2013

Report on Healthcare Associated Infections (HAI) to the General Assembly

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LIST OF ABBREVIATIONS USED IN THIS DOCUMENT

ABBREVIATION	DEFINITION
CAUTI	Catheter-associated urinary tract infection
CDC	Centers for Disease Control and Prevention
CDI	*Clostridium difficile* infection
CHA	Connecticut Hospital Association
CLABSI	Central line-associated bloodstream infection
CMS	Centers for Medicaid and Medicare Services
COLO	NHSN code for surgical site infection following colon surgical procedures
CUSP	Comprehensive Unit-based Safety Program
DHHS	Department of Health and Human Services
DPH	Connecticut Department of Public Health
DU	Device utilization
FacWideIN	Facility-wide inpatient
HAI	Healthcare associated infection
HO	Hospital-onset
HYST	NHSN code for surgical site infection following abdominal hysterectomies
ICU	Intensive care unit
IPPS	Inpatient Prospective Payment System
MRSA	Methicillin-resistant *Staphylococcus aureus*
NHSN	National Healthcare Safety Network
NICU	Neonatal intensive care unit
PICU	Pediatric intensive care unit
QI	Quality improvement
QIP	Quality Incentive Program
SIR	Standardized infection ratio
SSI	Surgical site infection
VRE	Vancomycin-resistant enterococcus

EXECUTIVE SUMMARY

This is the fifth annual report to the Connecticut General Assembly on Healthcare Associated Infections (HAI), pursuant to C.G.S. 19a-490 o. It is an update on which HAI are reportable, with data on trends and progress on reducing HAI in Connecticut healthcare facilities. The Connecticut Department of Public Health (DPH) HAI website provides additional reports, data, and educational materials at http://www.ct.gov/dph/cwp/view.asp?a=3136&q=417318.

From 2008 to 2011, Connecticut acute care hospitals were mandated to report central line-associated blood stream infections (CLABSI) from one adult intensive care unit (ICU) per hospital and all pediatric ICU (PICU), via the Centers for Disease Control and Prevention's (CDC) secure online data collection system, the National Healthcare Safety Network (NHSN). The Connecticut HAI Advisory Committee ("the HAI Advisory Committee") then recommended that the state HAI reporting mirror federal Centers for Medicaid and Medicare Services (CMS) health facility quality improvement (QI) reporting, which expanded HAI surveillance considerably to include additional ICU for CLABSI reporting as well as two new types of HAI: catheter-associated urinary tract infections (CAUTI) in all acute care hospital adult and PICU, and surgical site infections (SSI) following colon surgical procedures and abdominal hysterectomies. In future years, HAI surveillance in Connecticut is anticipated to continue to expand consistently with expansion of CMS reporting; these expansions are expected to include new HAI measures as well as additional healthcare facility types across the continuum of care.

Connecticut, other states, and the CDC use a statistical measure called the standardized infection ratio (SIR) to assess the burden of HAI and to track progress in prevention. For the purposes of this report, the SIR compares the number of HAI in the state to the number of infections predicted based on national HAI data across the United States. A statistically significant SIR below 1 means the state is performing better than predicted based on national data; a statistically significant SIR above 1 means the state is performing worse than predicted.

- Connecticut is doing well in reducing CLABSI. From 2009 to 2013, the SIR in adult ICU decreased from 0.91 to 0.47. PICU CLABSI made similar progress, and Connecticut has surpassed the federal Department of Health and Human Services' (DHHS) 2013 National Prevention Target: a 50% reduction in CLABSI (equivalent to an SIR of 0.50).
- As far as reducing CAUTI, Connecticut has room to improve. While the CAUTI SIR decreased from 1.84 to 1.67 from 2012 to 2013, Connecticut healthcare facilities will need to implement measures in order to achieve the National Prevention Target by the end of the extended target period: a 25% reduction in CAUTI (equivalent to an SIR of 0.75).
- Connecticut's SSI SIR following colon surgical procedures increased from 1.2 in 2012 to 1.26 in 2013, failing to achieve the National Prevention Target: a 25% reduction in CAUTI (equivalent to an SIR of 0.75).
- Connecticut's SSI SIR following abdominal hysterectomies increased from 1.45 in 2012 to 1.72 in 2013, failing to achieve the National Prevention Target: a 25% reduction in CAUTI (equivalent to an SIR of 0.75).
- Connecticut first began collecting data on methicillin-resistant *Staphylococcus aureus* (MRSA) blood stream infections (bacteremia) in 2013; with an SIR of 0.74, Connecticut has already surpassed the National Prevention Target: a 25% reduction in MRSA bacteremia (equivalent to a 0.75 SIR). However, Connecticut's SIR may continue to drop by the end of the extended target period.

- Connecticut first began collecting data on *Clostridium difficile* infection (CDI) in 2013. With an SIR of 1.02, Connecticut failed to achieve the National Prevention Target of a 30% reduction in CDI (equivalent to an SIR of 0.70).

This report highlights our successes and persistent challenges. Certain HAIs, such as CLABSI in our intensive care units and MRSA bacteremia, have dramatically decreased over the years and have attained ambitious national goals. Others, unfortunately, such as CAUTI and certain surgical site infections, remain stubbornly high despite our collective efforts. We must redouble our efforts on the challenges that remain.

These data are used by prevention collaboratives (groups of health facilities sharing best practices for prevention) in the state led by the Connecticut Hospital Association (CHA) and Qualidigm, a Connecticut-based national consulting and research company, working with Connecticut DPH. These HAI surveillance data show that Connecticut DPH, our partners, and the medical community need to redouble our efforts to prevent HAI in Connecticut.

HOW HEALTHCARE ASSOCIATED INFECTIONS MEASURES ARE MADE MANDATORILY REPORTABLE

In 2006, the Connecticut Legislature established the HAI Advisory Committee and directed Connecticut DPH to develop a state public health HAI program to raise awareness of HAI, promote transparency for healthcare consumers, and promote the collection, analysis, and sharing of data to foster and guide infection prevention action in healthcare settings. Tracking, measuring, and reporting of HAI data are important to understand statewide trends, identify patterns of infection, and ensure readiness for the possible emergence of new or unusual microorganisms.

The HAI Advisory Committee meets quarterly to provide recommendations to Connecticut DPH on HAI public reporting and public awareness. It consists of 11 voting members and approximately 40 regular non-member participants. Among these committed individuals are hospital epidemiologists, infection preventionists (IP), healthcare consumers and advocates, QI professionals, and professional healthcare associations. Non-voting participants attend meetings and participate in discussion, but do not have the authority to vote on formal motions set before the HAI Advisory Committee. All substantive business, such as recommendations to Connecticut DPH regarding which HAI should be publicly reported, must be conducted through formal motion and majority vote by the voting members. These deliberations are informed by the most current science of HAI surveillance and prevention in the medical and public health literature, sharing of best practices among states and the CDC, and the practical experience and perspective of the members of the HAI Advisory Committee.

Once the HAI Advisory Committee makes a recommendation regarding selection and surveillance methods of new HAI measures, in accordance with Connecticut General Statutes Section 19a-490 o, their recommendation is considered by the Connecticut DPH Reportable Diseases Advisory Committee ("the Reportable Diseases Advisory Committee") for inclusion in a Connecticut DPH list published annually in the Connecticut Epidemiologist Newsletter, "Reportable Diseases, Emergency Illnesses and Health Conditions." This list is revised and published each year in compliance with C.G.S. 19a-2a and Section 19a-36-A2 of the Public Health Code. When the recommendation is accepted by the Connecticut DPH Commissioner (as it has each time a recommendation to include a particular HAI measure has been made), it is then placed on the annual reportable conditions list with reporting instructions.

