



Using NHSN Antimicrobial Use Data in Your Hospital

2024 Nebraska Antimicrobial Stewardship Summit
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Disclosures

Nothing to disclose

Outline

- Summarize the metrics available to hospitals within the National Healthcare Safety Network (NHSN) AU Option.
- Describe resources for using NHSN AU data for action



The Core Elements of Hospital Antibiotic Stewardship Programs: 2019



Centers for Disease
Control and Prevention
National Center for Emerging and
Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

Core Elements of Hospital Antibiotic Stewardship Programs



Hospital Leadership Commitment

Dedicate necessary human, financial, and information technology resources.



Accountability

Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.



Pharmacy Expertise (previously “Drug Expertise”):

Appoint a pharmacist, ideally as the co-leader of the stewardship program, to help lead implementation efforts to improve antibiotic use.



Action

Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.



Tracking

Monitor antibiotic prescribing, impact of interventions, and other important outcomes, like *C. difficile* infections and resistance patterns.



Reporting

Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.



Education

Educate prescribers, pharmacists, nurses, and patients about adverse reactions from antibiotics, antibiotic resistance, and optimal prescribing.

CDC released *Priorities* to enhance the quality and impact of hospital antibiotic stewardship programs

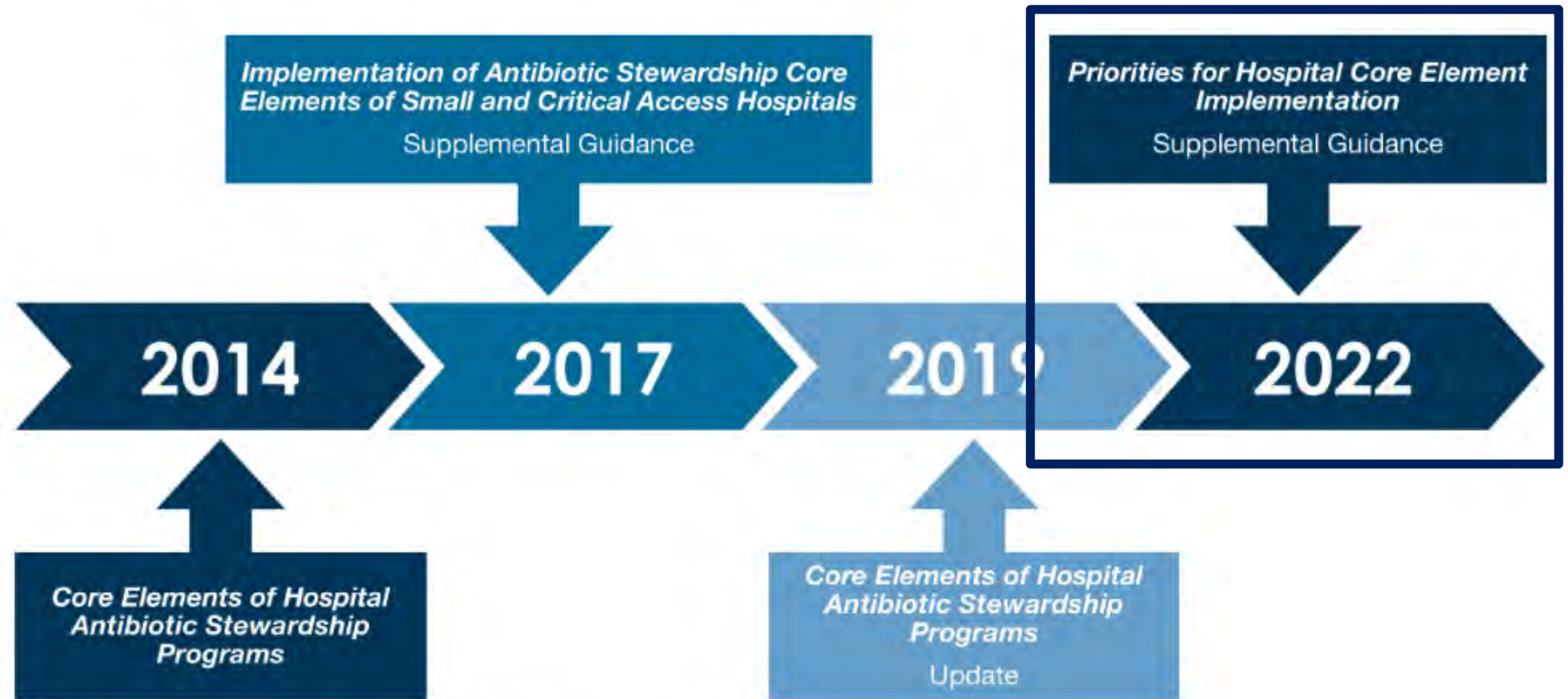


Figure. Timeline of Core Elements of Hospital Antibiotic Stewardship Programs

Priorities are derived from the Hospital Core Elements

- Highlight a **subset** of effective stewardship implementation approaches that are supported by evidence and/or recommended by stewardship experts.
- The Priority tracking element is submitting AU data to the **NHSN Antimicrobial Use Option**

Hospital Core Elements	Priorities for Hospital Core Element Implementation
Hospital Leadership Commitment  Dedicate necessary human, financial, and information technology resources.	Antibiotic stewardship physician and/or pharmacist leader(s) have antibiotic stewardship responsibilities in their contract, job description, or performance review.
Accountability  Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.	Antibiotic stewardship program is co-led by a physician and pharmacist.*
