Using Data for Action with the 2023 AU SAAR Rebaseline

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ANTIMICROBIAL USE OPTION

Objectives

By the end of our presentation, the audience should be able to:

- Understand how the Standardized Antimicrobial Administration Ratio (SAAR) was updated with the 2023 baseline.
- Interpret their SAAR values and describe why their SAAR may have changed with the new baseline.
- Apply best practices when presenting their SAAR values.

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Disclaimers

- The 2023 baseline has not yet been implemented in the NHSN application.
  - This webinar is occurring prior to the availability of the new 2023 baseline SAAR reports within NSHN.
  - This training will provide additional information on the SAAR and how it can be used for action.
- This presentation provides a high-level overview building on some concepts covered in previous presentations posted here: 2023 AU SAAR Rebaseline | NHSN |CDC.

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Outline

- Introduction to the SAAR
- Summary of the 2023 SAAR Rebaseline
- Scenario 1 – Understanding your adult and pediatric 2023 Baseline SAARs
- Scenario 2 – Presenting your SAARs
- Scenario 3 – Producing and distributing your SAARs
- Next steps and resources

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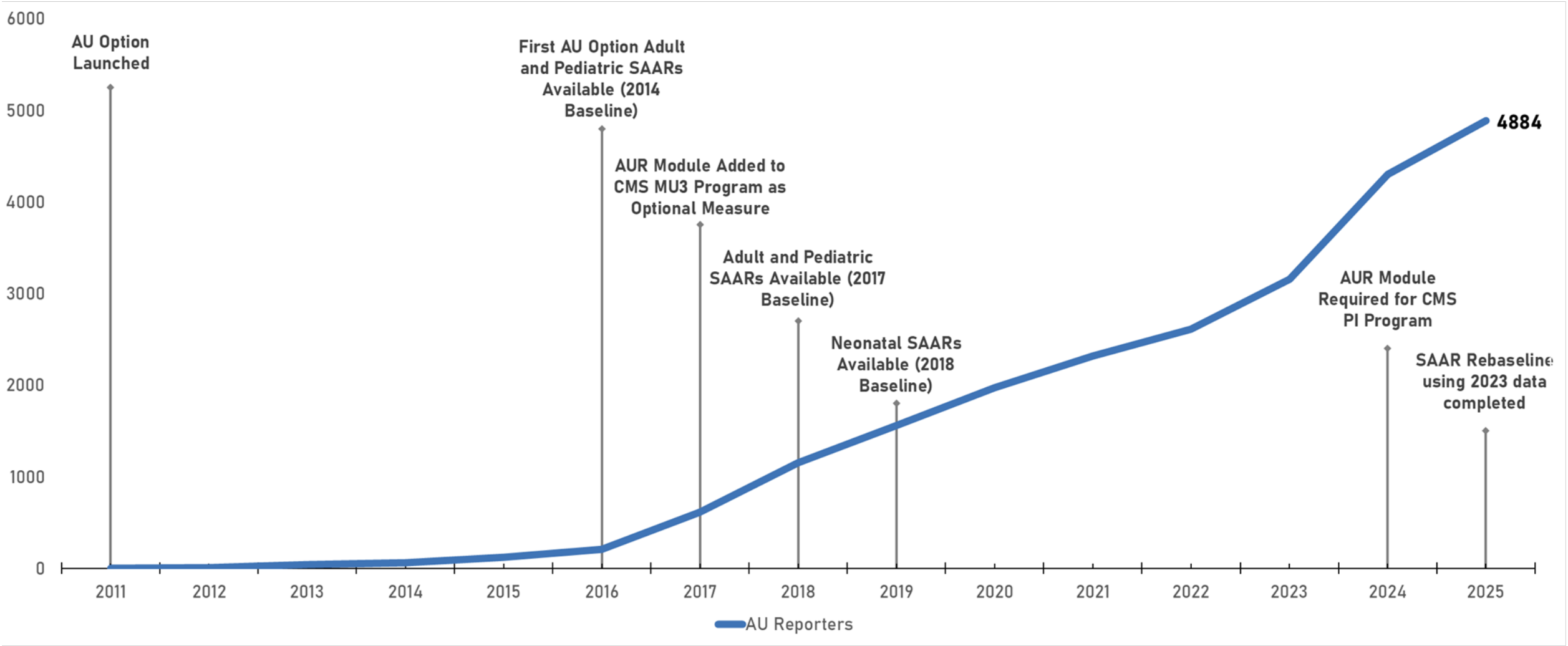
Introduction to the SAAR

History of the NHSN Antimicrobial Use (AU) Option



MU3: Meaningful Use Stage 3; PI Program: Promoting Interoperability Program

Standardized Antimicrobial Administration Ratio (SAAR)

$$\mathbf{SAAR} = \frac{\#\ \boldsymbol{observed\ antimicrobial\ days\ of\ therapy}}{\#\ \boldsymbol{predicted\ antimicrobial\ days\ of\ therapy}}$$

Reported to NHSN

Calculated by CDC

- When the number of observed antimicrobial days of therapy (DOT) is greater than the number predicted, the SAAR will be >1.

$$\frac{500\ \text{observed DOT}}{300\ \text{predicted DOT}} = \text{SAAR of } 1.67$$

- If the number of observed DOT is less than the number predicted, the SAAR will be <1.
- P-values and 95% confidence intervals provide information about statistical significance.

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Calculating the Number of Predicted DOT

$$\mathbf{SAAR} = \frac{\#\ \boldsymbol{observed\ DOT}}{\#\ \boldsymbol{predicted\ DOT}}$$

- The number of predicted DOT is calculated in the NHSN application for a specific location or group of locations.
- These calculations are based on statistical predictive models that include risk adjustment.
  - Models use location and facility characteristics (factors) reported to NHSN that significantly impact rates of antimicrobial use (AU).
  - Model details are available in NHSN's SAAR Guide.
- These models are developed by CDC using data reported to NHSN for the baseline year.
  - The "baseline" refers to the calendar year of NHSN data used to develop SAAR models.

SAAR Guide: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/au-saar-guide-508.pdf

How to Interpret a SAAR

- SAAR < 1.0 indicates less antimicrobial use than predicted.
- SAAR = 1.0 indicates the same antimicrobial use as predicted.
- SAAR > 1.0 indicates more antimicrobial use than predicted.

- A SAAR alone is not a definitive measure of appropriateness of antimicrobial use; any SAAR value may warrant additional investigation.

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Summary of the 2023 SAAR Rebaseline

Updates to the 2023 SAAR Baseline

- 2023 AU data were used to develop 2023 baseline SAAR models.
- Larger sample sizes were included in models compared to previous baselines.
- New SAAR eligible location types were added.
- SAAR antimicrobial agent categories were updated.

Full list of drugs in each category can be found in Appendix E of the AUR Module Protocol

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Larger sample size for 2023 Baseline

Population	2014 Baseline	2017/2018 Baseline	2023 Baseline
Adult	77 hospitals 350 patient care locations	449 hospitals 2,156 patient care locations	2,374 hospitals 14,658 patient care locations
Pediatric	77 hospitals 33 patient care locations	106 hospitals 170 patient care locations	398 hospitals 948 patient care locations
Neonatal	N/A	304 hospitals 324 patient care locations	770 hospitals 865 patient care locations

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Hospital Characteristics for SAAR Referent Populations	Adult SAAR Referent Population				Pediatric SAAR Referent Population				Neonatal SAAR Referent Population			
	2017 Baseline n=449		2023 Baseline n=2,374		2017 Baseline n=106		2023 Baseline n=398		2018 Baseline n=304		2023 Baseline n=770	
Facility Type	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**
Critical access	28	6.2%	260	11.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Children's	0	0.0%	10*	0.4%	6	5.7%	53	13.3%	10	3.3%	35	4.5%
General acute care	320	71.3%	1,938	81.6%	91	85.8%	336	84.4%	274	90.1%	717	93.1%
Military	19	4.2%	33	1.4%	5	4.7%	6	1.5%	11	3.6%	7	0.9%
Oncology	1	0.2%	6	0.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Orthopedic	0	0.0%	9	0.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Psychiatric	0	0.0%	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Surgical	3	0.7%	24	1.0%	0	0.0%	0	0.0%	0	0.0%	2	0.3%
Veterans Affairs	75	16.7%	82	3.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Women's	1	0.2%	6	0.3%	0	0.0%	0	0.0%	5	1.6%	4	0.5%
Women's and Children's	2	0.4%	5	0.2%	4	3.8%	3	0.8%	4	1.3%	5	0.6%
Medical School Affiliation	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**	**No. hospitals**	**% of hospitals**
None	131	29.2%	453	19.1%	13	12.3%	19	4.8%	52	17.1%	68	8.8%
Undergraduate	71	15.8%	504	21.2%	19	17.9%	32	8.0%	50	16.4%	109	14.2%
Graduate	102	22.7%	319	13.4%	27	25.5%	59	14.8%	57	18.8%	96	12.5%
Major	145	32.3%	1,098	46.3%	47	44.3%	288	72.4%	145	47.7%	497	64.5%

*It is possible for Children's hospitals to have adult location types (such as labor, delivery, or postpartum units)

2023 Baseline Adult SAAR Location Types

- **8 current locations**
  - Medical ICUs
  - Medical-Surgical ICUs
  - Surgical ICUs
  - Medical Wards
  - Medical-Surgical Wards
  - Surgical Wards
  - General Hematology-Oncology Wards
  - Step-down units
- **18 new locations**
  - Burn ICUs
  - Medical Cardiac ICUs
  - Neurologic ICUs
  - Neurosurgical ICUs
  - Surgical Cardiothoracic ICUs
  - Trauma ICUs
  - Burn Wards
  - Labor & Delivery Wards
  - Labor, Delivery, Recovery, Postpartum Suites
  - Neurology Wards
  - Neurosurgical Wards
  - Oncology Hematopoietic Stem Cell Transplant Wards
  - Orthopedic Trauma Wards
  - Orthopedic Wards
  - Postpartum Wards
  - Pulmonary Wards
  - Mixed Acuity Units
  - Solid Organ Transplant Special Care Areas

