

Targeted Assessment for Stewardship (TAS) Report: Group and Facility

Description

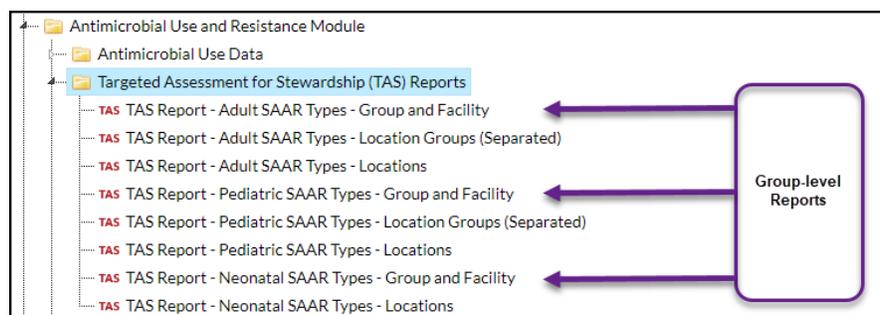
The Targeted Assessment for Stewardship (TAS) is a framework for quality improvement developed by the CDC to use NHSN AU Option data for action to optimize AU at facilities. The TAS Reports use a metric called the AU cumulative attributable difference (AU-CAD). The AU-CAD is the number of antimicrobial days needed to achieve a user-identified SAAR Target. This could be a reduction or addition of antimicrobial days depending on the identified SAAR target. The TAS Reports allow users to rank location groups and locations within individual facilities or facilities within groups by the AU-CAD to prioritize stewardship efforts where they may have the greatest impact. The Group TAS Reports use SAAR data reported by each member facility and the group-identified SAAR target to calculate the pooled AU-CAD for each SAAR type and location using the following formula, rounded to the nearest whole number:

$$\text{AU-CAD} = \text{Observed antimicrobial days} - (\text{Predicted antimicrobial days} \times \text{SAAR target})$$

The AU-CAD can be greater than or less than zero. A positive AU-CAD value means the SAAR target identified by the group was less than the current group SAAR value. A positive AU-CAD value represents the number of antimicrobial days the member facilities must collectively reduce per time period to decrease their SAAR values and reach the SAAR target identified by the group. A negative AU-CAD value means the SAAR target identified by the group was greater than the current group SAAR value. A negative AU-CAD value represents the number of antimicrobial days the member facilities must collectively add per time period to increase their SAAR values and reach the SAAR target identified by the group.

Note: SAAR and AU-CAD are not measures of the appropriateness or judiciousness of antimicrobial use. Facilities should assess the appropriateness of courses of therapy for select antimicrobials or infections to inform the clinical relevance of AU-CAD reductions or additions.

This Quick Reference Guide describes how a group user can run and interpret a group-level TAS Report within NHSN. All TAS Reports with titles ending in “– Group and Facility” will produce pooled “group-level” SAARs and AU-CAD values as well as “facility-level” SAARs and AU-CAD values for each member facility. Keep in mind that, the report does not include all the inpatient locations within a facility. Instead, it includes only those location types that can generate SAARs (see Table 5 in the [AUR Module Protocol](#) for a list of SAAR-eligible location types). If a member facility does not report AU data from any SAAR-eligible locations, it will not appear in the report.



For guidance on running the other types of TAS Reports or the TAS Dashboard please see the guides here: [Analysis Quick Reference Guides](#). Prior to generating a TAS Report, we recommend reviewing the [TAS Guide](#) to learn how to set your group-identified SAAR targets.

Example

As a starting point, you've decided to run the Adult SAAR Types Group and Facility TAS report and set the SAAR targets at 1 for each SAAR type. You want to use this information to identify which member facilities have potential opportunities for improvement and prioritize stewardship efforts.

After [generating data sets](#), click "TAS Report – Adult SAAR Types – Group and Facility" then click "Modify Report."

Setting SAAR Targets

On the modification screen, click the Display Options tab. You're able to enter your SAAR Targets on this tab. If you've set SAAR targets before via the TAS Dashboard or other TAS Reports, they will appear here. You'll notice the default GroupBy value at the top of this tab shows "Cumulative". This means the report will generate for the most recent 12 months of AU data combined. If you wanted to run the TAS reports using more granular time periods (for example, Quarter), you'd change the GroupBy selection. However, the reports will still only contain data for the most recent 12 months.