The 2013 members of the HAI Advisory Committee were:

- Department of Public Health Commissioner or Commissioner's designee
  Wendy Furniss, Chief, Healthcare Safety & Quality Branch, Connecticut DPH, Hartford, CT
- Two representatives from the Connecticut Hospital Association
  Alison Hong, MD, Director, Quality and Patient Safety, CT Hospital Association, Wallingford, CT
  James Iacobellis, Connecticut Hospital Association, Wallingford, CT
- Two representatives from organizations representing health care consumers
  Valerie Wyzykowski, Office of Healthcare Advocate, State of CT, Hartford, CT
  Jean Rexford, Executive Director, Connecticut Center for Patient Safety, Hartford, CT
- Two representatives who are hospital-based infectious disease specialists or epidemiologists
  Louise Dembry, MD, Hospital Epidemiologist, Yale-New Haven Hospital, New Haven, CT
  Brenda Grant, RN, MPH, CIC, Infection Preventionist, Stamford Hospital, Stamford, CT
- One representative from the Connecticut State Medical Society
  Douglas Waite, MD, VP for Medical Affairs/CMO, Director of Infectious Disease, Day Kimball Hospital, Putnam, CT
- One representative from a labor organization representing hospital-based nurses
  Dale Cunningham, American Federation of Teachers, Rocky Hill, CT

- Two members from the public
  Raymond Andrews, Trustee, The Donaghue Medical Research Foundation, West Hartford, CT
  Vacant

HEALTHCARE ASSOCIATED INFECTIONS SUBJECT TO REPORTING IN CONNECTICUT

From 2008 through 2011, the Connecticut HAI reporting requirement mandated acute care hospitals to report the incidence of CLABSI from one medical or medical/surgical ICU as well as all PICU. CLABSI in ICU were chosen because they relate to procedures that are performed frequently, may result in significant harm to patients, have surveillance definitions that are generally recognized, are relatively easily identified and counted, and have widely accepted prevention methods. Patients in ICU were chosen because they are a population at high risk for adverse outcomes as they are already critically ill and are at a greater risk for developing CLABSI. Moreover, surveillance is relatively easy to perform in ICU because these patients are already aggressively monitored.

Beginning in 2011, CMS expanded "pay for reporting" HAI reporting requirements for the Inpatient Prospective Payment System (IPPS) for hospitals and the Quality Incentive Program (QIP) for hemodialysis centers as a condition of receiving annual supplemental payments. CMS requires that these data be reported using NHSN. The expansion added new classes of facilities beyond acute care hospitals, new locations within hospitals, and new types of HAI to the reporting expectations. CMS reporting requirements will continue to expand for the foreseeable future.

The HAI Advisory Committee recommended that the Connecticut HAI reporting mandate mirror the CMS reporting mandate. This resulted in an expansion in the HAI surveillance measures that are be reported by acute care facilities to Connecticut DPH and subsequently to the public. Therefore, in 2012, reporting expanded to include CAUTI and SSI following colon surgical procedures and abdominal hysterectomies in acute care hospitals. As of January 2013, two new HAI measures were made reportable to Connecticut DPH: MRSA bacteremia and *Clostridium difficile* infection (CDI) LabID events in each acute care hospital. LabID events report patient-specific data on these two infections generated from hospital microbiology laboratory results, and are reported for all inpatients, facility-wide (FacWideIN), with the exception of inpatient NICU data for CDI.

HOW HEALTHCARE ASSOCIATED INFECTIONS DATA ARE COLLECTED

The HAI reporting mandate requires acute care hospitals to report specific HAI-related data to NHSN, which is a secure, internet-based surveillance system that healthcare facilities may use to track and report HAI data. NHSN includes standardized definitions, built-in analytical tools, user training and support, and integrated data quality checks. Only persons who have completed training on the standard definitions and surveillance methodology may perform NHSN data entry, and all protocols must be followed precisely. These protocols provide a rigorous national and state standard to ensure consistent collection of comparable data. The CDC makes NHSN available to all United States healthcare facilities at no charge, and, as of the writing of this report, is currently collecting data from more than 17,000 facilities (over 5,000 of which are hospitals) in all fifty states, the District of Columbia, and the Commonwealth of Puerto Rico.

Participation in NHSN requires a considerable commitment by each participating healthcare facility. Qualified IP, trained in nursing, microbiology, epidemiology, and/or medical technology, conduct HAI surveillance, and all have obtained additional education in infection prevention and control. These individuals collect HAI data from a variety of sources maintained by facilities, such as laboratory culture results, patient medical records, and flowcharts, such as those maintained on ICU patients. When

hospital IP determine that a patient has a condition that meets the NHSN definition of an HAI, then the infection is reported to Connecticut DPH via NHSN. These data are stored on the secure NHSN server which is protected from inappropriate disclosure by both software security features and federal law. Once data are entered, they are immediately available to the facility for viewing, analysis, and updating. Facility NHSN users must confer rights to the DPH HAI Program, which allows it to view and analyze the data for the purpose of public reporting. All patient and facility information is protected by state and federal law and are stored on secure computers.

The Connecticut DPH and CDC NHSN staffs ensure correct use of NHSN by Connecticut healthcare facilities as well as foster data accuracy by providing training to healthcare facility staff regarding how to apply the surveillance protocols that define an NHSN-reportable HAI, as well as how to collect, enter, and analyze the data. The data in this report reflect all data that were entered by Connecticut acute care hospitals into NHSN on or after June 6, 2014.

HEALTHCARE ASSOCIATED INFECTIONS DATA CLEANING AND VALIDATION

Data must be validated to ensure timeliness, completeness, accuracy, and compliance with NHSN reporting protocols. The DPH HAI Program works to ensure that Connecticut hospitals are interpreting and applying these definitions consistently by applying its own data validation process to review the data for completeness and accuracy. There are a number of points at which these data are checked for validity. NHSN has a series of internal logic checks that prevent users from entering inaccurate data. Further data checks are conducted by the DPH HAI Program utilizing output from NHSN itself aimed at identifying data quality issues. DPH HAI Program staff also periodically contact hospital reporting partners to review their facilities' data, and to encourage data quality "alerts" be resolved by the NHSN users at that facility. Finally, as resources permit, DPH HAI Program epidemiologists visit acute care hospitals in the state to perform data validation studies, which include audits of patient medical records. These chart reviews are intended to identify patient outcomes that have been misclassified according to NHSN definitions; inconsistencies are discussed with hospital IP and addressed accordingly within NHSN to ensure adherence to the reporting guidelines. On average, this process occurs every two to three years for a particular measure, or as program capacity allows. In total, this iterative approach to data cleaning and validation acts as a broad safety net to ensure that publicly-reported facility HAI data are of the best possible quality.

INTERPRETING HEALTHCARE ASSOCIATED INFECTIONS DATA

The Standardized Infection Ratio

The standardized infection ratio (SIR) is a summary statistical measure used to track HAI at a national, state, or facility level over time. The SIR adjusts for the fact that each healthcare facility treats different populations of patients. For example, the experience with HAI at a hospital with a large burn unit (a location where patients are increased risk of acquiring infections due to the nature of their illness compared to other patients) cannot be directly compared to a facility without a burn unit. The SIR is calculated by dividing the number of observed infections by the number of predicted infections.

$$\textbf{Standardized infection ratio (SIR)} = \frac{\textbf{Observed number of infections}}{\textbf{Predicted number of infections}}$$

The predicted number of infections is an estimated number of HAI based on national NHSN HAI baseline data, and is adjusted for risk factors that have been found to be significantly associated with differences in infection rates. The baseline data, or referent period, for each infection type are the following:

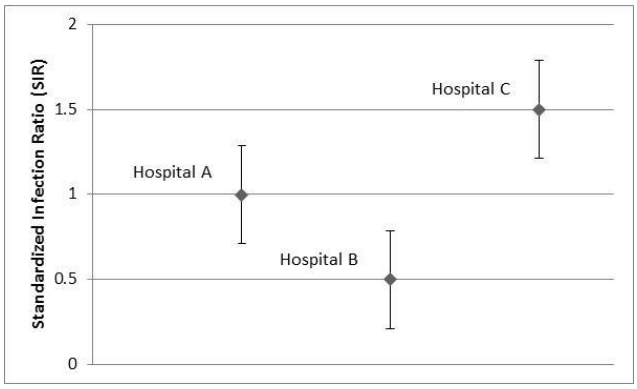
- CLABSI: National CLABSI data from 2006-2008
- CAUTI: National CAUTI data from 2009
- SSI: National SSI data from 2006-2008
- MRSA bacteremia: National MRSA data from 2010-2011
- CDI: National CDI data from 2010-2011

How to Interpret the Standardized Infection Ratio

- If the **SIR is equal to 1**, then the number of observed infections is the same as the number of predicted infections.
- If the **SIR is less than 1**, then there were fewer infections observed than predicted.
- If the **SIR is greater than 1**, then there were more infections observed than predicted.