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2023 Baseline Pediatric SAAR Location Types

- **5 current locations**
  - Medical ICUs
  - Medical-surgical ICUs
  - Medical Wards
  - Medical-surgical Wards
  - Surgical Wards
- **4 New locations**
  - Surgical Cardiothoracic ICUs
  - General Hematology-Oncology Wards
  - Oncology Hematopoietic Stem Cell Transplant Wards
  - Step-down Units

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2023 Baseline Neonatal SAAR Location Types

- **4 current locations**
  - Level II special care nurseries
  - Level II/III neonatal intensive care units (NICUs)
  - Level III NICUs
  - Level IV NICUs

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No “Facility-wide” SAAR

- Consistent with 2017/2018 SAARs
- SAARs generated in NHSN only include SAAR eligible location types listed on previous slides.
  - Additionally, SAARs are not available for outpatient locations.
- None of the SAARs contain AU data from all inpatient locations in a facility
  - Highest level of “roll-up” shown in the All Antibacterial SAAR
    - Includes all SAAR eligible locations for a given population (adult, pediatric, neonatal)
  - Exception: if a small facility only mapped SAAR eligible locations
    - For example, a facility with one adult mixed acuity unit and no outpatient locations

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No new risk adjustment factors in SAAR modeling

- NHSN used 2023 AU data to redo the SAAR models, but no new risk adjustment factors were assessed.
  - Included facility & location/unit level factors
  - 2023 models could use different groupings of variables
- Like the 2017/2018 model risk adjustment:
  - No patient level
  - No AR Option data

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Knowledge Check #1

True/False: We need to map new locations in our NHSN Facility to be able to see SAARs for the newly eligible location types.

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Knowledge Check #1

True/False: We need to map new locations in our NHSN Facility to be able to see SAARs for the newly eligible location types.

False: Your facility already has locations mapped for Healthcare Associated Infections (HAI) reporting. Any AU data reported into a newly eligible SAAR location will generate SAARs using the 2023 baseline.

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Scenario 1 – Understanding Your 2023 Baseline SAARs

Understanding your 2023 Baseline SAARs

- When 2023 baseline is available in NHSN, you'll want to understand how your SAARs are impacted by the risk adjustment models and other updates.

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Your SAARs will likely change

- **All SAAR models are different from 2017/2018 to 2023 baseline.**
- Shifting SAARs even though there was no change in prescribing and days present
  - Differences within the risk adjustment models
  - Some SAARs have changes in antimicrobials included in the category which could impact the observed antimicrobial days (SAAR numerator)
  - May shift closer to 1 and be higher than those created using the 2017/2018 baseline because SAARs have been recalibrated based on 2023 national AU incidence, which for many SAAR types, is lower than incidence in 2017/2018
    - Can result in lower predicted values (SAAR denominator)

Refer to How will my SAARs change? Understanding the impact of the 2023 SAAR Rebaseline for more information

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Risk factors assessed in Adult and Pediatric SAAR models

- Data from AU Option
  - Location type (e.g., adult medical ward, adult medical ICU)
- Data from NHSN Annual Hospital Survey
  - Facility type (e.g., General, Critical Access, Children's)
  - Medical school affiliation type
  - Total number of hospital beds
  - Total number of hospital ICU beds
  - Percentage of hospitals beds that are ICU beds
    - Calculated as (number of ICU beds / total number of beds) *100
  - Average hospital length of stay
    - Calculated as (number of annual facility patient days / number of annual facility admissions)

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Comparing 2017 & 2023 Adult BSHO SAAR Model Details

2023 SAARs

Adult: Broad spectrum antibacterial agents predominantly used for hospital-onset infections

Parameter	Estimate
Intercept	-4.9392
Location Type	
Medical ICU	3.0644
Oncology Hematopoietic Stem Cell Transplant Ward	2.9621
Medical-Surgical ICU, Surgical ICU	2.9448
Burn ICU, Medical Cardiac ICU, Trauma ICU	2.7411
Surgical Cardiothoracic ICU, Neurologic ICU, Neurosurgical ICU	2.5611
Solid Organ Transplant Special Care Area	2.5036
Burn Ward, General Hematology-Oncology Ward, Pulmonary Ward	2.4750
Mixed Acuity Unit, Step-Down Unit	2.2976
Medical-Surgical Ward, Surgical Ward	2.1882
Medical Ward	2.1105
Orthopedic Ward, Orthopedic Trauma Ward	1.7345
Neurosurgical Ward	1.5232
Neurology Ward	1.3758
Labor and Delivery Ward, Labor and Delivery/Postpartum Ward, Postpartum Ward	REF
Facility Type	
Critical Access, General Acute Care, Oncology, Surgical, Veterans Affairs	0.4214
Children's, Military, Orthopedic, Psychiatric, Women's, Women's and Children's	REF
Number of ICU beds, facility-wide	
≥5	0.2593
<5	REF
Average length of stay, facility-wide (in days)	
≥2.8	0.0909
1.0 - 2.7	REF
Medical school affiliation type	
None, Undergraduate, Major	0.0446
Graduate	REF

2017 SAARs

Adult: Broad spectrum antibacterial agents predominantly used for hospital-onset infections

Parameter	Estimate
Intercept	-2.3357
Location type	
Medical ICU	1.0084
Medical-surgical ICU, surgical ICU	0.8825
General hematology-oncology ward	0.3795
Step-down unit	0.2197
Medical ward	0.0781
Medical-surgical ward, surgical ward	REF
Facility type	
Veterans Affairs (VA)	-0.1821
Critical access	-0.2465
Military	-0.6278
Women's	-1.1920
General acute, oncology, surgical, women's and children's	REF
Number of ICU beds, facility-wide	
≥8	0.1734
<8	REF
Average length of hospital stay (in days)	
≥3.6	0.1091
<3.6	REF
Teaching Status	
Undergraduate only	0.1394
None, graduate, major	REF

2017/2018 SAAR details

2023 SAAR Guide

BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections

Comparing 2017 & 2023 Adult BSHO SAAR Model Details – Location Type

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2017/2018 SAAR details
2023 SAAR Guide

BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections

Comparing 2017 & 2023 Adult BSHO SAAR Model Details – Facility Type

2023 SAARs

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2017/2018 SAAR details
2023 SAAR Guide

BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections

Comparing 2017 & 2023 Adult BSHO SAAR Model Details – Number of ICU Beds

2023 SAARs

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[2017/2018 SAAR details]
[2023 SAAR Guide]

BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections

Comparing 2017 & 2023 Adult BSHO SAAR Model Details – Average Length of Stay

2023 SAARs

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2017/2018 SAAR details
2023 SAAR Guide

BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections

Comparing 2017 & 2023 Adult BSHO SAAR Model Details – Medical School Affiliation & Teaching Status

2023 SAARs

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[2017/2018 SAAR details]
[2023 SAAR Guide]

BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections

Knowledge Check #2

True/False: My SAAR values changed with the 2023 baseline because prescribing practices changed at my hospital.

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Knowledge Check #2

True/False: My SAAR values changed with the 2023 baseline because prescribing practices changed at my hospital.

False: Your SAAR values changed with the 2023 baseline because SAARs have been recalibrated using the 2023 AU national incidence and impacted by changes in the risk adjustment models.

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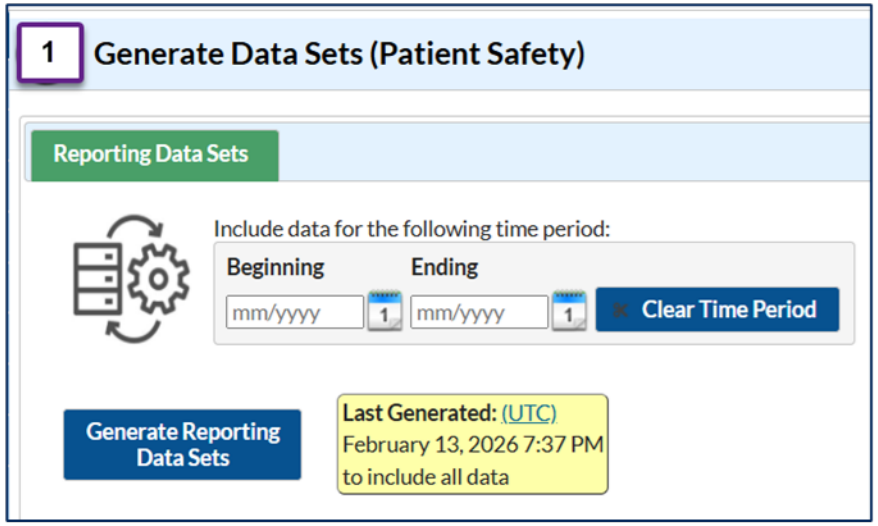
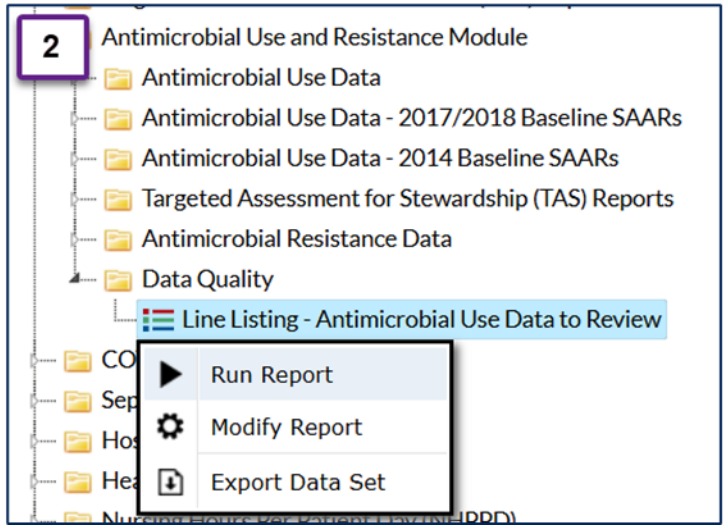
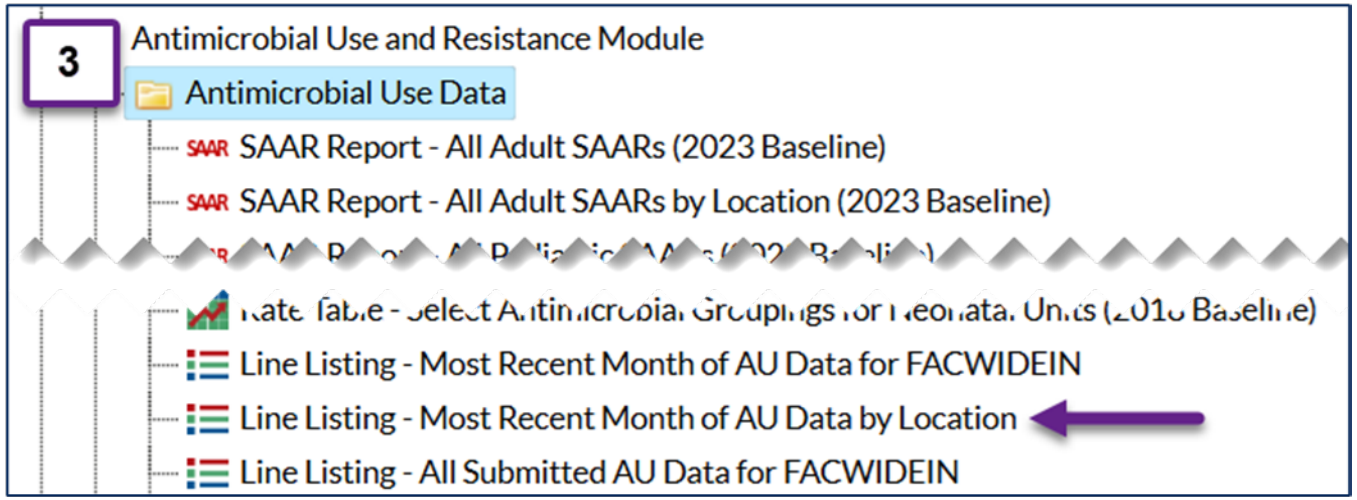
Use NHSN tools to review data quality

