Group Targeted Assessment for Stewardship (TAS) Dashboard

Description

The Targeted Assessment for Stewardship (TAS) Dashboard allows NHSN groups to visualize facilities with the greatest need for antimicrobial stewardship via an interactive chart. The TAS Dashboard displays a metric known as the Antimicrobial Use Cumulative Attributable Difference (AU-CAD) over time, by quarter, for the most recent complete four calendar quarters at the group and facility level. The AU-CAD is the number of antimicrobial days needed to achieve a desired Standardized Antimicrobial Administration Ratio (SAAR) target. The higher the AU-CAD value, the greater the number of antimicrobial days that need to be reduced to meet the SAAR target. The TAS Dashboard uses SAAR data reported by each member facility and your SAAR targets to calculate the AU-CAD for each SAAR type and location using the following formula, rounded to the nearest whole number:
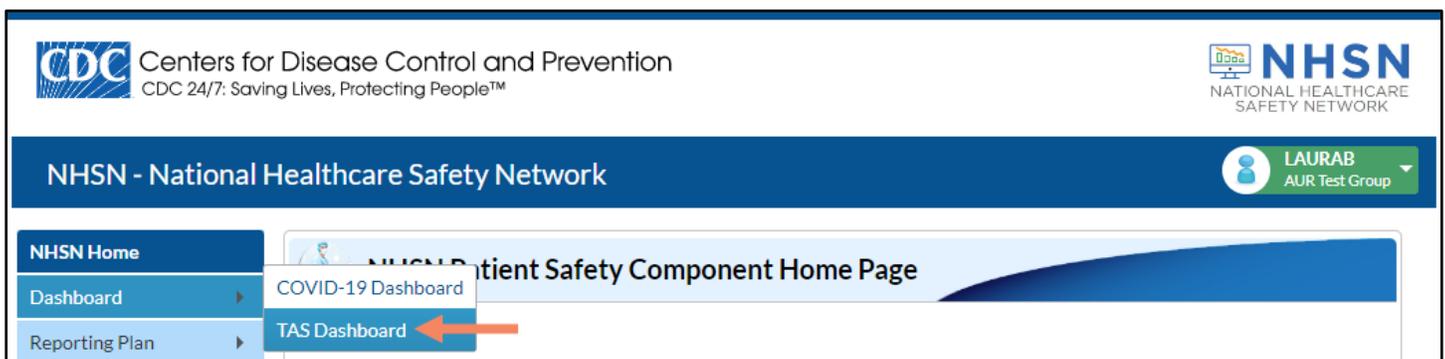
$$\text{AU-CAD} = \text{Observed antimicrobial days} - (\text{Predicted antimicrobial days} \times \text{SAAR target})$$

The predicted antimicrobial days are calculated using the 2017 SAAR baseline models for adult and pediatric patient care locations, and the 2018 SAAR baseline models are used for neonatal locations. 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 decrease 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 antibiotics or infections to inform the clinical relevance of AU-CAD reductions or additions.

