Back to Basics: Analysis 101

Outpatient Procedure Component (OPC)

1. Surgical Site Infection (SSI) Module

2. Same Day Outcome Measures (SDOM) Module

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Objectives

- This training is intended to provide a guide to accessing, modifying and interpreting analysis reports in the NHSN OPC
- By the end of this training, the user will be able to:
  - List the steps to get started with analysis in the NHSN OPC
  - Access, modify, and run the analysis reports in the OPC
  - Read, describe, and interpret the results of the analysis reports

DISCLAIMER: *All data presented in this presentation is fictious for training purposes and does not represent any facility's data*

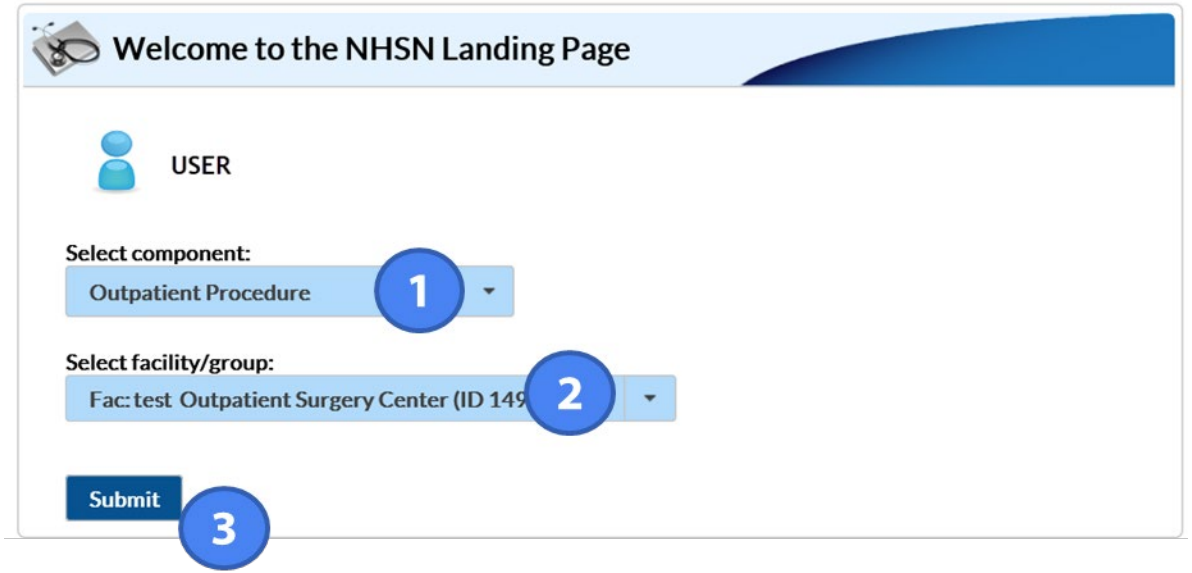
Background

- OPC analysis reports are designed to accommodate outpatient procedure data from **Ambulatory Surgery Centers (ASCs)**
- There are two modules within OPC
  - SSI Module
  - SDOM Module
- Alerts are found in the NHSN OPC homepage must be addressed to ensure complete reporting of the data
  - Guide to Alerts can be found here: Resolve Alerts in Outpatient Procedure Component (cdc.gov)
- All data that is entered into NHSN must undergo a dataset generation to ensure that the user is able to view the most up-to-date data

Getting Started With Analytic Functions in OPC

Accessing OPC Analysis reports in NHSN

- The landing page allows you to select the NHSN component as well as the facility enrolled in each component.

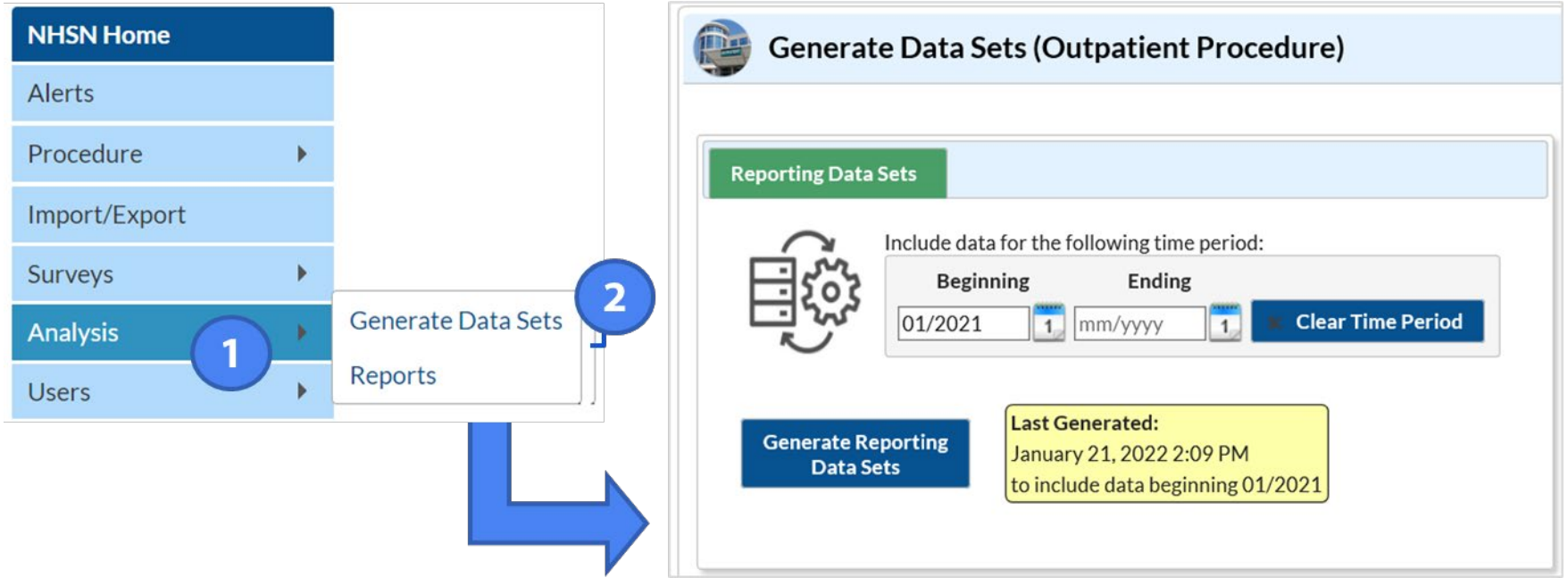


Running Analysis: Generate Data Sets in OPC

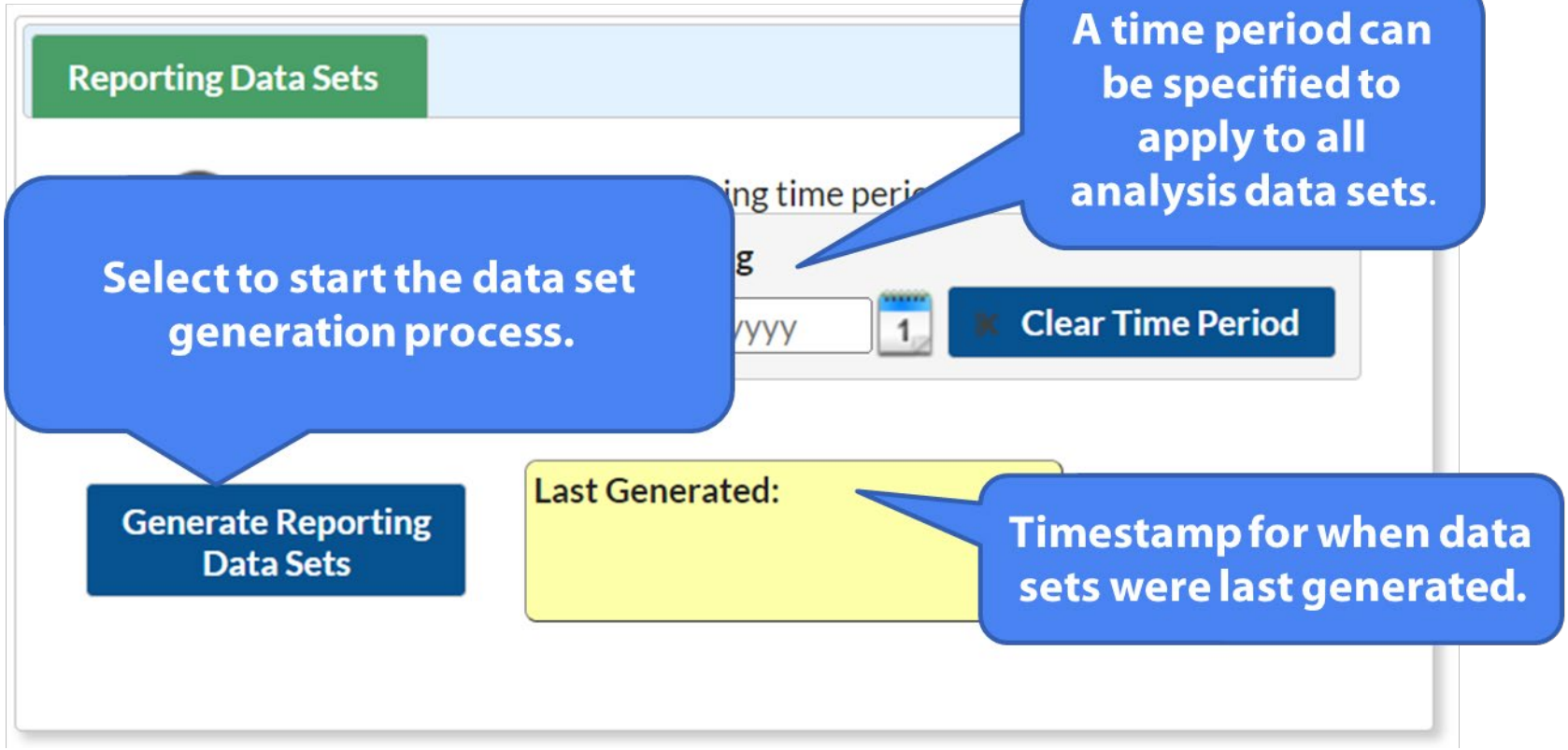
- Before running analysis reports, it is important to generate a new data set.
- Purpose of generating data sets:
  - This process will freeze NHSN data at a specific point in time and copy those data to defined data sets
  - This process is necessary each time you'd like to see updates made to your data applied to NHSN reports.
  - Data sets are user-specific, therefore, each user in NHSN who wishes to analyze data must generate data sets
- Guide for generating datasets: How to Generate Data Sets (cdc.gov)