The screenshot shows the 'Modify "TAS Report - Adult SAAR Types - Group and Facility"' interface. At the top, there's a header with 'Type: TAS' and 'Last Generated: September 30, 2022 10:48 AM'. Below the header are tabs for 'Title/Format', 'Time Period', 'Filters', and 'Display Options'. The 'Display Options' tab is selected. Under 'TAS Options', there are dropdowns for 'Group by: Cumulative' and 'Population: Adult'. Below these are input fields for various SAAR types, all set to '1': All Antibacterials, BSHO, BSCA, GramPos, NSBL, CDI, and Antifungal. A callout box with a purple border and arrow points to the 'Save' button, containing the text 'Click Save here to save the newly entered SAAR Targets'. At the bottom of the interface are buttons for 'Run', 'Save...', 'Export...', and 'Close'.

Since you selected the Adult SAAR Types TAS Report, you'll see the population defaults to Adult and all Adult SAAR Types are listed. Enter a value of 1 for each SAAR type then click Save (see right screenshot). You'll see a message that confirms you've successfully saved your SAAR targets.

Click Run to generate the report.

Interpreting the Report

Note: This example uses fictitious data for illustrative purposes only

Group-Level Summary Table

National Healthcare Safety Network
TAS Report for Adult SAAR Types for Acute Care Hospitals 1
Total for all Facilities in Group
Group Identified SAAR Target: All antibacterials = (1); BSHO = (1); BSCA = (1); GramPos = (1); NSBL = (1); CDI = (1); Antifungal = (1)
 As of: October 7, 2022 at 5:27 PM
 Date Range: All AU_TAS
 if (((population = "ADULT")))

2 Number of Facilities	3 Number of Beds	4 Number of SAAR Locations	SAARTypeCat	5 Facility AU-CAD (Rounded)	6 Three highest use drugs within SAAR Type (Percentage)	7 Antimicrobial Days	8 Predicted Antimicrobial Days	8 Days Present	9 SAAR	10 95% Confidence Interval
3	650	30	NSBL	25352	AMOX(74); AMOXWC(2); NAF(2);	69705	44352.736	456190	1.572	1.560, 1.583
3	650	30	ANTIFGL	-10069	FLUCO(34); CASPO(26); ANID(20);	6714	16782.565	456190	0.400	0.391, 0.410
3	650	30	GRAMPOS	-20271	VANC(71); QUINWD(4); TELAV(4);	39774	60044.559	456190	0.662	0.656, 0.669
3	650	30	BSCA	-49707	CEFEX(8); ERTA(8); CEFPRO(8);	18396	68103.003	456190	0.270	0.266, 0.274
3	650	30	CDI	-71107	CEFEX(9); CLIND(9); CEFEP(9);	17103	88209.796	456190	0.194	0.191, 0.197
3	650	30	BSHO	-92211	CEFEP(16); MERO(16); IMIPWC(16);	9207	101417.814	456190	0.091	0.089, 0.093
3	650	30	ALL	-145994	VANC(29); AMOX(27); TIG(1);	193004	338997.838	456190	0.569	0.567, 0.572

1. Tables include the most recent 12 months of reported data from locations for which SAARs are generated. If SAAR Type-level AU-CADs are the same, their ranks are tied.
 2. AU-CAD = Observed Antimicrobial Days - (Predicted Antimicrobial Days * Facility Identified SAAR Target)
 3. When selecting a SAAR Target, consider the lower bound of the SAAR Confidence Interval. See the TAS User Guide for further details.
 4. A negative AU-CAD value means the SAAR Target was greater than the current SAAR value for that category. To increase your SAAR value, the negative AU-CAD value represents the number of antimicrobial days to add per time period to reach your SAAR Target.
 5. The drug code and full drug name can be found here: <http://www.cdc.gov/nhsn/xls/aur/aur-eligible-antimicrobial-agents.xlsx>.
 6. If the observed antimicrobial days exceed days present for a specific SAAR category, neither the SAAR nor the AU-CAD will be calculated, and data should be validated for accuracy.
 Source of aggregate data: 2017 NHSN SAAR Data