Set-Up

The TAS Dashboard can be accessed by navigating to Dashboard and then TAS Dashboard from the left-hand menu in NHSN.
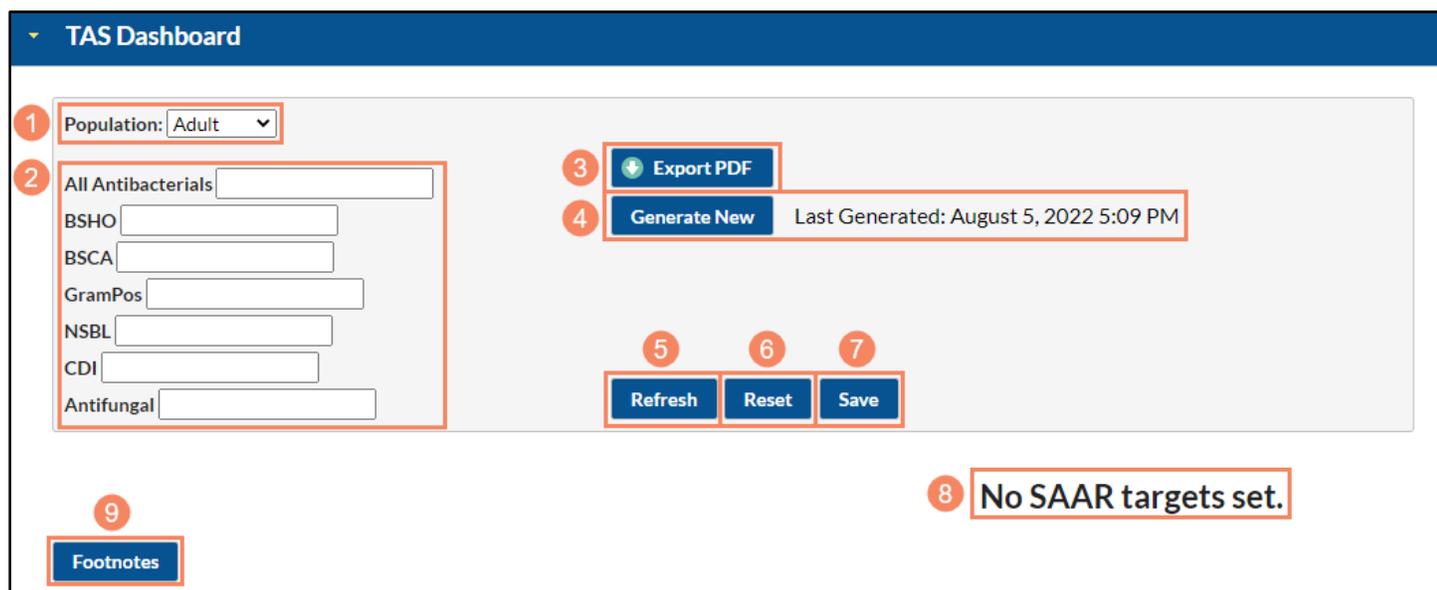
The TAS Dashboard will display "No SAAR targets set." if you have not set SAAR targets via the TAS Dashboard or TAS Reports. You will have to enter and save SAAR targets to view the TAS Dashboard. Below are the components and associated set-up instructions for the TAS Dashboard.

1. **Population:** This drop-down menu can be used to display the TAS Dashboard for each of the available populations. The TAS Dashboard can be generated for different patient populations (i.e., "Adult", "Pediatric", or "Neonatal") by selecting from the drop-down menu. Only one population can be displayed at a time, and the adult population is selected by default.

2. **SAAR targets:** These are the desired SAAR values your group would like member facilities to work towards for each SAAR category (abbreviations listed in the table below). While SAAR values are rounded to three numbers beyond the decimal point (for example, 1.255), the SAAR targets will be automatically rounded to two numbers beyond the decimal point (for example, if you enter 1.255 as a SAAR target it will be rounded to 1.26). Groups cannot set different SAAR targets for each member facility, but the SAAR targets can be different for each combination of population and SAAR type. SAAR targets can be changed at any time by editing the targets and clicking the Save button. These targets are also used for the Group TAS Reports and are unique to your NHSN user account. They do not affect the rest of your AU data or SAAR reports in any way, nor do they affect member facilities' data.

Abbreviation	SAAR Type Description	Applicable Population(s)*
ALL	All antibacterial agents	Adult, Pediatric, Neonatal
BSHO	Broad spectrum antibacterial agents predominantly used for hospital-onset infections	Adult, Pediatric, Neonatal
BSCA	Broad spectrum antibacterial agents predominantly used for community-acquired infections	Adult, Pediatric
GRAMPOS	Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., Methicillin-resistant *Staphylococcus aureus* [MRSA])	Adult, Pediatric
NSBL	Narrow spectrum beta-lactam agents	Adult, Pediatric
CDI	Antibacterial agents posing the highest risk for *Clostridioides difficile* infection (CDI)	Adult, Pediatric
ANTIFGL	Antifungal agents predominantly used for invasive candidiasis	Adult, Pediatric
AZITH	Azithromycin	Pediatric
VANC	Vancomycin predominantly used for treatment of late-onset sepsis	Neonatal
CEPH	Third generation cephalosporins	Neonatal
AMP	Ampicillin predominantly used for treatment of early-onset sepsis	Neonatal

Abbreviation	SAAR Type Description	Applicable Population(s)*
AMINO	Aminoglycosides predominantly used for treatment of early-onset and late-onset sepsis	Neonatal
FLUCO	Fluconazole predominantly used for candidiasis	Neonatal

Drugs within each SAAR type may differ by population. See the AUR Module Protocol for the list of drugs included in each SAAR.