Pharmacy/Stewardship Expertise  Appoint a pharmacist, ideally as the co-leader of the stewardship program, to help lead implementation efforts to improve antibiotic use.	Antibiotic stewardship physician and/or pharmacist leader(s) have completed infectious diseases specialty training, a certificate program, or other training on antibiotic stewardship.
Action  Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.	Antibiotic stewardship program has facility-specific treatment recommendations for common clinical condition(s) and performs prospective audit/feedback or preauthorization.
Tracking  Monitor antibiotic prescribing, impact of interventions, and other important outcomes, like <i>C. difficile</i> infections and resistance patterns.	Hospital submits antibiotic use data to the NHSN Antimicrobial Use Option.
Reporting  Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.	Antibiotic use reports are provided at least annually to target feedback to prescribers. In addition, the antibiotic stewardship program monitors adherence to facility-specific treatment recommendations for at least one common clinical condition.
Education  Educate prescribers, pharmacists, nurses, and patients about adverse reactions from antibiotics, antibiotic resistance, and optimal prescribing.	No implementation priority identified.

National Healthcare Safety Network (NHSN):

CDC's domestic tracking and response system to identify emerging and enduring threats across healthcare

Surveillance Program with risk-adjusted, national benchmarking of:

- Healthcare-associated infections (HAIs) and conditions
- Patient-safety events
- **Antimicrobial use and resistance (AUR)**
- Vaccination of healthcare personnel
- Emerging pathogens and diseases
 - E.g., COVID-19, Influenza
- All hazards preparedness & bed capacity



**Data for action
& accountability**

NHSN AUR Module

- **Purpose:** mechanism for facilities to report and analyze AU and/or AR data
 - Inform benchmarking
 - Reduce AR infections through antibiotic stewardship
 - Interrupt transmission of AR present & admissions

- AU Option
 - Numerator: antimicrobial days (aka days of therapy)
 - Denominators: days present & admissions

- AR Option
 - Numerator: isolate level susceptibility results
 - Denominator: patient days, admissions & encounters

AUR Module data are required in CY 2024

- Beginning in **CY 2024**, AUR Module data are required under the Public Health and Clinical Data Exchange Objective of the CMS PI Program
- Applies to eligible hospitals and critical access hospitals that participate in the CMS PI Program
- **Measure includes submission of both AU and AR Option data**
- For CY 2024 facilities attest to either:
 - Being in active engagement with NHSN to submit AUR data or,
 - Claim an applicable exclusion