- Report Header:** At the top of the report, you'll see the report title "Total for all Facilities in Group" which lets you know that you are looking at the group-level summary table with pooled data for member facilities. In addition, you will see the SAAR target values you entered on the modification screen and any other modifications you made to the report. In this example, we entered a target value of 1 for each adult SAAR type (see above screenshot).
- Number of Facilities:** This column shows the number of member facilities included in group-level AU-CADs. Member facilities that cannot generate SAARs are not included.
- Number of Beds:** This is the sum of number of beds that member facilities reported in their most recent NHSN Patient Safety Component Annual Facility Survey.
- Number of SAAR Locations:** This is the sum of the number of locations eligible for inclusion in AU-CADs for each population (adult, pediatric, neonatal) and SAAR type for all included member facilities. Please note that the Neonatal FLUCO SAAR type excludes data from Level II NICUs.

5. **Pooled AU-CAD:** The AU-CAD is pooled at the group level and is calculated for each SAAR type using the group-identified SAAR target and the sum of observed antimicrobial days and predicted antimicrobial days for all included member facilities. The value is rounded to the nearest whole number. The SAAR types are displayed according to their AU-CAD values, with the highest pooled AU-CAD value being ranked first. In this example, the narrow spectrum beta-lactam agents (NSBL) SAAR type is ranked first. The NSBL SAAR has a pooled AU-CAD value of 25,352.

$$\begin{aligned}\text{AU-CAD} &= \text{Observed antimicrobial days} - (\text{Predicted antimicrobial days} \times \text{SAAR target}) \\ &= 69705 - (44352.736 \times 1.0) \\ &\approx 25352\end{aligned}$$

This can be interpreted as the member facilities within the group needed to collectively reduce 25,352 antimicrobial days among the drugs in the adult NSBL SAAR category over the last twelve months to decrease the pooled NSBL SAAR value from the current value of 1.572 to the group-identified SAAR target of 1.0. If a pooled SAAR cannot be calculated due to data quality issues, the pooled AU-CAD value will also be suppressed.

6. **Three highest use drugs within SAAR Type (Percentage):** This column shows the three highest use drugs and their percentage of use within each SAAR type pooled for all included member facilities. For the NSBL SAAR, amoxicillin (AMOX), amoxicillin/clavulanate (AMOXWC), and nafcillin (NAF) and were the three highest use drugs over the course of the last twelve months making up 74%, 2%, and 2% of NSBL use, respectively. The drugs are abbreviated using the NHSN drug codes to save space. Refer to the [List of Antimicrobial Agents Eligible for AUR Module](#) for the full drug name.
7. **Antimicrobial Days & Predicted Antimicrobial Days:** These columns indicate the sum of observed (or reported) antimicrobial days and predicted antimicrobial days, respectively, for antimicrobials included in the selected SAAR type for all included member facilities. These values are used to calculate the AU-CAD for each SAAR type. For the NSBL SAAR, all adult SAAR locations from all included member facilities reported a combined 69,705 antimicrobial days, whereas 44,352.736 antimicrobial days were predicted based on the SAAR models.
8. **Days Present:** These are the total days present for all locations from member facilities included in the TAS Report. As a reminder, for the report “TAS Report – Adult SAAR Types – Group and Facility”, this would be all adult locations from all included member facilities that can generate SAARs. In this case, the total days present for all adult SAAR locations over the last twelve months was 456,190.
9. **Pooled SAAR:** The pooled SAAR value displayed on this report uses the sum of antimicrobial days and predicted antimicrobial days from all adult locations that can generate SAARs from all included member facilities. For the NSBL SAAR type, the pooled SAAR value was 1.572.
10. **95% Confidence Interval:** The 95% Confidence Interval (CI) is a range of values in which we have a high degree of confidence that the true pooled SAAR lies; however, the pooled SAAR reported under the SAAR column is the most likely value. If the confidence interval includes the value of 1, then the pooled SAAR is not statistically significant (the observed usage is not statistically significantly different from predicted usage). In this example, the NSBL SAAR 95% CI is 1.560, 1.583 and does not include 1.0, which means this SAAR is statistically different than a value of 1.0.