How to Generate Data Sets in OPC

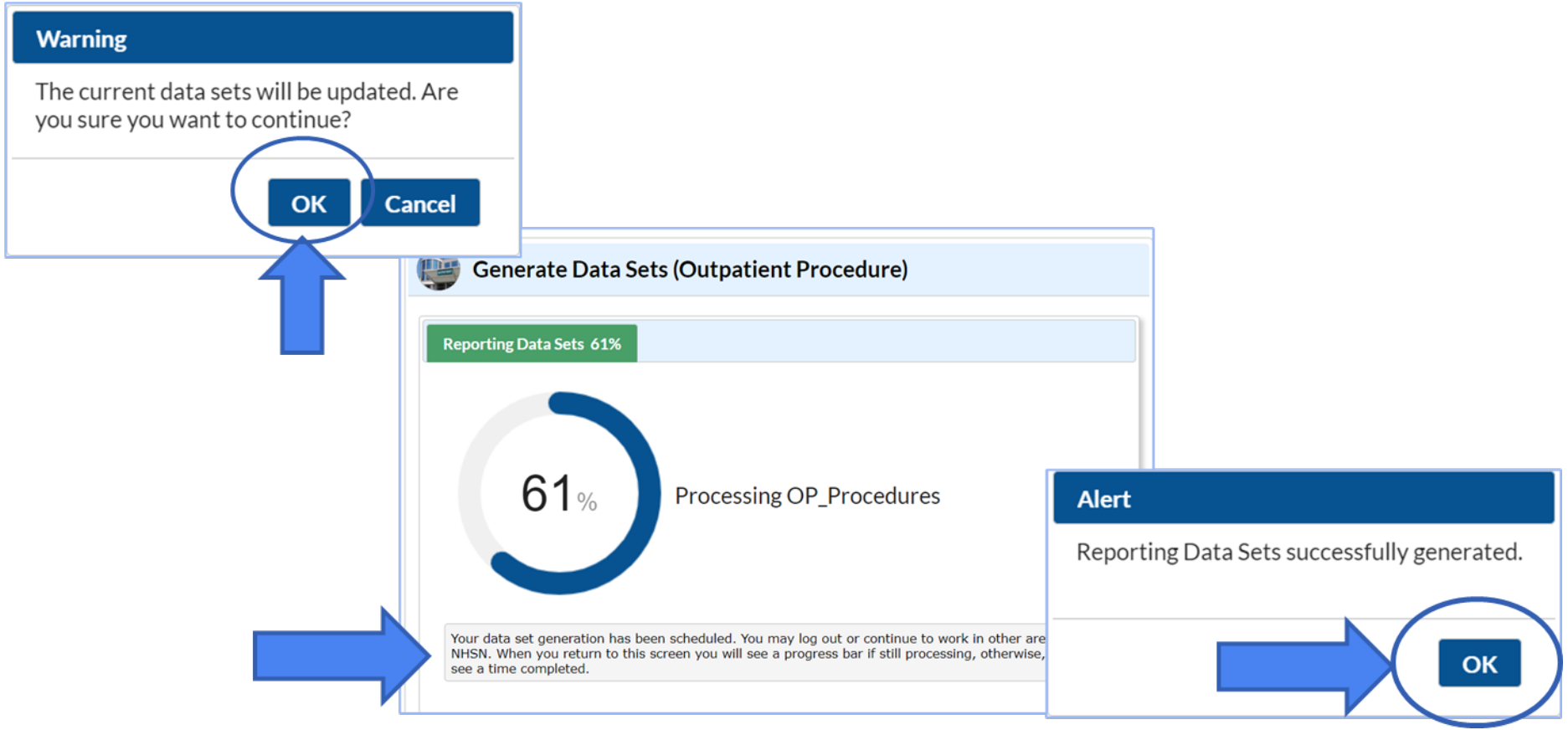
- From the left-hand navigation pane, select the “Analysis” tab and then “Generate Data Sets”



Generating Data Sets: a closer look



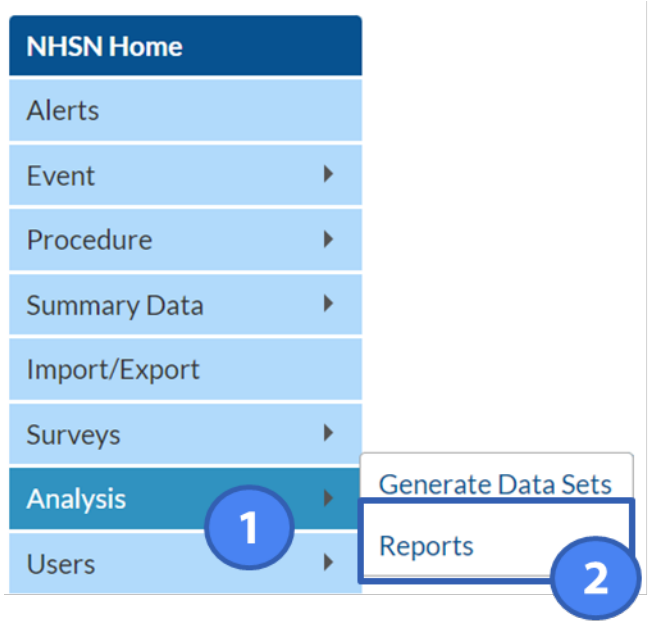
Generating Data Sets Process



Accessing Analysis Reports in OPC

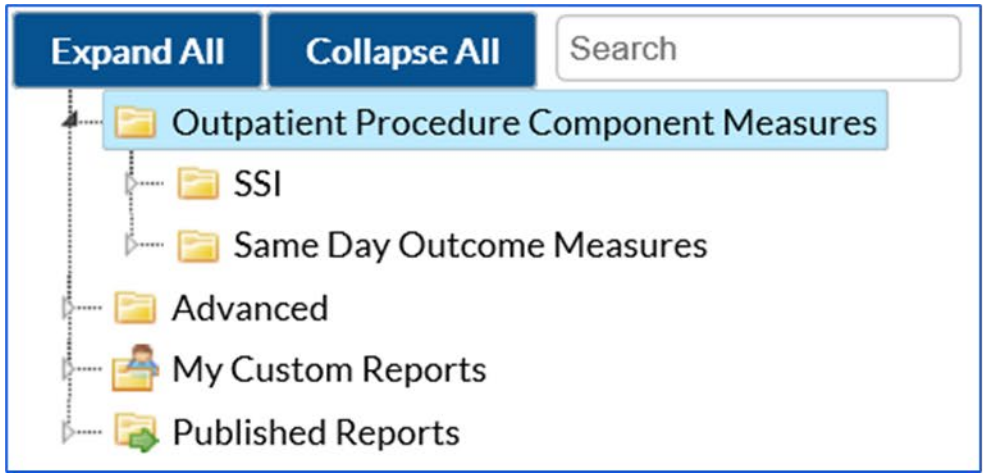
Accessing OPC Analysis reports in NHSN

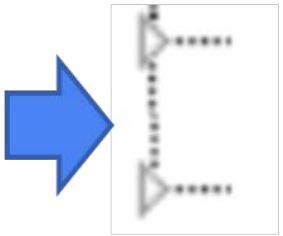
- Left navigation pane gives you the option to select “Analysis” and then the “Reports”



Running Analysis Reports in OPC

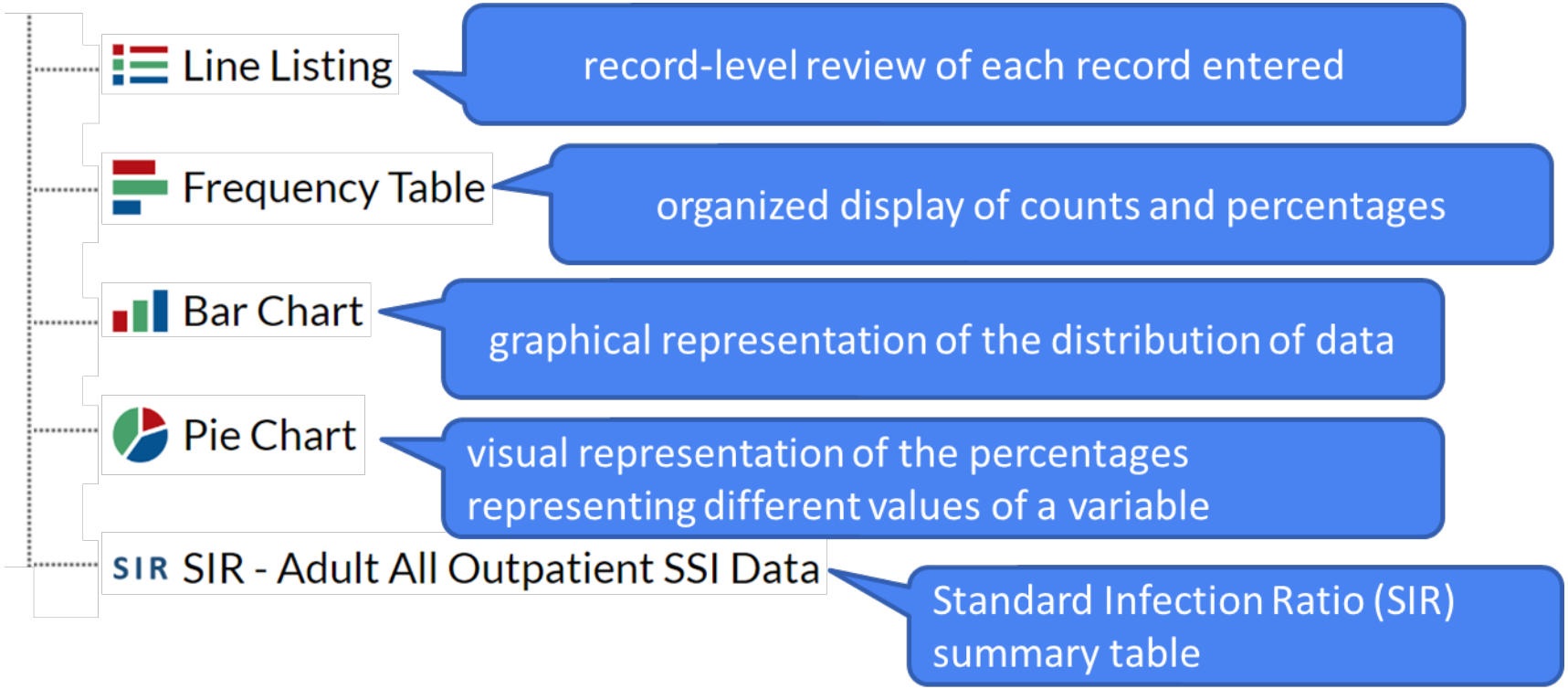
- Each “Report” will have drop down menu for selection of specific reports



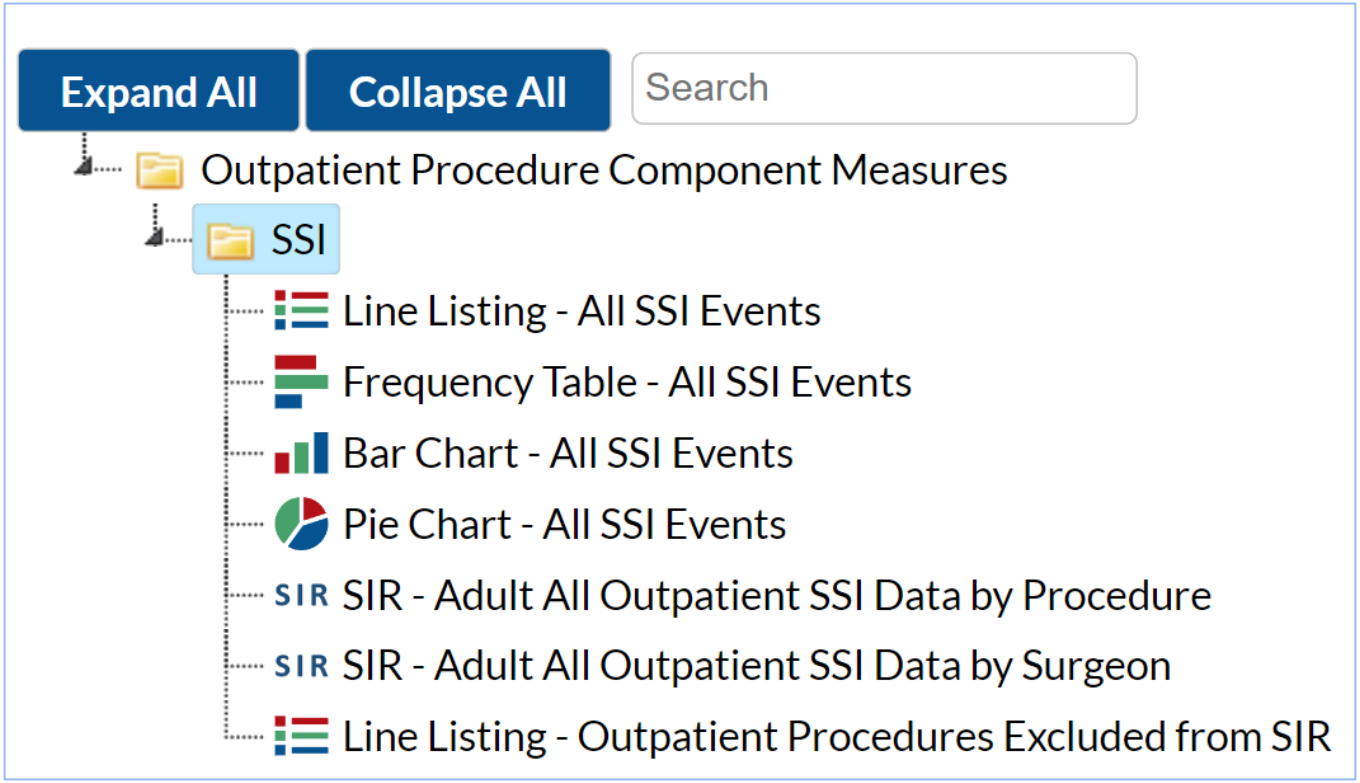


These arrows indicates there are additional menu options within the reports that can be expanded

