UMKC School of Medicine

#1066

The Impact of 2013 National Health Safety Network (NHSN) Definition Changes on Hospital Central-Line Associated Bloodstream Infection (CLABSI) Rates

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Abstract

Background: NHSN, the nation's most widely used healthcare-associated infection (HAI) tracking system, provides surveillance definitions for CLABSI to healthcare facilities in order to establish infection rates for benchmarking purposes. Recent discussion has centered around the Heme/Onc population as many CLABSI's attributed to these patients may actually be due to translocation of intestinal or oral flora from mucosal barrier injury (MBI). To address this issue, healthcare facilities reporting data to NHSN began using revised definitions for CLABSI in January 2013 that includes a more specific category for bloodstream infections (BSI) associated with MBI.
Objective: To apply the revised 2013 NHSN CLABSI definitions to CLABSI's from 2012 to demonstrate the impact of a definition change on CLABSI rates.
Methods: CLABSI's previously reported to NHSN from 2012 were obtained from existing infection control databases and analyzed using the new definitions.
Results: The number of CLABSI's decreased in 2012 from 74 to 56 by using the new 2013 definitions. The NICU, Med/Surg, and Heme/Onc units had a decrease in CLABSI rates of 7%, 16%, and 45%, respectively.
Conclusions: In our 354 bed free-standing pediatric hospital applying the 2013 definitions to evaluate BSI's from 2012 decreased our hospital's overall 2012 CLABSI rate by 24%. Addition of the MBI category had a significant decrease in the number of primary CLABSI attributed to Heme/Onc patients thus potentially reflecting a more accurate CLABSI rate in this population. With implementation of the new definitions, institutions may see a decrease in their infection rates based on definition changes alone, making it difficult to assess the impact of quality improvement efforts.

Background

The National Health Safety Network (NHSN), the nation's most widely used healthcare-associated infection (HAI) tracking system, provides surveillance definitions for CLABSI to healthcare facilities in order to establish infection rates for benchmarking purposes. Recent discussion has centered around the Heme/Onc population as many CLABSI's attributed to these patients may actually be due to translocation of intestinal or oral flora from mucosal barrier injury (MBI). To address this issue, healthcare facilities reporting data to NHSN began using revised definitions for CLABSI in January 2013 that includes a more specific category for bloodstream infections (BSI) associated with MBI.

Objective

•To apply the revised 2013 CLABSI definitions to CLABSI's from 2012

• To demonstrate the impact of a definition change on CLABSI rates

Methods

In our 354-bed free standing pediatric hospital, CLABSI's reported to NHSN in 2012 were obtained from existing infection control databases and analyzed using the new definitions.

Methods

NHSN 2012 BSI Definitions	NHSN 2013 BSI Definitions
Health Care associated - no evidence that infection was present or incubating at time of admission	Health Care associated - all elements of infection criteria are met on or after day 3 of admission
Device related - no minimum amount of time between device placement and time of BSI	Device related- device has to be in place >2 calendar days or it occurs on day 1 or 2 following device removal
Blood draws on separate occasions - blood draws collected within 48 hours, (Mon and Tues, or Mon and Wed.)	Blood draws on separate occasions - blood draws collected within 2 days, (Mon and Tues, not Mon and Wed)
Addition of MBI - for qualifying allogeneic hematopoietic stem cell transplant patients or neutropenic patients	No special consideration for specific populations

Results

•Overall there was a 24% decrease in CLABSI rates in 2012 using 2013 vs. 2012 definitions

•Figure 1 and 2: 2012 data comparing rates using both definitions-Decrease in overall CLABSI rates, especially in Heme/Onc population

•Figure 3: Expected CLABSI rate of 3.19 in 2012 based on 2013 definitions-actual decrease to 2.26 through August 2013

•Figure 4: MBI rates have decreased in the Heme/Onc population reflecting true decrease in BSI's through August 2013

•Table 1: Number of CLABSI reported in 2012 according to the 2012 and 2013 definitions

•15 BSI met the MBI definition, all but one in the Heme/Onc population

•Figure 5: There was a 45% decrease in Heme/Onc 2012 CLABSI rates using 2013 definitions

Table 1: CLABSI rates in 2012 based on revised 2013 definitions

Location	Line days	CLABSI (n) 2012 Definitions	CLASBI (n) 2013 Definitions	BSI (n) with MBI Definition	BSI (n) not meeting 2013 criteria*
NICU	8023	15	14	0	1
PICU	5625	14	14	0	0
Heme/Onc	**5958**	**33**	**18**	**14**	**1**
Med/Surg	7211	12	10	1	1
Total	26817	74	56	15	3

