Massachusetts Hospitals Statewide Performance Improvement Agenda Report

MHA Board-approved Quality & Safety Goal January 2013
Reduce preventable CAUTI, CLABSI and SSI by 40% by 2015

Figure 1. Massachusetts Statewide Aggregate Hospital Acquired Infection Data Summary

Hospital-Acquired Infection (Source)	Time Period (Most Recent Data)	Observed Infections (Numerator)	Denominator Count*	Infection Rate*	Infection Rate vs. Baseline % Change	Expected Infections**	Standard-ized Infection Ratio (SIR)	SIR vs. Baseline % Change	Baseline Time Period
CLABSI/ICU (NHSN/DPH)	JAN'15-DEC'15	161	191,221	0.84	-8.8	410.90	0.39	-8.7	JAN'12-DEC'12
CAUTI/ICU (NHSN/CMS)	JUL'14-JUN'15	504	225,251	2.24	-37.1	476.54	1.06	-36.8	APR'12-MAR'13
SSI/CABG (NHSN/DPH)	JAN'14-DEC '14	28	4,061	6.89	27.0	51.00	0.55	30.6	JAN'12-DEC'12
SSI/HPRO (NHSN/DPH)	JAN'14-DEC '14	56	12,051	4.65	-31.1	90.64	0.62	-31.8	JAN'12-DEC'12
SSI/KPRO (NHSN/DPH)	JAN'14-DEC '14	49	15,543	3.15	-42.6	85.99	0.57	-45.1	JAN'12-DEC'12
SSI/ABHYST (NHSN/DPH)	JAN'14-DEC '14	51	5,123	9.96	51.2	39.38	1.30	46.6	JAN'12-DEC'12
SSI/VHYS (NHSN/DPH)	JAN'14-DEC '14	26	1,794	14.49	19.3	8.92	2.91	25.1	JAN'12-DEC'12
SSI Total	JAN'14-DEC '14	210	38,572	5.4	-14.7	275.93	0.76	-16.7	JAN'12-DEC'12
All Infections Combined		875	455,044	1.9	-29.2	1,163.37	0.75	-30.1	

Notes: *Infections per 1,000 catheter days or procedures

** Expected (predicted) infections based on national baseline 2006-2008

Sources: CDC National Healthcare Safety Network (NHSN) data reported by MA DPH or CMS. Data may not be complete and is subject to change.

Figure 1 lists the hospital-acquired infections that are being tracked to assess progress in meeting the MHA Board-approved goal to reduce preventable infections: catheter-associated urinary tract infections (CAUTI); central line-associated bloodstream infections (CLABSI); and surgical site infections (SSI) for coronary artery bypass graft surgery (CABG), hip/knee prosthesis (HPRO/KPRO), and abdominal/vaginal hysterectomy (ABHYST/VHYS). As infection rate data for these conditions are periodically updated by the Massachusetts Department of Public Health (DPH) and the Centers for Medicare & Medicaid Services (CMS), they will be compared to baseline infection rate data for calendar year 2012 or April'12-March'13 from the CDC National Healthcare Safety Network (NHSN), which is also the primary source of the DPH and CMS periodic reports.

Statewide hospital-acquired **CLABSI** data are updated monthly in reports to MHA by DPH. Complete, or near complete data have been reported through December 2015. Figure 1 CLABSI data show that the CLABSI rate declined 8.8% since the baseline period. A related measure, the Standardized Infection Ratio (SIR), compares the observed number of CLABSI to the expected number of CLABSI based on consideration of patient and organizational variables and the experience of hospitals across the nation in the period 2006 - 2008. The Massachusetts hospital CLABSI SIR declined 8.7% since the baseline period. Longer-term Massachusetts hospital-acquired CLABSI data are presented later in this report.

Statewide hospital-acquired **CAUTI** data are updated on a quarterly basis (with a 9 to 12-month lag) by CMS. The Massachusetts hospital CAUTI rate for July 2014 – June 2015 declined 37.1% from the baseline period rate. The CAUTI SIR declined 36.8% from the baseline period.

