for which exact enactment and effective dates could both be determined, laws became effective immediately upon enactment or approval in 15 states (43%), within less than 3 months in 12 states (34%), within 3 – 9 months in 6 states (17%), and after 1 year in 2 states (6%; data not shown).

The largest proportions of states first required HAI data submission in 2008 and implemented state HAI prevention programs in 2009 (Table 2). Overall, however, most states implemented HAI programs during the same year, or prior to the year, that HAI data submission was first required. In 6 states (16%) mandatory HAI data submission requirements pre-dated HAI program implementation (District of Columbia, Florida, Illinois, Maine, Utah, and Vermont). Furthermore, in 7 states (19%) HAI program implementation pre-dated HAI law enactment (Arkansas, Georgia, Hawaii, Indiana, New Mexico, North Carolina, and Tennessee). Hospitals in 31 states (84%) were required to submit HAI data to NHSN since the time of HAI law enactment or later (Table 3). Instead of reporting to NHSN, hospitals in the remaining 6 states submitted data to a state entity using the state's HAI reporting system. Similarly, HAI laws in most states included provisions requiring that HAI data be publicly reported (Table 3).

### Device-associated infection data submission

States varied with regard to data submission requirements for device-associated infections. Most states with HAI laws required that hospitals report CLABSI in adult, pediatric, and neonatal ICUs (Table 4). The majority of those states first required CLABSI data submission in adult ICUs in 2008 and 2009 (56% for both years); in contrast, requirements for CLABSI data submission in pediatric and neonatal ICUs appeared to have occurred in two waves with the largest proportions of those states first requiring data submission in 2008 and 2011 (Table 5). States that required CAUTI and VAP data submission were less common (Table 4). For those states with CAUTI data submission requirements, most began in 2012 (Table 5).

### MDRO infection data submission

States also varied with regard to requirements for MDRO infections. About half of states with HAI laws required that hospitals submit MRSA and/or *C. difficile* infection data (Table 4). However, only 3 states (8%) required VRE data submission (Table 4). There was no clear period during which most states with HAI laws first required MDRO infection reporting, however, among those states with MRSA and *C. difficile* requirements, the largest proportions first required data submission in 2013 (Table 5).

# DISCUSSION

## HAI data submission requirements

The results presented here show that, as of January 31, 2013, 37 states and territories (71%) had enacted legislation and/or promulgated administrative regulations requiring data submission for at least one type of HAI. These findings build on previous work showing that, as of August 1, 2011, 32 states had mandatory data submission requirements.[7] Four states recently implemented those requirements; two of those states (Arkansas and New Mexico) previously required only voluntary data submission. This increase in the number of states with mandatory reporting reflects an environment of increased data submission and public reporting requirements throughout the nation. Furthermore, we tracked the development of state mandates, and submission requirements, over time and found many states requiring data submission for multiple device-associated infections, as well as infections caused by MRSA, VRE, and *C. difficile*. It is of note that, despite having HAI laws, neither Florida nor Puerto Rico required acute care hospitals to submit data congruent with the infections discussed here.

## Trends in HAI laws and HAI program implementation

Most states with HAI laws first enacted them in 2006 and 2007 (54% for both years) and most HAI laws also became effective those same years (52% for both years); this trend reflected evidence that emerged in the past decade emphasizing the importance of HAI. For example, the Institute of Medicine 1999 publication of *To Err is Human*[8] was instrumental in publicizing that not only were HAI a leading cause of morbidity and mortality among hospitalized patients in the US but they were also largely preventable. Additional reports[9,10] highlighting that HAI, and specifically CLABSI, could be prevented, along with the publication of a guidance document to assist in the design and implementation of HAI reporting systems[11] were important drivers toward the development of state-level HAI laws across the country at that time.

In 2009, funding from the American Recovery and Reinvestment Act (ARRA) provided $40 million to 49 states, the District of Columbia, and Puerto Rico for the purposes of developing, expanding, and supporting HAI program infrastructure in those states, as well as monitoring and preventing HAI. ARRA funding affected those states enacting legislation, and promulgating administrative regulations, starting in 2009 and forward. It also likely impacted the timing of when HAI programs were established. Despite the majority of states first enacting HAI legislation in 2006 and 2007, it was not until 2008 and 2009 that most states with HAI laws implemented a HAI prevention program (60%). There was a similar lag between statute enactment and when most states required hospitals to first submit HAI data. These observed lags were likely not just a function of funding availability, but also reflected the time necessary to hire staff, establish the HAI programs, and appoint an HAI advisory committee. Of note, in 7 states HAI program implementation pre-dated statutory requirements for HAI reporting thereby indicating that some states were proactive in starting their HAI prevention efforts, even in the absence of a legal mandate.