*Did not meet criteria due to new 2 day calendar rule

Figure 1: 2012 Hospital Wide CLABSI Rates 2012 vs. 2013 Definitions

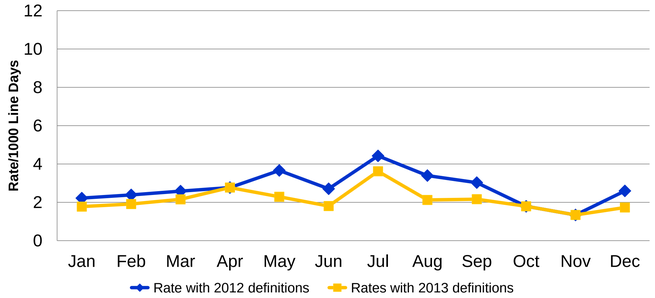


Figure 2: 2012 Heme/Onc CLABSI Rates 2012 vs. 2013 Definitions

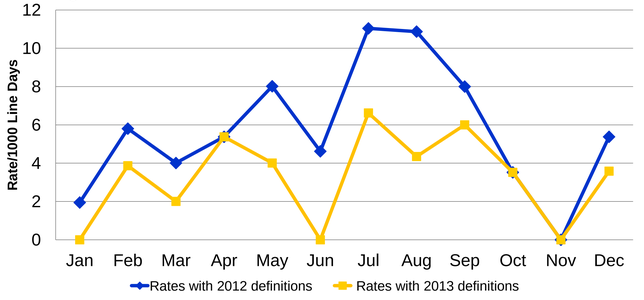


Figure 3: Heme/Onc CLABSI Rates Jan 2012-Aug 2013

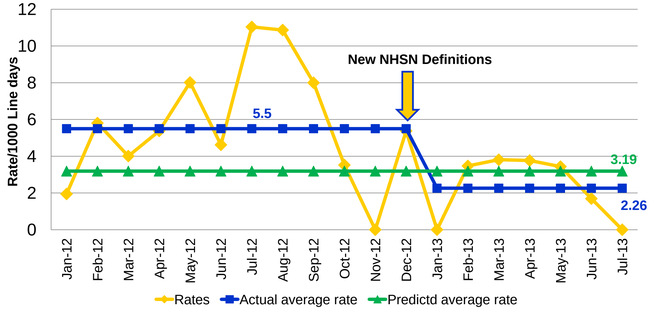


Figure 4: Mucosal Barrier Injury (MBI) Rates Jan 2012- Aug 2013

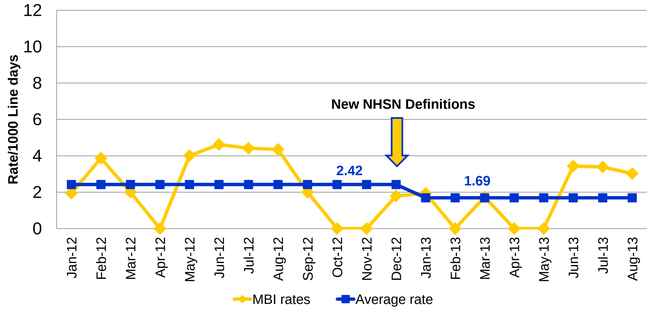
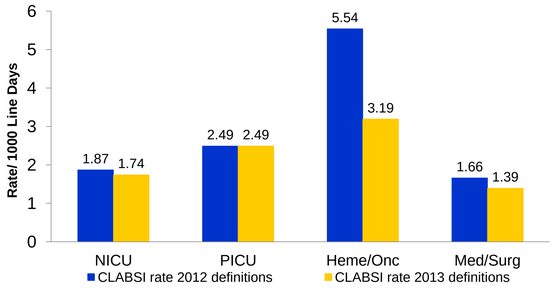


Figure 5: Hospital wide CLABSI Rates 2012 vs. 2013 Definitions



Conclusion/Implications

•2013 MBI category: led to significant change in Heme/Onc BSI rates with better clinical relevance of CLABSI data

•Continued decrease in Heme/Onc CLABSI rates in 2013 beyond the expected decrease with definitions

•Other Institutions may see decrease in rates with new definitions

•Potential difficulty in assessing impact of quality improvement efforts

•Important to distinguish CLABSI's attributed to lapses in central line maintenance vs. patient risk factors and continued tracking of CLABSI's and MBIs will provide specific interventions for each

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