However, the value of the SIR alone is insufficient without a measure of statistical significance. Statistical tests are used to determine whether the difference between the number of observed infections and the number of predicted infections is due to chance alone. If it is extremely unlikely that this difference is due to chance, then the difference is considered to be statistically significant. One measure of statistical significance is the 95% confidence interval. An SIR with a confidence interval that does not include the reference value of 1 is considered to be statistically significant, while an SIR with a confidence interval with upper and lower bounds that fall on either side of 1 is not considered statistically significant. The SIR value of 1 is equal to the national baseline for each measure. Even if the SIR itself is less than or greater than 1, if it is not statistically significant, the number of observed infections is considered to be similar to the number of predicted infections based on national data.

The example below shows SIR for three hospitals along with their 95% confidence intervals.



Hospital A: If the 95% confidence interval crosses the reference line of 1.0, the SIR is not statistically significant, and we can conclude that the hospital has observed a similar number of infections to what was predicted based on national data.

Hospital B: If the upper bound of the 95% confidence interval falls below the reference line of 1.0, the SIR is statistically significant, and we can conclude that the hospital has observed fewer infections than were predicted based on national data.

Hospital C: If the lower bound of the 95% confidence interval falls above the reference line of 1.0, the SIR is statistically significant, and we can conclude that the hospital has observed more infections than were predicted based on national data.

HEALTHCARE ASSOCIATED INFECTIONS SURVEILLANCE RESULTS

Thirty Connecticut acute care hospitals reported HAI data into NHSN in 2013.[1] Of these 30 hospitals, 16 categorized themselves as major teaching hospitals, which train medical students and post-graduate residents (Table 1). Two categorized themselves as graduate teaching hospitals, which train post-graduate residents/fellows, and one categorized itself as an undergraduate teaching hospital, which trains undergraduate medical students. Eleven categorized themselves as non-teaching hospitals. These 30 hospitals reported HAI data from a total of 60 ICU, which are categorized according to NHSN's 80% Rule; that is, if 80% of the patients cared for in that area are of a certain type, the location is designated as that type (Table 2).

Table 1: 2013 Connecticut reporting hospitals by teaching type

Teaching Type	# (%)
Graduate Teaching	2 (6.7)
Major Teaching	16 (53.3)
Non-teaching	11 (36.7)
Undergraduate Teaching	1 (3.3)
Total	30 (100)

Table 2: 2013 Connecticut reporting ICU by ICU type

Intensive Care Unit Types	# (%)
Burn	1 (1.7)
Medical Cardiac	4 (6.7)
Medical	9 (15.0)
Medical/Surgical	22 (36.7)
Neonatal Level II/III & III	12 (20.0)
Neurosurgical	2 (3.3)
Pediatric	2 (3.3)
Surgical	4 (6.7)
Surgical Cardiothoracic	4 (6.7)
Total	60 (100)

Central Line-Associated Blood Stream Infections, All Intensive Care Units

A central line is a flexible tube that is placed through the skin into a large vein in a patient's chest, arm, neck, or groin and ends in or close to the heart or one of the major blood vessels near the heart. Central lines are tubes used to administer fluids, nutrition, chemotherapy, antibiotics, blood and blood products, monitor the cardiovascular system, or to draw blood when repeated draws are needed. While they are an essential part of providing medical care for many patients, and are beneficial and often lifesaving, their use also may place patients at risk for infection because the line can serve as a way for bacteria to cross the barrier posed by intact skin and into the blood, particularly when they are not

[1] For the purposes of HAI surveillance, Yale-New Haven Hospital and Yale-New Haven Saint Raphael's campuses are reported as separate facilities.

inserted correctly or kept clean. These infections are serious, costly, and most can be prevented by following accepted practices for inserting and caring for central lines.

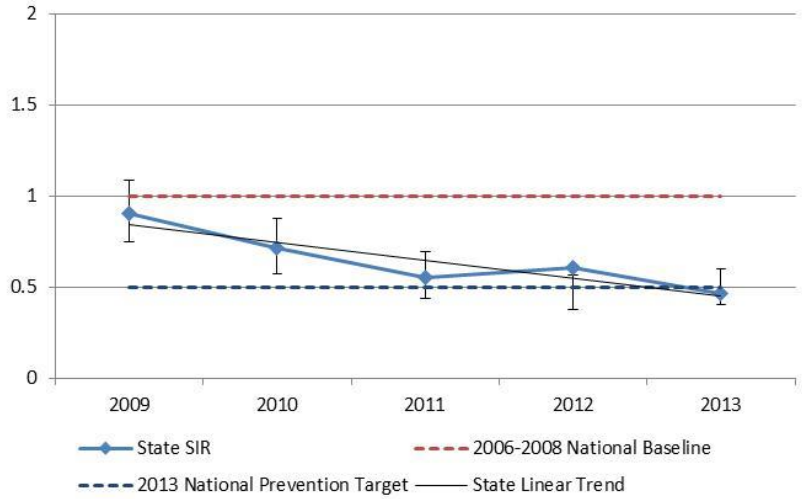
During 2013, 99 CLABSI occurring in Connecticut ICU were observed, approximately 53% fewer than were predicted; 134 CLABSI were observed in 2012. This resulted in a statistically signficant SIR of 0.47, indicating that fewer CLABSI occurred in Connecticut's ICU than were predicted based on national data (Table 3).

Table 3: 2013 CLABSI SIR, all Connecticut acute care hospital ICU

Observed # CLABSI	Predicted # CLABSI	# Central Line Days	SIR	SIR 95% Confidence Interval
99	212.63	99,577	0.47	0.38, 0.56

Connecticut has shown a general decrease in CLABSI since 2009, with an SIR of 0.91 in 2009 to an SIR of 0.47 in 2013. The DHHS National Prevention Target for CLABSI was to achieve an SIR of 0.50 by the end of 2013, representing a 50% reduction from the national baseline period of 2006-2008. Connecticut's 2013 CLABSI SIR of 0.47 was lower than the National Prevention Target, demonstrating that the impressive efforts of Connecticut healthcare facilities have yielded major successes against CLABSI in performing surveillance and implementing control measures (Figure 1). A small rise in the CLABSI SIR was observed during 2012, however it is believed that this may have been in part due to a change in reporting law mandating HAI surveillance in Connecticut to reflect CMS reporting (from only one ICU in each acute care hospital reporting CLABSI to all ICU reporting this measure).