### Trends in specific HAI reporting

The data presented here demonstrate that, among states with HAI laws, most first required that CLABSI data be submitted by hospitals, with the majority beginning in 2008 and 2009. In fact, reporting of other device-associated infections, as well as infections caused by MDROs, tended not to occur until several years later. CLABSI reporting likely preceded reporting of other HAI in many states because they were identified early on as being common, potentially fatal, expensive, and largely preventable with simple and inexpensive interventions.[10,12–14] For states with CAUTI reporting requirements, most began in 2012; for states with MRSA and *C. difficile* reporting requirements, the largest proportions began in 2013. Much of the timing of when states first required that specific HAI be reported was influenced by the federal Centers for Medicare & Medicaid Services (CMS) Hospital Inpatient Quality Reporting (IQR) Program in which hospitals are required to report HAI via NHSN. For instance, acute care hospitals participating in the CMS Hospital IQR Program were first required to report CAUTI events in January 2012, and MRSA bacteremia and *C. difficile* LabID Events in January 2013. This is consistent with when most states required reporting of those same HAI, as indicated above. This observation is further supported by when states required CLABSI reporting in pediatric and neonatal ICUs, for which two waves occurred. The second wave, in 2011, aligned with CMS requirements (beginning in January 2011) that adult, pediatric, and neonatal ICUs in acute care hospitals report CLABSI events. Overall, these findings suggest that federal reporting requirements have been, and may continue to be, an important influence on state mandated reporting.

Among states with HAI data submission requirements, only 11% required VAP. It is notable that two states (Illinois and Missouri) with statutory requirements for VAP reporting did not submit data. In Missouri, a process measure (Head of Bed elevation) was substituted for the purposes of public reporting. This was mainly due to the poor reliability of the VAP surveillance definition, potentially resulting in high variation with regards to how VAP cases were classified.[15,16] Due to the lack of an objective and specific outcome measure, the CDC's VAP Surveillance Definition Working Group developed a more objective and reliable surveillance definition for ventilator-associated events (VAE; implemented in NHSN in January 2013).[17] It is possible that the improved definition will result in additional states choosing to require VAE data submission.

Most states chose to use the NHSN reporting system, which allows not only for the facility to track its own data but to easily share their data with the state DOH or a collaborative. When states use NHSN, this increases the coordination between state and federal mandates thereby reducing the burden of collecting data using multiple definitions. Additionally, it forces the states to use the CDC infection definitions and surveillance protocols which enhances harmonization. When initiating a new HAI data submission requirement, a state will have to decide which surveillance method should be used.[18] Furthermore, several HAI are reported by most states (i.e., CLABSI, MRSA, and *C. difficile*) and this raises concerns about the need for rapid harmonization and consensus across states that report the same information (an issue that will become increasingly important as more states require the reporting of additional infection types). This is highlighted by the publication of NHSN

reports comparing the results of these standardized data on infection prevention quality measures.[19]

State and federally mandated HAI reporting has broadened the focus of HAI prevention efforts. While these mandates are designed to promote patient safety and decrease HAI, prevention occurs at the facility level and lack of resources are an issue. HAI prevention efforts in the US have been built on the efforts of front-line healthcare epidemiologists and infection preventionists. Although the prominence of their work and the demands on their time have increased dramatically with mandatory reporting, most have not seen corresponding increases in support for their efforts.

### Limitations

State-level HAI data reporting requirements provide a unique example of administrative law. Most state HAI statutes grant state DOH the authority to alter HAI mandates without legislatively amending statutory provisions. As such, while attempts were made to be as thorough as possible in this review, as well as confirm results with HAI coordinators, due to the flexibility to change state mandates it is possible that a data element is not correct. Furthermore, the legal analysis focused specifically on laws directly applicable to state HAI data submission and public reporting requirements. Other laws that are not specific to state HAI programs, such as communicable disease and licensing laws, were not included in this analysis. In addition, reporting laws relating to community-associated, and not hospital-associated, infections were not included. It should be noted, however, that HAI mandates in two states (New Mexico and Georgia) are in the notifiable disease rule and thus reported via notifiable conditions. Other states have HAI on their notifiable diseases lists but, unlike for New Mexico and Georgia, those are not reported to NHSN.

