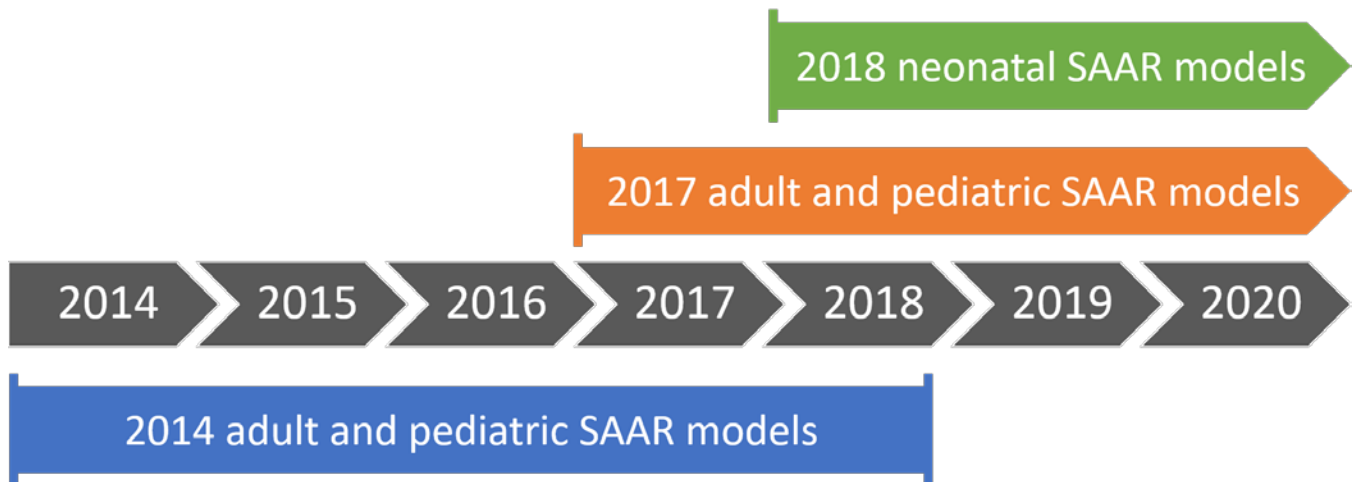


Standardized Antimicrobial Administration Ratio (SAAR) Reports – All SAARs

Description

The standardized antimicrobial administration ratio (SAAR) is a metric for comparing observed to predicted days of antimicrobial therapy. The SAAR metric uses indirect standardization where predicted antimicrobial use 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.



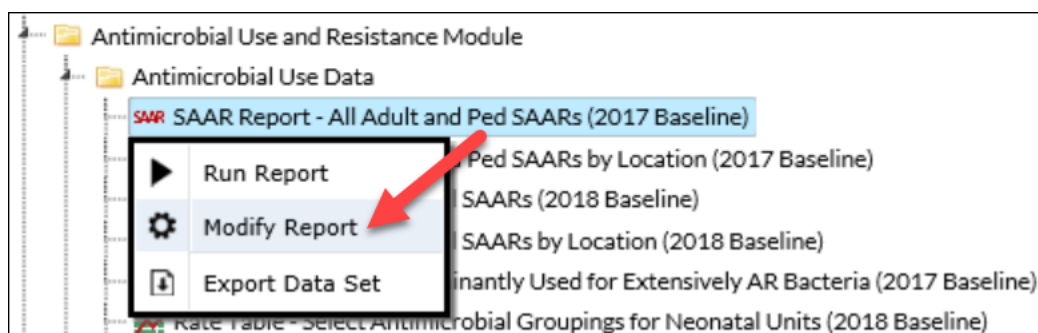
This document explains how to calculate and interpret the SAAR metric. For more information, please see the NHSN Antimicrobial Use and Resistance (AUR) Module Protocol (see Additional Resources).

Example

You are interested in obtaining SAARs by quarter (3-month, calendar quarter-year) instead of the default display of SAARs by month. Additionally, you would like to limit the report to show only SAARs for antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA) in adult SAAR wards. After generating data sets, select the "SAAR Report - All Adult and Ped SAARs (2017 Baseline)" and then choose "Modify Report."

For a more general, step-by-step explanation of the NHSN modification screen, refer to this document:

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



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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.