Facility-Level Summary Tables

Subsequent tables in the Group and Facility TAS Report display metrics at the facility-level for each member facility in the group by SAAR type. This information is similar to the information facilities see in their individual Facility TAS Reports. Since the pooled AU-CAD for the NSBL SAAR was ranked first for the group, you want to take a closer look at the facility-level summary table for the NSBL SAAR to see facility-level differences in SAAR values to determine whether and where further action may be warranted.

National Healthcare Safety Network
TAS Report - Adult SAAR Types - Group and Facility
Facilities within the Group Ranked by AU-CAD
Group Identified SAAR Target: NSBL = (1) 1

As of: October 7, 2022 at 5:27 PM
 Date Range: All AU_TAS
 if (((population = "ADULT")))

2 Facility Rank	3 Facility Org ID	Facility Name	State	Medical School Affiliation	4 Number of Beds	SAARTypeCat	5 Facility AU-CAD (Rounded)	6 Three highest use drugs within SAAR Type (Percentage)	7 Antimicrobial Days	Predicted Antimicrobial Days	8 Days Present	9 SAAR	10 95% Confidence Interval
1	33617	CDA-XYZ TEST FACILITY (PROD)	GA	M	150	NSBL	32031	AMOX(83); AMOXWC(1); NAF(1);	61257	29225.781	343423	2.096	2.079, 2.113
2	10000	DHQP MEMORIAL HOSPITAL	GA	M	300	NSBL	-739	NAF(8); CEPHLX(8); OX(8);	4258	4996.582	41240	0.852	0.827, 0.878
3	10036	TESTING FACILITY	GA	M	200	NSBL	-5940	CEFOX(8); PENV(8); AMOXWC(7);	4190	10130.373	71527	0.414	0.401, 0.426

1. Tables include the most recent 12 months of reported data from locations for which SAARs are generated. If SAAR Type-level AU-CADs are the same, their ranks are tied.
 2. AU-CAD = Observed Antimicrobial Days - (Predicted Antimicrobial Days * Facility Identified SAAR Target)
 3. When selecting a SAAR Target, consider the lower bound of the SAAR Confidence Interval. See the TAS User Guide for further details.
 4. A negative AU-CAD value means the SAAR Target was greater than the current SAAR value for that category. To increase your SAAR value, the negative AU-CAD value represents the number of antimicrobial days to add per time period to reach your SAAR Target.
 5. The drug code and full drug name can be found here: <http://www.cdc.gov/nhsn/xls/aur/aur-eligible-antimicrobial-agents.xlsx>.
 6. If the observed antimicrobial days exceed days present for a specific SAAR category, neither the SAAR nor the AU-CAD will be calculated, and data should be validated for accuracy.
 Source of aggregate data: 2017 NHSN SAAR Data

- Report Header:** At the top of the report, you'll see the report title "Facilities within the Group Ranked by AU-CAD" which lets you know that you are looking at the facility-level summary tables with data for each SAAR type and individual member facility in the group. In addition, you will see the SAAR target value you entered on the modification screen and any other modifications you made to the report. In this example, we entered a target value of 1 for the adult NSBL SAAR (see above screenshot).
- Facility Rank:** The member facilities are displayed according to their rank with the facility with the highest Facility AU-CAD value being ranked #1. In this example, the CDA-XYZ Test Facility (orgID 33617) is ranked #1 for the NSBL SAAR type. If AU-CADs are the same for two or more member facilities within the same SAAR type, their ranks are tied. Member facilities for which NHSN cannot calculate an AU-CAD are not assigned ranks.
- Facility Org ID, Facility Name, and State:** These columns include information on which member facility the data correspond to in each row.