Figure 1: 2009-2013 CLABSI SIR, all Connecticut acute care hospital ICU



The vertical bars accompanying each data point represent the 95% confidence interval

Central Line-Associated Bloodstream Infections in Pediatric and Neonatal Intensive Care Units

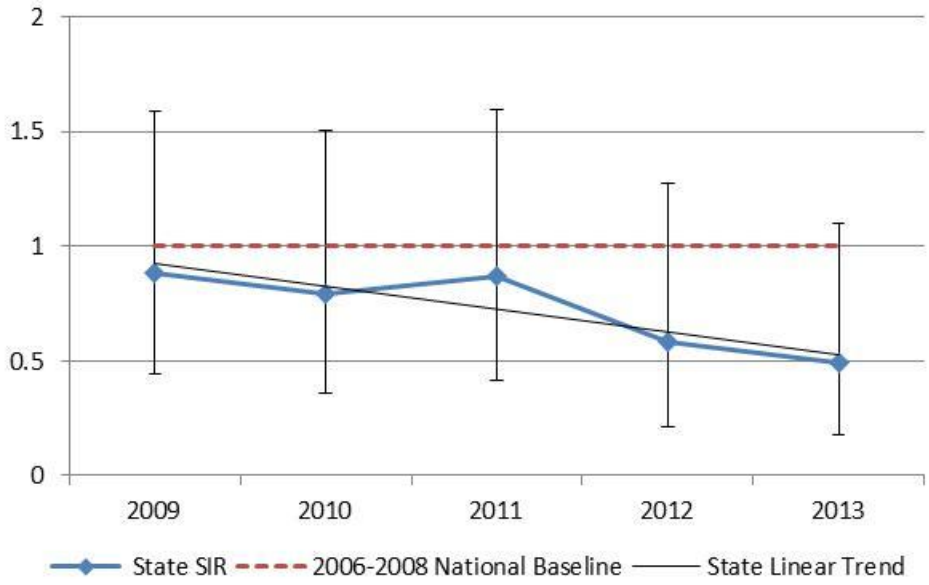
There are currently two PICU in Connecticut. During 2013, five CLABSI occurring in PICU were observed, approximately 50% fewer than predicted and one less than was observed in 2012. This resulted in an SIR of 0.50 (Table 4). While this SIR is not statistically significant, indicating that the number of CLABSI observed in Connecticut's PICU was similar to the number predicted based on national data, it is very

encouraging. Between 2009 and 2013, the CLABSI SIR in PICU decreased overall, from 0.89 to 0.50, although this decrease is not statistically significant (Figure 2).

Table 4: 2013 CLABSI SIR, Connecticut acute care hospital PICU

Observed # CLABSI	Predicted # CLABSI	# Central Line Days	SIR	SIR 95% Confidence Interval
5	10.10	3,367	0.50	0.18, 1.10

Figure 2: 2009-2013 CLABSI SIR, Connecticut acute care hospital PICU



The vertical bars accompanying each data point represent the 95% confidence interval

Connecticut began collecting CLABSI data from its 12 NICU in 2012. During 2013, 12 CLABSI occurring in NICU were observed, approximately 59% fewer than predicted; the same number was observed in 2012. This resulted in a statistically significant SIR of 0.41, indicating that fewer CLABSI occurred in Connecticut's NICU than were predicted based on national data. CLABSI data from Connecticut's NICU demonstrate the effectiveness of the efforts of our neonatal care community in reducing these serious infections in this vulnerable patient population.

Table 5: 2013 CLABSI SIR, Connecticut acute care hospital NICU

Observed # CLABSI	Predicted # CLABSI	# Central Line Days	SIR	SIR 95% Confidence Interval
12	29.66	12,180	0.41	0.22, 0.69

Central Line Device Utilization

The central line device utilization (DU) ratio measures the proportion of total patient days in which central lines are used. It is calculated by dividing the number of patients with at least one central line by

all patients in a patient care location (such as an ICU) during the specified reporting period. DU is a measure of the degree of invasive care interventions in a patient location, and can serve as a marker for severity of illness among the patients in that location. Because central line use is a necessary condition for the development of a CLABSI, reducing central line use as well as the duration of use (when the patient's condition permits it) may lead to a reduction in CLABSI. CLABSI prevention guidelines include recommendations to remove central lines as soon as they are no longer needed by the patient. In 2013, Connecticut hospitals observed statistically significantly lower DU ratios in six ICU types and statistically significantly higher DU ratios in five ICU types when compared to 2013 national DU ratios (Table 6). Connecticut's 2013 central line DU ratio was statistically significantly lower than the national ratio for four of the five birthweight categories in level II/III NICU, and four of the five birthweight categories in level III NICU (Tables 7 and 8). These data are encouraging, as they suggest that Connecticut ICU HCP are making progress in following national recommendations on CLABSI prevention. Such success in implementing practice recommendations is consistent with the excellent progress Connecticut hospitals are making in preventing CLABSI.

Table 6: 2013 central line DU ratios, Connecticut adult and pediatric ICU

ICU Type	# Central Line Days	# Patient Days	State DU Ratio*	National DU Ratio 2013
Burn (n=1)	412	508	0.81**	0.47
Medical, Major Teaching (n=5)	14,993	27,513	0.55**	0.57
Medical, All Others (n=4)	2,426	7,707	0.32**	0.45
Medical Cardiac (n=4)	6,499	12,657	0.51**	0.43
Medical/Surgical, Major Teaching (n=12)	25,452	60,017	0.42**	0.54
Medical/Surgical, All Others, ≤15 Beds (n=9)	7,627	21,825	0.35**	0.37
Medical/Surgical, All Others, >15 Beds (n=1)	2,275	3,987	0.57**	0.49
Neurosurgical (n=2)	5,159	10,484	0.49**	0.43
Pediatric Medical/Surgical (n=2)	3,367	8,837	0.38**	0.45
Surgical, Major Teaching (n=4)	6,607	12,542	0.53**	0.57
Surgical Cardiothoracic (n=4)	12,580	16,264	0.77**	0.66

** # central line days/# patient days*

*** Difference between state DU ratio and national DU ratio is statistically significant*

Table 7: 2013 central line DU ratios by birthweight, Connecticut level II/III NICU

Birthweight category	# Central Line Days	# Patient Days	State DU Ratio*	National DU Ratio 2013
<750 g	1,140	3,253	0.35**	0.39
751-1,000 g	1,057	4,345	0.24**	0.32
1,001-1,500 g	886	4,703	0.19**	0.25
1,501-2,500 g	1,361	9,373	0.15	0.14
> 2,500 g	932	7,875	0.12**	0.17

12 level II/III NICU locations reported in 2013

** # central line days/# patient days*

*** Difference between state DU ratio and national DU ratio is statistically significant*

Table 8: 2013 central line DU ratios by birthweight, Connecticut level III NICU

Birthweight category	# Central Line Days	# Patient Days	State DU Ratio*	National DU Ratio 2013
<750 g	1,637	4,877	0.34**	0.39
751-1,000 g	1,709	5,114	0.33	0.33
1,001-1,500 g	1,738	7,322	0.24**	0.26
1,501-2,500 g	940	10,072	0.09**	0.17
> 2,500 g	780	7,371	0.11**	0.23

12 level II/III NICU locations reported in 2013

** # central line days/# patient days*

*** Difference between state DU ratio and national DU ratio is statistically significant*

Central Line-Associated Bloodstream Infections Pathogens

A total of 107 pathogens[2] were isolated from 99 CLABSI; one CLABSI can be caused by more than one pathogen. *Candida* yeasts, followed by coagulase-negative staphylococci, were the pathogens most often associated with CLABSI. *S. aureus* and *Enterococcus* bacteria can sometimes become resistant to antibiotics used to treat infections caused by these microorganisms, giving rise to MRSA and Vancomycin-resistant *enterococcus* (VRE). These two drug-resistant microorganisms were associated with 6.5% and 4.7% of CLABSI, respectively.