1. Generate new data sets
   a. Time boxing
2. AU Data Quality Line List
3. AU Line List
   a. Run most recent month
   b. Modify output as needed







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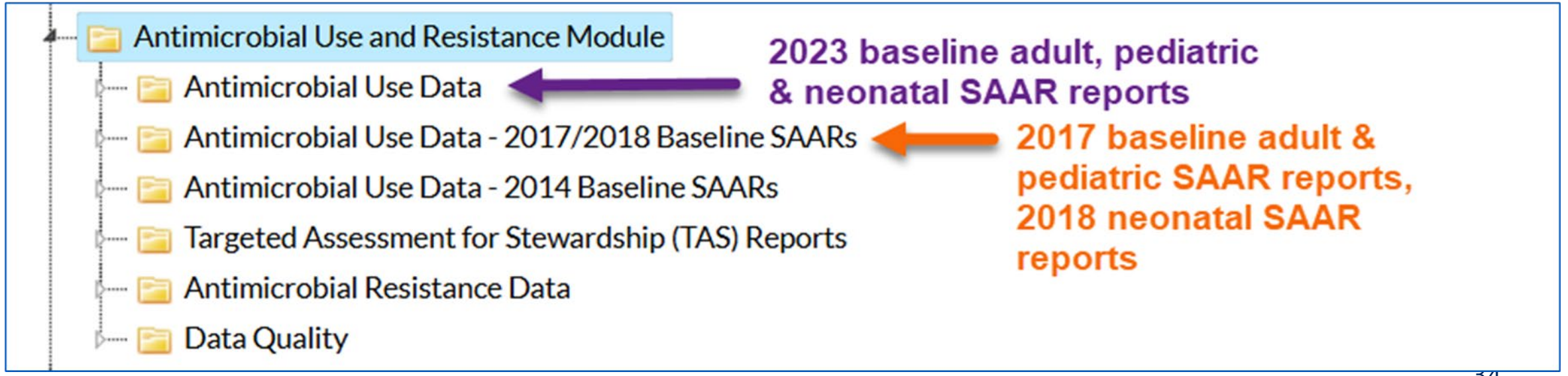
Run the SAAR reports in NHSN

- Run the location group SAAR report for each baseline.
  - Use the default or apply the same modifications for each report.
- Find 2023 baseline reports in the main Antimicrobial Use Data folder.
- Find 2017/2018 baseline reports in their own folder.



Output of a 2023 baseline SAAR report

- 2023 baseline report output will remain like 2017/2018 baseline reports.
  - Adult, pediatric and neonatal populations will have own reports.
  - Many more adult & pediatric locations types will be included.
    - **Consider modifying by time period if reports are too lengthy.**
  - Footnotes updated slightly

National Healthcare Safety Network
SAARs Table - All Adult Standardized Antimicrobial Administration Ratios (SAARs) High-Level Indicators and High-Value Targets (2023 Baseline)
As of: February 13, 2026 at 7:40 PM UTC
Date Range: All AU_SAAR_ADULT_2023

Broad spectrum antibacterial agents predominantly used for hospital-onset infections used in adult SAAR general ICUs

Facility Org ID	Summary Year/Month	SAAR Type for Adult Locations 2023 Baseline	Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR	SAAR p-value	95% Confidence Interval
13860	2023M01	Adult_BSHO_GeneralICU_2023	140	689.996	2215	0.203	0.0000	0.171, 0.239
13860	2023M02	Adult_BSHO_GeneralICU_2023	172	1173.408	3857	0.147	0.0000	0.126, 0.170
13860	2023M03	Adult_BSHO_GeneralICU_2023	164	1150.756	3792	0.143	0.0000	0.122, 0.166
13860	2023M04	Adult_BSHO_GeneralICU_2023	194	894.035	2889	0.217	0.0000	0.188, 0.249
13860	2023M05	Adult_BSHO_GeneralICU_2023	307	429.024	1379	0.716	0.0000	0.639, 0.799

Please note that all the data presented on this slide is fictious and not actual facility data.

Example SAAR interpretation

SAAR Baseline year	Observed Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR Value	P-value	95% Confidence Interval	Percentile
2023	191	212.222	721	0.900	0.02	0.74, 0.98	39

- In January 2026, there were 191 observed antimicrobial days for the BSHO drugs and 212.222 antimicrobial days predicted based off the 2023 Adult BSHO SAAR models.

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Example SAAR interpretation

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- In January 2026, there were 191 observed antimicrobial days for the BSHO drugs and 212.222 antimicrobial days predicted based off the 2023 Adult BSHO SAAR models.
- Using the 2023 baseline models, the MS ICU location SAAR is 0.900.

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Example SAAR interpretation

SAAR Baseline year	Observed Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR Value	P-value	95% Confidence Interval	Percentile
2023	191	212.222	721	0.900	0.02	0.74, 0.98	39

- In January 2026, there were 191 observed antimicrobial days for the BSHO drugs and 212.222 antimicrobial days predicted based off the 2023 Adult BSHO SAAR models.
- Using the 2023 baseline models, the MS ICU location SAAR is 0.900.
- The p-value is less than 0.05 and the 95% confidence interval does not include 1.0 so the SAAR of 0.900 is statistically different than 1.000.

Please note that all the data presented on this slide is fictious and not actual facility data.

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Example SAAR interpretation

SAAR Baseline year	Observed Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR Value	P-value	95% Confidence Interval	Percentile
2023	191	212.222	721	0.900	0.02	0.74, 0.98	39

- In January 2026, there were 191 observed antimicrobial days for the BSHO drugs and 212.222 antimicrobial days predicted based off the 2023 Adult BSHO SAAR models.
- Using the 2023 baseline models, the MS ICU location SAAR is 0.900.
- The p-value is less than 0.05 and the 95% confidence interval does not include 1.0 so the SAAR of 0.900 is statistically different than 1.000.
- SAAR percentile of 39 means the SAAR of 0.900 falls within the 39th percentile for MS ICUs. 38% of MS ICUs have BSHO SAARs lower than this unit and 61% have higher BSHO SAARs than this unit.

Please note that all the data presented on this slide is fictious and not actual facility data.

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BSHO SAARs calculated with the 2017 and 2023 Baseline

- January 2026
- Adult medical-surgical ICU location
- 191 antimicrobial days
- 721 days present

SAAR Baseline year	Observed Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR Value
2017	191	223.618	721	0.854
2023	191	212.222	721	0.900

Data for informational purposes to show how SAARs look different using different baselines, not meant for comparison as SAARs should not be compared across baselines

BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections

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Comparing 2017 & 2023 Adult BSHO SAAR Details – Antimicrobials

2023 SAARs

- AMIKACIN (IV only)
- AZTREONAM (IV only)
- CEFEPIME
- CEFTAZIDIME
- GENTAMICIN (IV only)
- IMIPENEM/CILASTATIN
- MEROPENEM
- PIPERACILLIN/TAZOBACTAM
- TOBRAMYCIN (IV only)

2017 SAARs

- AMIKACIN (IV only)
- AZTREONAM (IV only)
- CEFEPIME
- CEFTAZIDIME
- DORIPENEM
- GENTAMICIN (IV only)
- IMIPENEM/CILASTATIN
- MEROPENEM
- PIPERACILLIN/TAZOBACTAM
- TOBRAMYCIN (IV only)

BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections
Full list of drugs in each category can be found in Appendix E of the AUR Module Protocol

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BSHO SAARs calculated with the 2017 and 2023 Baseline

- January 2026
- Adult medical-surgical ICU location
- 191 antimicrobial days
- 721 days present