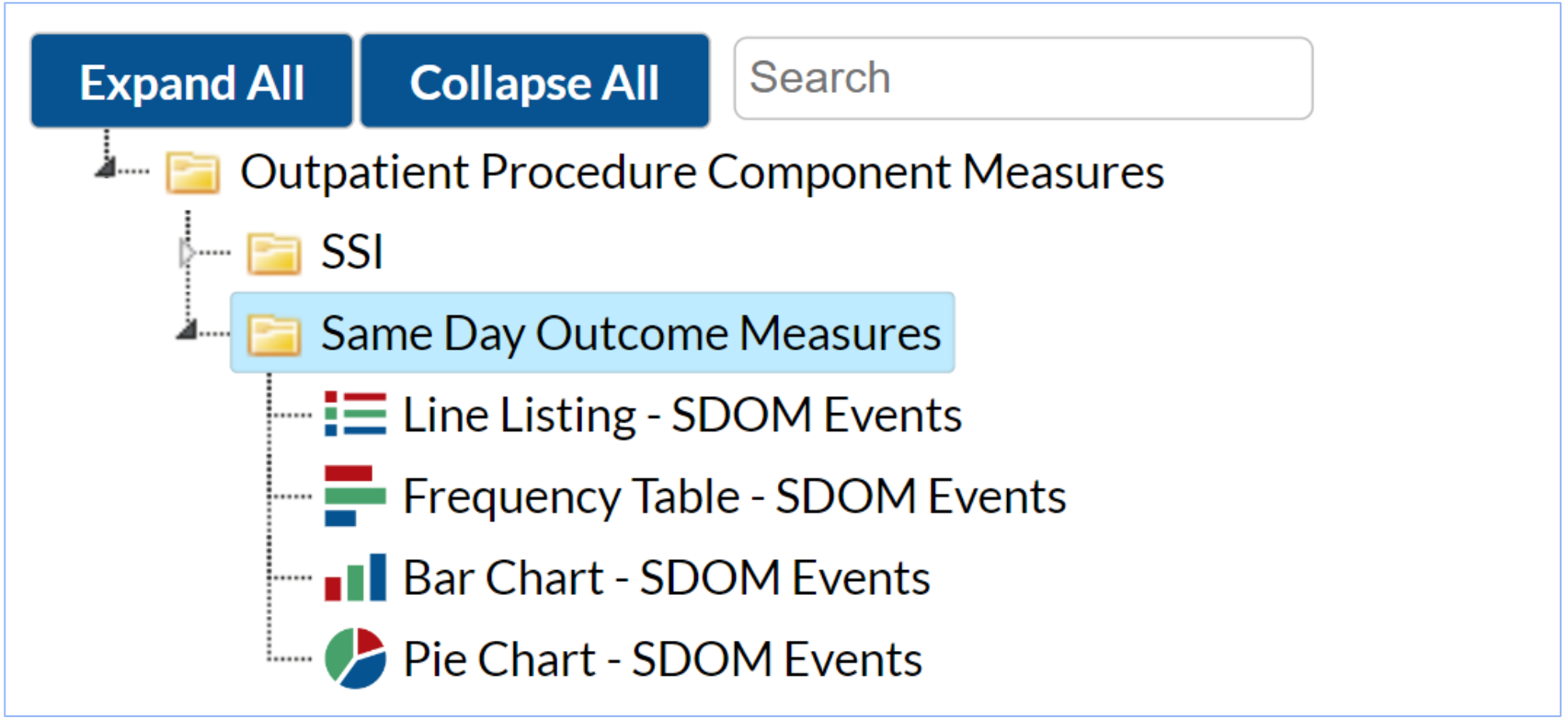
Types of Analysis Reports



SSI Module

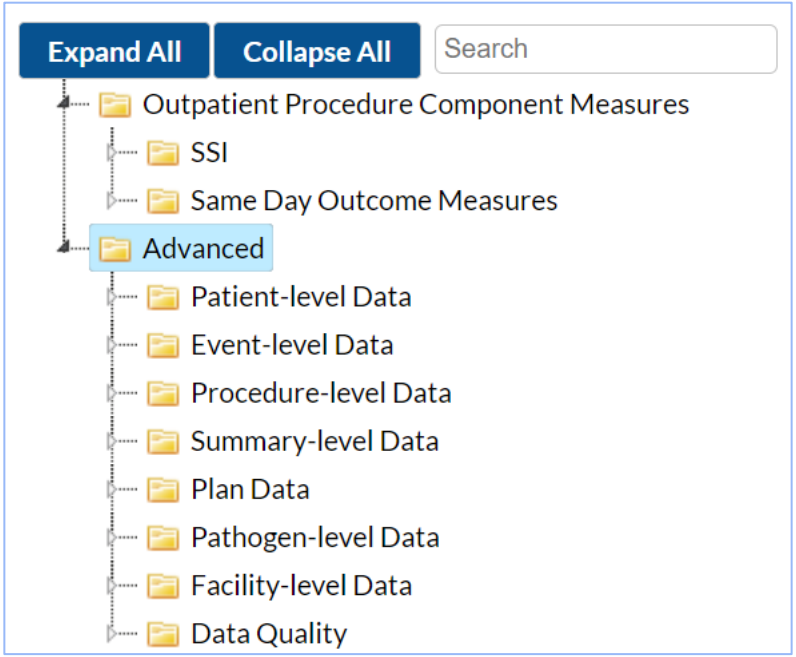

Expand All
Collapse All
Search
Outpatient Procedure Component Measures
SSI
Line Listing - All SSI Events
Frequency Table - All SSI Events
Bar Chart - All SSI Events
Pie Chart - All SSI Events
SIR SIR - Adult All Outpatient SSI Data by Procedure
SIR SIR - Adult All Outpatient SSI Data by Surgeon
Line Listing - Outpatient Procedures Excluded from SIR

SDOM Module: Reports

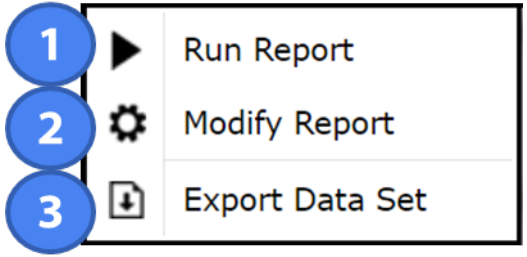


Advanced Reports

- Additional reports are available for drill-down of data



Report Options

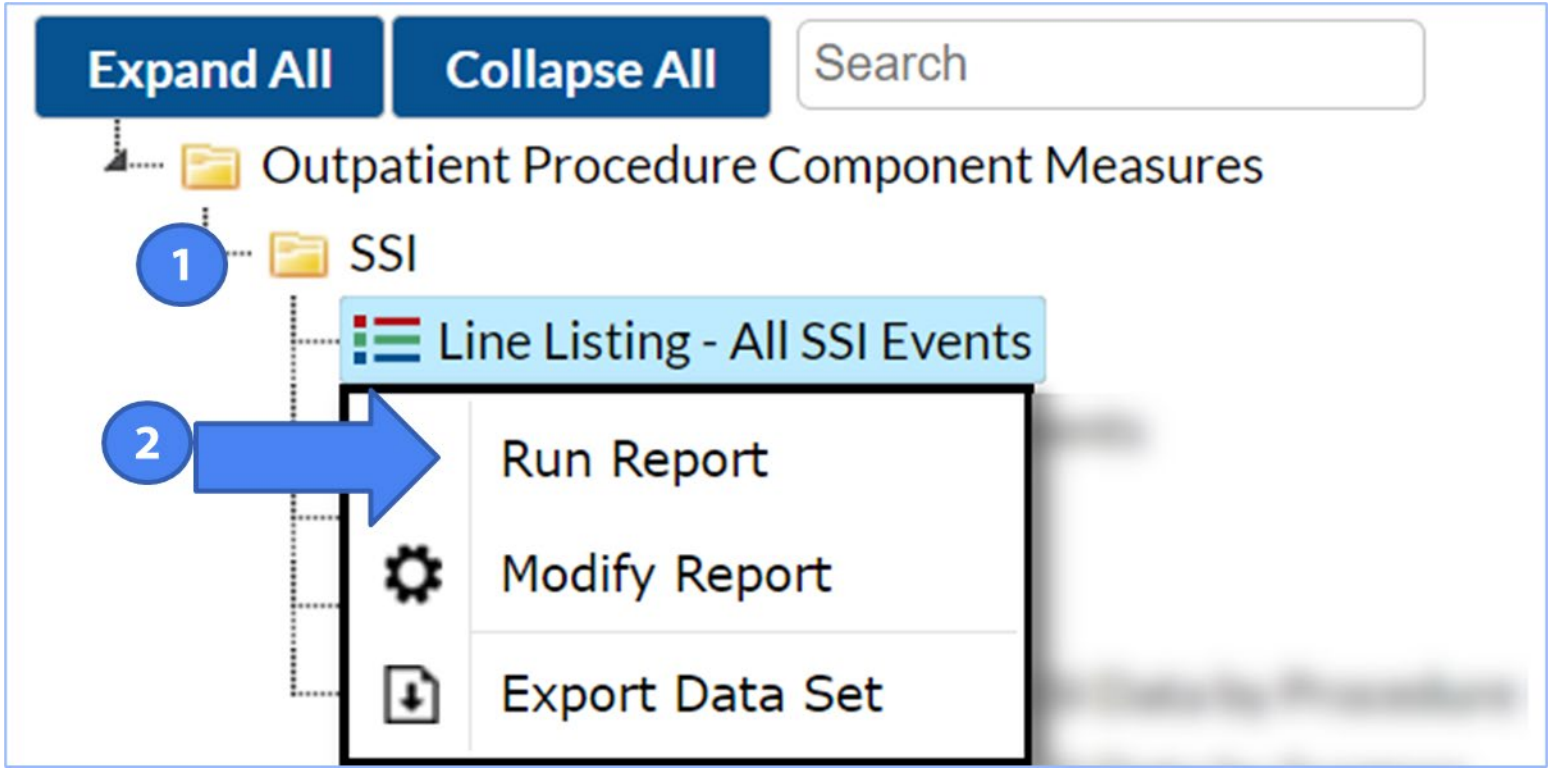


1. Selecting “Run Report” will display the data based on the current default settings without any modifications
2. Selecting “Modify Report” will display the modification screen to customize the report
3. Selecting “Export Data Set” will allow the option to export the data set into a different program (i.e., xlxs, SAS, .txt., and .csv)

Line Listing – All SSI Events

SSI Module

SSI Module: Line Listing – All SSI Events



Title of report displaying timestamp and name of the report data set

National Healthcare Safety Network
Line Listing of All Surgical Site Infection Events
As of: February 20, 2023 at 11:02 AM
Date Range: All OP_SSI_EVENTS

orgID	patID	opeventType	opspcEvent	procDate	procCode	dob	ageAtProc	gender	procDurationHr	procDurationMin	outpatient	whenDetected	allAdultExcl
46153	OP-TEST19	OPSSI	DIP	11/20/2022	APPY	[illegible]/08/1989	33	F	3	1	Y	ACTIVE	0
46153	OP-TEST11	OPSSI	DIS	06/26/2022	HER	03/24/	55	M	1	23	Y	PASSIVE	1
46153	9.3.0.7	OPSSI	DIS	02/11/2019	HPRO	04/13/1983			2	2	Y	PASSIVE	0
46153	9.4.1.8	OPSSI	DIP	06/12/2019	HPRO							ACTIVE	0
46153	9.4.7.1	OPSSI	DIP	02/10/2020	HPRO							ACTIVE	0
46153	9.2.1.1	OPSSI	DIS	01/04/2019	KPRO							PASSIVE	0
46153	COLD789	OPSSI	OS	01/25/2021	KPRO							ACTIVE	0
46153	AB123	OPSSI	DIP	02/10/2021	KPRO							ACTIVE	0
46153	OP-TEST15	OPSSI	SIP	08/01/2022	LAM							PASSIVE	0

