

# Standardized Antimicrobial Administration Ratio (SAAR) Table - Locations

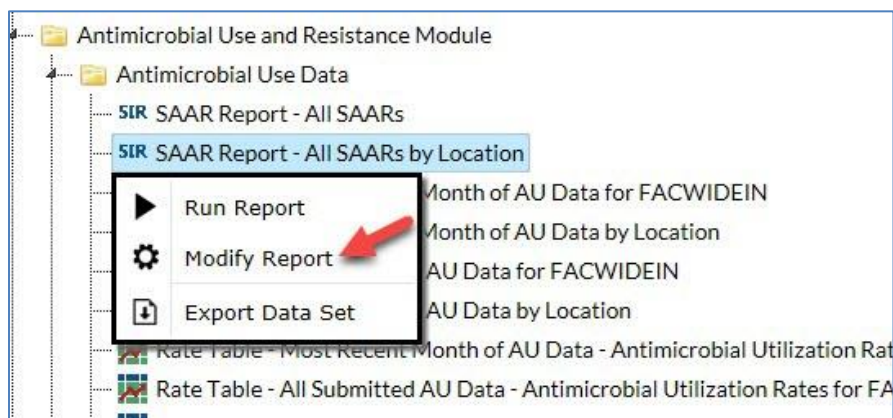
## Description

The standardized antimicrobial administration ratio (SAAR) is a metric for comparing observed to predicted days of antimicrobial therapy. It is constructed using indirect standardization where predicted antimicrobial use days are based on nationally aggregated AU data. This document explains how to calculate and interpret the SAAR. For more information, please see the AUR Module protocol: <https://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>.

For a more basic explanation of the NHSN modification screen, refer to this document: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/howtomodifyreport.pdf>.

## Example

You are interested in obtaining SAARs by quarter (3-month, calendar quarter-year) instead of the default display of SAARs by month for all locations. You are particularly interested in the SAARs for the last quarter of 2016. After generating data sets, select the “SAAR Report -All SAARs by Location” and then choose “Modify Report.”



## Modifying the Output

When you choose to modify the report, the modification screen appears showing multiple tabs containing available modifications for the given report. The “Title/Format” tab allows you to update the report title and select the format in which you want the report displayed, such as HTML or PDF. To filter the data by time period, choose the “Time Period” tab at the top of the page. For our report, we will filter the data by time period for the 4<sup>th</sup> quarter of 2016 (2016Q4).

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The screenshot shows the 'Modify SAAR Report - All SAARs by Location' window. At the top, there is a header bar with the title and a sub-header. Below the header, there is a row of tabs: 'Title/Format', 'Time Period', 'Filters', and 'Display Options'. The 'Time Period' tab is selected and highlighted in green. Below the tabs, there is a section titled 'Time Period:' with a form containing three input fields: 'Date Variable' (a dropdown menu with 'Summary~Yr/Qtr' selected), 'Beginning' (a text box with '2016Q4'), and 'Ending' (a text box with '2016Q4'). To the right of these fields is a 'Clear Time Period' button. Below the form is a checkbox labeled 'Enter Date variable/Time period at the time you click the Run button'. At the bottom of the window, there are four buttons: 'Run', 'Save...', 'Export...', and 'Close'.

**Tip:** For more descriptive variable labels on your report, check the box “Show descriptive variable names” (recommended).

The “Filters” tab allows you to further filter the data that will be displayed in the report.

**Tip:** For including just one item in each filter such as a single SAAR Type, the “equal” operator can be used. For including more than one item in each filter such as multiple locations, the “in” operator can be used.

The “Display Options” tab allows you to view your SAARs by month, quarter, half-year, year or cumulative for the entire time period selected in the “Time Period” tab. In this example, we’ve selected “Summary~Yr/Qtr” to see the SAARs grouped by calendar quarter.

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## Final Report

For each time period, the SAAR tables display the observed antimicrobial days, predicted antimicrobial days, the total days present, and the SAAR values. The predicted days of antimicrobial use (“Predicted Antimicrobial Days”) are calculated using negative binomial regression models that adjust for predictive factors, such as bed size, teaching status, ICU status, and ward type. Five separate predictive models were developed for each of the antimicrobial groups (<http://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>).

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At present, facilities with locations mapped as adult and pediatric medical, surgical, and medical/surgical ICUs and wards are able to generate up to 16 different SAARs. As noted by the footnotes in the SAAR tables, the SAARs will be generated for data uploaded into NHSN starting January 2014 moving forward.