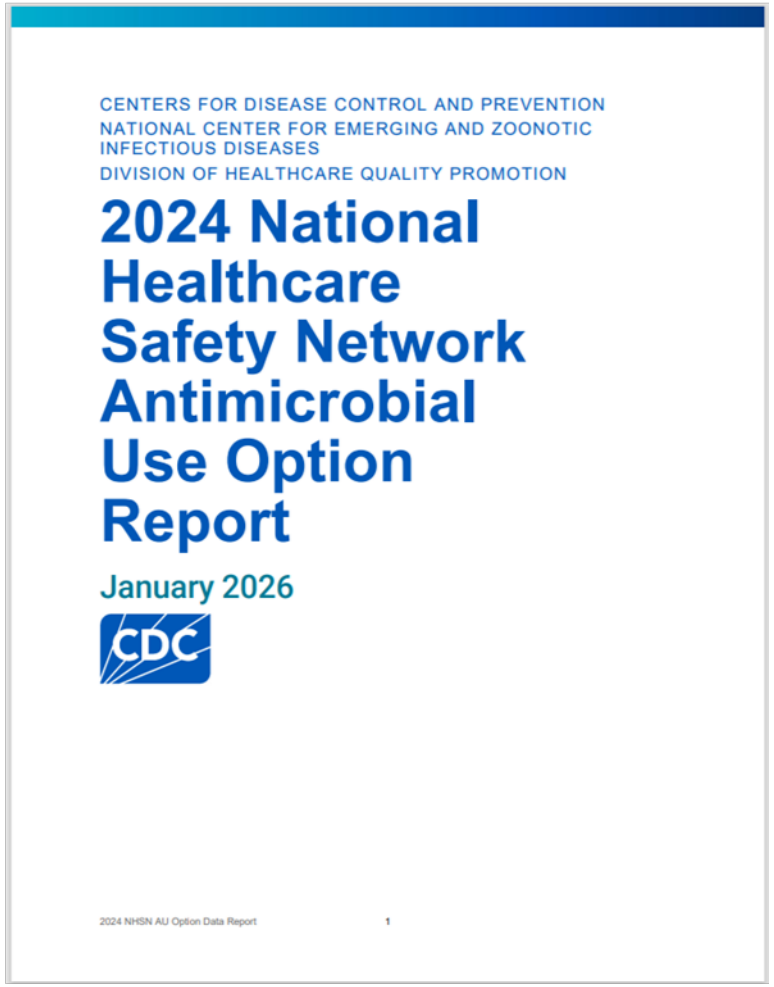
SAAR Baseline year	Observed Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR Value	SAAR Percentile*
2017	191	223.618	721	0.854	33
2023	191	212.222	721	0.900	39

Data for informational purposes to show how SAARs look different using different baselines, not meant for comparison as SAARs should not be compared across baselines

*SAAR percentile is generated based on the most recently published distributions (i.e., 2024).
BSHO: Adult broad-spectrum antibacterial agents predominantly used for hospital-onset infections

AU Data Report

- Published annual AU data reports starting in 2019
  - 2019–2023 reports used 2019–2023 AU data risk adjusted using the 2017/2018 SAAR baselines
  - 2024 report uses 2024 AU data risk adjusted using the 2023 baseline models
- Summarizes SAAR distributions and antimicrobial use among SAAR-eligible locations
- The 2024 report includes data from 3,288 (adult), 523 (pediatric), and 1,078 (neonatal) hospitals.



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2024 AU Data report: Adult BSHO SAAR Distributions

3b. Adult broad spectrum antibacterial agents predominantly used for hospital-onset infections (Adult BSHO) (2023 Baseline)

Table 3b1: Distribution of broad spectrum antibacterial agents predominantly used for hospital-onset infections SAAR among adult locations by location type

Adult location group	Adult SAAR location type	No. of locations[1]	Days present	Antimicrobial days		SAAR and 95% confidence limits (CL)			No. of locations with ≥1 predicted antimicrobial day[2]
				Observed	Predicted	SAAR	Lower CL	Upper CL	
Critical Care Units/ICUs	Burn ICUs	43	154,826	32,817	38,151.72	0.860	0.851	0.870	43
	Medical Cardiac ICUs	216	1,054,351	264,795	263,459.74	1.005	1.001	1.009	216
	Medical ICUs	773	3,816,500	1,350,546	1,313,864.50	1.028	1.026	1.030	773
	Medical-Surgical ICUs	1,969	9,186,629	2,848,732	2,790,129.19	1.021	1.020	1.022	1,969
	Neurologic ICUs	84	433,683	83,977	90,374.05	0.929	0.923	0.936	84
	Neurosurgical ICUs	171	1,048,095	206,322	219,063.92	0.942	0.938	0.946	171
	Surgical Cardiothoracic ICUs	360	1,843,069	417,470	384,845.35	1.085	1.082	1.088	360
	Surgical ICUs	325	1,688,087	514,777	518,231.23	0.993	0.991	0.996	325
	Trauma ICUs	121	726,843	180,877	181,078.79	0.999	0.994	1.004	121
Wards	Burn Wards	28	150,812	31,800	28,366.57	1.121	1.109	1.133	28
	Labor and Delivery Wards	768	4,553,864	82,063	71,606.78	1.146	1.138	1.154	767
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Adult location group	Adult SAAR location type	5th	10th	15th	20th	25th	30th	35th	40th	45th	50th	55th	60th	65th	70th	75th	80th	85th	90th	95th
Critical Care Units/ICUs	Burn ICUs	0.440	0.504	0.553	0.638	0.677	0.705	0.723	0.732	0.760	0.822	0.834	0.851	0.989	1.001	1.047	1.124	1.247	1.423	1.582
	Medical Cardiac ICUs	0.378	0.530	0.610	0.681	0.748	0.781	0.823	0.855	0.910	0.950	1.000	1.066	1.103	1.174	1.241	1.292	1.397	1.481	1.724
	Medical ICUs	0.474	0.578	0.650	0.718	0.764	0.814	0.868	0.898	0.931	0.976	1.024	1.070	1.112	1.162	1.218	1.263	1.321	1.387	1.524
	Medical-Surgical ICUs	0.456	0.584	0.659	0.716	0.775	0.826	0.865	0.912	0.950	0.992	1.032	1.080	1.116	1.165	1.209	1.278	1.344	1.428	1.587
	Neurologic ICUs	0.508	0.566	0.654	0.702	0.712	0.732	0.755	0.778	0.794	0.821	0.894	0.966	1.052	1.079	1.133	1.172	1.295	1.528	1.576
	Neurosurgical ICUs	0.497	0.573	0.632	0.670	0.699	0.736	0.783	0.863	0.879	0.930	0.964	0.995	1.050	1.102	1.146	1.188	1.318	1.438	1.671
	Surgical Cardiothoracic ICUs	0.307	0.420	0.520	0.562	0.659	0.729	0.798	0.851	0.908	0.970	1.038	1.102	1.178	1.261	1.313	1.368	1.452	1.581	1.862
	Surgical ICUs	0.454	0.543	0.605	0.670	0.733	0.792	0.828	0.872	0.915	0.959	0.996	1.039	1.092	1.146	1.192	1.263	1.335	1.424	1.563
	Trauma ICUs	0.541	0.626	0.707	0.748	0.809	0.848	0.885	0.924	0.949	0.983	1.010	1.072	1.120	1.135	1.181	1.232	1.347	1.419	1.489
Wards	Burn Wards	0.413	0.509	0.540	0.630	0.651	0.722	0.739	0.800	0.820	0.851	0.979	1.079	1.358	1.424	1.519	1.775	1.868	1.922	1.938
	Labor and Delivery Wards	0.189	0.328	0.402	0.475	0.555	0.636	0.689	0.759	0.817	0.885	0.952	1.027	1.128	1.242	1.341	1.467	1.683	1.981	2.465
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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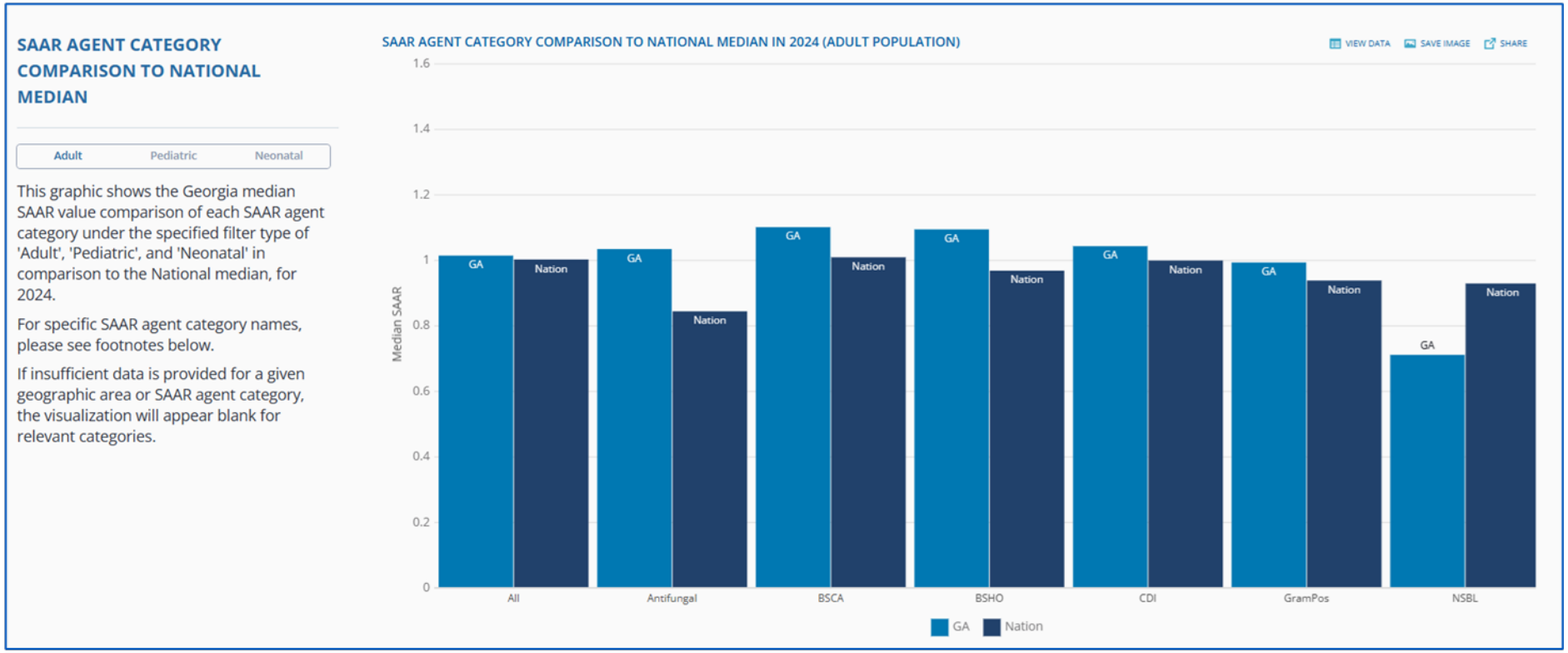
AU Data on the Antimicrobial Resistance & Patient Safety Portal

- Percent of eligible facilities reporting by SAAR category, population, and state
- Median SAAR values by SAAR category, population, and state (map & bar chart)



[Inpatient Antibiotic Use | A.R. & Patient Safety Portal]

Knowledge Check #3

Where can you find data to help you compare your SAAR values to other SAARs?