Table 9: Pathogens associated with Connecticut CLABSI, 2013

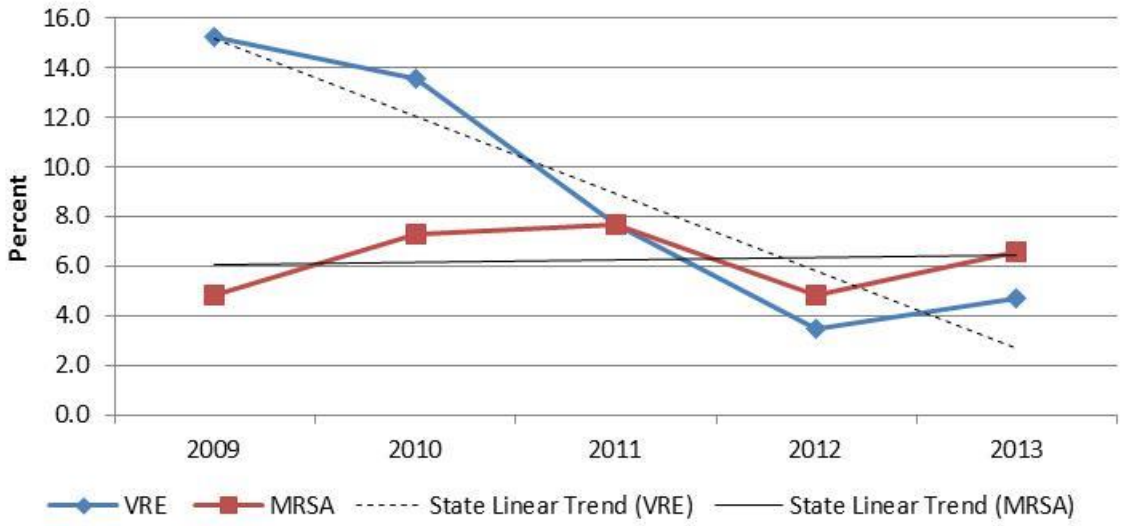
Pathogen	#	%
Candida	17	15.9
Coagulase-negative staphylococci	16	15.0
***Staphylococcus aureus* (non-MRSA)**	9	8.4
MRSA*	7	6.5
Klebsiella	8	7.5
Escherichia	8	7.5
Enterobacter	6	5.6
***Enterococcus* (non-VRE)**	5	4.7
VRE*	5	4.7
Streptococcus	4	3.7
Pseudomonas	4	3.7
***Staphylococcus* (non-aureus)**	2	1.9
Serratia	2	1.9
Corynebacterium	2	1.9
Other	12	11.2
Total	107	100

**Antibiotic-resistant microorganism*

[2] Defined as a disease-causing, infectious microorganism

The spread of multi-drug resistant organisms (MDRO) is of great public health concern due to the limited treatment options available for infections caused by these microorganisms. From 2009 to 2013, the numbers of CLABSI associated with VRE and MRSA were not high in Connecticut, totaling 47 for VRE and 33 for MRSA. The percentage of CLABSI associated with VRE declined during this period, from 15.2 in 2009 to 4.7 in 2013. The percentage of CLABSI associated with MRSA stayed relatively low, but steady. Between 2012 and 2013, while the total number of CLABSI declined, the number of infections associated with VRE and MRSA stayed nearly the same, leading to the slight increase in percentages between these years shown in Figure 3.

Figure 3: Percent of pathogens isolated from Connecticut acute care hospital CLABSI that are VRE or MRSA, 2009-2013



The vertical bars accompanying each data point represent the 95% confidence interval

Catheter-Associated Urinary Tract Infections, All Intensive Care Units

Urinary tract infections are a common type of HAI in acute care hospitals. CAUTI may occur when indwelling urinary catheters (generally called a Foley catheter) are incorrectly placed, left in too long, or not kept clean; pathogens may travel through the catheter to infect the kidneys or bladder. These CAUTI have been associated with increased illness, death, cost, and longer stays in the hospital. While these devices are often very important for medical monitoring of the patient's health status as well as patient comfort and hygiene, sometimes catheters are not necessary, and removal of such catheters can prevent this HAI.

During 2013, Connecticut acute care hospitals observed 423 CAUTI, approximately 67% more than were predicted. This resulted in a statistically significant SIR of 1.67, indicating that more CAUTI were observed than were predicted based on national data (Table 10). However, this does represent a decrease from the 2012 CAUTI SIR of 1.84.

The DHHS National Prevention Target for CAUTI is to achieve an SIR of 0.75 by the end of 2014, representing a 25% reduction in CAUTI from the national baseline period of 2009. Connecticut's 2013 CAUTI SIR of 1.67 is much higher than the National Prevention Target, despite collaborative efforts that hospitals have been making to date; although there is still one year left to reach the target goal, concerted efforts by facilities will be necessary to do so.

Table 10: 2013 CAUTI SIR, all Connecticut acute care hospital ICU

Observed # CAUTI	Predicted # CAUTI	# Urinary Catheter Days	SIR	SIR 95% Confidence Interval
423	254.13	112,722	1.67	1.51, 1.83

Catheter-Associated Urinary Tract Infections, Pediatric Intensive Care Units

A very small percentage (2%) of Connecticut's ICU CAUTI occurred in children. Nine CAUTI were observed in PICU, approximately four more than predicted. This resulted in an SIR of 1.86, which, though high, was not statistically significant, indicating that the number of CAUTI occurring in Connecticut's PICU is similar to the number predicted based on national data (Table 11).

Table 11: 2013 CAUTI SIR, Connecticut acute care hospital PICU

Observed # CAUTI	Predicted # CAUTI	# Urinary Catheter Days	SIR	SIR 95% Confidence Interval
9	4.83	1,728	1.86	0.91, 3.41

Urinary Catheter Device Utilization

The urinary catheter DU ratio measures the proportion of total patient days in which urinary catheters are used. It is calculated by dividing the number of patients with an indwelling urinary catheter by all patients in a patient care location (usually an ICU) during the specified reporting period. DU is a measure of the degree of invasive care interventions in a patient location, and can serve as a marker for severity of illness among the patients in that location. Because urinary catheter use is a necessary condition for the development of a CAUTI, reducing urinary catheter use and the duration of use (when the patient's condition permits it) may lead to lower rates of CAUTI. CAUTI prevention guidelines include recommendations to remove urinary catheters as soon as they are no longer needed by the patient.

Eight of the 11 types of ICU analyzed in Table 12 have DU ratios that are statistically significantly higher than the national DU ratio. This may be one possible factor contributing to the state's high CAUTI SIR. It should be noted that, between 2012 and 2013, the DU ratio decreased in six of the 11 types of ICU, although these decreases may not be statistically significant (Figure 4). This can be credited to a concerted effort on behalf of hospital staff to remove unnecessary urinary catheters in patients, thus reducing their chances of developing an infection in relation to the catheter.