3. **Export PDF button:** Clicking this button generates a printer-friendly version of the TAS Dashboard that can be printed or saved as a PDF file.
4. **Generate New button and Last Generated date:** The "Generate New" button can be used to generate new data sets just like navigating to Analysis and then Generate Data Sets from the left-hand menu in NHSN. The Last Generated date displays the last time you ran a data set generation (DSG). If you have not generated data sets or your user rights have changed, the TAS Dashboard will display "No data. Please run DSG." Please note this button generates new data sets for all NHSN Patient Safety Component modules.
5. **Refresh button:** Clicking this button will apply the SAAR targets you have entered to the TAS Dashboard display without saving them to the database. This function can be used to test changes to your SAAR targets for the selected population.
6. **Reset button:** Clicking this button resets your SAAR targets to the last targets you saved. For example, if you changed the SAAR target from 1.20 to 1.10 and then clicked Refresh to update the dashboard to show the AU-CAD values for a target of 1.10, you could click Reset to change the SAAR target back to the target value that was last saved (1.20).
7. **Save button:** Clicking this button saves the SAAR targets entered for the selected population to the database so they will be available even if you log out of NHSN or navigate away from the TAS Dashboard. Please note this only affects your NHSN account and will not affect other group users' SAAR targets.
8. **TAS Dashboard display:** The TAS Dashboard will display here once you have entered and saved your SAAR targets. If you have not set SAAR targets via the TAS Dashboard or TAS Reports, it will display "No SAAR targets set."
9. **Footnotes button:** This button can be used to show or hide the TAS Dashboard footnotes. Footnotes are shown by default.

Example and Interpretation

Let's look at the TAS Dashboard for the adult population. By default, NHSN compares SAAR values to 1.000 to produce SAAR p-values and 95% confidence intervals. For this example, let's set our SAAR targets to 1.20 for the All Antibacterial SAAR and 0.20 for all the other SAAR types as benchmarks. Data shown in this example are fictitious and the SAAR targets used in this example may not be appropriate for facilities in your group. Please work with your antimicrobial stewardship program to identify appropriate, achievable SAAR targets. For guidance on selecting a SAAR target, please see the TAS Guide. Once we enter the SAAR targets and click Save, the high-level TAS Dashboard will appear.

