



2016

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

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By the Infectious Disease Section,
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This is the eighth annual report on Healthcare Associated Infections (HAI) to the Connecticut General Assembly, pursuant to C.G.S. 19a-490o. The Connecticut Department of Public Health (DPH) HAI website provides reports, data, and educational materials to healthcare providers and the public at <http://www.ct.gov/dph/cwp/view.asp?a=3136&q=417318>.

HAI data for prevention

The federal Department of Health and Human Services (DHHS) has created a national HAI prevention plan. That plan specifies national HAI prevention target goals for the six key HAI that the federal government prioritizes for tracking in various healthcare settings, listed in the table below. Connecticut, on the advice of our statewide HAI Advisory Committee that was established pursuant to CGS 19a-490n, tracks the same HAIs in the same types of facilities and locations that the federal government is tracking under the national plan. Connecticut also aims to achieve the same HAI prevention targets as the nation. As noted in the *2014 Annual Report to the General Assembly*, other than for central line blood stream infections (CLABSI), neither the nation nor Connecticut met the extremely ambitious HAI reduction target goals for the first period of national HAI surveillance that ended in 2013-2015. New National Prevention Targets have been developed and will guide HAI tracking through the year 2020, aligning them with a new 2015 baseline and the timeframe of Healthy People 2020.

How HAIs are tracked: the SIR and rates

The Connecticut HAI reporting mandate requires healthcare facilities to report specific HAI-related data to the National Healthcare Safety Network (NHSN), which is a secure, internet-based surveillance system created and managed by the Centers for Disease Control and Prevention (CDC) 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 across the spectrum of healthcare at no cost, and, as of the writing of this report, is currently collecting data from nearly 19,000 facilities from 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 trained Infection Practitioners (IPs), or other staff trained in infection prevention, 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 facility IP determines that a patient has a condition that meets the NHSN definition of an HAI, then the infection is reported to Connecticut DPH via NHSN. The data are stored on the secure NHSN server which is protected from inappropriate disclosure by both software security features and federal law. Once entered, the data 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 public reporting. All patient and facility information is protected by state and federal law and are stored on secure computer servers.

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. The SIR can be used to compare the number of HAI in a healthcare facility, a location within the facility, or the facilities statewide to the number of infections predicted based on national HAI data across the United States. A statistically significant SIR measuring below 1.0 means the state, facility, or location is performing better than predicted; a statistically significant SIR above 1.0 means the state, facility, or location is performing worse than predicted. For dialysis centers, SIRs are calculated and can be used for blood stream infections; however, rates, rather than SIRs, are used for other types of dialysis-related infections. A rate is a proportion, the number of events divided by the size of population at risk. Rates of infections in a state or healthcare facility that are higher than the national rates indicate the need for assessment and enhanced prevention actions. The first baseline period for various HAIs that the state and nation track were developed during the period 2006-2011. As noted above, a new uniform baseline period for all tracked HAIs was established in 2016 using 2015 data, called “the 2015 baseline.” We anticipate that the 2015 baseline will be used to evaluate progress on the prevention of HAIs through the year 2020, which would allow HAIs to align with the broader Healthy People 2020 targets and planning. In this report, the numbers of HAIs in facilities in 2016 are compared to the new 2015 baseline.

Results for 2016:

Six HAIs are reported to the Connecticut DPH from acute care hospitals (see the table below). Some are tracked by location type, some only facility-wide. Four HAI types are tracked in long term care hospitals, and one in inpatient rehabilitation facilities (IRF). Two infection types are reported in outpatient hemodialysis centers.

The following table summarizes the results for 2016. The national SIR baseline = 1.0, and the national local access site infection (LASI) rate = 0.76 per 100 patient-months. Green and red colored numbers are “statistically different” which means that their difference from the national baseline is not likely due to chance. Those in green are statistically “**better**” and those in red, statistically “**worse.**” Those in black may be higher or lower than the national number, but the difference might be just due to chance.