SSI data for January 2014 – December 2014 were reported by DPH in July 2015 and are displayed in Figure 1. Infection rates for **HPRO** and **KPRO** have dropped 31% and 43% respectively from the

baseline, while **CABG, ABHYST, and VHYST** rates have climbed. Overall combined SSI rates have dropped 14.7% since the baseline period.

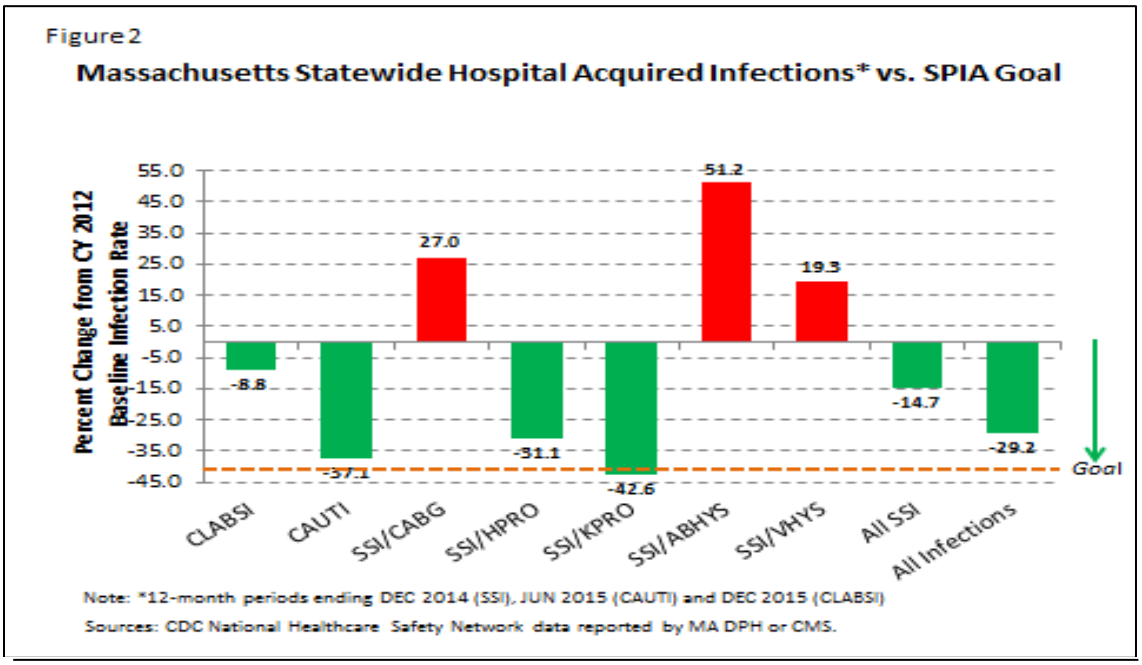
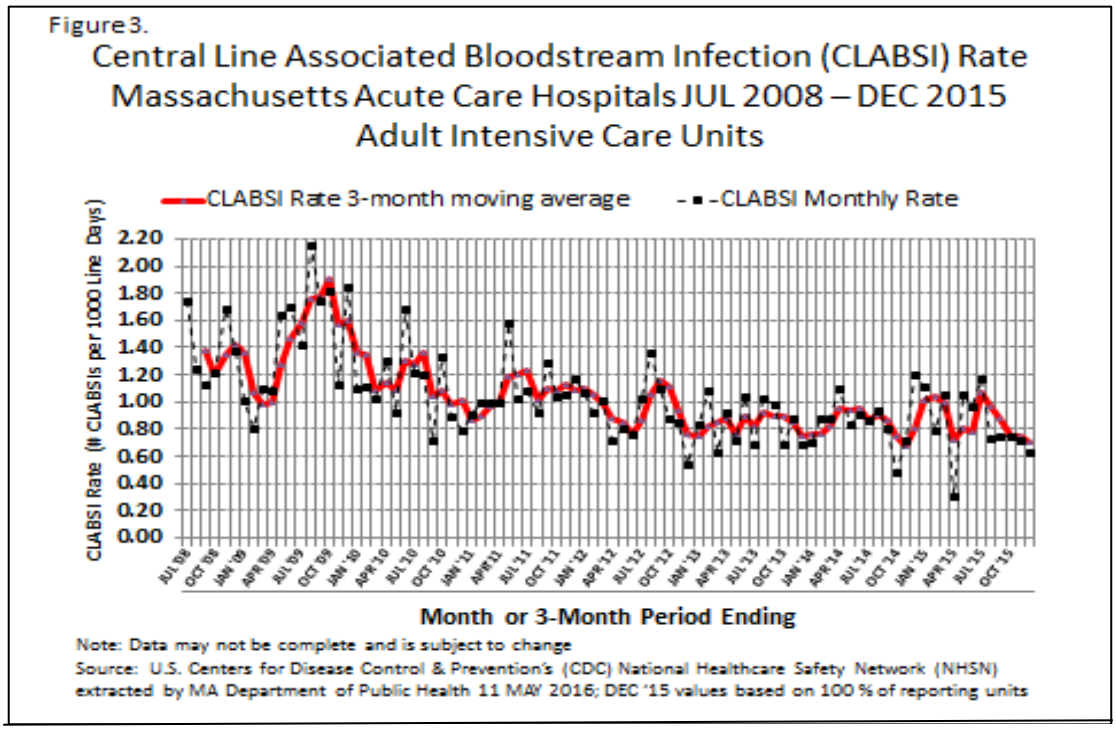


