

# Standardized Infection Ratio (SIR) Table

## Device-Associated Infections

### Description

The standardized infection ratio is a risk-adjusted summary measure that compares the observed number of infections to the predicted number of infections based on NHSN aggregate data. This document explains how to calculate and interpret the SIR for device-associated infections. The example below is for CLABSI, but the CAUTI SIR is calculated and interpreted in a similar manner.

### Example

Below is an example of an SIR table for CLABSI surveillance that occurred in critical care locations in 2015 grouped by half-year (6-month, calendar half-year).

### Report Modification

For the purpose of this example, the modifications that have been made are: summaryYr was set to 2015, filtered by Critical Care (CC) locationType, and the report grouped by summaryYH. For further information on report modifications, please visit <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/howtomodifyreport.pdf>.

**Title/Format** **Time Period** **Filters** **Display Options**

**Time Period:**

Date Variable	Beginning	Ending	
summaryYr	2015	2015	<input type="button" value="Clear Time Period"/>

Enter Date variable/Time period at the time you click the Run button

**Title/Format** **Time Period** **Filters** **Display Options**

**Additional Filters:**

AND OR

AND OR

locationType equal CC - CC

**Title/Format** **Time Period** **Filters** **Display Options**

**SIR Options:**

**Group by:** summaryYH



## Output/Results and Interpretation

### National Healthcare Safety Network

#### SIR for Central Line-Associated BSI Data for Acute Care Hospitals (2015 baseline) - By OrgID

As of: November 9, 2016 at 10:48 AM

Date Range: BS2\_CLAB\_RATESALL summaryYr 2015 to 2015

if(((locationType = "CC" )))

orgID=10018 CCN=868768

orgID	summaryYH	infCount	numPred	numclays	SIR	SIR_pval	sir95ci
10018	2015H1	3	1.034	1160	2.901	0.1078	0.738, 7.896

- This facility reported 3 central line-associated BSI (infCount) in critical care locations (locationType="CC") during the first half of 2015. This is the observed number of CLABSIs.
- The overall SIR for this facility during this time period is 2.901, indicating that this facility observed approximately 190% more infections than expected.
- An SIR will only be calculated if the number of predicted infections is  $\geq 1$ . When the predicted number of infections is  $< 1$ , it is considered too low to calculate a precise SIR and comparative statistics. When this occurs, you may wish to group your SIRs by a longer time period, such as calendar year (summaryYr).
- The SIR p-value is a statistical measure that tells you if the observed number of infections is significantly different from what was predicted. A p-value less than 0.05 (an arbitrary and conveniently used cut point) indicates that the number of observed CLABSIs is statistically significantly different (higher or lower) from the number predicted. In this example, the p-value for the first half of 2015 is greater than 0.05 and thus there is no significant difference between the number of infections observed and the number of infections predicted.
- The 95% Confidence Interval is a range of values in which the true SIR is thought to lie, however the SIR reported under the SIR column is the most likely value. If the confidence interval includes the value of 1, then the SIR is not significant (the number of observed infections is not significantly different from the number predicted, using the same convenient cut point). The statistical evidence should be interpreted as insufficient to conclude that the SIR is different than 1.

#### Additional Resources:

Analysis Guides and Training: <https://www.cdc.gov/nhsn/ps-analysis-resources/index.html>

How to filter your data by time period: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/filtertimeperiod.pdf>

How to filter your data on additional criteria: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/selectioncriteria.pdf>

A Guide to the SIR <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf>