How to Determine the SSI SIR Numerator Inclusion Indicators

Updated February 2025

Description

Under the current NHSN baseline, there are five surgical site infections (SSI) models, each having its own set of inclusion criteria for the numerator of the standardized infection ratio (SIR). One of the challenges users experienced is how to determine which SSI events are included in the different SSI SIR models. With the current baseline, SSI events have indicator variables that assign them to the corresponding SSI SIR model. The indicator variables take into account both the procedure details as well as the SSI details for determining if the SSI should be counted in the SIR numerator. There are five SSI event indicators, each one preceded by the prefix, **bs2 or bs3**. The BS2 prefix indicates that the indicator variables apply to 2015 baseline and the bs3 apply to the 2022 baseline. The SSI events indicator variables and their corresponding descriptions are listed in Table 1. The purpose of this quick reference guide (QRG) is to describe how to run line list report and interpret the SSI event indicator variables for the 2015 baseline SIRs.

Table 1. SSI Event Indicators

If the value of the following variables = 1, then the SSI is included in the corresponding SIR numerator count.

SSI Event Indicator	Description*
Bs2_SSIAll Bs3_SSIAll	The indicator for All SSI SIR model for adult patients
Bs2_SSIPedAll Bs3_SSIPedAll	The indicator for All SSI SIR model for pediatric patients
Bs2_SSIComplex Bs3_SSIComplex	The indicator for Complex A/R SSI SIR model for adult patients
Bs2_SSIPedComplex Bs3_SSIPedComplex	The indicator for Complex A/R SSI SIR model for pediatric patients
Bs2_SSIComplex30d Bs3_SSIComplex30d	The indicator for Complex 30-day SSI SIR model for adult patients

*Adult patients are patients 18 years and older at time of surgery. Pediatric patients are patients under 18 years at time of surgery
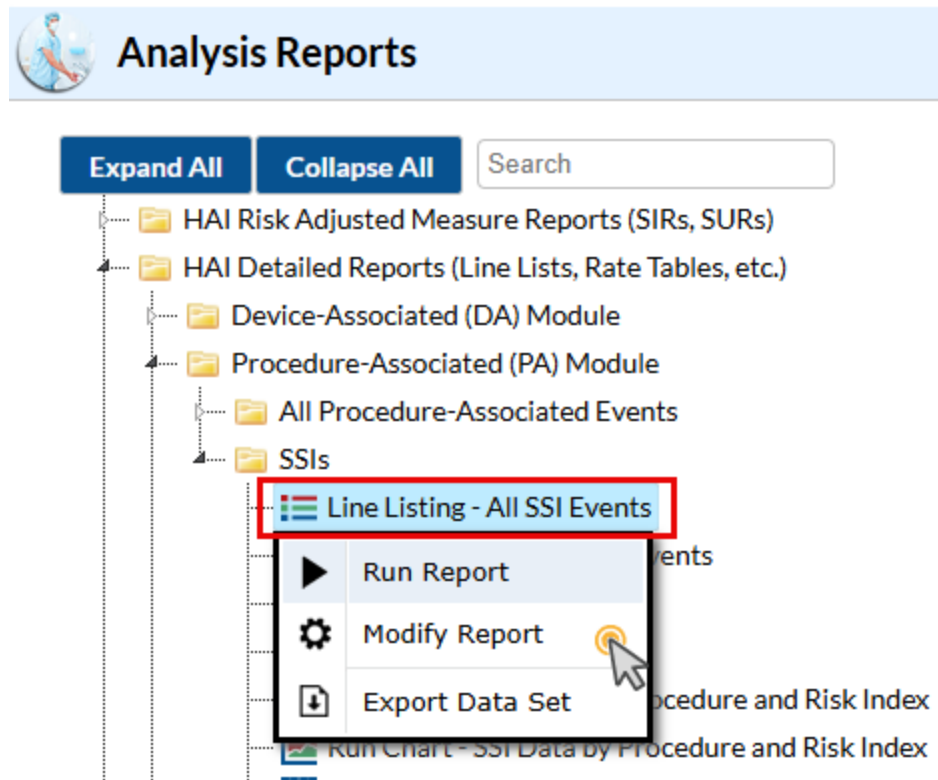
Table 2. Background Information: Features of the SSI Models