High-level TAS Dashboard
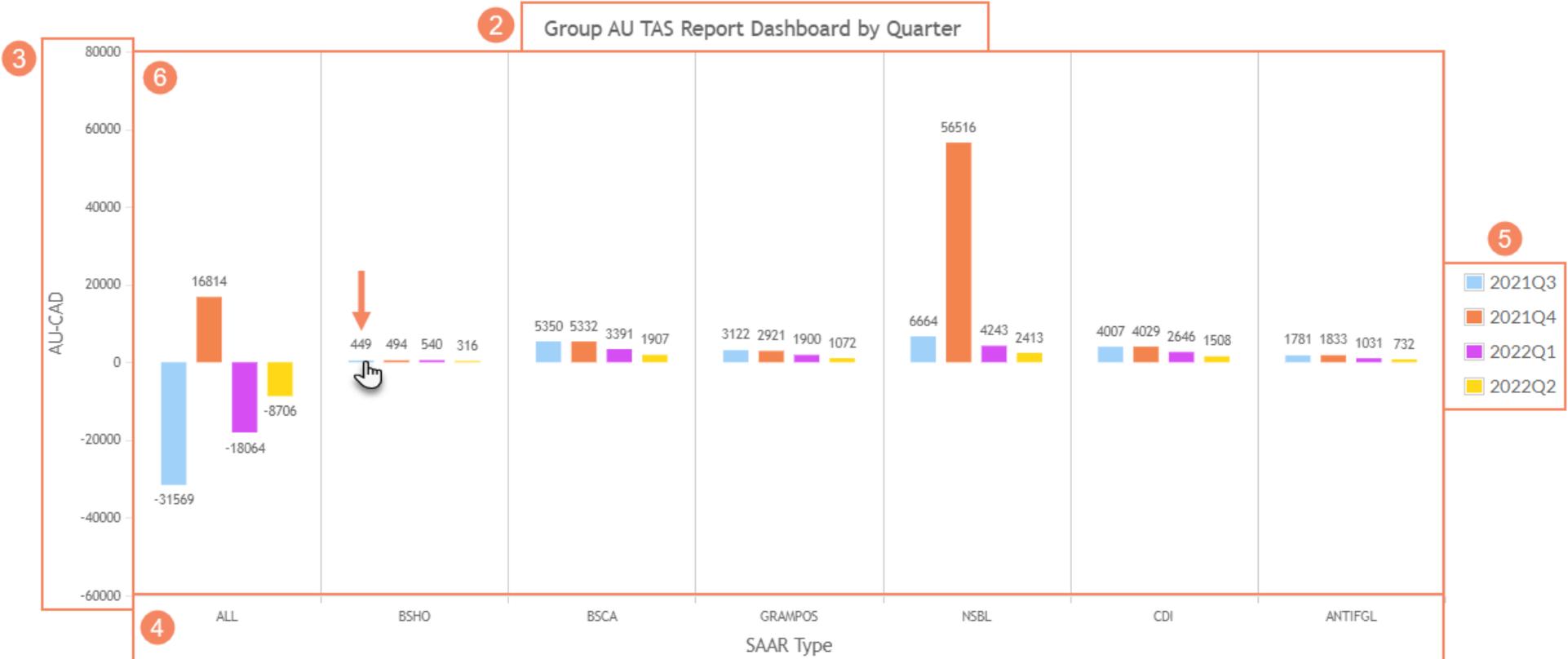
Group AU-CAD

SAAR Type	2021Q3	2021Q4	2022Q1	2022Q2
ALL	-31569	16814	-18064	-8706
BSHO	449 ←	494	540	316
BSCA	5350	5332	3391	1907
GRAMPOS	3122	2921	1900	1072
NSBL	6664	56516	4243	2413
CDI	4007	4029	2646	1508
ANTIFGL	1781	1833	1031	732

Footnotes

1. Abbreviations: ALL - All antibacterial agents; BSHO - Broad spectrum antibacterial agents predominantly used for hospital-onset infections; BSCA - Broad spectrum antibacterial agents predominantly used for community-acquired infections; GRAMPOS - Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA); NSBL - Narrow spectrum beta-lactam agents; CDI - Antibacterial agents posing the highest risk for CDI; ANTIFGL - Antifungal agents predominantly used for invasive candidiasis.
2. ND = No SAAR data available; NT = SAAR data but no SAAR Target available. As a reminder, AU-CAD values only appear if you've entered a SAAR target and facilities have uploaded AU data for locations that can generate SAARs.
3. AU-CAD = Observed Antimicrobial Days - (Predicted Antimicrobial Days * Group Identified SAAR Target)
4. Data include the most recent complete four calendar quarters.
5. A negative AU-CAD value means the SAAR Target was greater than the current SAAR value for that category. To increase the SAAR value, the negative AU-CAD value represents the number of antimicrobial days the facility needs to add per time period to reach your SAAR Target.

Note: Data are fictitious and for demonstration purposes only.

