

Reporting Procedure Duration

NHSN Analysis

March 2021

This guide will provide instructions on how to identify procedure duration outlier data using NHSN Analysis reports.

Background

Procedure duration outliers are defined by the universal exclusion criteria in [“The NHSN Standardized Infection Ratio \(SIR\): A Guide to the SIR”](#) as either a procedure duration that is less than 5 minutes or greater than five times the interquartile range (IQR5). The IQR5 is used as an indicator of an extreme outlier for procedure durations when calculating the surgical site infections (SSI) SIRs. The IQR5 is calculated as five times the interquartile range (Q1-Q3) above the 75th percentile among all procedures reported to NHSN during the 2015 baseline year. For example, if the national interquartile range for a specific procedure type is 30 minutes, and the 75th percentile is 100 minutes, the IQR5 would be calculated as: $100 + (30 * 5) = 250$ minutes. Procedures with a duration greater than the IQR5 were excluded from the baseline data risk adjustment and will be excluded from all SSI SIR calculations for your facility.

In the NHSN Patient Safety Protocol, Procedure Duration is defined as:

Duration of operative procedure: The interval in hours and minutes between the Procedure/Surgery Start Time and the Procedure/Surgery Finish Time, as defined by the Association of Anesthesia Clinical Directors (AACD)¹³:

Procedure/Surgery Start Time (PST): Time when the procedure is begun (for example, incision for a surgical procedure).

Procedure/Surgery Finish (PF): Time when all instrument and sponge counts are completed and verified as correct, all postoperative radiologic studies to be done in the OR are completed, all dressings and drains are secured, and the physicians/surgeons have completed all procedure-related activities on the patient.



The table below includes the NHSN Operative Procedure IQR5 thresholds for adult and pediatric patients:

Table 1. IQR5 Values for NHSN Operative Procedures, Adult and Pediatric Patients, all SSI SIR Models				
NHSN Operative Procedures	IQR5* (in minutes)		IQR5* (in hours and minutes)	
	Minutes	Hours	Minutes	
AAA	1116	18	36	
AMP	300	5	0	
APPY	210	3	30	
AVSD	471.5	7	51.5	
BILI	1295	21	35	
BRST	777	12	57	
CARD	1001	16	41	
CBGB	847	14	7	
CBGC	847	14	7	
CEA	376	6	16	
CHOL	346	5	46	
COLO	697	11	37	
CRAN	904	15	4	
CSEC	170	2	50	
FUSN	874	14	34	
FX	532	8	52	
GAST	489	8	9	
HER	521	8	41	
HPRO	349	5	49	
HTP	1355	22	35	
HYST	547	9	7	
KPRO	316	5	16	
KTP	670	11	10	
LAM	687	11	27	
LTP	1243	20	43	
NECK	1796	29	56	
NEPH	774	12	54	
OVRY	594	9	56	
PACE	311	5	11	
PRST	737	12	17	
PVBY	850	14	10	
REC	1136	18	56	
RFUSN	1129	18	49	
SB	856	14	16	
SPLE	1073	17	53	
THOR	721	12	1	
THYR	506	8	26	
VHYS	506	8	26	
VSHN	378	6	18	
XLAP	724	12	4	

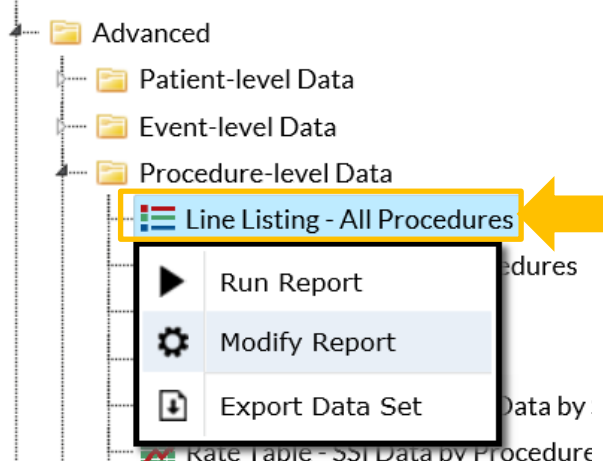


How to Identify Procedures with an Outlier Duration

Method One: Line Listing - All Procedures report

The “Line Listing - All Procedures” report describes in detail all procedures entered into NHSN by the facility. As an example, let’s use this method to identify the procedures where procedure duration was less than 5 minutes.

