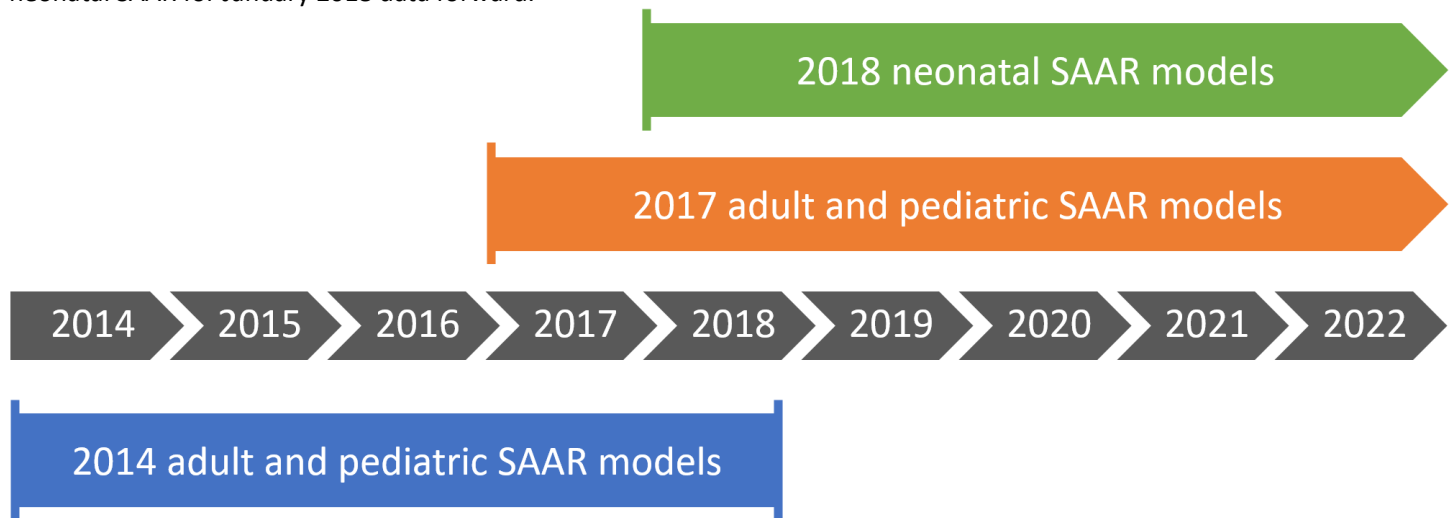


Standardized Antimicrobial Administration Ratio (SAAR) Reports – All SAARs by Location

Description

The standardized antimicrobial administration ratio (SAAR) is a metric for comparing observed to predicted antimicrobial days. The SAAR uses indirect standardization where predicted antimicrobial days are based on nationally aggregated antimicrobial use (AU) data. There are three SAAR baselines currently available in the National Healthcare Safety Network (NHSN) AU Option: the 2014 baseline adult and pediatric SAAR, 2017 baseline adult and pediatric SAAR, and 2018 baseline neonatal SAAR. Users can generate the 2014 baseline adult and pediatric SAAR for January 2014 through December 2018 data. Users can generate the 2017 baseline adult and pediatric SAAR for January 2017 data forward. Users can generate the 2018 baseline neonatal SAAR for January 2018 data forward.



This document explains how to calculate and interpret the SAAR metric for individual SAAR locations. For more information, please see the NHSN Antimicrobial Use and Resistance (AUR) Module Protocol (see Additional Resources).

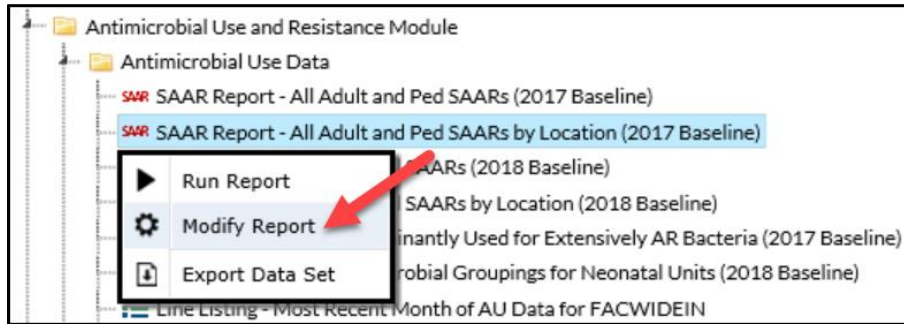
Example

You are interested in obtaining SAARs by quarter (calendar quarter) instead of the default display of SAARs by month for all SAAR locations. You are particularly interested in the adult and pediatric SAARs for the second quarter of 2021. After generating data sets, select the “SAAR Report - All Adult and Ped SAARs by Location (2017 Baseline)” and then choose “Modify Report.”

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>.





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 second quarter of 2021 (Summary~Yr/Qtr = 2021Q2).

Modify "SAAR Report - All Adult and Ped SAARs by Location (2017 Baseline)"

Show descriptive variable names ([Print List](#)) Analysis Data Set: AU_SAAR_2017 Type: SAAR Last Generated: **November 8, 2021 8:15 AM**

Title/Format Time Period Filters Display Options

Time Period:

Date Variable	Beginning	Ending	Clear Time Period
Summary~Yr/Qtr	2021Q2	2021Q2	

Enter Date variable/Time period at the time you click the Run button

Run Save... Export... 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 displayed in the report.