4. **Medical School Affiliation and Number of Beds:** Medical school affiliation and number of beds are included for each member facility from their most recent NHSN Patient Safety Component Annual Facility Survey.
5. **Facility AU-CAD:** The Facility AU-CAD is calculated for each SAAR type using the observed antimicrobial days, predicted antimicrobial days, and group-identified SAAR target. The value is rounded to the nearest whole number. For the NSBL SAAR, CDA-XYZ Test Facility has a Facility AU-CAD value of 32,031. This can be interpreted as this facility needed to reduce 32,031 antimicrobial days among the drugs in the adult NSBL SAAR category administered in all its SAAR-eligible locations over the last twelve months to decrease the facility NSBL SAAR value from the current value of 2.096 to the group-identified SAAR target of 1.0. If a facility-level pooled SAAR cannot be calculated due to data quality issues, the facility-level pooled AU-CAD value will also be suppressed.
6. **Three highest use drugs within SAAR Type (Percentage):** This column shows the three highest use drugs and their percentage of use within each SAAR type for each member facility. For the NSBL SAAR, amoxicillin (AMOX), amoxicillin/clavulanate (AMOXWC), and nafcillin (NAF) were the three highest use drugs over the course of the last twelve months making up 83%, 1%, and 1% of NSBL use, respectively, for CDA-XYZ Test Facility. The drugs are abbreviated using the NHSN drug codes to save space. Refer to the [List of Antimicrobial Agents Eligible for AUR Module](#) for the full drug name.
7. **Antimicrobial Days & Predicted Antimicrobial Days:** These columns indicate the observed (or reported) antimicrobial days and predicted antimicrobial days, respectively, for antimicrobials included in the selected SAAR type for each included member facility. For the NSBL SAAR, all adult SAAR locations for CDA-XYZ Test Facility reported 61,257 antimicrobial days, whereas 29,225.781 antimicrobial days were predicted based on the SAAR models.
8. **Days Present:** These are the total days present for all locations included in the TAS Report for each member facility. As a reminder, for the report “TAS Report – Adult SAAR Types – Group and Facility”, this would be all adult locations for all included member facilities that can generate SAARs. In this case, the total days present for all adult SAAR locations for CDA-XYZ Test Facility over the last twelve months was 343,423.
9. **SAAR:** The facility SAAR value displayed on this report uses the antimicrobial days and predicted antimicrobial days from all adult locations that can generate SAARs for each member facility. For the NSBL SAAR type, the SAAR value was 2.096 for CDA-XYZ Test Facility.
10. **95% Confidence Interval:** 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). In this example, the NSBL SAAR 95% CI is 2.079, 2.113 for CDA-XYZ Test Facility and does not include 1.0 which means this SAAR is statistically different than a value of 1.0.

Now that you’ve completed the “Target” portion of the TAS Strategy, you can take this information and move onto the “Assess” portion as outlined in the [TAS Guide](#). Groups can also use the annual [AU Data Report](#) or the [Antibiotic Resistance & Patient Safety Portal](#) to review distributions of SAAR values within the nation or your state to serve as a comparison. You could also run a [Location-group](#) and/or [Location-specific](#) TAS report to get a more granular look at how SAARs and location AU-CAD values vary across locations within member facilities.

Additional Resources

Antimicrobial Use and Resistance (AUR) Module Eligible Antimicrobial Agents: <http://www.cdc.gov/nhsn/xls/aur/aur-eligible-antimicrobial-agents.xlsx>

AUR Module website: <https://www.cdc.gov/nhsn/psc/aur/index.html>

National Healthcare Safety Network (NHSN) AUR Module Protocol: <http://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>

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

NHSN's Guide to TAS: <https://www.cdc.gov/nhsn/ps-analysis-resources/tas/tas-guide-508.pdf>

TAS Report – Facility Quick Reference Guide: <https://www.cdc.gov/nhsn/ps-analysis-resources/tas/facility-level-508.pdf>

TAS Report – Location Groups Quick Reference Guide: <https://www.cdc.gov/nhsn/ps-analysis-resources/tas/location-group-level-508.pdf>

TAS Report – Locations Quick Reference Guide: <https://www.cdc.gov/nhsn/ps-analysis-resources/tas/location-level-508.pdf>

Facility TAS Dashboard Quick Reference Guide: <https://www.cdc.gov/nhsn/ps-analysis-resources/tas/facility-508.pdf>

Group TAS Dashboard Quick Reference Guide: <https://www.cdc.gov/nhsn/ps-analysis-resources/tas/group-508.pdf>