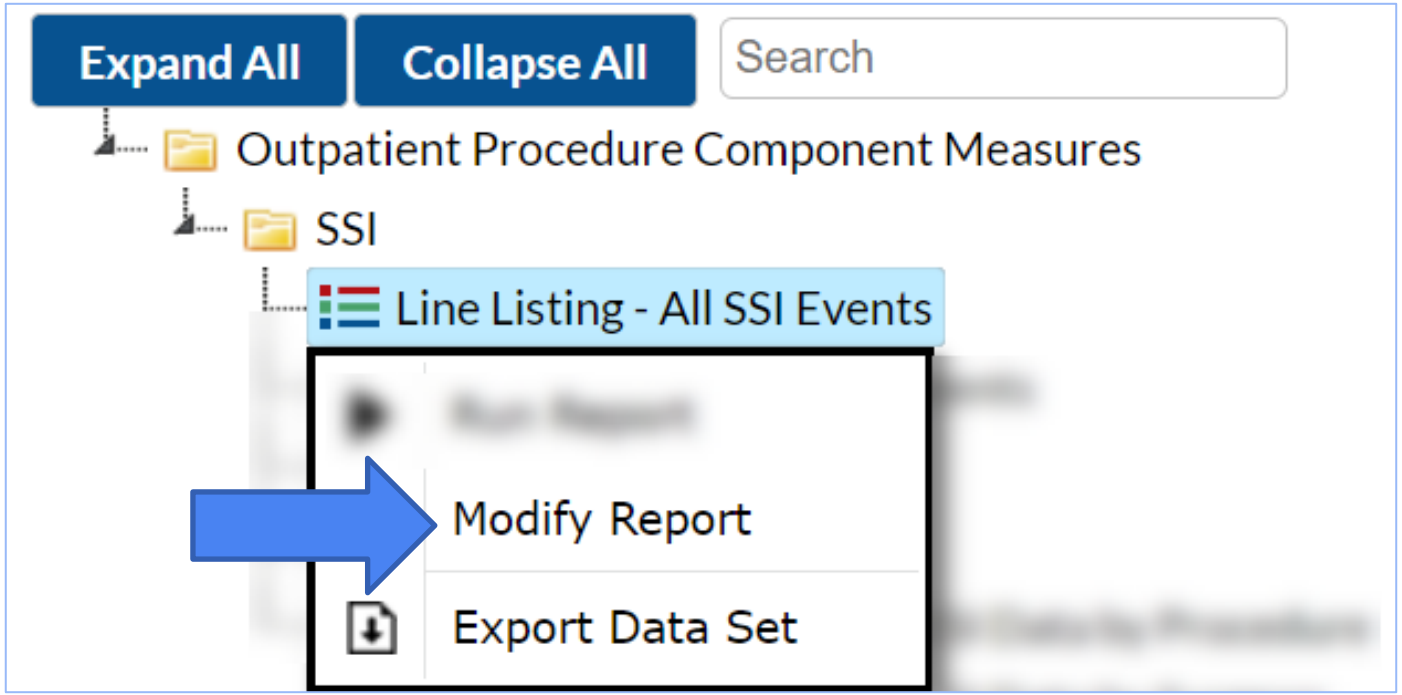
The line listing table is based on the default variables set forth by NHSN and is abbreviated

Sorted by procCode
Data contained in this report were last generated on February 14, 2023 at 3:27 PM to include data beginning November 2018.

Footnotes display the timestamp of the last data set generation

Please Note: All data presented in this slide is fictious for training purposes and does not represent any facility's data

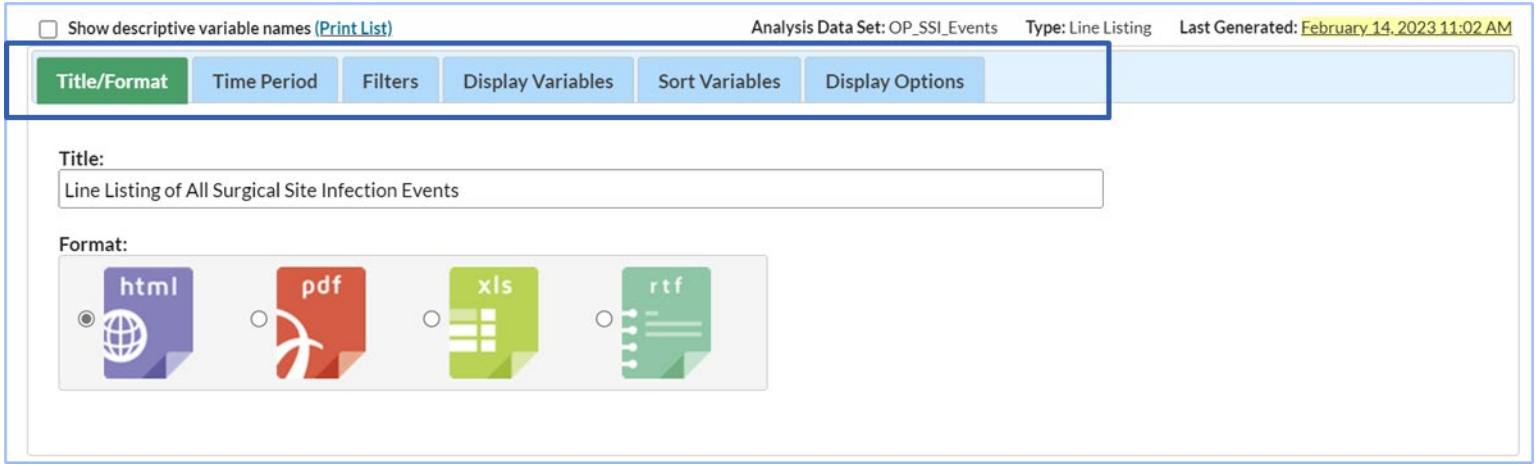
SSI Module: Line Listing – All SSI Events



- Detailed guide on modifying reports in OPC: [OPC Modify Report (cdc.gov)]

Modification of Line Listing – All SSI Events

- Modifying the report allows you to choose the variables that are appropriate for your reporting purposes
- General tabs allow you to select filters for the report
- Example: Review SSI events identified for BRST Procedures performed in 2022



Tip! For more descriptive variable labels on your report, as well as on the modification screen, check this box

procDateYm =procedure date year month

Show descriptive variable name

generated report. By default, the title and format option are pre-selected for you

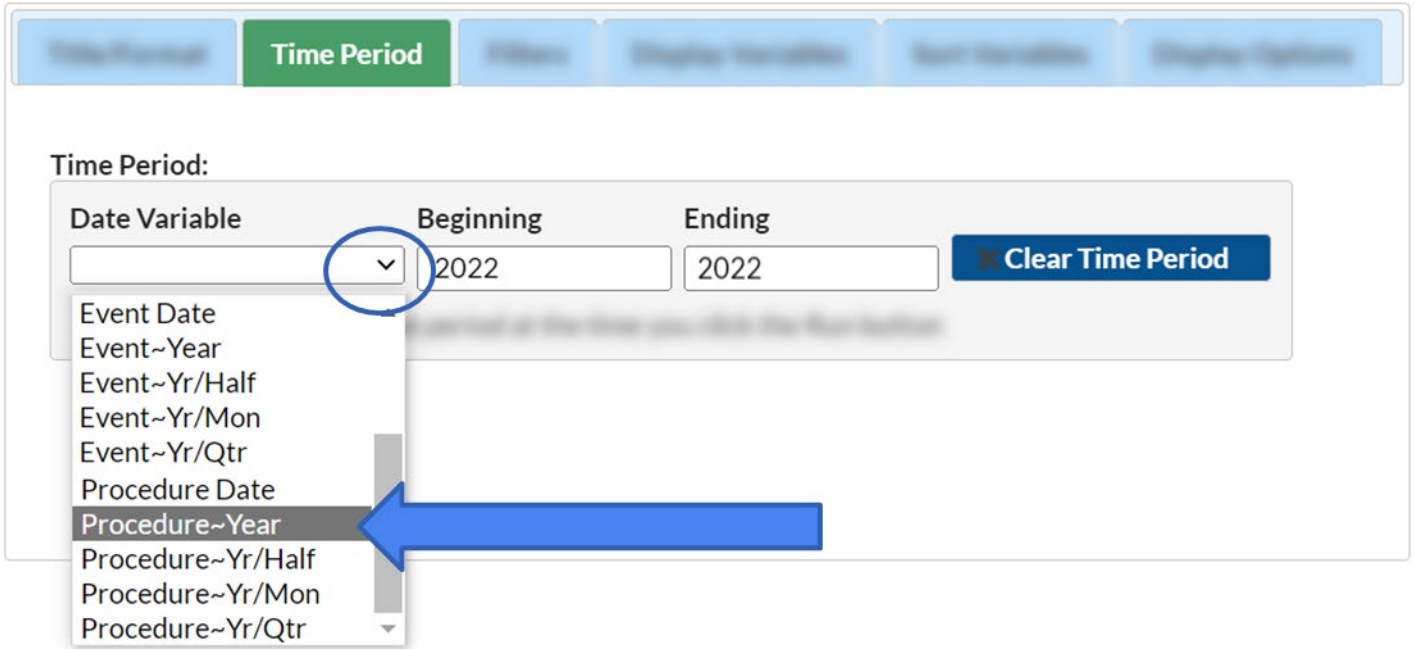
Title/Format

Title:

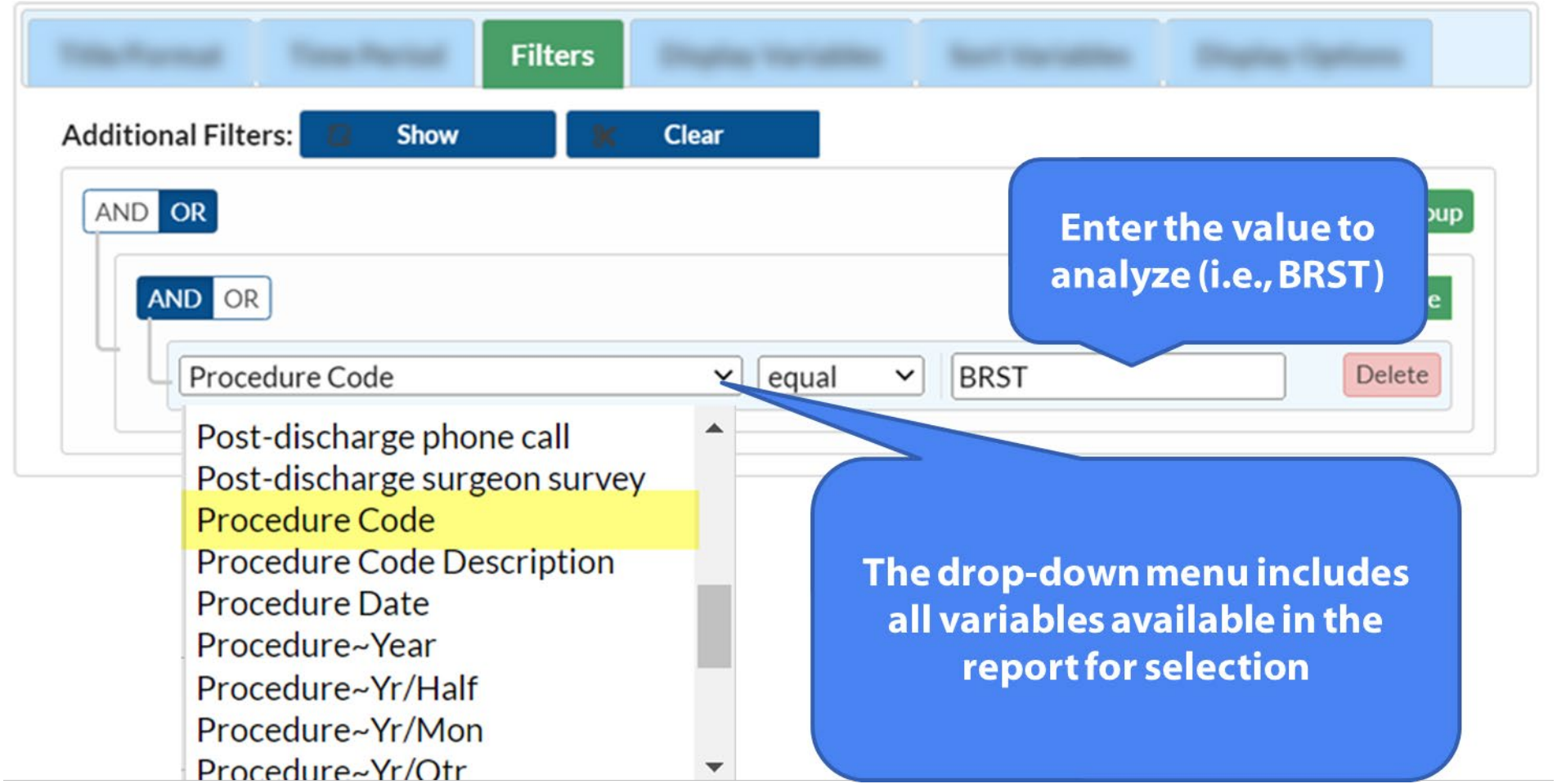
Line Listing of All Surgical Site Infection Events