1. **SAAR targets and Save button:** Once you enter SAAR targets and click Save, the TAS Dashboard displays AU-CAD data based on the SAAR targets you entered. In this example, we entered SAAR targets of 1.20 for the All Antibacterial SAAR and 0.20 for all the other SAAR types.
2. **High-level TAS Dashboard title:** The title indicates what data are displayed and at what level of aggregation (calendar quarter) in the chart and table below it.
3. **High-level TAS Dashboard y-axis:** The y-axis displays the numeric AU-CAD value. This axis automatically adjusts to accommodate the range of AU-CAD values for your group and displays AU-CAD values above and below zero.
4. **High-level TAS Dashboard x-axis**: The x-axis displays each SAAR type available for the selected population. In this example, because we selected the adult population, the x-axis displays ALL, BSHO, BSCA, GRAMPOS, NSBL, CDI, and ANTIFGL. The full names for the SAAR Types can be found in the TAS Dashboard footnotes.
5. **High-level TAS Dashboard legend:** The legend displays the colors that correspond with each calendar quarter included in the TAS Dashboard. The TAS Dashboard displays the most recent four complete calendar quarters. The time period and level of aggregation displayed by the TAS Dashboard cannot be changed.
6. **High-level TAS Dashboard display:** The high-level Group TAS Dashboard displays a graphical interpretation of the AU-CADs pooled at the group level for each SAAR type over time by quarter for the most recent complete four calendar quarters. AU-CAD values will only appear if you've entered a SAAR target and facilities have uploaded AU data for locations that can generate SAARs. "ND" in place of an AU-CAD value indicates no data are available for that SAAR type/quarter combination and "NT" indicates no SAAR target was entered for that SAAR type. "ND" is also displayed when an AU-CAD for the specific SAAR type/quarter cannot be generated. Please see the TAS Guide for situations where NHSN cannot generate an AU-CAD.
7. **High-level Facility AU-CAD table:** The high-level Group AU-CAD table repeats the information in the high-level Group TAS Dashboard display in tabular format.

8. **High-level TAS Dashboard Footnotes:** The TAS Dashboard displays footnotes relevant to the selected population. Footnote #1, which lists the SAAR type abbreviations for the population displayed, changes depending on which population is selected. Footnotes #2-5 stay the same regardless of which population is selected.