## CONCLUSIONS

These findings demonstrate that, since 2003, the majority of states and territories have adopted laws requiring the reporting of at least one HAI to their DOH, reflecting an environment of increased concern for patient safety across the nation over a relatively short period of time. While most states with HAI laws require CLABSI, MRSA, and *C. difficile* reporting, data submission requirements vary across states. Federal mandates may be significant influencers of state HAI law adoption, and this is important to consider when addressing current and emerging HAI. Recent studies have suggested that HAI reduction efforts at the state[20] or federal levels[21] have not achieved their desired effects on hospital infection rates, indicating that other prevention efforts are also at play. Considering the facility and state resources required to comply with HAI reporting mandates, future work should address whether these laws have indeed had the desired impact of reducing infection rates.

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## References

1. Klevens RM, Edwards JR, Richards CL, et al. Estimating health care-associated infections and deaths in US hospitals, 2002. Public Health Reports. Mar-Apr;2007 122(2):160–166. [PubMed: 17357358]
2. Scott, RD, II. The Direct Medical Costs of Healthcare-Associated Infections in U.S Hospitals and the Benefits of Prevention. Atlanta, GA: Centers for Disease Control and Prevention; 2009.
3. Murphy DJ, Needham DM, Goeschel C, Fan E, Cosgrove SE, Pronovost PJ. Monitoring and reducing central line-associated bloodstream infections: a national survey of state hospital associations. Am J Med Qual. Jul-Aug;2010 25(4):255–260. [PubMed: 20525918]
4. Aswani MS, Reagan J, Jin L, Pronovost PJ, Goeschel C. Variation in public reporting of central line-associated bloodstream infections by state. Am J Med Qual. Sep-Oct;2011 26(5):387–395. [PubMed: 21825038]
5. U.S. Department of Health & Human Services. National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination. http://www.hhs.gov/ash/initiatives/hai/actionplan/index.html Accessed July 2, 2013
6. HAI Focus. State Healthcare-Associated Infection (HAI) Laws. http://haifocus.com/state-healthcare-associated-infection-laws/. Accessed December 11, 2013
7. Reagan J, Hacker C. Laws pertaining to healthcare-associated infections: a review of 3 legal requirements. Infect Control Hosp Epidemiol. Jan; 2012 33(1):75–80. [PubMed: 22173526]
8. To Err Is Human: Building a Safer Health System. Washington, DC: Institute of Medicine; 2000.
9. Centers for Disease Control and Prevention. Reduction in central line-associated bloodstream infections among patients in intensive care units–Pennsylvania, April 2001–March 2005. MMWR Morb Mortal Wkly Rep. Oct 14; 2005 54(40):1013–1016. [PubMed: 16224448]
10. Pronovost P, Needham D, Berenholtz S, et al. An intervention to decrease catheter-related bloodstream infections in the ICU. N Engl J Med. Dec 28; 2006 355(26):2725–2732. [PubMed: 17192537]
11. McKibben L, Horan T, Tokars JI, et al. Guidance on public reporting of healthcare-associated infections: recommendations of the Healthcare Infection Control Practices Advisory Committee. Am J Infect Control. May; 2005 33(4):217–226. [PubMed: 15877016]
12. Mermel LA. Prevention of intravascular catheter-related infections. Ann Intern Med. Mar 7; 2000 132(5):391–402. Erratum, Ann Intern Med 2000;2133(2005):2395. [PubMed: 10691590]
13. O'Grady NP, Alexander M, Dellinger EP, et al. Guidelines for the prevention of intravascular catheter-related infections. Centers for Disease Control and Prevention. MMWR Recomm Rep. Aug 9; 2002 51(RR-10):1–29. [PubMed: 12233868]
14. Shannon RP, Patel B, Cummins D, Shannon AH, Ganguli G, Lu Y. Economics of central line–associated bloodstream infections. Am J Med Qual. Nov-Dec;2006 21(6 Suppl):7S–16S. [PubMed: 17077414]
15. Stevens JP, Kachniarz B, Wright SB, et al. When Policy Gets It Right: Variability in U.S. Hospitals' Diagnosis of Ventilator-Associated Pneumonia. Crit Care Med. Oct 18. Epub 2013 Oct 18.
16. Klompas M. Interobserver variability in ventilator-associated pneumonia surveillance. Am J Infect Control. Apr; 2010 38(3):237–239. [PubMed: 20171757]
17. Magill SS, Klompas M, Balk R, et al. Developing a new, national approach to surveillance for ventilator-associated events. Am J Crit Care. Nov; 2013 22(6):469–473. [PubMed: 24186816]
18. Gase KA, Haley VB, Xiong K, Van Antwerpen C, Stricof RL. Comparison of 2 Clostridium difficile surveillance methods: National Healthcare Safety Network's laboratory-identified event reporting module versus clinical infection surveillance. Infect Control Hosp Epidemiol. Mar; 2013 34(3):284–290. [PubMed: 23388363]
19. 2012 National and State Healthcare-Associated Infections Progress Report. Atlanta, GA: Centers for Disease Control and Prevention; 2014.