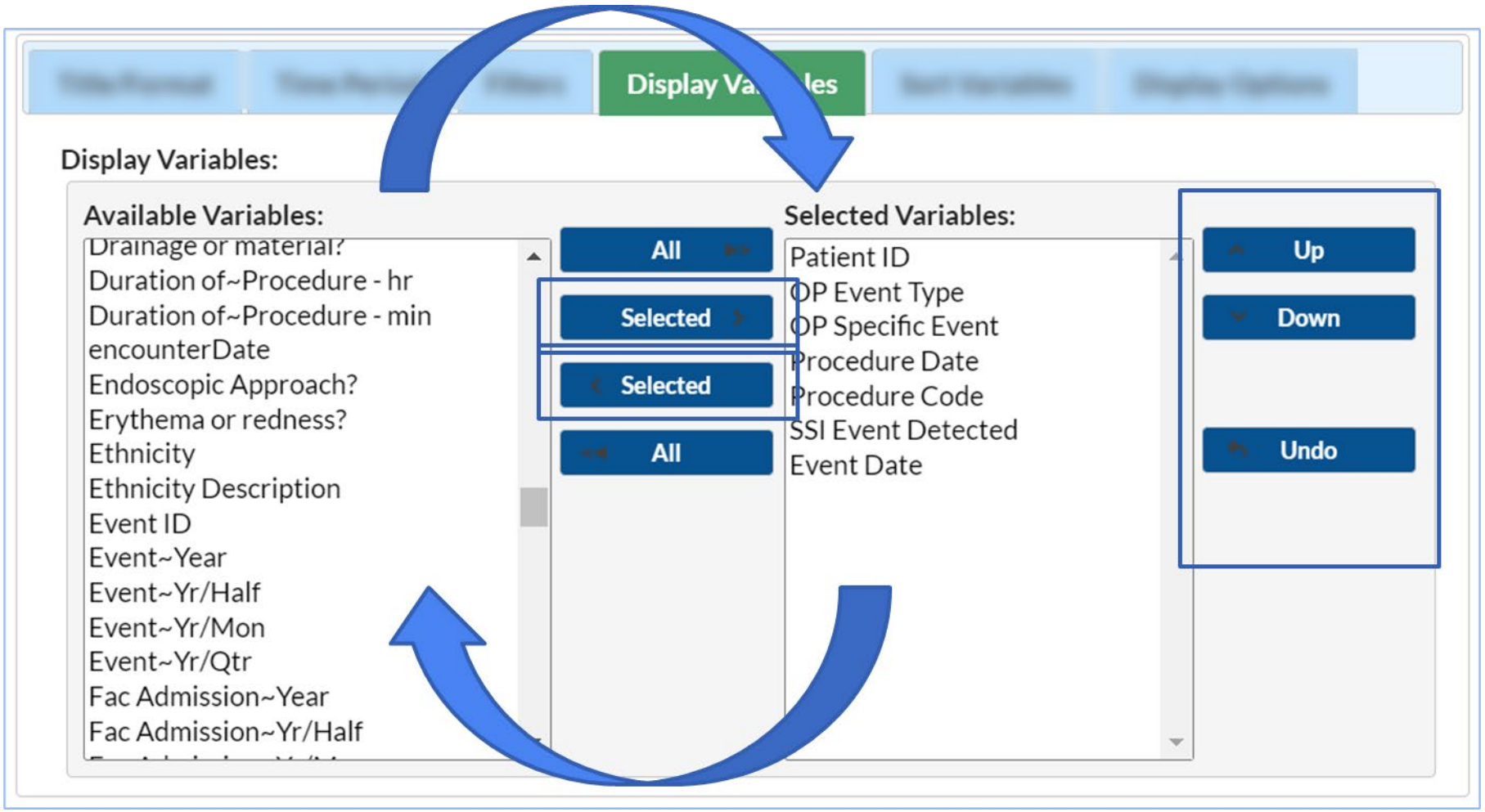
Format:

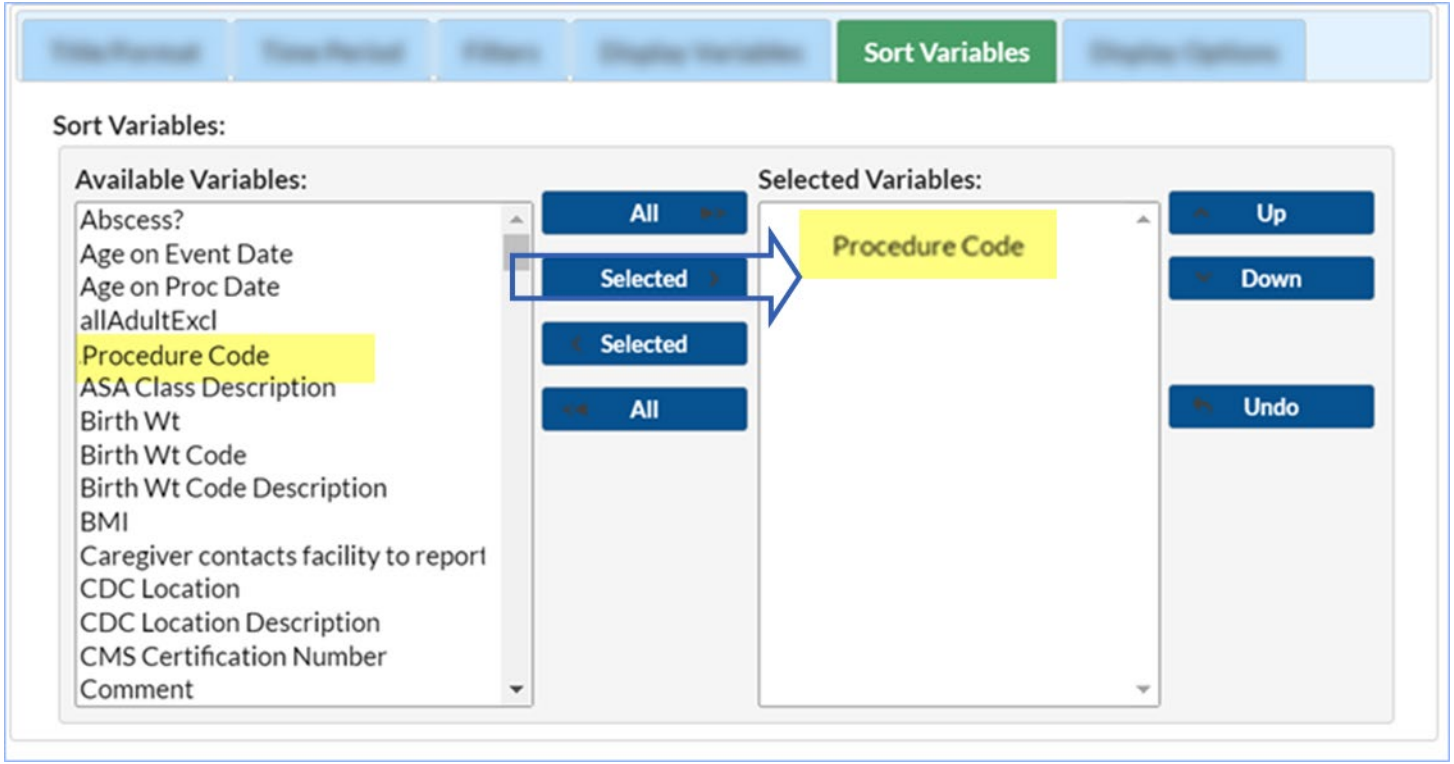
You may choose the format in which the report is displayed, such as HTML or PDF



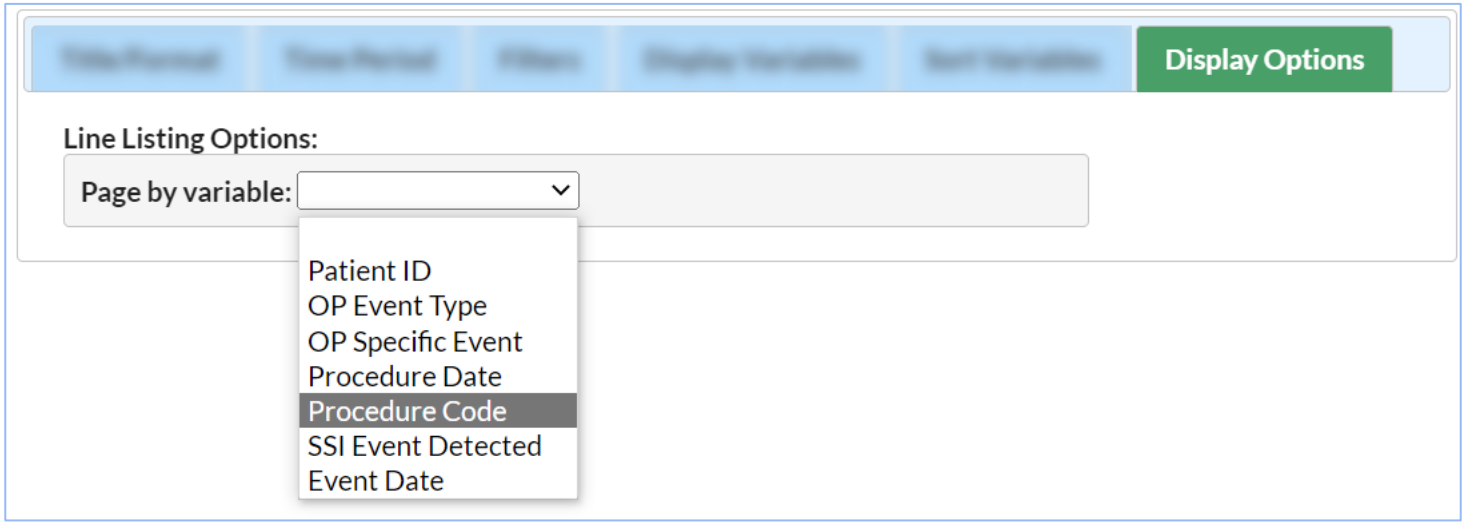
- Select a specific time period for your report
- For the SSI module, search by procedure date because procedure carries the risk of infection


Filters
Additional Filters:
Show
Clear
AND
OR
AND
OR
Procedure Code
equal
BRST
Delete
Post-discharge phone call
Post-discharge surgeon survey
Procedure Code
Procedure Code Description
Procedure Date
Procedure~Year
Procedure~Yr/Half
Procedure~Yr/Mon
Procedure~Yr/Qtr
Enter the value to analyze (i.e., BRST)
The drop-down menu includes all variables available in the report for selection


Display Variables:
Available Variables:
Drainage or material?
Duration of~Procedure - hr
Duration of~Procedure - min
encounterDate
Endoscopic Approach?
Erythema or redness?
Ethnicity
Ethnicity Description
Event ID
Event~Year
Event~Yr/Half
Event~Yr/Mon
Event~Yr/Qtr
Fac Admission~Year
Fac Admission~Yr/Half
All
Selected
Selected
All
Selected Variables:
Patient ID
OP Event Type
OP Specific Event
Procedure Date
Procedure Code
SSI Event Detected
Event Date
Up
Down
Undo



- You can sort by more than one variable. NOTE: the variable must be in your line list in order to sort on that variable.