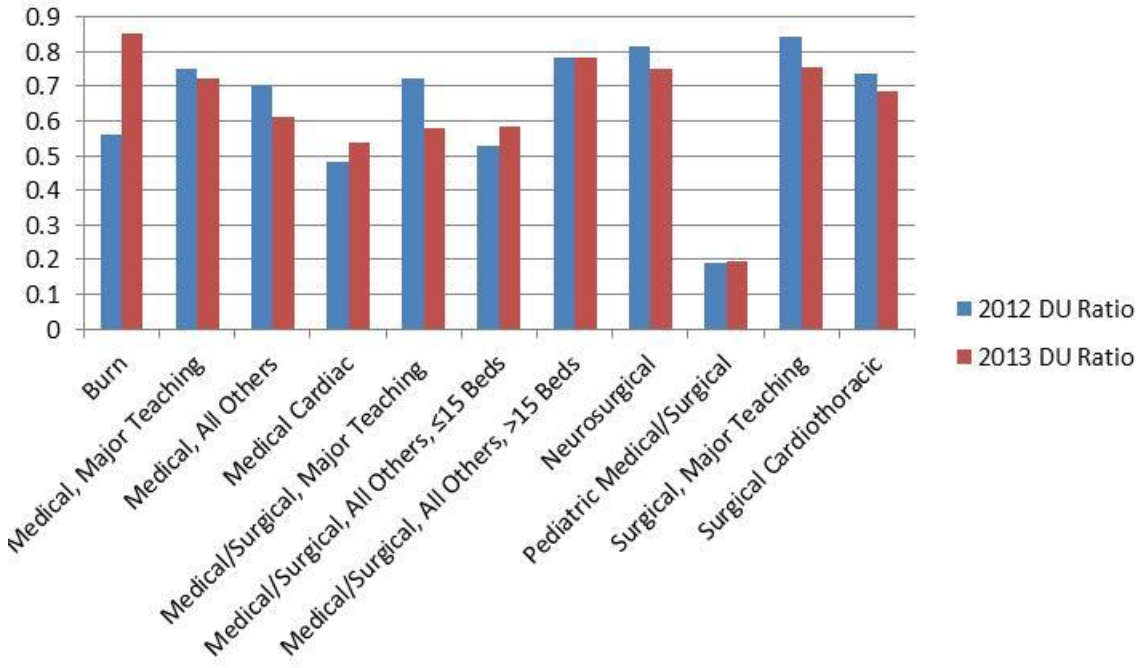
Table 12: 2013 urinary catheter DU ratios, Connecticut adult and pediatric ICU

ICU Type	# Urinary Catheter Days	# Patient Days	State DU Ratio*	National DU Ratio 2013
Burn (n=1)	432	508	0.85**	0.48
Medical, Major Teaching (n=5)	19,844	27,513	0.72**	0.67
Medical, All Others (n=4)	4,693	7,707	0.61	0.61
Medical Cardiac (n=4)	6,800	12,657	0.54**	0.52
Medical/Surgical, Major Teaching (n=12)	34,867	60,017	0.58**	0.65
Medical/Surgical, All Others, ≤15 Beds (n=9)	12,773	21,825	0.59**	0.54
Medical/Surgical, All Others, >15 Beds (n=1)	3,110	3,987	0.78**	0.63
Neurosurgical (n=2)	7,885	10,484	0.75**	0.65
Pediatric Medical/Surgical (n=2)	1,728	8,837	0.20**	0.21
Surgical, Major Teaching (n=4)	9,484	12,542	0.76**	0.72
Surgical Cardiothoracic (n=4)	11,106	16,264	0.68**	0.65

** # urinary catheter days/# patient days*

*** Difference between state DU ratio and national DU ratio is statistically significant*

Figure 4: 2012-2013 Connecticut urinary catheter DU ratios by ICU type



DU ration: # urinary catheter days/# patient days

Catheter-Associated Urinary Tract Infection Pathogens

A total of 456 pathogens were isolated from 423 CAUTI during 2013; one CAUTI can be caused by more than one pathogen. *Candida* and *Escherichia coli* were the pathogens most commonly associated with this type of infection, followed by *Enterococcus* and unspecified yeasts. Antibiotic-resistant bacteria were found among CAUTI pathogens; VRE and MRSA were associated with 4.2% and 1.1% of CAUTI, respectively (Table 13). These data are similar to what was observed in 2012 for VRE (4.4%), and represent a slight increase for MRSA (0.2% in 2012).

Table 13: Pathogens associated with Connecticut CAUTI, 2013

Pathogen	#	%
Candida	107	23.5
Escherichia	99	21.7
***Enterococcus* (non-VRE)**	51	11.2
VRE*	19	4.2
Yeast (unspecified)	48	10.5
Pseudomonas	37	8.1
Klebsiella	28	6.1
Proteus	16	3.5
Serratia	11	2.4
Enterobacter	10	2.2
***Staphylococcus aureus* (non-MRSA)**	3	0.7
MRSA*	5	1.1
Coagulase-negative staphylococci	8	1.8
Citrobacter	4	0.9
Morganella	3	0.7
Acinetobacter	3	0.7
Other	4	0.9
Total	456	100

**Antibiotic-resistant microorganism*

Surgical Site Infections

SSI occur when microorganisms infect a body site where surgery is or was performed. They are a significant cause of post-surgical morbidity and possible mortality, and can result in the need for hospital readmissions or extended courses of antibiotics.

In 2013, 140 infections following colon surgical procedures were observed, approximately 26% more than were predicted. This resulted in a statistically significant SIR of 1.26, indicating that more SSI following colon procedures were observed than were predicted based on national data. Fifty-nine infections following abdominal hysterectomies were observed during 2013, 72% more than were predicted. This resulted in a statistically significant SIR of 1.72, indicating that approximately 72% more SSI following abdominal hysterectomies were observed than were predicted based on national data (Table 14).

Table 14: 2013 Connecticut SSI SIR, by procedure type

Surgical Procedure	Procedure Count	Observed # SSI*	Predicted # SSI	State SIR	SIR 95% Confidence Interval
Colon	3,638	140	110.98	1.26	1.07, 1.48
Abdominal hysterectomy	4,019	59	34.24	1.72	1.32, 2.20

**In accordance with the CMS reporting requirement, these data include deep incisional primary and organ/space infections that occurred within 30 days of of the procedure in patients that were 18 years of age or older at the time of surgery*

The DHHS National Prevention Target for SSI was to achieve an SIR of 0.75 by the end of 2013, representing a 25% reduction in SSI from the national baseline period of 2006-2008. Connecticut's 2013 SSI SIR for infections following colon surgical procedures of 1.26 was higher than the National Prevention Target; Connecticut's 2013 SSI SIR for infections following abdominal hysterectomies of 1.72 was much higher than the National Prevention Target. Connecticut hospitals already collaborate to reduce these infections, but continued concerted efforts by facilities will help Connecticut to achieve future goals.

A total of 189 pathogens were isolated from 140 SSI following colon surgical procedures; one SSI can be caused by more than one pathogen. *Enterococcus* bacteria were most commonly associated with these types of SSI, followed by *Escherichia* and *Bacteroides* (Table 15). It is unsurprising that the pathogens most commonly associated with these SSI are gram-negative bacteria that normally inhabit the gastrointestinal tract, considering the anatomic location of these surgeries. Drug-resistant bacteria are also a concern among SSI: 3.2% of pathogens isolated from SSI following colon surgical procedures were VRE, while 4.8% were MRSA. This was slightly less than in 2012, when 3.6% were VRE, and 6.7% MRSA.

Table 15: Pathogens associated with Connecticut SSI following colon surgical procedures, 2013

Pathogen	#	%
***Enterococcus* (non-VRE)**	39	20.6
VRE*	6	3.2
Escherichia	38	20.1
Bacteroides	17	9.0
***Staphylococcus aureus* (non-MRSA)**	6	3.2
MRSA*	9	4.8
Klebsiella	12	6.3
Pseudomonas	12	6.3
Enterobacter	8	4.2
Coagulase-negative staphylococci	7	3.7
Streptococcus	6	3.2
Candida	4	2.1
Clostridium	4	2.1
Proteus	4	2.1
Gram-negative rod, unspecified	2	1.1
Lactobacillus	2	1.1
Prevotella	2	1.1
Other	11	5.8
Total	189	100

**Antibiotic-resistant microorganism*

A total of 38 pathogens were isolated from 59 SSI following abdominal hysterectomies; one SSI can be caused by more than one pathogen. *Echerichia* and *Enterococcus* bacteria were the types of pathogen most commonly associated with these SSI (Table 16). One VRE and one MRSA were isolated from these types of infections, while no VRE or MRSA isolates were observed in 2012.