Included in model: Under 2015 Baseline	All SSI Model – Adult	Complex A/R SSI Model – Adult	All SSI Model – Pediatric	Complex A/R SSI Model – Pediatric	Complex 30-Day
All NHSN procedure categories	✓	✓	✓	✓	COLO HYST
Procedures in patients < 18 years			✓	✓	
Procedures in patients >=18 years	✓	✓			✓
Inpatient procedures only	✓	✓	✓	✓	✓
Outpatient procedures	EXCLUDED FROM ALL PATIENT SAFETY SSI SIR MODELS				
Superficial incisional primary (SIP) SSIs	✓		✓		
Deep incisional primary (DIP) SSIs	✓	✓	✓	✓	✓
Organ/space (O/S) SSIs	✓	✓	✓	✓	✓
DIP and O/S SSIs identified > 30 days after procedure (per protocol)	✓	✓	✓	✓	
SSIs detected on current admission (A)	✓	✓	✓	✓	✓
SSIs detected on follow-up admission to the same facility (RF)	✓	✓	✓	✓	✓
SSI detected on follow-up admission to different facility (RO)	✓		✓		✓
SSIs detected through post-discharge surveillance efforts (P)	✓		✓		✓

How to run the SSI Event Line List

Step 1: Under the HAI Detailed Reports (Line Lists, Rate Tables, etc.), navigate to the Procedure-Associated (PA) Module folder and click on SSIs subfolder then select the Line Listing – All SSI Events

Once selected, click "Modify Report" on the pop-up menu.

Step 2: Modify the report by defining the appropriate criteria

The basic modification guidelines can be found here: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/howtomodifyreport.pdf

- The title and format of the report can be modified, as needed for your analysis. *This step is optional*.
- Define the time period. For this example, the time period is set to the first half of 2024, based on the procedure date (i.e., procdateYH = 2024H1).
- Filters can be included to this report to limit the amount of data to display in the report output. For example, the report can be limited by defining specific procedure code(s), such as "proccode" IN COLO and CARD. *This step is also optional.*
- On the Display Variable tab, you will find the list of indicator variables included in the Selected Variable list by default as shown in the screen shot below.

Once you are satisfied with selected modifications, click run (or export) to obtain the results.

Step 3: Report Output and Interpretation

Below are the results from the *"Line Listing -All SSI Events"* report. As mentioned above, the indicator variables, highlighted in pale red in the table below, will appear in the report output by default.

National Healthcare Safety Network
Line Listing for All Surgical Site Infection Events
As of: February 24, 2025 at 6:44 PM UTC
Date Range: SSI_EVENTS procDateYH 2022H1 to 2022H1

orgID	patID	eventType	spcEvent	procDate	procCode	dob	ageAtProc	sex	procDurationHr	procDurationMin	outpatient	closure	whenDetected	bs2_SSIAll	bs2_SSIPedAll	bs2_SSIComplex	bs2_SSIPedComplex	bs2_SSIComplex30d
10018	15684957	SSI	IAB	01/12/2022	COLO	08/01/1990	80	M	3	43	N	PRI	P	1	0	0	0	1
10018	84695267	SSI	BONE	02/04/2022	CARD	07/25/1932	69	F	1	56	N	PRI	A	0	0	0	0	0
10018	65248952	SSI	OREP	01/21/2022	COLO	09/20/1950	54	F	1	36	N	PRI	P	0	0	0	0	0
10018	36524895	SSI	DIP	03/16/2022	COLO	03/24/1932	33	M	8	33	N	PRI	RF	1	0	1	0	0

1. Please review the Quick Reference Guide related to the new SSI Indicator Variables (https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/ssi-events-line-list-qrg.pdf) for more information on determining which SSIs are included in the SIRs.

The SSI event indicator variables show whether an event is included in the SIR calculation. They also indicate in which SSI model(s), the events are included. If any of the SSI event indicator variables is equal to 1, then the SSI event is included in the corresponding SSI model. In the above example, COLO event with patient ID 15684957 is included in both the All-SSI SIR model (bs2_SSIAll=1) and the Complex 30-day SSI SIR model (bs2_SSIComplex30d=1). This event is included in both models because the event meets the inclusion criteria for each of those models, as outlined in table 2.

This COLO is excluded from the All-SSI SIR for pediatric patients (bs2_SSIpedAll=0) because the patient ID 15684957, is over 18 years at time of procedure. This COLO is also excluded from the Complex A/R SSI SIR for adults' patients (bs2_SSIComplex=0) because the event was detected via post-discharge surveillance (whenDetected = P). And as shown in the table 2, events detected via post-discharge surveillance are excluded from the Complex A/R SSI SIR for both adults and pediatric patients.

REMEMBER: If the associated procedure is excluded from the SIR, the SSI will also be excluded.

Additional Resources:

THE NHSN STANDARDIZED INFECTION RATIO (SIR): A Guide to the SIR: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf

Troubleshooting your surgical site infections (SSI) SIR: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/ssi-sir_tips.pdf