20. Pakyz AL, Edmond MB. Influence of state laws mandating reporting of healthcare-associated infections: the case of central line-associated bloodstream infections. Infect Control Hosp Epidemiol. Aug; 2013 34(8):780–784. [PubMed: 23838217]

21. Lee GM, Kleinman K, Soumerai SB, et al. Effect of nonpayment for preventable infections in U.S. hospitals. N Engl J Med. Oct 11; 2012 367(15):1428–1437. [PubMed: 23050526]

## Table 1

States and territories with laws requiring HAI data submission, as of January 31, 2013

| Presence of mandatory HAI data submission requirements | States and territories (n=52) | Number (%) |
|---|---|---|
| Yes | AL, AR, CA, CO, CT, DC, DE, FL, GA, HI, IL, IN, MA, MD, ME, MN, MO, NC, NH, NJ, NM, NV, NY, OH, OK, OR, PA, PR, RI, SC, TN, TX, UT, VA, VT, WA, WV | 37 (71) |
| No | AK, AZ, IA, ID, KS, KY, LA, MI, MS, MT, ND, NE, SD, WI, WY | 15 (29) |

Abbreviation: HAI, healthcare-associated infection

## Table 2

Timing of HAI laws and HAI program implementation, through January 31, 2013

| Year | States and territories (n=37) | Number (%) |
|---|---|---|
| ***Year of HAI law enactment***[a] | | |
| **2003** | IL | 1 (3) |
| **2004** | FL, MO | 2 (5) |
| **2005** | NV, NY, VA | 3 (8) |
| **2006** | CA, CO, CT, DC, MD, ME, NH, OH, OK, SC, TN, VT | 12 (32) |
| **2007** | DE, NJ, OR, PA, PR, TX, UT, WA | 8 (22) |
| **2008** | MA, MN, RI, WV | 4 (11) |
| **2009** | AL | 1 (3) |
| **2011** | AR, HI, IN, NC | 4 (11) |
| **2012** | GA, NM | 2 (5) |
| ***Year HAI law became effective*** | | |
| **2004** | FL, IL, MO | 3 (8) |
| **2005** | NV, NY | 2 (5) |
| **2006** | CO, CT, MD, OH, OK, SC, TN, VT | 8 (22) |
| **2007** | CA, DC, DE, ME, NH, OR, PA, PR, TX, UT, WA | 11 (30) |
| **2008** | MA, MN, NJ, RI, VA, WV | 6 (16) |
| **2009** | AL | 1 (3) |
| **2011** | AR, HI, IN, NC | 4 (11) |
| **2012** | NM | 1 (3) |
| **2013** | GA | 1 (3) |
| ***Year HAI data submission was first legally required***[b] | | |
| **2004** | FL | 1 (3) |
| **2005** | MO | 1 (3) |
| **2007** | CO, DC, ME, NY, UT, VT | 6 (16) |
| **2008** | CT, DE, IL, MA, MD, NJ, OH, OK, PA, RI, SC, TN, VA, WA | 14 (38) |
| **2009** | CA, MN, NH, OR, WV | 5 (14) |
| **2011** | AL, AR, HI, TX | 4 (11) |
| **2012** | IN, NC, NM | 3 (8) |
| **2013** | GA | 1 (3) |
| **Unknown** | NV, PR | 2 (5) |
| ***Year of HAI program implementation*** | | |
| **2003** | TN | 1 (3) |
| **2005** | MO | 1 (3) |
| **2006** | CO, OH, SC | 3 (8) |
| **2007** | DE, NJ, NY, OR, PA, TX, WA | 7 (19) |
| **2008** | CT, MA, MD, NH, NM, OK, RI, VA | 8 (22) |
| **2009** | AL, AR, CA, DC, GA, HI, IL, IN, ME, MN, NC, UT, VT, WV | 14 (38) |

| Year | States and territories (n=37) | Number (%) |
|---|---|---|
| **2010** | FL, NV, PR | 3 (8) |

