

# Standardized Infection Ratio (SIR) Table

## Surgical Site Infections

### Description

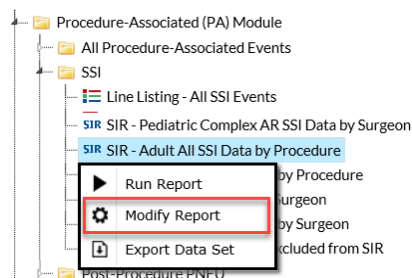
The standardized infection ratio is a risk-adjusted summary measure that compares the observed number of infections to the predicted number of infections based on NHSN aggregate data. This document describes how to calculate and interpret the SSI SIR.

### Example

Suppose you are interested in running a SIR report for SSI surveillance that occurred for colon surgeries (COLO) during 2015 using the All SSI Model for adults.

### Modifying the Report

To run this report, access it by Analysis > Reports > Procedure-Associated (PA) Module > SSI. Below is the modifications for this example. For basic modification guideline, follow <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

procCode equal COLO - Colon surgery



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Modify "SIR - Adult All SSI Data by Procedure"

Show descriptive variable names (Print List)      Analysis Data Set: bs2\_SIR\_AdultAllSSIProc    Type: SIR    Data Set Generated On: 01/13/2017 09:30:00

Title/Format    Time Period    Filters    Display Options

SIR Options:

Group by:

## Results and Interpretation

### National Healthcare Safety Network

#### SIR for Adult All SSI Data by Procedure (2015 Baseline) - By OrgID

As of: January 10, 2017 at 1:29 PM

Date Range: BS2\_SIR\_ADULTALLSIPROC summaryYr 2015 to 2015

if (((procCode = "COLO" ) ))

orgid=10018 CCN=12345

orgid	summaryYr	procCount	infCountAdultAll	numPredAdultAll	SIRAll	SIRAll_pval	SIRAll95CI
10018	2015	33	1	2.645	0.378	0.3297	0.019, 1.864

1. Includes all inpatient NHSN operative procedures in patients  $\geq 18$  years of age.
2. The SIR is only calculated if numPred is  $\geq 1$ . Lower bound of 95% Confidence Interval only calculated if infCount  $> 0$ .
3. The number of predicted events is calculated based on national aggregate NHSN data from 2015. Please find the document containing the list of risk factors used in risk adjustment for each procedure at <https://www.cdc.gov/nhsn/2015rebaseline/index.html>
4. Excludes all Superficial Incisional Secondary (SIS) and Deep Incisional Secondary (DIS) SSIs.
5. Includes procedures and associated SSIs that are reported with either primary or other than primary closure technique.

Source of aggregate data: 2015 NHSN SSI Data

Data contained in this report were last generated on January 10, 2017 at 1:07 PM.

- During 2015, this facility reported 33 colon surgeries, which is displayed in the procedure count field (procCount) and 1 SSI event (All SSI Adult Model), which is displayed in the infection count field (infCountAdultAll).
- The number of predicted SSIs (numPredAdultAll) for this time period was 2.645. For each operative procedure category, the number of predicted SSIs is calculated based on a statistical modeling of a standard population's data during the baseline time period (2015).
- The SIR is the number of observed SSIs (numerator) divided by the number of predicted SSIs (denominator) (e.g.  $1/2.645 = 0.378$ ). A 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 a calendar year (summaryYear).



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## *Surgical Site Infections*

- 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 SSIs is [statistically] significantly different (higher or lower) from the number predicted. In this example, the p-value for the 2015 SIR 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 for the All SSI Adult Model, reported under the SIR column (SIRAll) is the most likely value. If the confidence interval includes the value of 1 (as in this example), 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

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>

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