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 selected “Summary~Yr/Qtr” to see the SAARs grouped by calendar quarter.

Modify "SAAR Report - All Adult and Ped SAARs by Location (2017 Baseline)"

Show descriptive variable names ([Print List](#)) Analysis Data Set: AU_SAAR_2017 Type: SAAR Last Generated: **September 24, 2021 11:14 AM**

Title/Format Time Period Filters Display Options

SAAR Options:

Group by: Summary~Yr/Qtr

Run Save... Export... Close

Final Report

For each time period, the SAAR tables display the observed antimicrobial days, predicted antimicrobial days, total days present, SAAR value, p-value, 95% confidence interval, and SAAR Percentile by SAAR Type and location. NHSN calculates the predicted antimicrobial days using predictive models developed by CDC and applied to nationally aggregated AU data reported to NHSN from the same group of patient care location types. CDC developed separate predictive models for each antimicrobial agent category. The SAAR Percentile column provides the percentile based on the distribution of location-specific SAARs found here:

<https://www.cdc.gov/nhsn/pdfs/datastat/2019-au-report-datatables.xlsx>.

Note: This example uses fictitious data for illustrative purposes only.

Facility Org ID	SAAR Type 2017 Baseline	Location	Summary Year/Month	CDC Location	Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR	SAAR p-value	95% Confidence Interval	SAAR Percentile
33617	Adult_BSHO_ICU_2017	MICU	2021M04	IN:ACUTE:CC:M	91	99.352	315	0.916	0.4054	0.742, 1.119	41
33617	Adult_BSHO_ICU_2017	MICU	2021M05	IN:ACUTE:CC:M	91	99.352	315	0.916	0.4054	0.742, 1.119	41
33617	Adult_BSHO_ICU_2017	MICU	2021M06	IN:ACUTE:CC:M	91	99.352	315	0.916	0.4054	0.742, 1.119	41
33617	Adult_BSHO_ICU_2017	MSICU	2021M04	IN:ACUTE:CC:MS	91	90.380	325	1.007	0.9342	0.815, 1.230	48

Any reported use of Colistin will be combined with and reported as Colistimethate. Any reported use of Amikacin Liposomal will be combined with and reported as Amikacin.
 Includes data for January 2017 and forward.
 The SAAR is only calculated if the number of predicted antimicrobial days (numAUDaysPredicted) is >=1.
 If antimicrobial days exceed days present for any SAAR categories except the All Antibacterial SAAR, a SAAR will not be calculated and data should be validated for accuracy.
 Data restricted to medical, medical-surgical, surgical, step down and oncology locations.
 The SAAR percentile is not shown if the SAAR is not shown, nor is it shown for pediatric medical ICUs or pediatric surgical wards where the aggregate sample size was too small for analysis (<20).
 Source of aggregate data: 2017 NHSN AU Data
 Source of Percentile Distribution: 2019 NHSN AU Option Report: <https://www.cdc.gov/nhsn/pdfs/datastat/2019-AU-Report-508.pdf>
 Data contained in this report were last generated on November 8, 2021 at 8:12 AM to include data beginning January 2018 through September 2021 .

- This example shows a SAAR table that contains broad spectrum antibacterial agents predominantly used for hospital-onset infections (BSHO) in adult SAAR ICUs, limited to the second quarter of 2021. The report shows the modifications made in the line above the table title: “Date Range: AU_SAAR_2017 summaryYQ 2021Q2 to 2021Q2”.
 - This SAAR table includes the observed and predicted antimicrobial days for broad spectrum antibacterial agents predominantly used for hospital-onset infections. For a complete list of antimicrobials in each SAAR Type, please see the NHSN AUR Module Protocol (see Additional Resources).
- As shown in the first row of the table, there were 91 antimicrobial days reported for this facility’s adult medical intensive care unit (MICU) location during the second quarter of 2021. 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 2021 Quarter 2 SAAR is $91/99.352 = 0.916$.
- The SAAR p-value is a statistical measure that tells you if observed antimicrobial usage is significantly different from predicted usage. 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 predicted. Due to the large number of days present recorded and included in the predictive models, most SAAR p-values are less than 0.05 and users should interpret them with caution, as statistical significance does not necessarily translate into clinical significance.

- The 95% Confidence Interval (CI) is a range of values in which we have a high degree of confidence that the true SAAR lies; however, the SAAR reported under the SAAR column is the most likely value. If the confidence interval includes the value of 1.000, 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 MICU 2021 Quarter 2 SAAR 95% confidence interval does contain 1.000 (0.742, 1.119), so the SAAR is NOT statistically significantly different from 1.
- The SAAR percentile of 41 indicates that the SAAR value of 0.916 falls within the 41st percentile for medical ICUs. In other words, 40% of medical ICUs have BSHO SAAR values lower than this MICU's SAAR value of 0.916 and 59% of medical ICUs have BSHO SAAR values higher than this MICU's SAAR value of 0.916.

Additional Resources

Surveillance for Antimicrobial Use Option: <https://www.cdc.gov/nhsn/psc/aur/index.html>

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

Strategies to Assess Antibiotic Use to Drive Improvements in Hospitals: <https://www.cdc.gov/antibiotic-use/healthcare/pdfs/Strategies-to-assess-antibiotic-use-in-hospitals-508.pdf>

NHSN AUR Module Training: <https://www.cdc.gov/nhsn/training/patient-safety-component/aur.html>

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