Abbreviation: HAI, healthcare-associated infection

[a]The original HAI laws in AR and NM were enacted in 2007 and 2008, respectively, and included voluntary HAI data submission. Dates reported here are for the amendments that included mandatory HAI data submission.

[b]The HAI laws in IL and OK required collection of pilot HAI data in 2008; however, official mandatory reporting of HAI data did not begin until 2009. Similarly, HAI outcome measures were first reported in OH in 2009 for HAI data collected in 2008.

## Table 3

HAI data submission to NHSN and public reporting provisions

| | States and territories (n=37) | Number (%) |
|---|---|---|
| ***HAI data submission to NHSN*** | | |
| Always required, since HAI law enactment | AL, AR, CO, CT, DE, GA, HI, IL, IN, MA, MD, NC, NH, NJ, NM, NY, OK, OR, PA, SC, TN, VA, VT, WA, WV | 25 (68) |
| Currently required, but not since HAI law enactment | CA, DC, ME, MN, TX, UT | 6 (16) |
| Not required[a] | FL, MO, NV, OH, PR, RI | 6 (16) |
| ***Presence of public reporting provisions*** | | |
| Yes | AL, AR, CA, CO, CT, DC, DE, FL, HI, IL, MA, MD, ME, MN, MO, NC, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, TN, TX, UT, VA, VT, WA, WV | 34 (92) |
| No | GA, IN, PR | 3 (8) |

Abbreviations: HAI, healthcare-associated infection; NHSN, National Healthcare Safety Network

[a]Hospitals in MO and RI had the option of submitting HAI data to NHSN but it was not mandatory.

## Table 4

States and territories with HAI laws by infection type, as of January 31, 2013

| Infection types | States and territories (n=37) | Number (%) |
|---|---|---|
| ***Device-associated infections*** | | |
| CLABSI, adult ICUs | AL, AR, CA, CO, CT, DC, DE, GA, HI, IL, IN, MA, MD, ME, MN, MO, NC, NH, NJ, NM, NV, NY, OK, OR, PA, RI, SC, TN, TX, UT, VA, VT, WA, WV | 34 (92) |
| CLABSI, pediatric ICUs[a] | AL, AR, CA, CT, DC, DE, GA, HI, IL, IN, MA, MD, MN, MO, NC, NH, NJ, NY, OH, PA, RI, TN, TX, UT, WA,WV | 26 (70) |
| CLABSI, neonatal ICUs[a] | AR, CA, CO, CT, DC, DE, GA, HI, IL, IN, MA, MD, ME, MN, MO, NC, NH, NJ, NY, OR, PA, RI, TN, TX, UT, WA, WV | 27 (73) |
| CAUTI, adult ICUs[b] | AR, CT, DE, GA, HI, IN, MN, NC, NH, NJ, PA, TN, UT, WV | 14 (38) |
| VAP, adult ICUs[c] | OK, PA, SC, WA | 4 (11) |
| ***Multidrug-resistant organism infections*** | | |
| Methicillin-resistant *S. aureus* | AR, CA, DC, DE, GA, HI, IL, ME, MN, MO, NC, NJ, NV, OH, PA, RI, SC, TN, UT, WV | 20 (54) |
| *C. difficile* | AR, CA, CT, DE, GA, HI, IL, ME, MN, NC, NM, NY, OH, OR, PA, RI, TN, UT, WV | 19 (51) |
| Vancomycin-resistant enterococci | CA, MO, PA | 3 (8) |

Abbreviations: HAI, healthcare-associated infection; CLABSI, central line-associated bloodstream infection; ICU, intensive care unit; CAUTI, catheter-associated urinary tract infection; VAP, ventilator-associated pneumonia

[a] CLABSI data submission requirements in neonatal and pediatric ICUs were not specified in the statute for one state (NM) and could not be determined for two states (NV, SC).