A. SAAR reports in NHSN
B. AU Option Data Reports
C. CDC's Antimicrobial Resistance & Patient Safety Portal
D. All the above

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Knowledge Check #3

Where can you find data to help you compare your SAAR values to other SAARs?

A. SAAR reports in NHSN

B. AU Option Data Reports

C. CDC's Antimicrobial Resistance & Patient Safety Portal

D. All of the above

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Scenario 2 – Presenting Your SAARs

Presenting Your SAARs

- Now that you understand your SAARs, consider presenting them to your hospital's antibiotic stewardship committee.

AI generated image

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Decision points when Deciding What to Present

- Which year of data should you present?
- Do you need to show differences between baselines?
  - Transition plan for 2023 baseline SAARs
- Which locations should you present?
  - How many more SAARs do you have now in 2023?
- How should data be grouped?
  - Location vs Location Groups
  - SAAR category
  - Specific SAARs

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Which Year(s) of Data to Present?

- When did your facility start submitting data?
  - 2023 baseline SAARs go back to January 2023.
  - If you submitted data prior to January 2023, we'd recommend switching to the 2023 baseline and updating your graphics to start with January 2023 moving forward.
- Have you done data quality checks?
  - Recommend displaying data you feel confident about.
  - If data are under review, be transparent.

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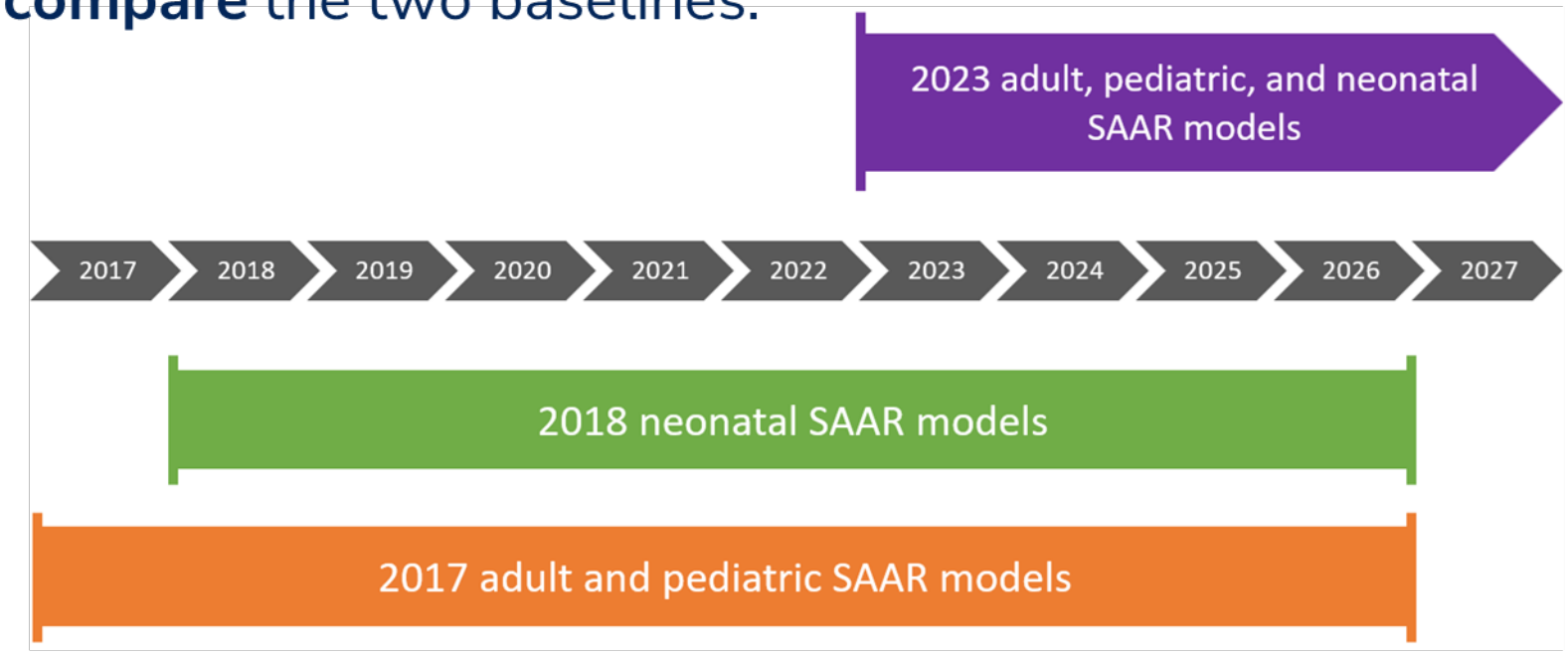
SAARs Available in NHSN

- NHSN will generate SAARs using two different baselines for 2023-2026 AU data.
- **We recommend moving to the 2023 baseline.**
- If you've been tracking/presenting using the 2017 baseline, keep in mind **do <u>not</u> compare** the two baselines.



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Do you need to show both baselines?

- If you've never presented data using the 2017/2018 baseline, move directly to the 2023 baseline.
- If you've been presenting 2017/2018 baseline data, consider your transition plan:
  - Show the same months of data using each baseline.
  - Move to only showing data using the 2023 baseline.

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Golden rule: Do not directly compare SAARs from different baselines

- The interpretation of the SAAR is:
  - The ratio of the antimicrobial days that your facility reported during the *analysis time period* and the number of antimicrobial days that would have been predicted in the *baseline year.*

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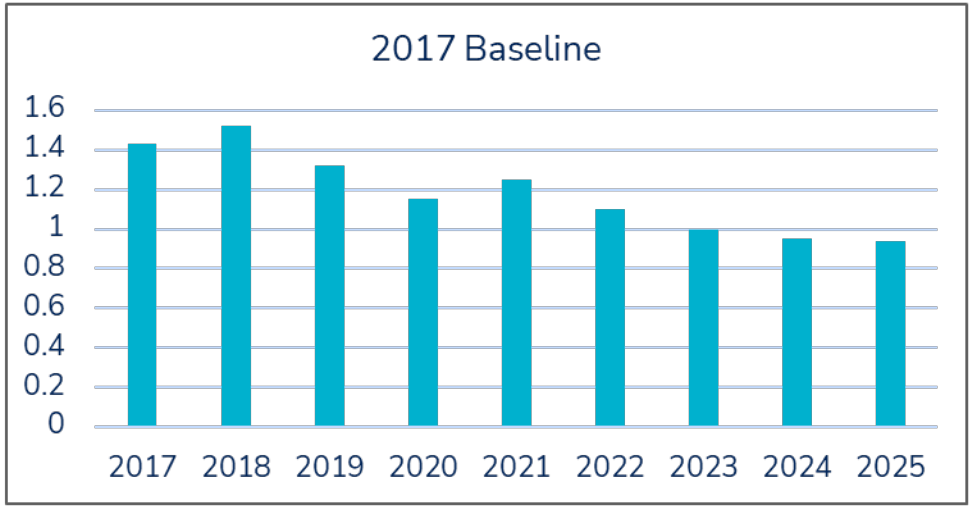
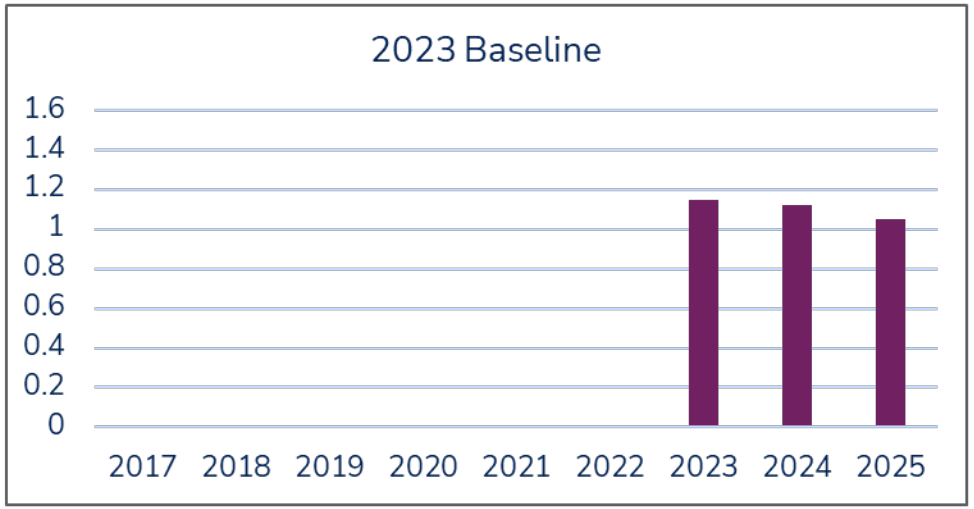
Analyzing SAARs from different baselines

- Your facility may want to look at SAARs under both baselines side-by-side.
  - Do not plot them together, as SAARs from different baselines *are not* comparable.

- The SAARs from the 2023 baseline must be interpreted under different context.
  - Clearly label SAARs with the baseline year.
  - No statistical testing between SAARs from different baselines should be conducted.