Now that we've walked through the layout of the High-level TAS Dashboard, let's interpret the AU-CAD for adult broad spectrum antibacterial agents predominantly used for hospital-onset infections (BSHO) during the third quarter of 2021 (2021Q3). The AU-CAD value for adult BSHO agents administered at our member facilities in 2021Q3 was 449, as shown by the arrows on the chart and table. For our member facilities to reduce their 2021Q3 adult BSHO SAARs to meet our SAAR target of 0.20, they would have needed to reduce use of adult BSHO agents by at least 449 antimicrobial days during that quarter. However, it'll be important to review the Group TAS Dashboard drilldown to see the contributions of each member facility.
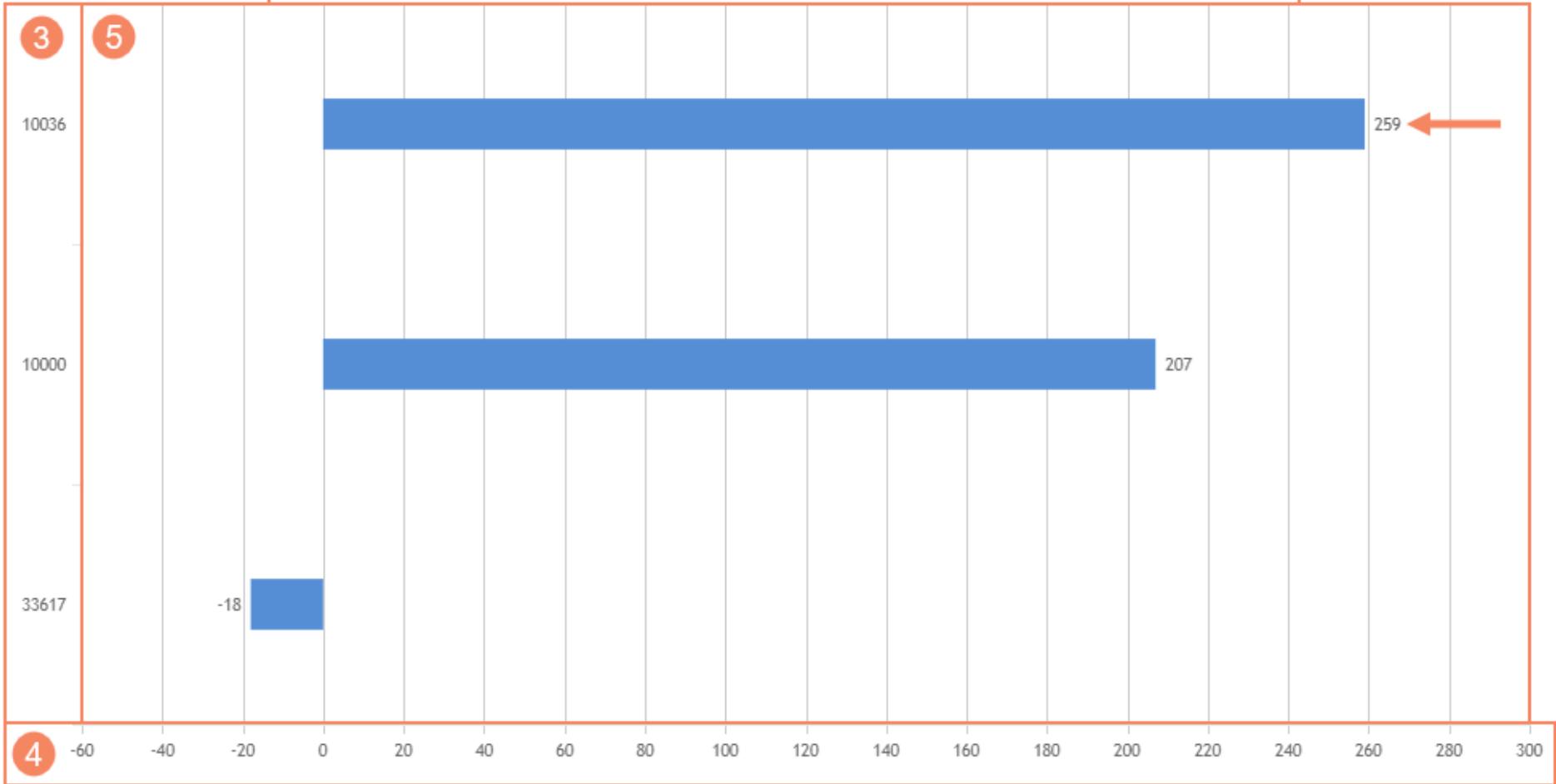
To continue the example, let's explore how to identify which member facility had the highest adult BSHO AU-CAD values in 2021Q3 and may benefit most from additional antimicrobial stewardship resources. Clicking on either the colored bar (as shown in the screenshot above) or the number above/below the bar takes you to the Group TAS Dashboard drilldown for each SAAR type and quarter combination. The example on the next page displays what happens after you click on the bar on the chart that corresponds with BSHO 2021Q3.

TAS Dashboard Drilldown

① ⬅ Back

② BSHO SAAR Number of Antimicrobial Days to Reduce to Reach Group Specific SAAR

③ ⑤

Label	Value
10036	259 ⬅
10000	207
33617	-18

④ -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

					Observed	
SAAR Type	Summary Year/Quarter	Facility Rank	Facility ID	AU Days Predicted	Antimicrobial Days	Facility AU-CAD
BSHO	2021Q3	1	10036	4418.617	1143	259
		2	10000	4943.391	1196	207
		3	33617	7179.819	1418	-18

Footnotes

1. Abbreviations: ALL - All antibacterial agents; BSHO - Broad spectrum antibacterial agents predominantly used for hospital-onset infections; BSCA - Broad spectrum antibacterial agents predominantly used for community-acquired infections; GRAMPOS - Antibacterial agents predominantly used for resistant Gram-positive infections (e.g., MRSA); NSBL - Narrow spectrum beta-lactam agents; CDI - Antibacterial agents posing the highest risk for CDI; ANTIFGL - Antifungal agents predominantly used for invasive candidiasis.
2. As a reminder, AU-CAD values only appear if you've entered a SAAR target and facilities have uploaded AU data for locations that can generate SAARs.
3. AU-CAD = Observed Antimicrobial Days - (Predicted Antimicrobial Days * Group Identified SAAR Target)
4. If SAAR Type-level AU-CADs are the same for two or more facilities, their ranks are tied.
5. A negative AU-CAD value means the SAAR Target was greater than the current SAAR value for that category. To increase the SAAR value, the negative AU-CAD value represents the number of antimicrobial days the facility needs to add per time period to reach your SAAR Target.