Table 16: Pathogens associated with Connecticut SSI following abdominal hysterectomies, 2013

Pathogen	#	%
Escherichia	11	28.9
***Enterococcus* (non-VRE)**	7	18.4
VRE*	1	2.6
Bacteroides	6	15.8
Streptococcus	4	10.5
***Staphylococcus aureus* (non-MRSA)**	2	5.3
MRSA*	1	2.6
Candida	2	5.3
Other	4	10.5

	Total	38	100

**Antibiotic-resistant microorganism*

Hospital-onset Methicillin-Resistant* Staphylococcus aureus *Bacteremia and* Clostridium difficile *Infections

The incidence of hospital onset (HO) MRSA bacteremia[3] and (CDI)[4] became reportable to Connecticut DPH by acute care hospitals in 2013. HO means the specimen is collected greater than three days after admission to the hospital. These data are based solely on culture results from laboratories.

In 2013, 109 cases of HO MRSA bacteremia were observed, approximately 26% fewer than were predicted. This resulted in a statistically significant SIR of 0.74, indicating that fewer cases of HO MRSA bacteremia were observed than were predicted based on national data (Table 17). For CDI, 1,460 HO cases were observed in 2013, approximately 2% more than predicted. This resulted in an SIR of 1.02 which was not statistically significant, indicating that the number of CDI observed in Connecticut during 2013 was similar to the number predicted based on national data.

Table 17: 2013 MRSA and CDI SIR, all Connecticut acute care hospital ICU

Infection Type	Observed # of HO	Predicted # HO	# Patient Days	SIR	SIR 95% Confidence Interval
MRSA	109	147.36	1,981,141	0.74	0.61, 0.89
CDI	1,460	1,434.70	1,817,224*	1.02	0.97, 1.07

**NICU and well-baby nursery counts were subtracted from count per surveillance protocol*

The DHHS National Prevention Target for CDI was to achieve an SIR of 0.70 by the end of 2013, representing a 30% reduction in CDI from the national baseline period of 2010-2011. Connecticut's 2013 CDI SIR of 1.02 was higher than the National Prevention Target; continued concerted efforts by facilities will help Connecticut to move towards future goals.

The DHHS National Prevention Target for MRSA bacteremia is to achieve an SIR of 0.75 by the end of 2015, representing a 25% reduction in MRSA bacteremia from the national baseline of 2010-2011. Connecticut's 2013 MRSA bacteremia SIR of 0.74 was lower than the National Prevention Target, demonstrating healthcare facility successes in performing surveillance and implementing control measures.

PARTNERSHIPS AND HAI PREVENTION

HAI surveillance to gather actionable data is a first step that healthcare facilities and Connecticut DPH are taking to improve patient safety. These data are used to inform and direct prevention activities that include participating in collaboratives with other facilities to share and follow best practices as well as implementing facility-based initiatives to improve hand hygiene, disinfection procedures for medical equipment, and other preventive measures.

Working in partnership with CHA and Qualidigm, Connecticut DPH collaborates with hospitals to facilitate sharing local and national best practices, tools and resources, and strategies for implementing

[3] Broadly defined as a positive laboratory test result for MRSA from a blood source

[4] Broadly defined as a positive laboratory test result for *C. difficile* toxin A and/or B from an unformed stool sample

prevention initiatives and garnering leadership support. Connecticut DPH has either hosted or participated in a number of seminars on infection prevention and approaches for promoting QI. Connecticut DPH Commissioner Mullen has been regularly communicating with hospital chief executive officers through circular letters and memos regarding HAI reporting initiatives.

All hospitals licensed by Connecticut DPH have a hospital-wide program for the prevention, control, and investigation of infectious diseases. Nurses, physicians, medical technologists, and other professionals who have acquired special training in infection control or epidemiology manage these programs. Through their infection prevention and control programs, hospitals strive to improve the care and safety of patients by following the recommendations and standards of agencies such as Connecticut DPH and CDC.

The efforts of these infection prevention and control programs have resulted in the development of several national HAI prevention programs that offer participants opportunities for shared learning, support, and tools to help eliminate HAI. The best known of these is the Comprehensive Unit-based Safety Program (CUSP) developed by staff of the Johns Hopkins Center for Patient Safety under the leadership of Dr. Peter Pronovost, a native of Connecticut. This program uses carefully crafted QI and workplace culture change methods to achieve the goal of consistently and sustainably incorporating proven best practices to prevent CLABSI (including the well-known Central Line Insertion Care Team Checklist, found at http://www.ahrq.gov/professionals/education/curriculum-tools/clabsitools/clabsitoolsap5.html). CUSP has been used to reduce CLABSI at Johns Hopkins as well as in a consortium of most of the hospitals in the state of Michigan. This Michigan Keystone Center project has sustained a 70 percent reduction in CLABSI over several years in a wide variety of hospitals, and has been successfully used in Connecticut.

CHA has led several prevention collaboratives based on CUSP in the past, along with additional prevention collaboratives aimed at CLABSI, CAUTI, and SSI. CHA has also worked with hospitals on an ambitious statewide initiative to eliminate all-cause preventable harm using high reliability science to create a culture of safety. All acute care hospitals in the state have participated in Partnership for Patients, a national initiative to eliminate preventable patient harm by 20% and avoidable readmissions by 40%. Engagement in these collaboratives builds upon hospitals' prior work. Working collaboratively, hospitals have committed to eliminating CLABSI, CAUTI, and SSI.

In 2013, two important prevention collaboratives were launched in Connecticut. The first, which enrolled 33 long-term care facilities, was developed in partnership with the Public Health Foundation and uses QI methodology to improve infection control processes in the long-term care setting, with a specific focus on reducing CDI. The use of QI methods in healthcare is a cutting-edge activity that Connecticut DPH is promoting throughout its agency as well as the public health system in Connecticut as a whole. The second collaborative was made up of communities of healthcare providers across the continuum of care (including acute care hospitals, long-term care, home health agencies, clinicians, and other providers of care) that serve the same patients. This project, facilitated by Qualidigm together with the CMS-designated Quality Improvement Organization (QIO) for Connecticut, is developing innovative methods of reducing antibiotic resistance through stewardship programs.

Successful implementation of these models is dependent upon executive leadership guiding overall institutional commitment to foster, promote, and support collaborative goals of improvement. Hospitals have also implemented prevention activities specific to their facility to eliminate HAI based on needs identified within their facilities, frequently focusing in hand hygiene.

2013 DEPARTMENT OF HEALTH AND HUMAN SERVICES NATIONAL ACTION PLAN TO PREVENT HEALTHCARE-ASSOCIATED INFECTIONS: STATEWIDE AND NATIONAL PROGRESS

Table 18: Connecticut and national performance: 2013 DHHS Action Plan metrics

Metric	Data Source	Baseline Period	Baseline Data	2013 National Target	2013 National Data**	Target Met Nationally?	2013 State Data	Target Met By State?
CLABSI	NHSN	2006-2008	1.00 SIR	↓ 50% or 0.50 SIR	0.54	✖	0.47	★
Hospitalizations with *C. difficile*	HCUP	2008	11.6 hospitalizations per 1,000 discharges	≥ ↓ 30% rate	13.3 hospitalizations per 1,000 discharges	✖	14.9 hospitalizations per 1,000 discharges	✖
CDI	NHSN	2010-2011	1.00 SIR	≥ ↓ 30% or 0.70 SIR	0.90	✖	1.02	✖
CAUTI	NHSN	2009	1.00 SIR	≥ ↓ 25% or 0.75 SIR	1.06*	Not expected to achieve target*	1.67*	Not expected to achieve target*
MRSA incidence rate^	EIP	2007-2008	27.08 infections per 100,000 persons	≥ ↓ 50% rate	18.28 infections per 100,000 persons	✖	21.09 infections per 100,000 persons	✖
MRSA bacteremia^^	NHSN	2010-2011	1.00 SIR	≥ ↓ 25% or 0.75 SIR	0.92*	Not expected to achieve target*	0.74*	Expected to achieve target*
COLO SSI	NHSN	2006-2008	1.00 SIR	≥ ↓ 25% or 0.75 SIR	0.92	✖	1.26	✖
HYST SSI	NHSN	2006-2008	1.00 SIR	≥ ↓ 25% or 0.75 SIR	0.86	✖	1.72	✖

★ *Target met* ✖ *Target not met*

HCUP: Healthcare Cost and Utilization Project *EIP: Emerging Infections Program*

^ Healthcare-associated *^^ Healthcare facility-wide inpatient*

**HHS has extended the five-year target period to the end of 2014 for CAUTI and the end of 2015 for MRSA bacteremia. The state and national SIR for these two measures represent interim figures based on data from calendar year 2013.*

***National 2013 data for all measures using NHSN as a data source are taken are from http://www.cdc.gov/HAI/pdfs/progress-report/hai-progress-report.pdf.*

National 2013 data for MRSA incidence rate (healthcare-associated) are taken from http://www.cdc.gov/abcs/reports-findings/survreports/mrsa13.pdf.