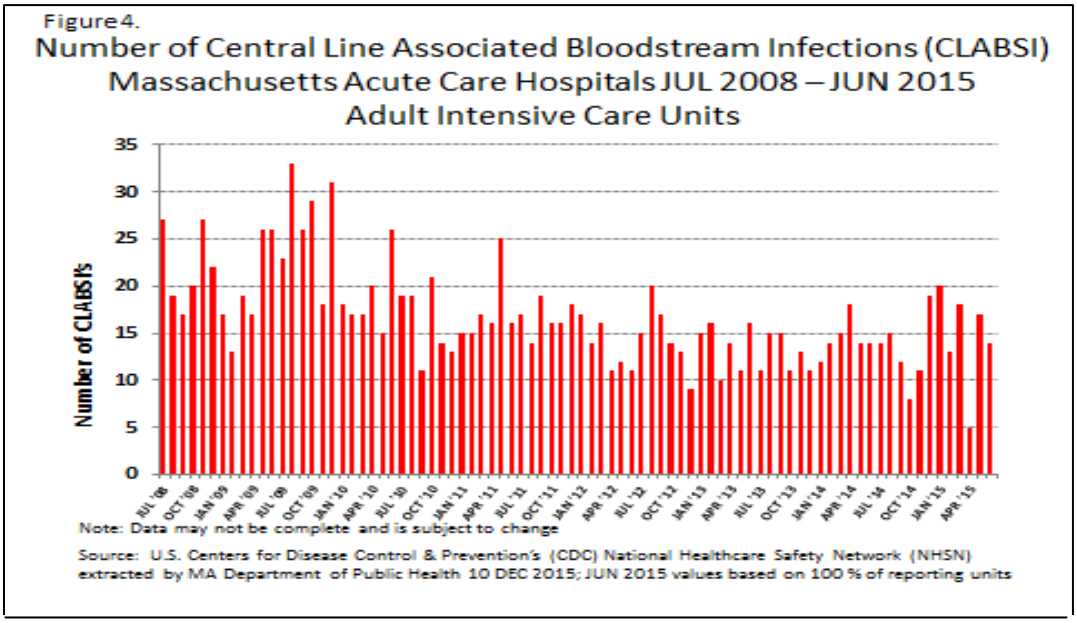
Figure 2 summarizes these findings and displays the gap between the most recent statewide rates for CLABSI, CAUTI, and SSI relative to the 40-percent reduction goal.