Step 1: Access the “Line Listing – All Procedures” report located in the Procedure-level Data subfolder of the Advanced folder and select Modify Report.



The screenshot shows a navigation tree with the following structure:

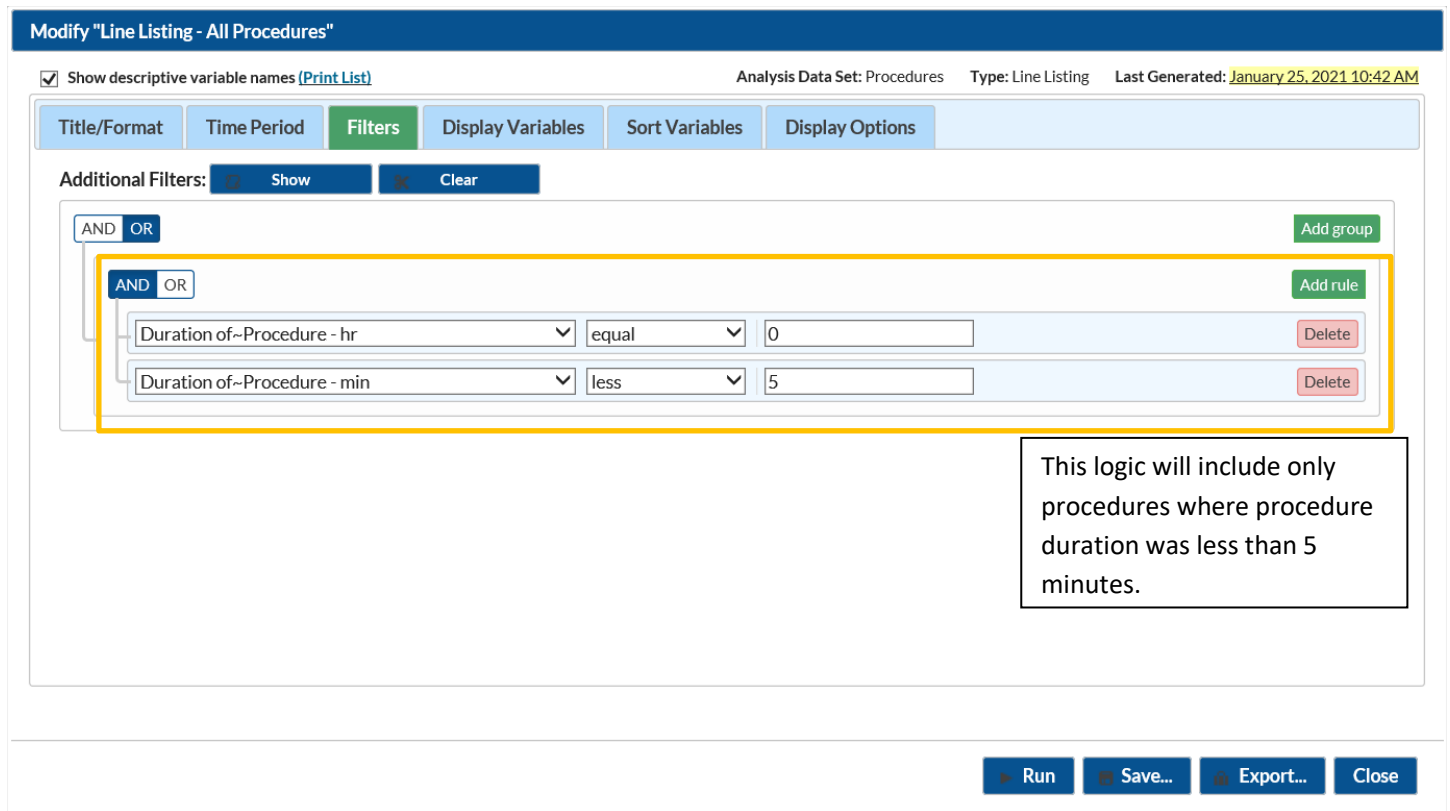
- Advanced
 - Patient-level Data
 - Event-level Data
 - Procedure-level Data
 - Line Listing - All Procedures** (highlighted with a yellow box and a yellow arrow pointing to it)
 - Rate Table - SSI Data by Procedure