National 2013 data for hospitalizations with C. difficile *are taken from http://hcupnet.ahrq.gov/.*

Federal and state governments are engaged in a coordinated effort to implement the DHHS National Action Plan to Prevent Healthcare-Associated Infections ("the DHHS Action Plan") available at http://health.gov/hcq/prevent-hai-action-plan.asp. This plan sets forth specific and ambitious goals for HAI reduction by the end of 2013 and beyond, and is being updated to include new targets for 2020. This plan is also set to expand beyond the acute care setting to the full continuum of care. Acute care hospital metrics currently being tracked as part of the DHHS Action Plan are summarized in Table 18.

National and statewide performance, reflected by the data presented in Table 18, indicate that these goals are very ambitious; most of the targets have not been met at the state or the national level. However, these data also show that progress has been made both nationally and in Connecticut. This progress has been fostered by the DHHS Action Plan itself as well as its resources, and the commitment to the DHHS Action Plan by the medical and public health communities. Despite this, Connecticut has fallen short in reducing CAUTI, *C. difficile* hospitalizations, MRSA incidence, and SSI following colon surgical procedures and abdominal hysterectomies; patient safety stakeholders, including those at public health agencies and acute care hospitals, across the state will need to continue to focus attention on preventing HAI in future years. Such activities should include continued promotion of prevention collaboratives (such as those led with federal funding support from Qualidigm and the CHA) as well as technical support from Connecticut DPH to prioritize facilities reporting high levels of HAI.

FUTURE STEPS: EXPANSION OF HAI REPORTING IN CONNECTICUT

CMS is aligning their payment incentive programs (e.g., IPPS and QIP) with the overall federal metrics described earlier in this report. CMS' plans are outlined in the following table prepared by the CDC Division of Healthcare Quality Promotion. Connecticut's four long-term acute care hospitals (LTAC) are reporting CLABSI and CAUTI from all locations within each facility; the four inpatient rehabilitation facilities (all of which are associated with acute care hospitals) are currently reporting CAUTI only. Each of the 44 outpatient hemodialysis centers in the state are to report data elements required by the NHSN Dialysis Event module (i.e., bloodstream infections, antibiotic starts, and vascular access site infections). This reporting to Connecticut DPH began in the autumn of 2013 for data entered into NHSN starting in January 2013.[5] Acute care hospitals continue to report SSI, CAUTI, and CLABSI from ICU and NICU, but as of January 1, 2013, have expanded reporting to include MRSA and CDI LabID events via NHSN.

Following the plan summarized in the table below, additional reporting requirements for both measures and facility types will be added in future years, to ensure that Connecticut mirrors the future expansion in CMS reporting.[6] Each fall, the measures required by CMS will be presented to the Reportable Diseases Advisory Committee for review, and inclusion in the list promulgated each January. CMS metrics with October start dates will generally be deferred three months to start state reporting in January, to align with the publication of the annual list of reportable public health conditions.

Table 19: Healthcare facility HAI current or proposed reporting requirements to CMS via NHSN

CMS Reporting Program	HAI Event	Reporting Specifications	Reporting Start Date
Hospital Inpatient Quality Reporting (IQR) Program	CLABSI	Adult, Pediatric, and Neonatal ICUs	January 2011
	CAUTI	Adult and Pediatric ICUs	January 2012
	SSI: COLO	Inpatient COLO Procedures	January 2012
	SSI: HYST	Inpatient HYST Procedures	January 2012
	MRSA Bacteremia LabID Event	FacWideIN	January 2013
	C. difficile LabID Event	FacWideIN	January 2013
	Healthcare Personnel Influenza Vaccination	All Inpatient Healthcare Personnel	January 2013
	Medicare Beneficiary Number	All Medicare Patients Reported into NHSN	July 2014
	CLABSI	Adult & Pediatric Medical, Surgical & Medical/Surgical Wards	January 2015
	CAUTI	Adult & Pediatric Medical, Surgical & Medical/Surgical Wards	January 2015
Hospital Outpatient Quality Reporting (OQR) Program	Healthcare Personnel Influenza Vaccination	All Outpatient Healthcare Personnel	October 2014

[5] Although Table 19 states that this component of CMS reporting was mandated to begin in 2012, it did not begin in Connecticut until 2013 after an initial pilot year of data collection had been completed.
[6] As of the writing of this report, there are no IPPS-exempt cancer hospitals in Connecticut.

Table 20 (continued): Healthcare facility HAI current or proposed reporting requirements to CMS via NHSN

CMS Reporting Program	HAI Event	Reporting Specifications	Reporting Start Date
ESRD Quality Incentive Program (QIP)	Dialysis Event (includes positive blood culture, I.V. antimicrobial start, and signs of vascular access infection)	Outpatient Hemodialysis Facilities	January 2012
	Healthcare Personnel Influenza Vaccination	All Healthcare Personnel	October 2015
Long Term Care Hospital* Quality Reporting (LTCHQR) Program	CLABSI	Adult & Pediatric LTAC ICUs & Wards	October 2012
	CAUTI	Adult & Pediatric LTAC ICUs & Wards	October 2012
	Healthcare Personnel Influenza Vaccination	All Inpatient Healthcare Personnel	October 2014
	MRSA Bacteremia LabID Event	FacWideIN	January 2015
	C. difficile LabID Event	FacWideIN	January 2015
	VAE	Adult LTAC ICUs & Wards	January 2016
Inpatient Rehabilitation Facility Quality Reporting (IRFQR) Program	CAUTI	Adult & Pediatric Wards	October 2012
	Healthcare Personnel Influenza Vaccination	All Inpatient Healthcare Personnel	October 2014
	MRSA Bacteremia LabID Event	FacWideIN	January 2015
	C. difficile LabID Event	FacWideIN	January 2015
Ambulatory Surgery Centers Quality Reporting (ASCQR) Program	Healthcare Personnel Influenza Vaccination	All Healthcare Personnel	October 2014
PPS-Exempt Cancer Hospital Quality Reporting (PCHQR) Program	CLABSI	All Bedded Inpatient Locations	January 2013
	CAUTI	All Bedded Inpatient Locations	January 2013
	SSI: COLO	Inpatient COLO Procedures	January 2014
	SSI: HYST	Inpatient HYST Procedures	January 2014
	MRSA Bacteremia LabID Event	FacWideIN	January 2016
	C. difficile LabID Event	FacWideIN	January 2016
	Healthcare Personnel Influenza Vaccination	All Inpatient Healthcare Personnel	October 2016
Inpatient Psychiatric Facility Quality Reporting (IPFQR) Program	Healthcare Personnel Influenza Vaccination	All Inpatient Healthcare Personnel	October 2015

Updated September 2015

LTACs are referred to as Long Term Care Hospitals by CMS

ESRD: End-stage renal dialysis

VAE: Ventilator-associated event