Focus on Reducing CLABSI in Massachusetts Acute Care Hospitals



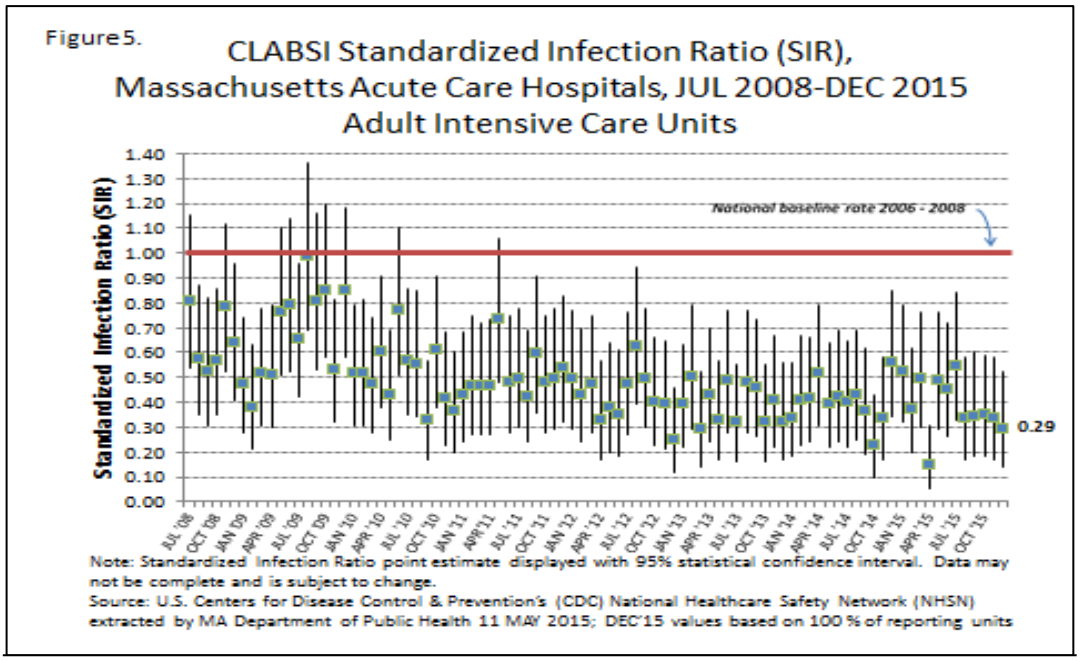
The CLABSI rate in Massachusetts acute care hospital adult intensive care units for the **3-month period ending DEC 2015 was 0.70 infections per 1,000 line days** (Fig.3). The rate is based on data submitted from 100 percent of planned reporting units as of May 11, 2016. The **rate for the previously reported 3-month period ending in June 2015 was 0.78**. **The one-month rate in December 2015 was 0.63.**

Figure 4.



There were **10 reported CLABSI in December 2014** (Fig.4)**.** The mean over the 84 months of data reporting is 16.4 CLABSI and the median is 16.