- The “Display Options” tab allows you to view your report organized by a specific criteria (NOTE: these variables were selected in the “display variables” tab)

Line Listing Report

Selected Variables:
- Patient ID
- OP Event Type
- OP Specific Event
- Procedure Date
- Procedure Code
- SSI Event Detected
- Event Date

National Healthcare Safety Network
Line Listing of All Surgical Site Infection Events
As of: February 14, 2023 at 11:34 AM
Date Range: OP_SSI_EVENTS procDateYr 2022 to 2022

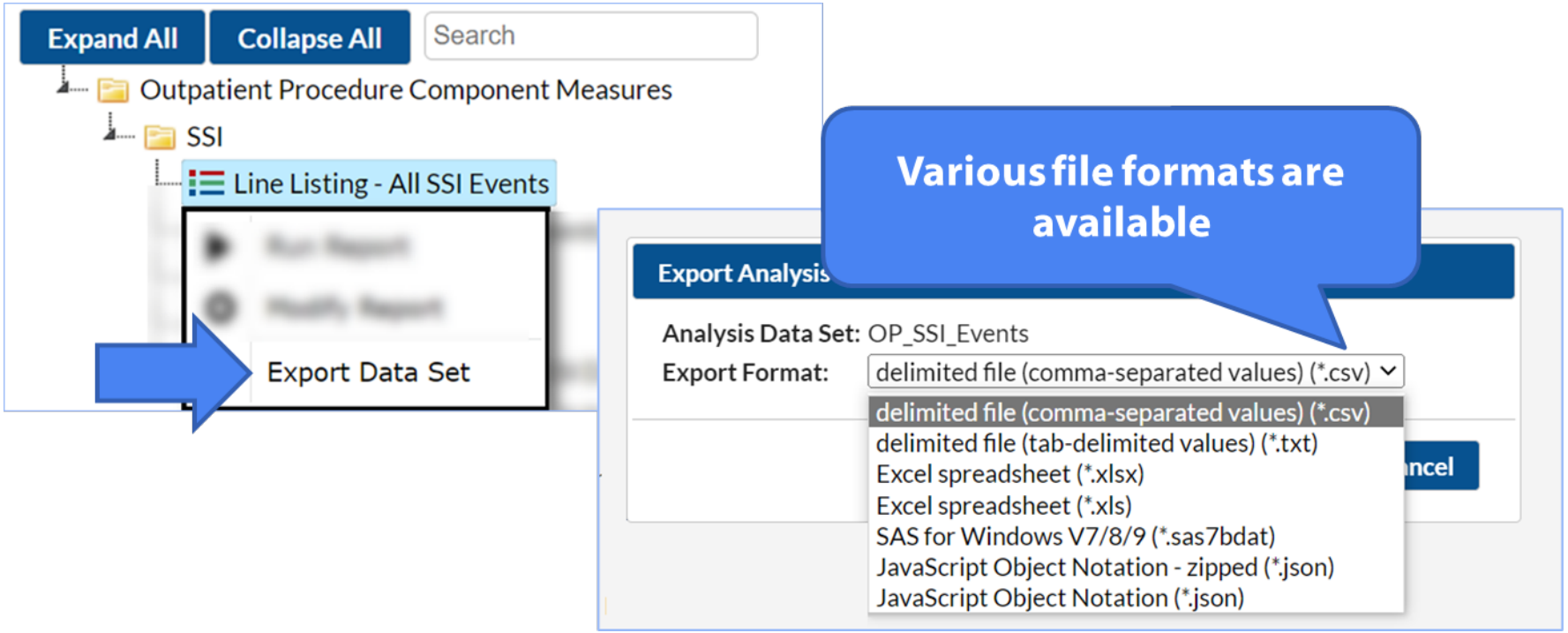
Patient ID	OP Event Type	OP Specific Event	Procedure Date	Procedure Code	SSI Event Detected	Event Date
OP-TEST19	OPSSI	DIP-BRST	11/20/2022	BRST	ACTIVE	11/30/2022
OP-TEST11	OPSSI	DIS-BRST	06/26/2022	BRST	PASSIVE	06/30/2022
OP-TEST15	OPSSI	SIP-BRST	08/01/2022	BRST	PASSIVE	08/31/2022

Sorted by procCode

Data contained in this report were last generated on February 14, 2023 at 11:01 AM to include data beginning November 2018.

Please Note: All data presented in this slide is fictious for training purposes and does not represent any facility's data

Exporting Data Sets



Frequency Table – SDOM Events

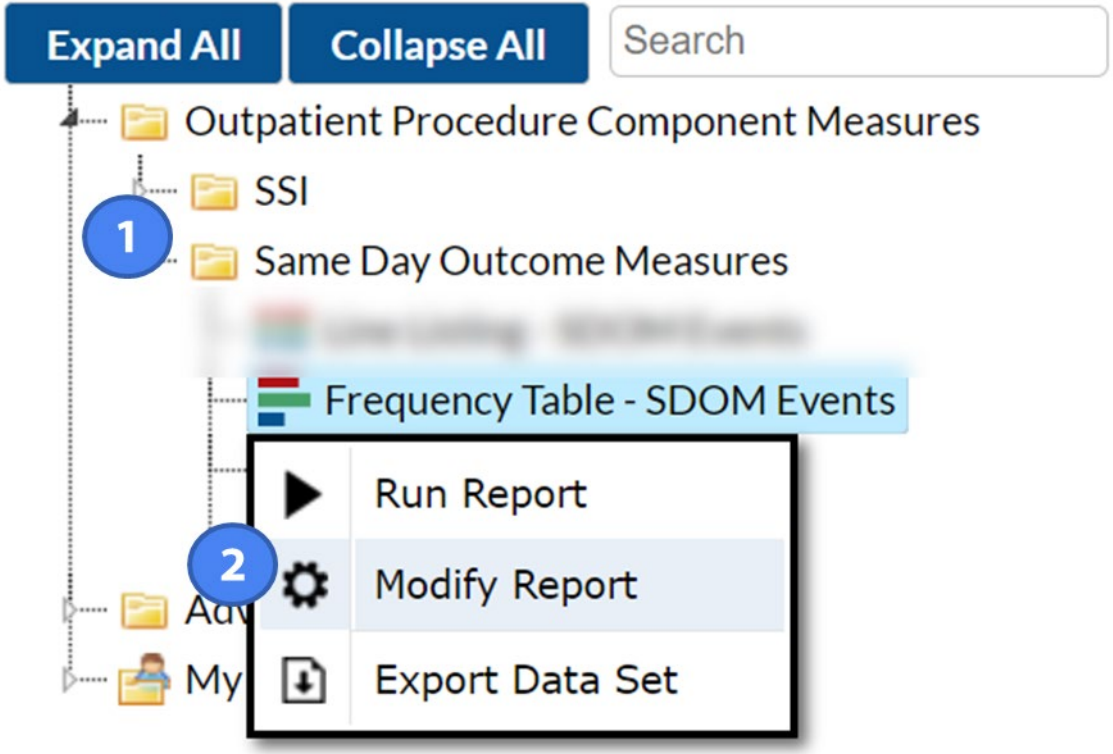
SDOM Module

Example: Review “Patient Fall” data

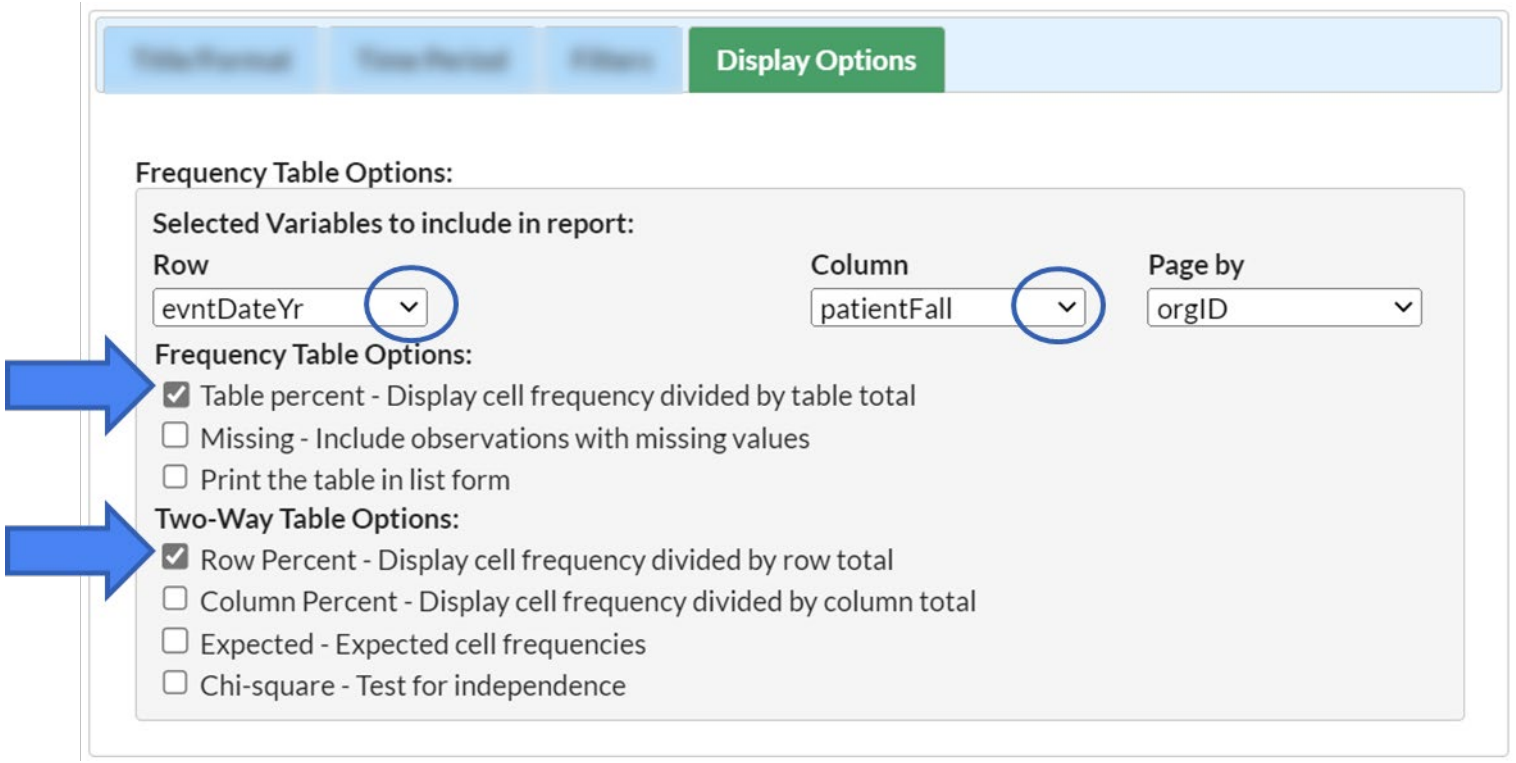
- This report type will allow you to select the row, column, and page-by variables used to count the records that meet each criteria.

- In the following slide, the Frequency Table will provide counts of records meeting each combination of procedure date year (eventDateYR) and SDOM patient falls (patientFall)

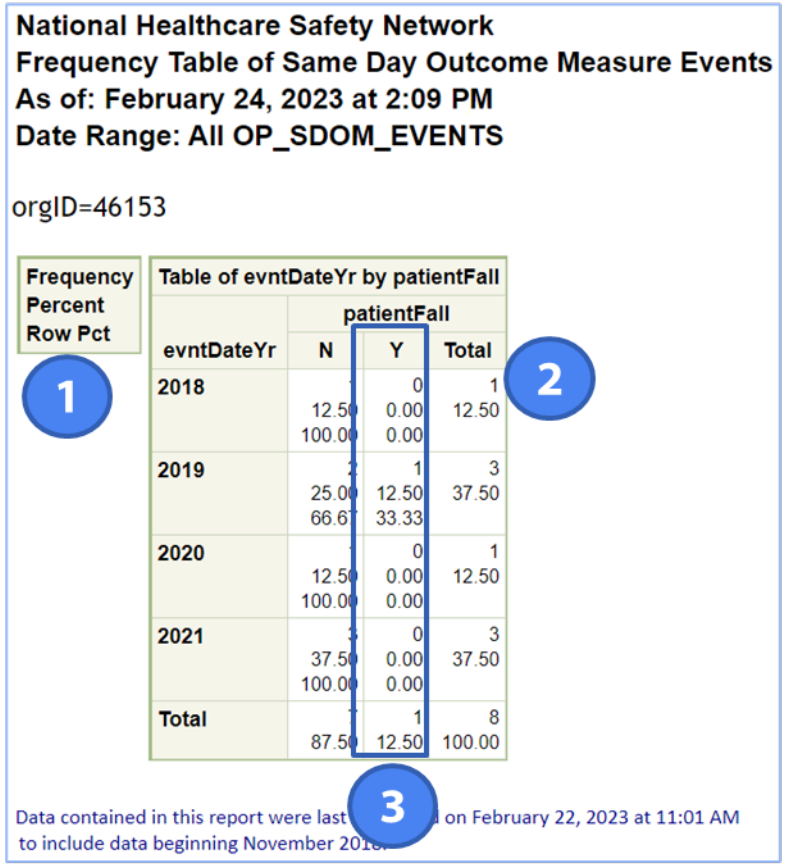
Running a Frequency Table for SDOM Events



Modifying Frequency Table Report



Frequency Table Report



National Healthcare Safety Network
Frequency Table of Same Day Outcome Measure Events
As of: February 24, 2023 at 2:09 PM
Date Range: All OP_SDOM_EVENTS

orgID=46153

Frequency Percent Row Pct	Table of evntDateYr by patientFall		
	patientFall		
evntDateYr	N	Y	Total
2018	1 12.50 100.00	0 0.00 0.00	1 12.50
2019	2 25.00 66.67	1 12.50 33.33	3 37.50
2020	1 12.50 100.00	0 0.00 0.00	1 12.50
2021	3 37.50 100.00	0 0.00 0.00	3 37.50
Total	7 87.50	1 12.50	8 100.00

Data contained in this report were last [illegible] on February 22, 2023 at 11:01 AM
to include data beginning November 2018.