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. For our example, we will filter by “SAAR Type 2017 Baseline” to show SAARs only for antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA) in adult SAAR wards. First, select the variable “SAAR Type 2017 Baseline” from the drop-down menu, set the operator to “equal” then select the value “Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA) used in adult SAAR wards”.

Tip: For including multiple items in each filter such as a multiple SAAR Types, use the “in” operator instead of the “equal” operator.

The screenshot shows the 'Modify "SAAR Report - All SAARs (2017 Baseline)"' interface. At the top, there is a header bar with the title and a checked box for 'Show descriptive variable names (Print List)'. Below the header, there are four tabs: 'Title/Format', 'Time Period', 'Filters' (which is active), and 'Display Options'. Under the 'Filters' tab, there is a section for 'Additional Filters' with 'Show' and 'Clear' buttons. Below this, there is a filter rule editor. It shows a logical structure with 'AND' and 'OR' operators. The first rule is selected, showing a dropdown for 'SAAR Type 2017 Baseline', an operator dropdown set to 'equal', and a text input field containing 'Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA) used in adult SAAR wards'. There are 'Add group', 'Add rule', and 'Delete' buttons. At the bottom right, there are 'Run', 'Save...', 'Export...', and 'Close' buttons.

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

The screenshot shows the 'Modify "SAAR Report - All SAARs (2017 Baseline)"' interface with the 'Display Options' tab selected. The header bar is the same as in the previous screenshot. The 'Display Options' tab is active, showing a 'SAAR Options' section with a 'Group by:' dropdown menu set to 'Summary~Yr/Qtr'. At the bottom right, there are 'Run', 'Save...', 'Export...', and 'Close' buttons.

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. NHSN calculates the predicted days of antimicrobial use (“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.

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

National Healthcare Safety Network

SAARs Table - All Standardized Antimicrobial Administration Ratios (SAARs) High-Level Indicators and High-Value Targets (2017 Baseline)

As of: December 6, 2018 at 1:25 PM

Date Range: All AU_SAAR_2017

if (((SAARType_2017 = "Adult_GramPos_Ward_2017")))

Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA) used in adult SAAR wards

| Facility Org ID | Summary Yr/Qtr | SAAR Type 2017 Baseline | Antimicrobial Days | Predicted Antimicrobial Days | Days Present | SAAR | SAAR p-value | 95% Confidence Interval |
|-----------------|----------------|-------------------------|--------------------|------------------------------|--------------|-------|--------------|-------------------------|
| 13860 | 2017Q1 | Adult_GramPos_Ward_2017 | 94 | 53.763 | 700 | 1.748 | 0.0000 | 1.421, 2.130 |
| 13860 | 2017Q2 | Adult_GramPos_Ward_2017 | 57 | 87.940 | 1145 | 0.648 | 0.0005 | 0.496, 0.834 |
| 13860 | 2017Q3 | Adult_GramPos_Ward_2017 | 245 | 144.937 | 2038 | 1.690 | 0.0000 | 1.489, 1.912 |

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 a specific SAAR category, 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.

Source of aggregate data: 2017 NHSN AU Data

Data contained in this report were last generated on November 19, 2018 at 10:58 AM.

This example shows the SAAR table based on the modification: "Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA) used in adult SAAR wards". The report shows the modifications made in the line above the table title: if(((SAARType_2017 = "Adult_GramPos_Ward_2017")))).

- This SAAR table includes the observed and predicted antimicrobial days for the nine antibacterial agents included in the "Adult Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA)" SAAR. For a complete list of antimicrobials in each SAAR grouping, please see Appendix E in the NHSN AUR Module Protocol (see Additional Resources).
- As shown in the first row of the table, there were 94 antimicrobial days for this select group of agents reported from this facility's adult SAAR wards during the first quarter of 2017. 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 2017 Quarter 1 SAAR is $94/53.763 = 1.748$.
- The SAAR p-value is a statistical measure that tells you if observed antimicrobial usage is significantly different from expected 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 expected. 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, 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 2017 Quarter 1 SAAR 95% CI does not contain 1, and we can conclude that the 2017 Quarter 1 SAAR is different than 1.

Additional Resources

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

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 Analysis Training: <https://www.cdc.gov/nhsn/training/analysis/index.html>

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