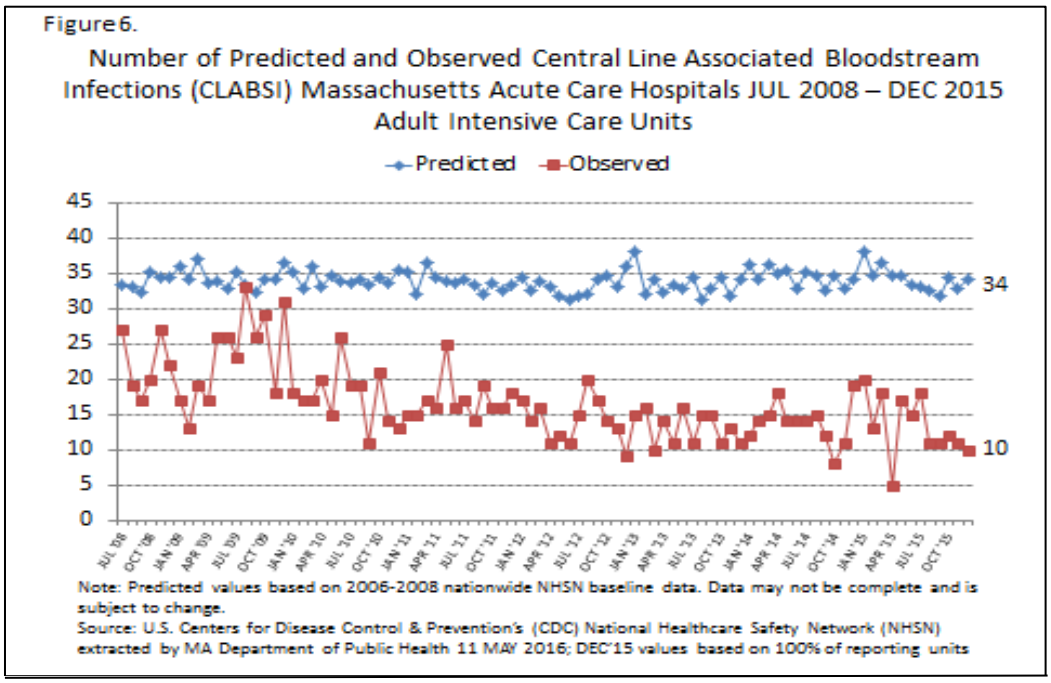
Figure 5.



The **Standardized Infection Ratio (SIR)** compares CLABSI incidence in relation to a national reference standard or baseline covering the period 2006 - 2008. The SIR adjusts for differences in the mix and size of hospital unit types reported on by hospitals, as well as the number of hospitals/units with medical school affiliations. Using the record of hospitals across the nation in the period January 2006 through December

2008, CDC/DPH calculate a predicted (expected) number of CLABSI in each state based on the number of patients and the unit types in which they were hospitalized. The observed (actual) number of CLABSI reported by hospitals in the state are then compared to the number of predicted CLABSI in an observed-to-predicted ratio to arrive at the SIR.

The SIR for Massachusetts hospitals (Fig. 5) **in December 2015 was 0.29, meaning the observed number of CLABSI (14) was 71percent fewer (1.00 minus 0.29 = 0.71) than predicted (34) had Massachusetts hospitals performed at the level of hospitals across the nation from 2006 through 2008**. The SIR includes a confidence interval around the 0.29 point estimate indicating that the "true" SIR in Massachusetts is between 0.14 and 0.15 with a 95 percent certainty.



The component parts of the SIR, the predicted number of CLABSI and the observed number of CLABSI in Massachusetts acute care hospitals in each month from July 2008 through December 2015 are displayed in Figure 6. The December 2015 counts are based on data from 100 percent of planned reporting units.

The Massachusetts Hospital Association will update this report on a quarterly basis when new CLABSI data are reported to us by the Massachusetts Department of Public Health (DPH). We appreciate the cooperation of DPH in supplying this data.

New comprehensive data on CLABSI, surgical site infections, and related information was released by DPH in July 2015. Data from that release on statewide aggregate trends through the end of calendar year 2014 may be found at this link: http://www.mass.gov/eohhs/docs/dph/quality/healthcare/hai/hai-aggregate-data-cy2014.xlsx

Data for individual hospitals from DPH's July 2015 release for calendar year 2014 may be found at this link: http://www.mass.gov/eohhs/docs/dph/quality/healthcare/hai/hai-hospital-data-cy2014.xlsx

A slide presentation on the CY 2014 HAI data findings presented to the Public Health Council may be found here: http://www.mass.gov/eohhs/docs/dph/quality/healthcare/hai/hai-update-cy2014.ppt