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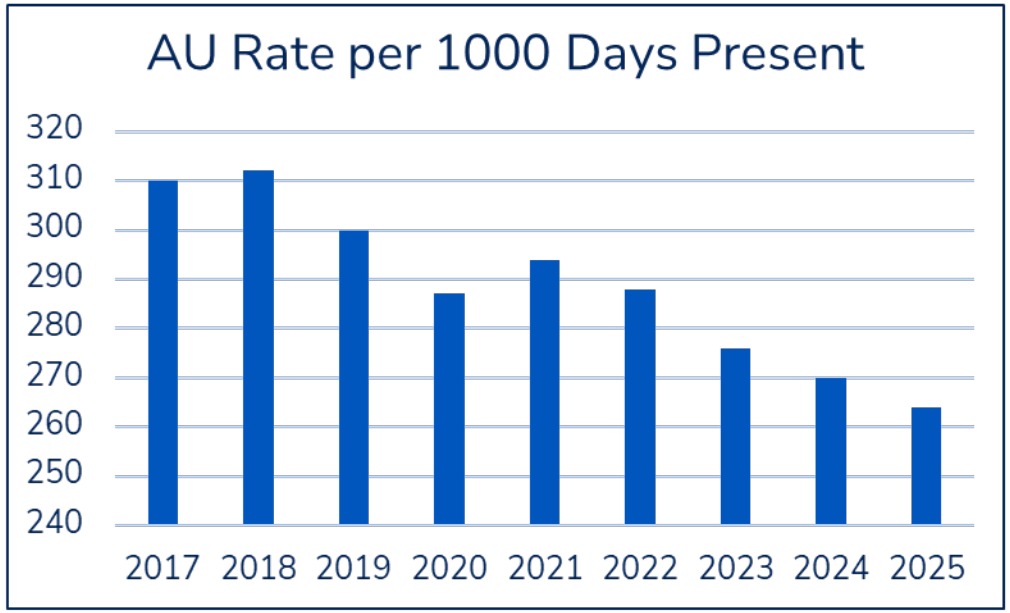
Use Observed Antimicrobial Days or AU Rate

- To show that a change in prescribing isn't what caused the SAARs to change, consider plotting the observed antimicrobial days or the AU rate.

$$\frac{Observed\ Antimicrobial\ Days}{Days\ Present} \times 1000 = AU\ Rate$$



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Knowledge Check #4

Which statements are true when reviewing baselines? (select all that apply)

A. Do not compare SAAR values from two different baselines in one graphic/figure.

B. It's okay to use a statistical test to compare SAAR values from two different baselines.

C. Use AU rates to look at trends in use.

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Which locations to present?

- With the 2023 baseline, 39 location types can generate SAAR.s
- Review which of your NHSN locations now receive a SAAR:
  - Hospital A: 40 bed general acute care hospital with two units mapped as Medical-Surgical Wards
    - No additional SAARs; both units were already able to generate SAARs under the 2017 baseline
  - Hospital B: 400 bed general acute care hospital with general & specialty ICUs and wards
    - 12 additional SAARs with specialty locations now able to generate SAARs in the 2023 baseline
  - Hospital C: 25 bed critical access hospital with one adult mixed acuity unit
    - SAARs now available for mixed acuity units

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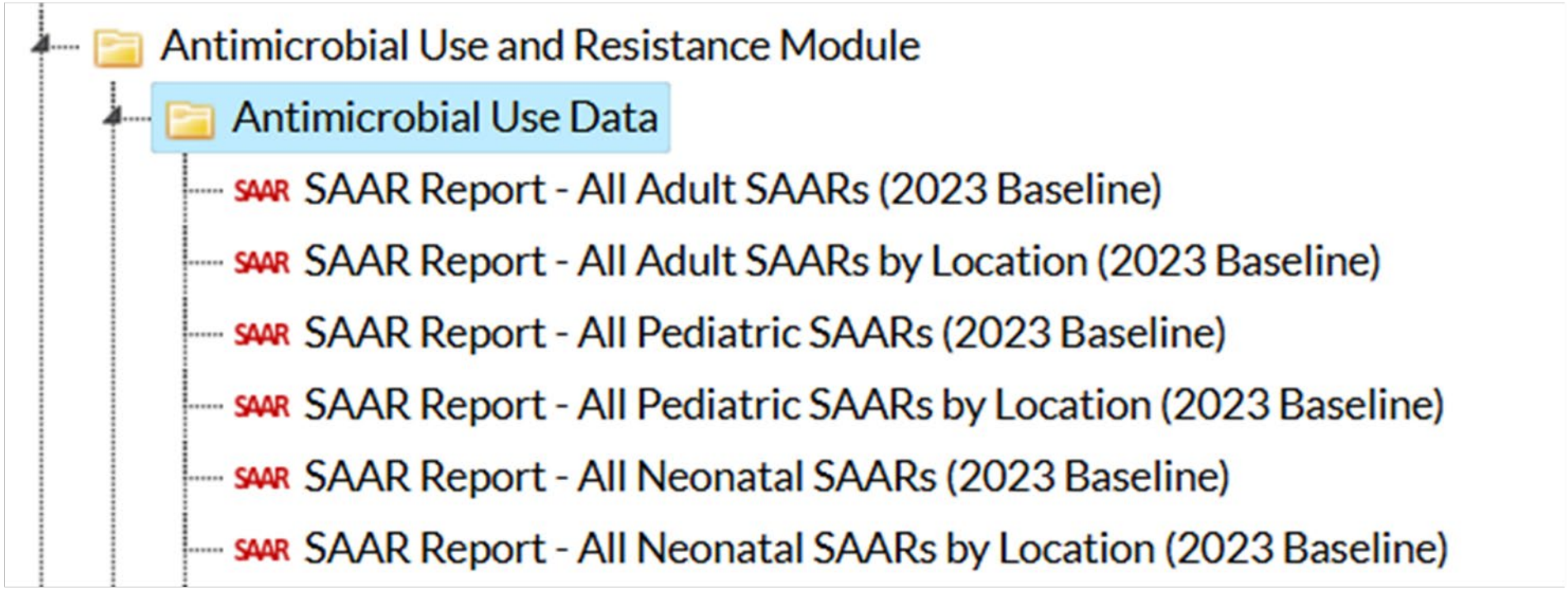
Two Types of 2023 Baseline SAAR Reports

- Two SAAR reports for each population (adult, pediatric & neonatal)



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Two Types of 2023 Baseline SAAR Reports Explained

- Location Group
  - SAARs for given locations rolled up into one SAAR per category/time period
  - Include **select** SAAR eligible location types
  - All Antibacterial SAAR in this report does **NOT** include all SAAR eligible locations
  - Location groups for general ICUs, general wards, and Step Down are identical to 2017 groupings
- Individual Location
  - SAARs for each individual SAAR eligible location per category/time period
  - Includes **all** SAAR eligible location types
  - All Antibacterial SAAR generated separately for all SAAR eligible location types
  - Includes SAAR percentiles

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Aggregate SAAR Reports: Adult Patient Care Location Groups

SAARTypeAdult2023 Code	Location Group	CDC Location(s) Included	Location Group Match for 2017 SAARs
Adult_All-Antibacterial_Select_2023	Select SAAR Locations	Only includes the 16 CDC Locations listed in this slide and the next	No match
Adult_BSHO_GeneralICU_2023	General ICUs	Medical Critical Care (IN:ACUTE:CC:M) Surgical Critical Care (IN:ACUTE:CC:S) Medical-Surgical Critical Care (IN:ACUTE:CC:MS)	Adult_BSHO_ICU_2017
Adult_BSHO_GeneralWard_2023	General Wards	Medical Ward (IN:ACUTE:WARD:M) Surgical Ward (IN:ACUTE:WARD:S) Medical-Surgical Ward (IN:ACUTE:WARD:MS)	Adult_BSHO_Ward_2017
Adult_BSHO_OB_2023	Obstetrics Wards	Labor and Delivery Ward (IN:ACUTE:WARD:LD) Labor, Delivery, Recovery, Postpartum Suite (IN:ACUTE:WARD:LD_PP) Postpartum Ward (IN:ACUTE:WARD:PP)	No match
Adult_BSHO_ORTHO_2023	Orthopedic Wards	Orthopedic Ward (IN:ACUTE:WARD:ORT) Orthopedic Trauma Ward (IN:ACUTE:WARD:T_ORT)	No match

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Aggregate SAAR Reports: Adult Patient Care Location Groups *Continued*

SAARTypeAdult2023 Code	Location Group	CDC Location(s) Included	Location Group Match for 2017 SAARs
Adult_BSHO_MixedAcuity_2023	Mixed Acuity Unit	Adult Mixed Acuity Unit (IN:ACUTE:MIXED:ALL_ADULT)	No match
Adult_BSHO_Step_2023	Step Down Unit	Adult Step Down Unit (IN:ACUTE:STEP)	Adult_BSHO_Step_2017
Adult_BSHO_SOTP_2023	Solid Organ Transplant Unit	Solid Organ Transplant Specialty Care Area (IN:ACUTE:SCA:SOTP)	No match
Adult_BSHO_ONC_2023	Oncology Units	Oncology General Hematology-Oncology Ward (IN:ACUTE:WARD:ONC_HONC) Oncology Hematopoietic Stem Cell Transplant Ward (IN:ACUTE:WARD:ONC_HSCT)	No match

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How should data be grouped – SAAR Category

- Pick a SAAR category (adult SAAR categories shown below):
  - Broad spectrum antibacterial agents predominantly used for hospital-onset infections
  - Broad spectrum antibacterial agents predominantly used for community-acquired infections
  - Antibacterial agents predominantly used for resistant gram-positive infections (e.g., methicillin-resistant Staphylococcus aureus [MRSA])
  - Narrow-spectrum beta-lactam agents
  - Antifungal agents predominantly used for invasive candidiasis
  - Antibacterial agents posing the highest risk for CDI
  - All antibacterial agents
- List the drugs in that category.
- Show the risk adjustment factors.