Note: Data are fictitious and for demonstration purposes only.

1. **Back button:** Clicking the Back button returns to the high-level TAS Dashboard.
2. **TAS Dashboard drilldown title:** The title indicates what data are displayed in the chart and table below it, and for what SAAR type.
3. **TAS Dashboard drilldown y-axis:** The y-axis displays the Facility ID (orgID) for each member facility NHSN calculated an AU-CAD for. In this example, the y-axis displays three member facilities with an AU-CAD value for the BSHO SAAR type in 2021Q3.
4. **TAS Dashboard drilldown x-axis:** The x-axis displays the numeric AU-CAD value. This axis automatically adjusts to accommodate the range of AU-CAD values for the member facilities included and displays AU-CAD values above and below zero.
5. **TAS Dashboard drilldown display:** The Group TAS Dashboard drilldown displays a graphical interpretation of the AU-CADs for each member facility for the selected SAAR type and quarter, ordered by facility rank.
6. **SAAR Type and Summary Year/Quarter columns:** These columns indicate the SAAR type and quarter you selected from the high-level TAS Dashboard. In this example, we selected the BSHO SAAR type for 2021Q3.
7. **Facility Rank column:** This column lists the rank order of member facilities by AU-CAD value, from largest to smallest. 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. Please see the TAS Guide for situations where NHSN cannot generate an AU-CAD.

8. **Facility ID column:** This column indicates the orgID for each member facility included in the table. In this example, NHSN calculated an AU-CAD value for the adult BSHO SAAR type for three member facilities in 2021Q3.
9. **AU Days Predicted and Observed Antimicrobial Days columns:** These columns indicate the predicted antimicrobial days and observed (or reported) antimicrobial days, respectively, for antimicrobials included in the selected SAAR antimicrobial category for the selected quarter for SAAR-eligible locations within each member facility included in the table. These values are used to calculate the AU-CAD for each member facility.
10. **Facility AU-CAD column:** This column indicates the pooled SAAR type- and quarter-specific AU-CAD for SAAR-eligible locations within each member facility, calculated using the AU-CAD formula.
11. **TAS Dashboard Drilldown Footnotes:** The TAS Dashboard displays footnotes relevant to the selected population. Footnote #1, which lists the SAAR type abbreviations for the population displayed, changes depending on which population is selected. Footnotes #2-5 stay the same regardless of which population, SAAR type, or quarter is selected.

Let's interpret the AU-CAD and data in the table for orgID 10036, as shown by the arrows on the chart and table. OrgID 10036 was ranked #1, which means it had the highest adult BSHO AU-CAD value among the included member facilities in 2021Q3. OrgID 10036 reported 1,143 antimicrobial days in the adult BSHO SAAR antimicrobial category in 2021Q3. NHSN predicted this facility would report approximately 4,418.617 antimicrobial days based on the adult BSHO SAAR model. We can plug these values, along with our SAAR target of 0.20, into the AU-CAD formula to see what the facility's AU-CAD value should be.

$$\text{AU-CAD} = \text{Observed antimicrobial days} - (\text{Predicted antimicrobial days} \times \text{SAAR target}) = 1143 - (4418.617 \times 0.20) \approx 259$$

As expected, based on our calculation, the AU-CAD value for adult broad spectrum antibacterial agents predominantly used for hospital-onset infections administered at orgID 10036 in 2021Q3 was 259, as shown by the arrow on the chart. To reduce their 2021Q3 adult BSHO SAAR to our SAAR target of 0.20, the facility would need to reduce use of adult broad spectrum antibacterial agents predominantly used for hospital-onset infections by approximately 259 antimicrobial days in a quarter.

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 Group Users: https://www.cdc.gov/nhsn/group-users/index.html

TAS Guide: 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

TAS Report – Group and Facility Quick Reference Guide: https://www.cdc.gov/nhsn/ps-analysis-resources/tas/group-level-508.pdf

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