2016 HAI Reporting, Connecticut (Standardized Infection Ratios)									
Facility Type	Location	Patient type	CLABSI	CAUTI	SSI (COLO/HYST)	MRSA	C. diff	BSI	LASI
ACH	Overall	All	1.03	0.95					
ACH	ICU	Adult	0.99	0.83	1.16/0.96	1.06	1.01		
ACH	ICU	Pedi	1.60	1.86					
ACH	ICU	NICU	0.71						
ACH	Ward	Adult	1.02	1.06					
ACH	Ward	Pedi	2.56						
LTACH	Overall		0.31	1.25		0.07	0.24		
LTACH	ICU		0.09	1.50					
LTACH	Ward		0.41	1.15					
IRF				1.79					
Dialysis								1.14	0.88*
* Rate per 100 patient months			Not reported/applicable		Too few predicted to calculate SIR				

ACH = Acute care hospital
BSI = blood stream infection
C. diff = laboratory-identified *Clostridium difficile* infection
CLABSI = central line associated blood stream infections
CAUTI = catheter associated urinary tract infections
Dialysis = outpatient hemodialysis center
ICU = intensive care unit
IRF = inpatient rehabilitation facility
LASI = local access site infection
LTACH = Long term acute care hospital
MRSA = laboratory-identified methicillin resistant *Staphylococcus aureus* bacteremia (blood stream infection)
SSI COLO = colon surgery infections
SSI HSYT = abdominal hysterectomy infections

Detailed data are available on the DPH website by type of HAI, and facility with facility profiles.

Facility infrastructure

Adequate infrastructure, such as trained staff and laboratory services to track HAIs, and staff to lead prevention efforts, is needed to prevent HAIs. Each healthcare facility using NHSN must complete an annual survey about infection prevention infrastructure and practices. Sufficient numbers of trained Infection Prevention (IP) staff in healthcare facilities is critical for both complete and accurate HAI surveillance and for prevention, and this is assessed by the NHSN survey. In 2016, the average number of full-time (40 hour/week) IPs per ACH was 1.7, and the average number of staffed beds per full time IP was 138, which is higher than the ratio last year (1:113). Because the responsibilities of IPs continue to increase, increasing the number of IPs to lower the IP:bed ratio and to hire other staff for related roles (e.g., clerical, data entry) should be considered, as resources permit.

FUTURE STEPS

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 facilities are interpreting and applying these definitions consistently by applying its own data validation process to review the data for completeness and accuracy. 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 using data output from NHSN aimed at identifying data quality issues. DPH HAI Program staff also periodically contact facility reporting partners to review their facilities' data, and to ask facility users to resolve data quality "alerts."

Finally, as resources permit, DPH HAI Program epidemiologists visit healthcare facilities 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. Inconsistencies are discussed with the facility and addressed accordingly within NHSN to ensure adherence to the reporting guidelines. On average, this process occurs every two to three years. In total, these different data cleaning and validation

activities acts as a broad safety net to ensure that publicly-reported facility HAI data are accurate. The CDC has developed data validation standards, and a Toolkit to help states validate their data.

While every year DPH checks on the quality of data with facility staff through “data checks” looking for outlier results and data that appear questionable, Connecticut has not performed the “gold standard” validation chart audits since 2013. It is time to do so again, and with the completing of rebaselining, this is an excellent time to do so. DPH is planning to begin data validation through chart audits in the next year, using the CDC Toolkit to guide our work.

Expansion of HAI reporting in Connecticut

Connecticut DPH aligns state HAI reporting with the Centers for Medicaid and Medicare Services (CMS) healthcare facility quality payment incentive programs. These CMS measures in turn align with the advice of experts in the field and scientific and policy organizations. There has been considerable expansion of reporting in the past four years to include new HAI measures as well as additional healthcare facility types across the continuum of care.

CMS is not expected to expand the number of HAIs in their quality incentive programs in the coming year. Neither is CMS expected to expand reporting to other facility types, such as long term care facilities and ambulatory surgical centers, this year. It is likely they will do so eventually, however.