1. Top left corner box contains a legend explaining what each cell in the frequency table represents
2. The top cell of each combination provides a simple count of the number of events (frequency) that have occurred meeting both the row and column criteria
3. In this example, there was one patient fall reported from 2018 to 2021 which accounts for approximately 13% of patient falls monitored for that time period

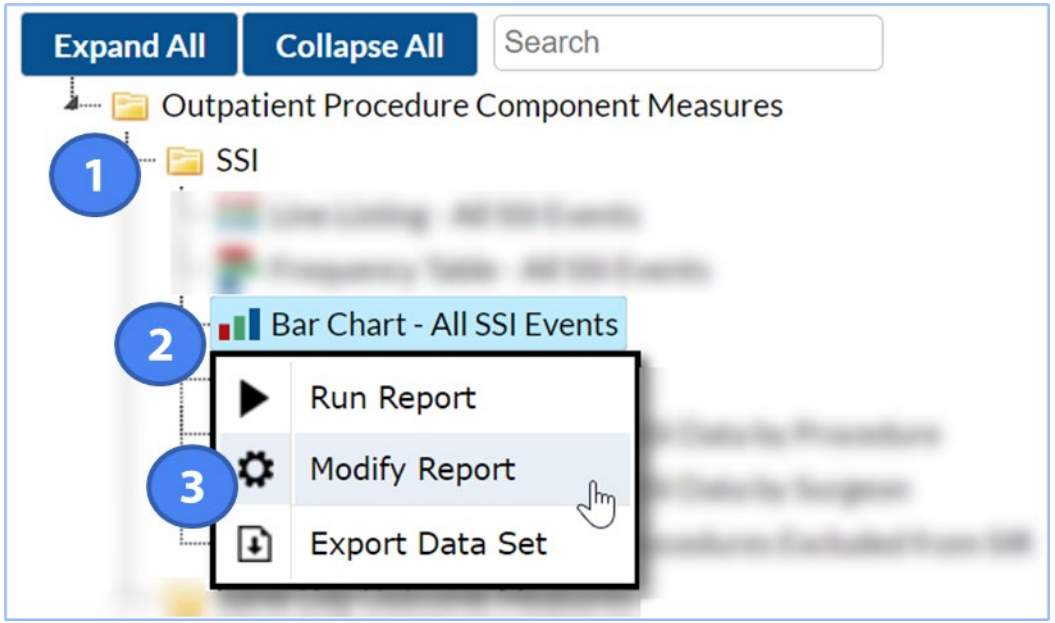
Please Note: All data presented in this slide is fictious for training purposes and does not represent any facility's data

Bar Chart– All SSI Events

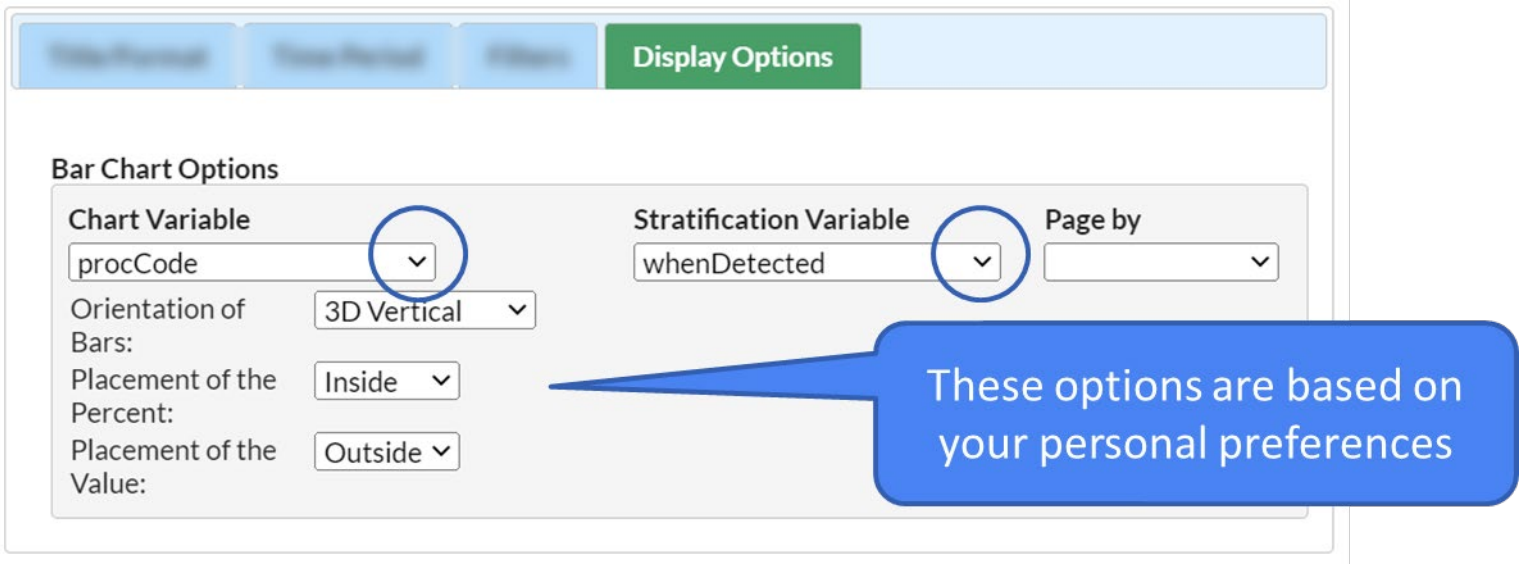
SSI Module

Bar Chart – All SSI Events

- Example: How do I get the distribution of SSI events by detection type, using a visual report?

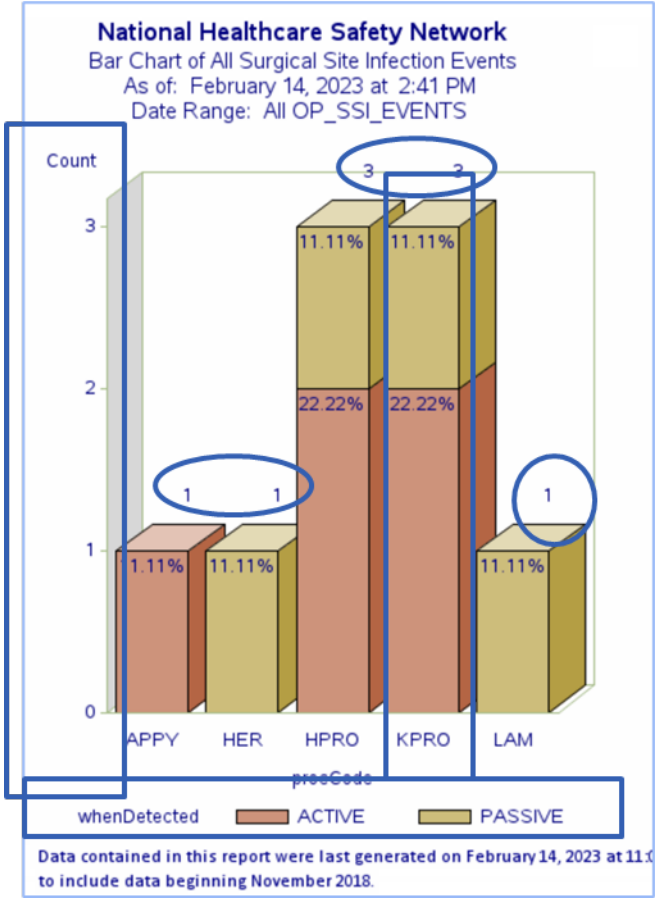


Modifying Bar Chart Report



- The “Chart variable” is the variable that will make up values of the bars. Different bars will be created for each value of the “Stratification variable”

Bar Chart Report: SSI Surveillance Type



- The count is the total number of events and is represented by the height of the bars (vertical axis)
- Because this chart is stratified on when detected type, each procedure code depicted on the chart is color coded. The percent shown for each bar is the percent of all events (n=9) on this chart that are included in the specific bar
- Example: Of all KPROs reported, 22.22%(2/9) were identified via Active surveillance

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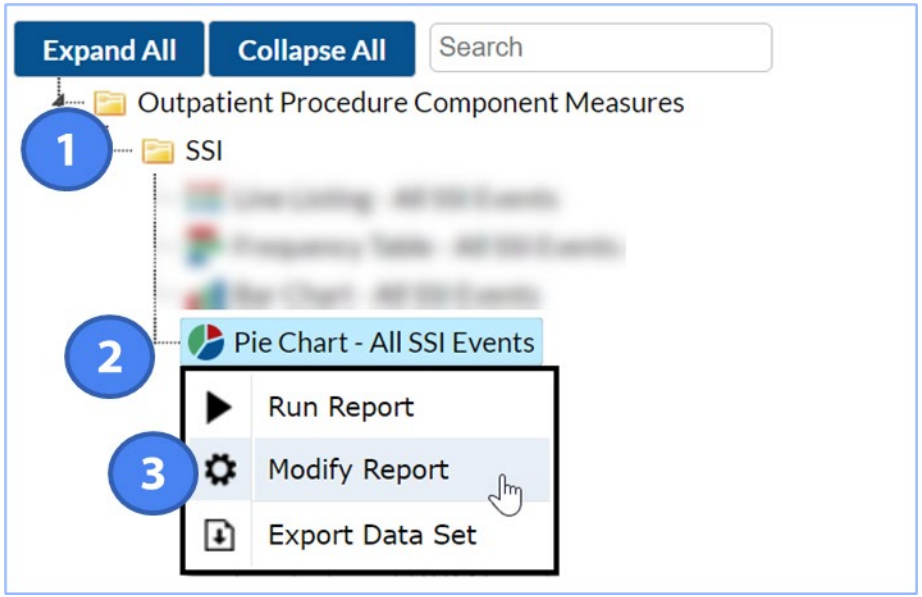
Pie Chart – All SSI Events