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How should data be grouped – Specific SAARs

- SAARs associated with ongoing projects/interventions
- SAARs significantly above 1.0
- SAARs higher than your state average (using AR PSP)
- SAARs above a certain percentile (using AU Data report)

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Tips for communicating changes to hospital leadership & committees

- A new National baseline using data from 2023 has been added for NHSN SAAR calculations to provide a more recent comparison benchmark.
  - 2023 was selected due to the larger number of hospitals reporting AU data across the country compared to 2017/2018.
  - 2023 risk models better reflect current antimicrobial use practices among a more diverse set of hospitals.
- SAARs created using the 2023 baseline may be higher than those created using the 2017/2018 baseline because SAARs have been recalibrated.
  - SAARs have been recalibrated based on 2023 national AU incidence, which for many SAAR types, is lower than incidence in 2017/2018.
  - This can result in lower predicted values (SAAR denominator).
- SAARs from the 2023 baseline should not be compared to those from the 2017/2018 baselines.

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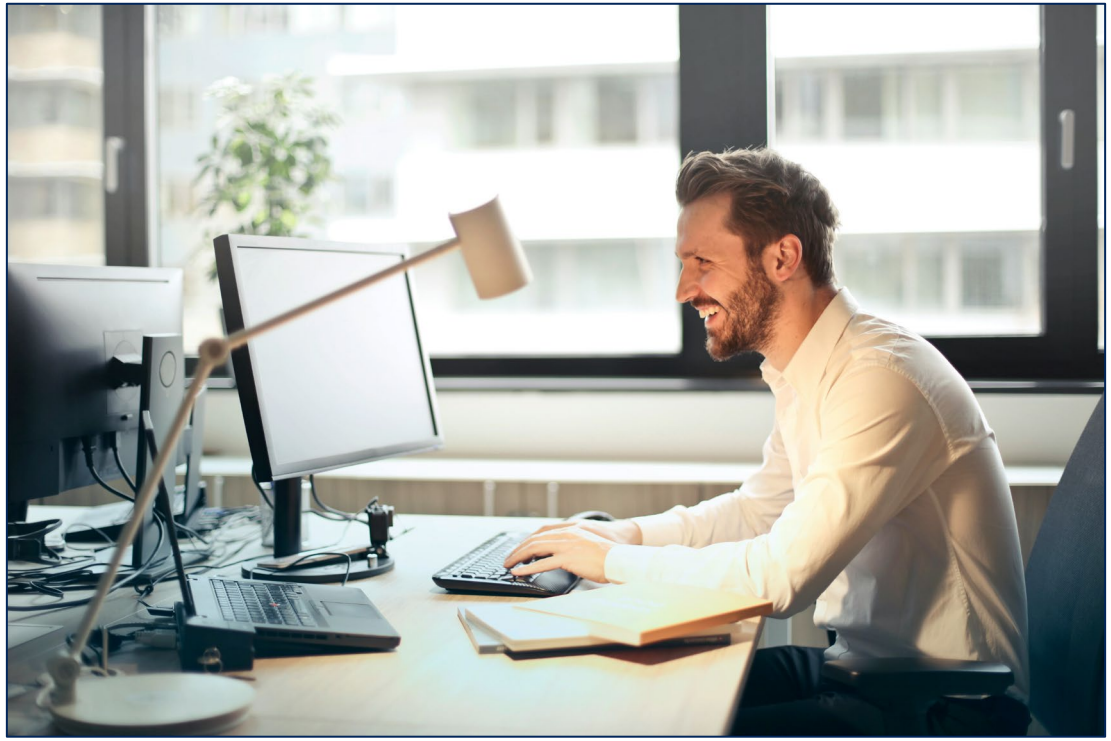
Scenario 3 – Producing & Distributing Your SAARs

Producing SAAR Reports for Member Hospitals

- If you're an antibiotic steward at a Health Department or Health System and you've been producing and distributing SAARs (e.g., reports, dashboards) to member hospitals, you'll want to think about what updates your materials will need.



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Reviewing additional SAAR data

- Generate new data sets to pull additional SAARs.
- With the 2023 baseline, 39 location types can generate SAARs.
- Within your hospitals, you may see additional units with SAARs.
  - For example, obstetrics, orthopedics, cardiothoracic, oncology locations, etc.
- Hospitals previously not having any SAARs, may now be able to generate SAARs.
  - For example, critical access hospitals with only NHSN location mapped as adult mixed acuity unit.

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Facility Types that can Generate 2023 Baseline SAAR Reports*

Facility type	Which 2023 baseline SAAR reports are available?
Critical access hospital (HOSP-CAH)	Adult
Children's hospital (HOSP-CHLD)	Adult, Pediatric, Neonatal
General acute care hospital (HOSP-GEN)	Adult, Pediatric, Neonatal
Military hospital (HOSP-MIL)	Adult, Pediatric, Neonatal
Oncology hospital (HOSP-ONC)	Adult
Orthopedic hospital (HOSP-ORTHO)	Adult
Psychiatric hospital (HOSP-PYSCH)	Adult
Surgical hospital (HOSP-SURG)	Adult, Neonatal
Veterans Affairs hospital (HOSP-VA)	Adult
Women's hospital (HOSP-WOM)	Adult, Neonatal
Women/Children's hospital (HOSP-WOMCHILD)	Adult, Pediatric, Neonatal

*Your NHSN Group-level SAARs depend on which facilities are sharing data with the group

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Best practices when presenting

- Ensure the graphic/figure includes:
  - Which baseline is used
  - Which SAAR category is displayed
  - Which population (adult, pediatric, neonatal) is shown
  - Which location/location groups are included
  - Time period of data
  - If showing AU rates, list the denominator (e.g., days present, admissions).
- Don’t show SAAR values from two different baselines in the same graphic/figure.

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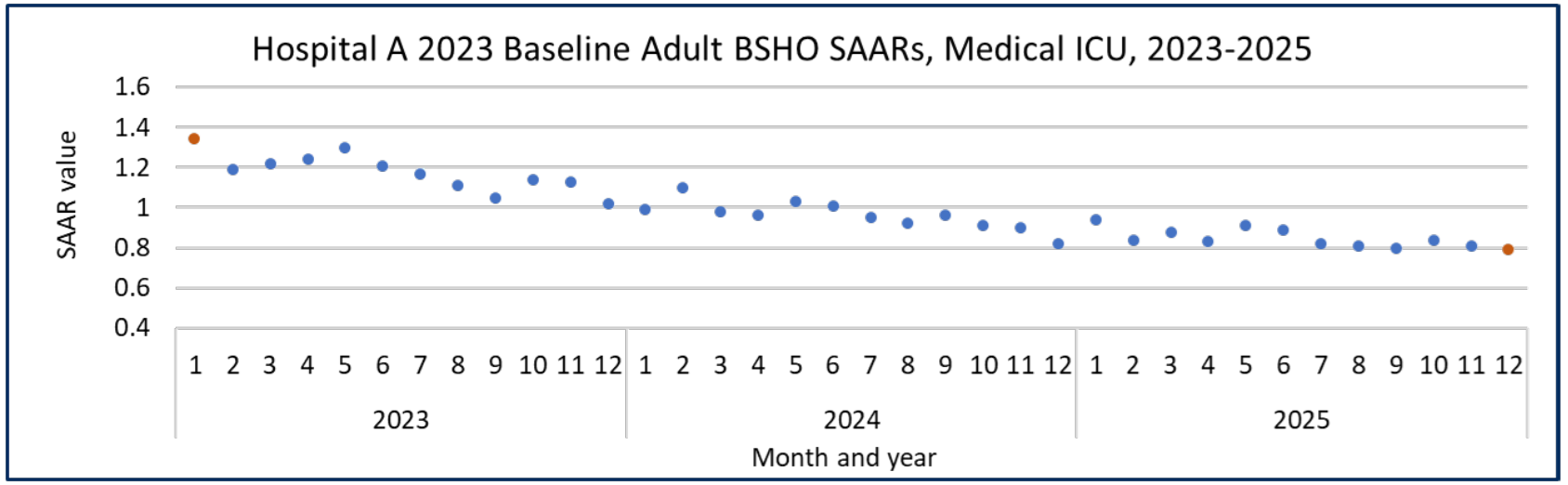
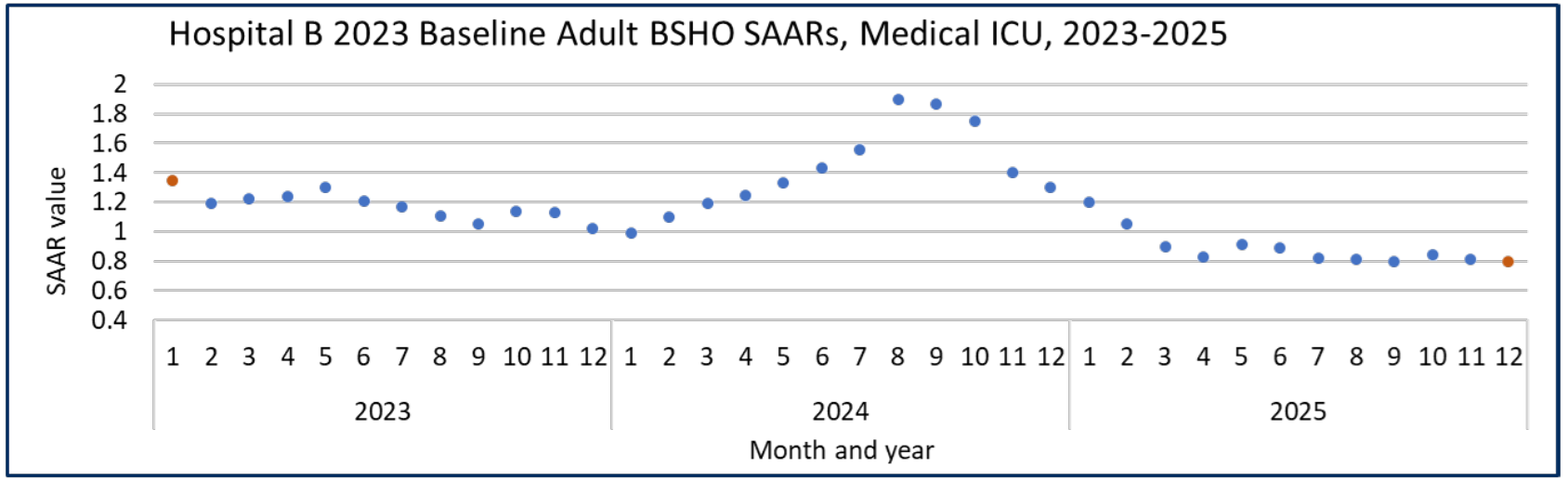
Comparing SAARs over time within the same baseline

- **Do** compare two SAARs at a time.
- **Don't** use multiple SAARs for a trend analysis.
- **Do** use rates for reviewing use over time.