## National Healthcare Safety Network SAARs Table - All SAARs by Location

As of: March 29, 2017 at 2:35 PM

Date Range: AU\_SAAR summaryYQ 2016Q4 to 2016Q4

### All antimicrobials used in adult ICUs and wards

Facility Org ID	SAAR Type	Location	Summary Yr/Qtr	CDC Location	Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR	SAAR p-value	95% Confidence Interval
10656	IND-Adult-1	AMW-1	2016Q4	IN.ACUTE:WARD:M	451	322.229	599	1.400	0.0000	1.275, 1.533
10656	IND-Adult-1	ASW-2	2016Q4	IN.ACUTE:WARD:S	417	323.393	617	1.289	0.0000	1.170, 1.418

Includes data for January 2014 and forward.

Data restricted to medical, medical/surgical and surgical locations.

Source of aggregate data: 2014 NHSN AU Data

Data contained in this report were last generated on March 29, 2017 at 1:32 PM.

- This example shows the first SAAR table that contains all antimicrobials used in adult ICUs and wards limited to the 4<sup>th</sup> quarter of 2016. The report shows which modifications were made in the line above the table title: “Date Range: AU\_SAAR summaryYQ 2016Q4 to 2016Q4”.
  - These SAAR tables include the observed and predicted antimicrobial days for all antibacterial agents. For a complete list of antimicrobials in each SAAR grouping, please see the NHSN AUR Module Protocol: <http://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>.
- As shown in the red box, there were 451 antimicrobial days reported for this facility’s Adult Medical Ward (AMW-1) during the last quarter of 2016. This is the observed number of antimicrobial days. The SAAR is the number of observed antimicrobial days (numerator) divided by the number of predicted antimicrobial days (denominator); in this example, the 2016 Quarter 4 SAAR is  $451/322.229 = 1.400$ .
- The SAAR p-value is a statistical measure that tells you if the observed usage is significantly different from what was expected. A p-value less than 0.05 (an arbitrary and conveniently used cut point) indicates that the number of observed antimicrobial days is statistically significantly different (higher or lower) than the number of antimicrobial days expected. Due to the large number of antimicrobial days recorded and included in the predictive models, most SAAR p-values are less than 0.05 and should be interpreted with caution as statistical significance does not necessarily translate into clinical significance.
- The 95% Confidence Interval (CI) is a range of values in which the true SAAR is thought to lie; however, the SAAR reported under the SAAR column is the most likely value. If the confidence interval includes the value of 1, then the SAAR is not statistically significant (the observed usage is not statistically significantly different from predicted usage, using the same convenient cut point). In this example, the Adult Medical Ward’s (AMW-1) 2016 Quarter 4 SAAR 95% CI does not contain 1 (1.275, 1.533), so the SAAR is statistically different from 1.

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## National Healthcare Safety Network SAARs Table - All SAARs by Location

As of: March 29, 2017 at 2:35 PM  
Date Range: AU\_SAAR summaryYQ 2016Q4 to 2016Q4

### Antimicrobials used for hospital-onset/multi-drug resistant infections in adult wards

Facility Org ID	SAAR Type	Location	Summary Yr/Qtr	CDC Location	Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR	SAAR p-value	95% Confidence Interval
10656	TAR-Adult-2	AMW-1	2016Q4	IN:ACUTE:WARD:M	123	69.984	599	1.758	0.0000	1.467, 2.090
10656	TAR-Adult-2	ASW-2	2016Q4	IN:ACUTE:WARD:S	118	64.191	617	1.838	0.0000	1.528, 2.193

Includes data for January 2014 and forward.  
Data restricted to medical, medical/surgical and surgical locations.  
Source of aggregate data: 2014 NHSN AU Data  
Data contained in this report were last generated on March 29, 2017 at 1:32 PM.

- This example shows the second SAAR table in the output window that was generated for the 4<sup>th</sup> quarter of 2016.
- As shown in the purple box, there were 123 antimicrobial days reported for this facility's Adult Medical Ward (AMW-1) during the last quarter of 2016. This is the observed number of antimicrobial days. The SAAR is the number of observed antimicrobial days (numerator) divided by the number of predicted antimicrobial days (denominator); in this example, the 2016 Quarter 4 SAAR is  $123/69.984 = 1.758$ . Additionally, because the 2016 quarter 4 SAAR p-value is less than 0.05 (0.0000) and the 95% confidence interval does not include 1 (1.467, 2.090), this SAAR is considered statistically different from 1.

## Additional Resources

Strategies to Assess Antibiotic Use to Drive Improvements in Hospitals:

<https://www.cdc.gov/getsmart/healthcare/pdfs/strategies-to-assess-antibiotic-use-in-hospitals-508.pdf>

Introduction to NHSN Analysis: <https://www.cdc.gov/nhsn/pdfs/training/2016/analysis-data-quality-parikh.pdf>

How to Export Data from NHSN: <http://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/exportdata.pdf>

AUR Module Protocol: <http://www.cdc.gov/nhsn/pdfs/pscmanual/11pscacurrent.pdf>

Surveillance for Antimicrobial Use Option: <http://www.cdc.gov/nhsn/acute-care-hospital/aur/>