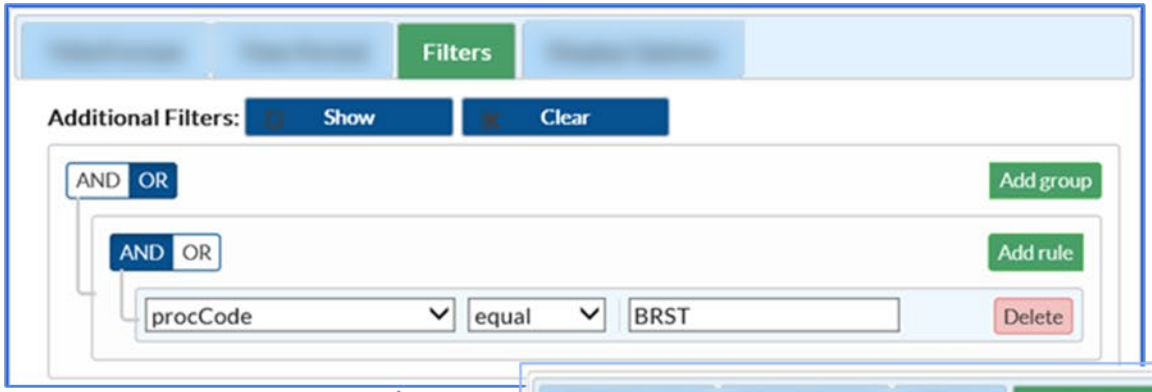
SSI Module

Running a Pie Chart for All SSI Events

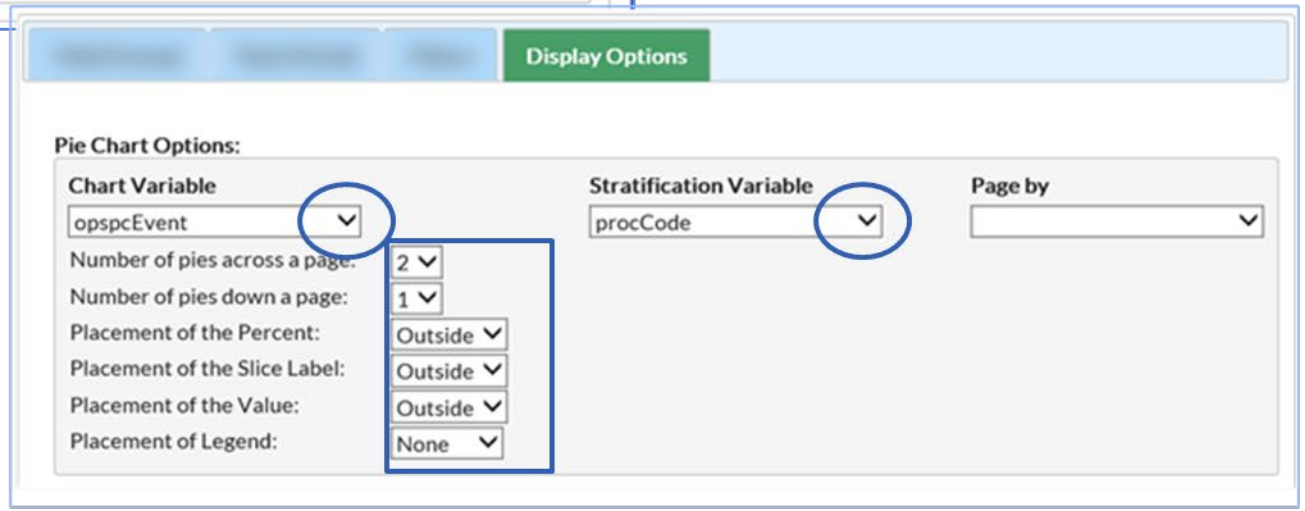
- Example: How do I provide a graphical representation of the data to understand the distribution of the specific event types that were identified for BRST SSIs?



Modifying the Pie Chart



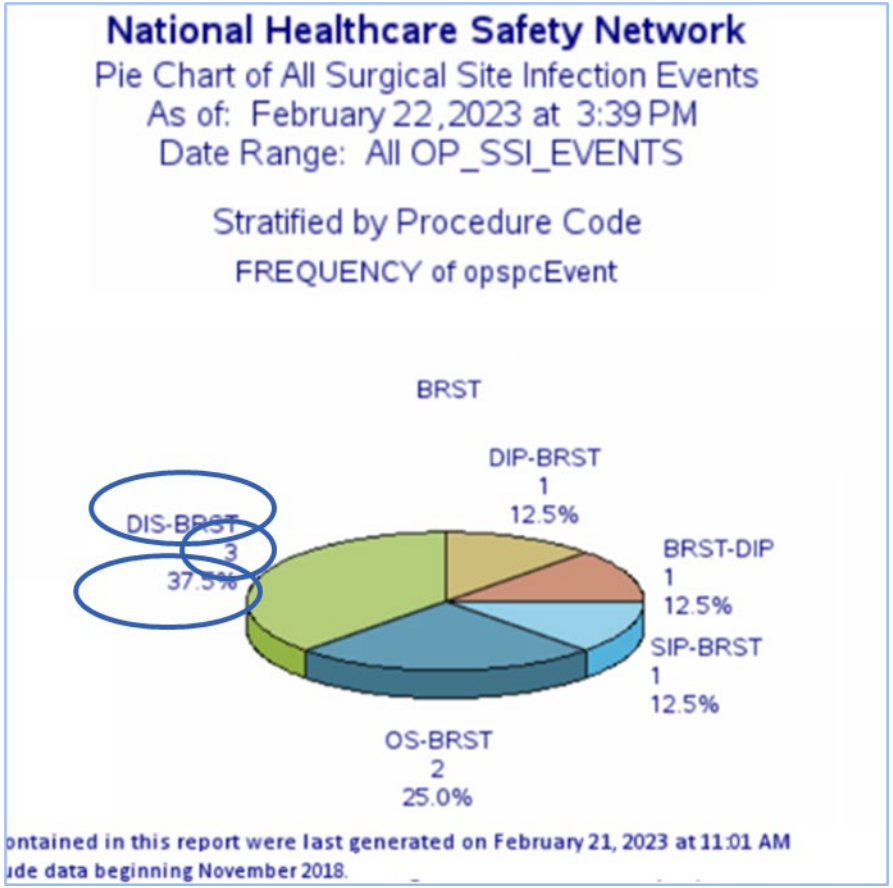
Adding a filter to only show BRST procedures



Note: opspcEvent=Outpatient Specific Event

Pie Chart Report

- The top value for each slice is the value of the “chart variable” (i.e. specific event type)
- The second value is a count of the number of events included in each slice of the pie. Example: there were 3 DIS for BRST procedures performed
- The bottom number is a percent corresponding to this slice’s percent of the entire pie. Example: 37.5% (3/8) of all SSI Events reported were DIS
- Note: DIS-BRST=Deep incisional Breast SSI Events



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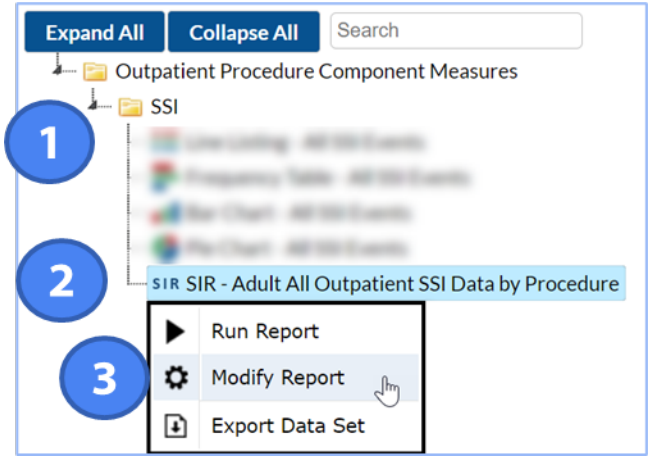
SIR REPORT– Adult All Outpatient SSI Data by Procedure

SSI Module

Running the SIR Report

- Example: Suppose you are interested in running an SIR report for SSI surveillance that occurred for BRST procedures during 2022 using the All-Outpatient SSI Model for adults
- Please note that All Outpatient SSI SIR models for ASCs are available for the following procedure categories: Breast Procedure (BRST), Herniorrhaphy Procedure (HER), Knee Prosthesis Procedure (KPRO), and Laminectomy Procedure (LAM)

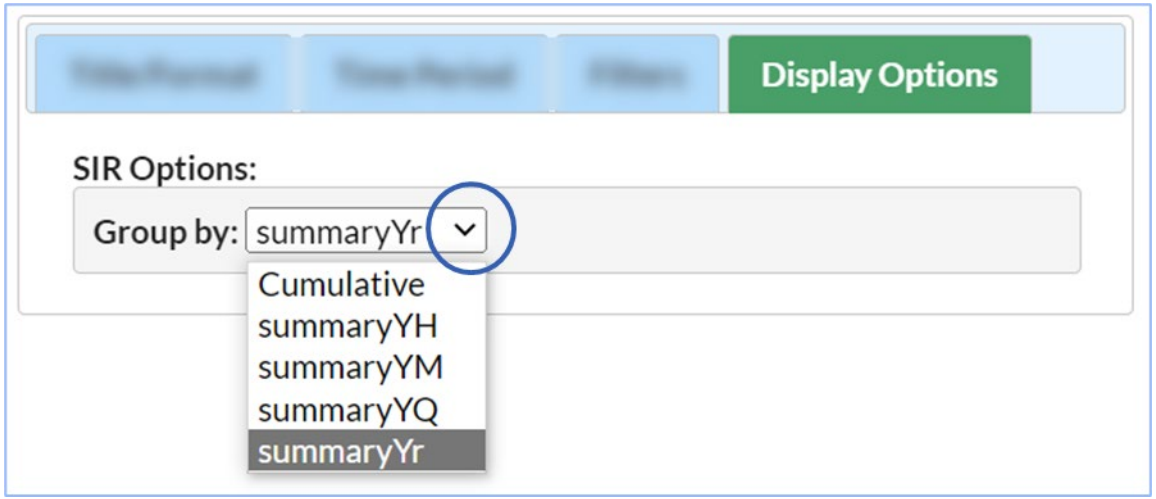


Purpose of the SIR Report

- The SIR is a summary measure used to track HAIs at a national, state, or local level over time
- The SIR adjusts for various facility and/or patient-level factors that contribute to HAI risk within each facility
- The SIR compares the actual number of HAIs reported to the number that would be predicted, given the standard population (i.e., NHSN baseline), adjusting for several risk factors
- Why not rates?
  - they cannot reflect differences in risk between populations, and therefore lose comparability over time and across entities.
- NHSN Guide to the SIR: NHSN SIR Guide (cdc.gov)

Modifying the SIR Report

- The SIR reports allow for the option to generate and display results by time period – e.g., by month, year, etc.
- Set the filters to only view the 2022 time period for BRST procedures



SIR Report

National Healthcare Safety Network

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

As of: February 22, 2023 at 4:45 PM

Date Range: OP_SIR_ADULTALLSSIPROC summaryYr 2022 to 2022

if (((procCode = "BRST")))

Numerator

SIR Statistics

orgid=46153

orgid	CCN	summaryYr	procCount	infCountAdultAll	numPredAdultAll	SIRAll	SIRAll_pval	SIRAll95CI
46153	153C461	2022	33	3	2.645	0.378	0.3297	0.019, 1.864

Denominator

1. SIR table includes in-plan months with data contr
2. Includes outpatient NHSN operative procedures p gery centers (AMB-SURG) in patients >=18 years of age.
3. The SIR is only calculated if numPred is >= 1. Lower bound of 95% Confidence Interval only calculated if infCount > 0.
4. The number of predicted events is calculated based on national aggregate NHSN data from 2015.
5. Excludes all Superficial Incisional Secondary (SIS) and Deep Incisional Secondary (DIS) SSIs.
6. 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 February 21, 2023 at 11:01 AM to include data beginning November 2018.

Please Note: All data presented in this slide is fictious for training purposes and does not represent any facility's data

SIR Report Interpretation

orgid	CCN	summaryYr	procCount	infCountAdultAll	numPredAdultAll	SIRAll	SIRAll_pval	SIRAll95CI
46153	153C461	2022	33	3	2.645	0.378	0.3297	0.019, 1.864

A In 2022, there were 3 breast SSI events identified in facility 46153 (infCountAdultAll), and there was a total of 33 outpatient breast surgeries performed (procCount).

B Based on the NHSN 2015 baseline data, 2.645 breast SSIs were predicted ("numPredAdultAll") in this facility under the Adult All Outpatient SSI SIR risk adjusted model.

C This results in an SIR of 0.378 (3/2.645), signifying that during this time period, the facility identified less breast SSIs than were predicted.

D Because the p-value ("SIRAll_pval") is above the significance level of 0.05 and the 95% confidence interval ("SIRAll95CI") includes the value of 1, we can conclude that this facility's SIR is not statistically significant; in other words, this facility did not observe a statistically significantly different number of breast SSIs than predicted.

Please Note: All data presented in this slide is fictious for training purposes and does not represent any facility's data

Summary of OPC Analysis Reports

In Summary

- There are two modules within OPC: SSI and SDOM
- Reports, such as line listings, frequency tables and graphical charts can be found in both report modules
- Before running analysis reports, it is important to generate a new data set
- Adult All Outpatient SSI SIR reports are available for BRST, HER, KPRO, and LAM
- You can utilize the analysis reports to provide insight into trends for prevention initiatives

Analysis Resources

- OPC User Toolkit:

- How to Generate Data Sets: How to Generate Data Sets (cdc.gov)
- How to Resolve Alerts: Resolve Alerts in Outpatient Procedure Component (cdc.gov)
- How to Modify a Report: OPC Modify Report (cdc.gov)
- NHSN Guide to the SIR: NHSN SIR Guide (cdc.gov)
- ASC Surveillance Resources: Surgical Site Infections (SSI) | OPC | NHSN | CDC

Thank You!

nhsn@cdc.gov

Please include “OPC” in the subject line

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.