Please note that all the data presented on this slide is fictious and not actual facility data.

Update comparison data

- If using median SAAR value from AU Data Report or CDC's Antimicrobial Resistance & Patient Safety Portal, remember to pull updated value using the new 2023 baseline.
  - Antimicrobial Use and Resistance (AUR) Module Reports | NHSN | CDC
  - A.R. & Patient Safety Portal

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Transitioning to the 2023 Baseline

- Consider a transition period where final analyses and conclusions based on 2017/2018 baseline data are finalized and the new 2023 baseline data is introduced.
  - Remember: data from two different baselines should not be displayed together in a single graph/plot.
- After the transition period, all items should use the 2023 baseline.
- Consider providing advance notice of your plans/timeline to member hospitals.

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Using TAS Framework and setting SAAR Targets

- AU Option Targeted Assessment for Antimicrobial Stewardship (TAS) framework helps stewards set SAAR targets for changing AU.
- If you've set SAAR targets using 2017 baseline, you'll need to assess the 2023 baseline values and potentially update your SAAR target.
- Use the AU Data Report and AR&PSP to know where your 2023 baseline SAARs are located among others in the state and national distribution to set informed SAAR targets.

TAS reports in NHSN are not yet updated with 2023 baseline data
AUR Training | PSC | NHSN | CDC

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Knowledge Check #5

Which items should be included when presenting your SAAR values? (select all that apply)

A. Version of the NHSN application used to generate the SAARs
B. SAAR baseline year
C. SAAR category
D. Population, location, and/or location group
E. Time period of data

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Knowledge Check #5

Which items should be included when presenting your SAAR values? (select all that apply)

A. Version of the NHSN application used to generate the SAARs

B. SAAR baseline year

C. SAAR category

D. Population, location, and/or location group

E. Time period of data

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Next Steps & Resources

What happens next?

- We anticipate the first group of new SAAR reports to be available in NHSN in the coming months.
- Additional trainings and educational resources will be available:
  - Webinars to present new/updated reports
  - New version of NHSN's Guide to the SAAR
  - New reference guides and toolkits, including talking points for NHSN users to help explain the Rebaseline to leadership
  - Additional resources and website updates
- Stay tuned for emails from the NHSN Team with more information.

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Bookmark This!
SAAR Rebaseline Resources

- NHSN AU SAAR Rebaseline webpage and resources – 2023 AU SAAR Rebaseline | NHSN |CDC
- This page will contain links to the following:
  - How will my SAARs change? Webinar slides
  - NHSN SAAR Guide under the 2023 Baseline
  - What is the SAAR Rebaseline and Why is it Important
  - Talking points for Pharmacists, Physicians, & Healthcare Staff when speaking to Hospital Leadership
  - Talking points for Organizations & Health Departments
- Resources will be posted on a rolling basis
- Additional SAAR resources to be updated: Keys to Success with the SAAR and quick reference guides

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SAAR Rebaseline Webpage

Refer to the resources below for additional information, FAQs, and training materials. The NHSN team remains committed to working with facilities to advance antimicrobial stewardship. Measuring progress under an updated national standard is important in evaluating prescribing practices and identifying opportunities for stewardship. The newly baselined data will continue to drive patient safety and the effort to optimize antimicrobial use.

Note 3 tabs

Education & Analysis Resources | Understanding New Models | Using New Reports in NHSN

Content Type	Title	Description
Recorded Webinar	How will my SAARs change? Understanding the impact of the 2023 SAAR Rebaseline [PDF – 1,006 KB]	A presentation that explains the impact of the 2023 SAAR baseline and provides guidance for the analysis and interpretation of SAARs under different baselines. Designed for users of NHSN AU SAAR data looking to understand how SAARs may change when the new baseline is implemented.

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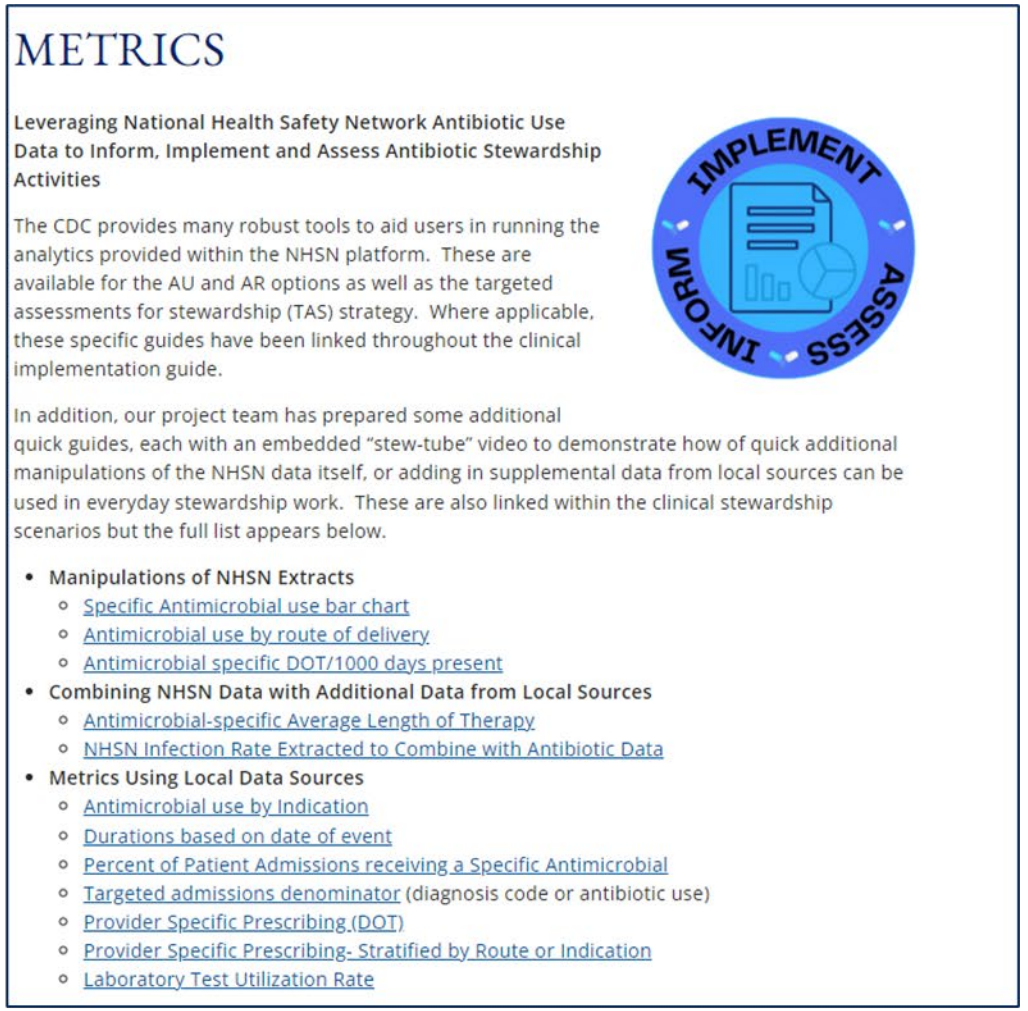
AU Resources

- CDC funded DASON to develop resources leveraging NHSN AU data to inform, implement and assess antibiotic stewardship activities.

- Video guides that demonstrate manipulation of AU data for different clinical scenarios.



METRICS

Leveraging National Health Safety Network Antibiotic Use Data to Inform, Implement and Assess Antibiotic Stewardship Activities

The CDC provides many robust tools to aid users in running the analytics provided within the NHSN platform. These are available for the AU and AR options as well as the targeted assessments for stewardship (TAS) strategy. Where applicable, these specific guides have been linked throughout the clinical implementation guide.

In addition, our project team has prepared some additional quick guides, each with an embedded "stew-tube" video to demonstrate how of quick additional manipulations of the NHSN data itself, or adding in supplemental data from local sources can be used in everyday stewardship work. These are also linked within the clinical stewardship scenarios but the full list appears below.

- **Manipulations of NHSN Extracts**
  - Specific Antimicrobial use bar chart
  - Antimicrobial use by route of delivery
  - Antimicrobial specific DOT/1000 days present
- **Combining NHSN Data with Additional Data from Local Sources**
  - Antimicrobial-specific Average Length of Therapy
  - NHSN Infection Rate Extracted to Combine with Antibiotic Data
- **Metrics Using Local Data Sources**
  - Antimicrobial use by Indication
  - Durations based on date of event
  - Percent of Patient Admissions receiving a Specific Antimicrobial
  - Targeted admissions denominator (diagnosis code or antibiotic use)
  - Provider Specific Prescribing (DOT)
  - Provider Specific Prescribing- Stratified by Route or Indication
  - Laboratory Test Utilization Rate

METRICS | Duke Antimicrobial Stewardship Outreach Network (DASON) accessed Nov 12, 2024

This work was funded by Centers for Disease Control & Prevention (CDC) Safety and Healthcare Epidemiology Prevention Research Development (SHEPheRD) Program- Contract 2022 Domain 1-A001.

QUESTIONS?

Thank you.

For any questions or concerns, contact the NHSN Helpdesk.

- **NHSN-ServiceNow** to submit questions to the NHSN Help Desk.
- Access new portal at **https://servicedesk.cdc.gov/nhsncsp**.
- If you do not have a SAMS login, or are unable to access ServiceNow, you can still email the NHSN Help Desk at nhsn@cdc.gov.

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 https://www.cdc.gov/
Follow us on social **@CDCgov**

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the U. S. Centers for Disease Control and Prevention.