A context menu is open over the selected item, showing the following options:

- Run Report
- Modify Report** (highlighted)
- Export Data Set

A text box on the right contains the following text: "The “Line Listing – All Procedures” report describes in detail all of the procedures data for the facility in NHSN"

Step 2: On the modification page of the “Line Listing - All Procedures” report the “Show descriptive variables names” box has been checked. Use the Filters Tab to request that the Line List include only procedures where procedure duration was less than 5 minutes.



The screenshot shows the "Modify 'Line Listing - All Procedures'" page. At the top, there is a header with the following information: "Analysis Data Set: Procedures", "Type: Line Listing", and "Last Generated: January 25, 2021 10:42 AM". Below the header, there are several tabs: "Title/Format", "Time Period", "Filters", "Display Variables", "Sort Variables", and "Display Options". The "Filters" tab is selected. Under the "Additional Filters:" section, there are "Show" and "Clear" buttons. Below that, there is a filter configuration area with "AND" and "OR" options. A yellow box highlights the following filter rules:

- Duration of--Procedure - hr equal 0
- Duration of--Procedure - min less 5

Each rule has a "Delete" button next to it. A text box on the right contains the following text: "This logic will include only procedures where procedure duration was less than 5 minutes."

At the bottom of the page, there are four buttons: "Run", "Save...", "Export...", and "Close".



Step 3. Let's review procedure duration in the report below:

This 2 minute procedure duration for KPRO is an outlier, because the procedure duration is less than 5 minutes.

A	B	C
Procedure Code	Duration of Procedure - hr	Duration of Procedure - min
KPRO	0	2
AMP	4	10
GAST	5	8

Method Two: Search by Procedure ID and Review Procedure Form

Procedures data can be reviewed and entered through the procedure form. This form can be accessed through the Procedures button on the left navigation panel.

Step 1. Procedure duration can be reviewed and modified through the procedure form. From the left navigation menu in NHSN, click on the "Procedures" tab and select "Find". Enter procedure ID in the "Procedure #" section and click "Find".

NHSN Home

- Alerts
- Dashboard
- Reporting Plan
- Patient
- Event
- Procedure** (1)
- Summary Data
- COVID-19
- Import/Export
- Surveys
- Analysis
- Users
- Facility
- Group
- Logout

Find Procedure

- Enter search criteria and click Find
- Fewer criteria will return a broader result set
- More criteria will return a narrower result set

Procedure Information

2 Facility ID: DHQP Memorial Hospital (ID 10000) v

2 Procedure #:

2 Enter the procedure ID

2 ICD-9-CM Code:

ICD-10 PCS:

CPT Code:

Procedure Date: 9 To: 9

Patient Information

Patient ID:

Last Name:

First Name:

Social Security #:

Secondary ID:

General Information

Completion Status:

3 Click "Find"

Find Clear Back

1 Click on the "Procedures" button to open the "Find Procedure" page.



Step 2. Review procedure duration hours and minutes for accuracy. If modifications are necessary, select “Edit” to make the appropriate correction to the procedure duration. Once the appropriate changes have been made, click “Save” to save the procedure form.