[b] CAUTI data submission in AL was required for hospital wards only, not for ICUs.

[c] Mandatory VAP data submission was written into the statutes in IL and MO; however, VAP was not reported in those states.

## Table 5

States and territories with HAI laws by year data submission began, through January 31, 2013

| Year | States and territories | Number (%) |
|---|---|---|
| ***Central line-associated bloodstream infection, adult ICUs[a] (n=34)*** | | |
| **2005** | MO, NV | 2 (6) |
| **2007** | CO, DC, ME, NY | 4 (12) |
| **2008** | CT, DE, IL, MA, MD, OK, PA, SC, TN, UT, VA, WA | 12 (35) |
| **2009** | CA, NH, NJ, OR, RI, VT, WV | 7 (21) |
| **2011** | AL, AR, HI, TX | 4 (12) |
| **2012** | IN, NC, NM | 3 (9) |
| **2013** | GA, MN | 2 (6) |
| ***Central line-associated bloodstream infection, pediatric ICUs[b,c] (n=26)*** | | |
| **2005** | MO | 1 (4) |
| **2007** | NY | 1 (4) |
| **2008** | CT, MA, MD, PA, TN, UT, WA | 7 (27) |
| **2009** | CA, NH, NJ, RI | 4 (15) |
| **2010** | DC, IL | 2 (8) |
| **2011** | AL, AR, DE, HI, OH, TX | 6 (23) |
| **2012** | IN, NC, WV | 3 (12) |
| **2013** | GA, MN | 2 (8) |
| ***Central line-associated bloodstream infection, neonatal ICUs[b,c] (n=27)*** | | |
| **2005** | MO | 1 (4) |
| **2007** | CO, ME, NY | 3 (11) |
| **2008** | MA, MD, PA, TN, WA | 5 (19) |
| **2009** | CA, NH, NJ, RI | 4 (15) |
| **2010** | DC, IL | 2 (7) |
| **2011** | AR, DE, HI, OR, TX, UT | 6 (22) |
| **2012** | CT, IN, NC, WV | 4 (15) |
| **2013** | GA, MN | 2 (7) |
| ***Catheter-associated urinary tract infection (n=14)*** | | |
| **2008** | PA | 1 (7) |
| **2010** | NJ | 1 (7) |
| **2012** | AR, CT, DE, HI, IN, NC, NH, TN, UT, WV | 10 (71) |
| **2013** | GA, MN | 2 (14) |
| ***Ventilator-associated pneumonia (n=4)*** | | |
| **2008** | OK, PA, SC | 3 (75) |
| **2009** | WA | 1 (25) |
| ***Methicillin-resistant* S. aureus[d] (n=20)** | | |
| **2005** | MO | 1 (5) |

| Year | States and territories | Number (%) |
|---|---|---|
| **2008** | PA, SC | 2 (10) |
| **2009** | CA, DC, NJ, OH | 4 (20) |
| **2010** | TN | 1 (5) |
| **2011** | ME, NV, RI | 3 (15) |
| **2012** | IL | 1 (5) |
| **2013** | AR, DE, GA, HI, MN, NC, UT, WV | 8 (40) |
| ***C. difficile (n=19)*** | | |
| **2008** | OH, PA | 2 (11) |
| **2009** | CA, NY | 2 (11) |
| **2010** | TN | 1 (5) |
| **2011** | RI | 1 (5) |
| **2012** | IL, ME, NM, OR | 4 (21) |
| **2013** | AR, CT, DE, GA, HI, MN, NC, UT, WV | 9 (47) |
| ***Vancomycin resistant enterococci (n=3)*** | | |
| **2005** | MO | 1 (33) |
| **2008** | PA | 1 (33) |
| **2009** | CA | 1 (33) |

Abbreviations: HAI, healthcare-associated infection; ICU, intensive care unit; CLABSI, central line-associated bloodstream infection; MRSA, methicillin-resistant *Staphylococcus aureus*

[a] In DE, CLABSI data were submitted for a single ICU per hospital until 2011.

[b] It was unclear when mandatory CLABSI data submission in neonatal and pediatric ICUs began in DC and MN. Possibly as early as 2007 and 2010, respectively and definitely by 2010 and 2013, respectively.

[c] Pediatric hospitals in MN were exempt from submitting CLABSI data.

[d] In NJ, MRSA data were submitted for at least one ICU location per hospital until 2011.