Procedure Details

Outpatient *: N - No Duration (Hrs:Mins) *: 1 : 9
 Wound Class *: C - Clean General Anesthesia *: Y - Yes
 ASA Score *: 2 - A patient with mild systemic disease
 Emergency *: N - No Trauma *: N - No Scope *: N - No
 Diabetes Mellitus *: N - No Closure Technique *: PRI - Primary
 Surgeon Code: _____
 Height *: 5 6 or 1.67 m
 Weight *: 149.47 lbs or 67.8 kg BMI 24.12
 Type of KPRO *: HEMI - Hemi Specific Type *: PARTREV - Partial Revision
 If total or partial revision, was the revision associated with prior infection at index joint? *: N - No

Procedure duration is described in hours and minutes on the procedures form.

Custom Fields

FIN: _____

Comments

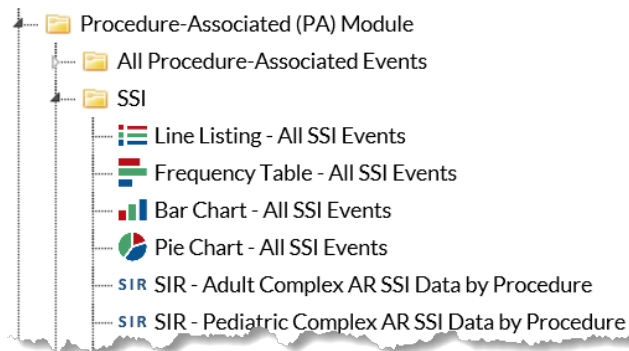
Select “Edit” to modify procedure duration where applicable. Save and close the procedure form.



Method Three: Line Listing - Procedures Excluded from SIR Report

The “Line Listing - Procedures Excluded from SIR” report describes all procedures excluded from the SSI SIR. This report can be used to identify procedures that were excluded due to procedure duration outliers. For this example, we are going to identify the procedures that were excluded due to a procedure duration greater than the IQR5.

Step 1. The “Line Listing - Procedures Excluded from SIR” report can be accessed by opening the “Procedure-Associated (PA) Module” folder, and then opening the “SSI” sub-folder. You can then access the report and select “Modify Report”.



The “Line Listing - Procedures Excluded from SIR” report describes all procedures excluded from the SSI SIR.

Step 2. On the modification page of the “Line Listing - Procedures Excluded from SIR” report the “Show descriptive variables names” box has been checked. In the Filters Tab for the “Line Listing – Procedures Excluded from SIR” report the output will contain only procedures that were excluded due to procedure duration that exceeded the IQR5.



Modify "Line Listing - Procedures Excluded from SIR "

Show descriptive variable names [\(Print List\)](#) Analysis Data Set: Procedures Type: Line Listing Last Generated: January 25, 2021 10:42 AM

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

Additional Filters:

AND OR

AND OR

Procedure Exceeds Duration Threshold? equal Y - Yes

Excluded Procedure? equal Y - Yes

This logic will include only procedures that were excluded due to procedure duration greater than IQR5.

Step 3. Let's review procedure duration in the report below:

This procedure duration outlier is 5 hours and 2 minutes. This procedure duration for APPY is greater than the IQR5 which is 3 hours and 30 minutes.

	A	B	C
Procedure Code		Duration of~Procedure - hr	Duration of~Procedure - min
THOR		8	4
APPY		5	2
GAST		4	0

Additional Resources

Line List: Procedures Excluded from the SIRs (2015 Baseline)

<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/line-list-procedures-excluded-sir.pdf>

Generating Data Sets

<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/generateddatasets-psc-508.pdf>

Analysis Quick Reference Guides

<https://www.cdc.gov/nhsn/ps-analysis-resources/reference-guides.html>

National Healthcare Safety Network (NHSN) Patient Safety Component Manual

https://www.cdc.gov/nhsn/PDFs/pscManual/pscManual_current.pdf