NHSN AU Option

- Data Collection: Electronic capture and aggregation to the month and location level and the facility-wide inpatient level
 - Electronic Medication Administration Record [eMAR]/Bar-Coding Medication Administration Record [BCMA] eMAR/BCMA
 - Antimicrobial days (Days of Therapy) – sum of days for which any amount of specific agent was administered to a patient
 - Admission, Discharge, Transfer (ADT) systems
 - Days Present – number of days during which a patient spent any time in specific unit or facility
 - Admissions – number of patients admitted to an inpatient location in the facility

Standardized Antimicrobial Administration Ratio (SAAR)

- Standardized AU metric
- Ratio comparing observed (or reported) to predicted AU by a referent (or baseline) population

$$SAAR = \frac{\textit{Observed antimicrobial days}}{\textit{Predicted antimicrobial days}}$$

- Compares AU within and across facilities to guide antimicrobial stewardship efforts

SAAR by Location Report — Output

National Healthcare Safety Network

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

As of: February 11, 2022 at 8:37 PM

Date Range: AU_SAAR_2017 summaryYr 2021 to 2021

if (((location = "MEDWARD"))

All Antibacterial Agents used in adult SAAR ICUs, wards, step down units and oncology units

Facility Org ID	SAAR Type 2017 Baseline	Location	Summary Year/Month	CDC Location	Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR	SAAR p-value	95% Confidence Interval	SAAR Percentile
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M01	IN:ACUTE:WARD:M	632	1222.111	2009	0.517	0.0000	0.478, 0.559	7
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M02	IN:ACUTE:WARD:M	704	1181.961	1943	0.596	0.0000	0.553, 0.641	10
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M03	IN:ACUTE:WARD:M	495	557.219	916	0.888	0.0079	0.813, 0.969	35
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M04	IN:ACUTE:WARD:M	569	577.902	950	0.985	0.7313	0.906, 1.068	48
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M05	IN:ACUTE:WARD:M	579	480.570	790	1.205	0.0000	1.110, 1.306	82
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M06	IN:ACUTE:WARD:M	553	671.581	1104	0.823	0.0000	0.757, 0.894	25
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M07	IN:ACUTE:WARD:M	675	820.619	1349	0.823	0.0000	0.762, 0.886	25
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M08	IN:ACUTE:WARD:M	521	526.802	866	0.989	0.8227	0.907, 1.077	49
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M09	IN:ACUTE:WARD:M	670	564.519	928	1.187	0.0000	1.099, 1.279	80
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M10	IN:ACUTE:WARD:M	537	934.984	1537	0.574	0.0000	0.527, 0.624	9
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M11	IN:ACUTE:WARD:M	671	1068.814	1757	0.628	0.0000	0.582, 0.677	11
33617	Adult_All-Antibacterial_2017	MEDWARD	2021M12	IN:ACUTE:WARD:M	671	889.969	1463	0.754	0.0000	0.699, 0.813	18

Any reported use of Colistin will be combined with and reported as Colistimethate. Any reported use of Amikacin Liposomal will be combined with and reported as Amikacin.

Includes data for January 2017 and forward.

The SAAR is only calculated if the number of predicted antimicrobial days (numAUDaysPredicted) is >=1.

If antimicrobial days exceed days present for any SAAR categories except the All Antibacterial SAAR, a SAAR will not be calculated and data should be validated for accuracy.

Data restricted to medical, medical-surgical, surgical, step down and oncology locations.

The SAAR percentile is not shown if the SAAR is not shown, nor is it shown for pediatric medical ICUs or pediatric surgical wards where the aggregate sample size was too small for analysis (<20).

Source of aggregate data: 2017 NHSN AU Data

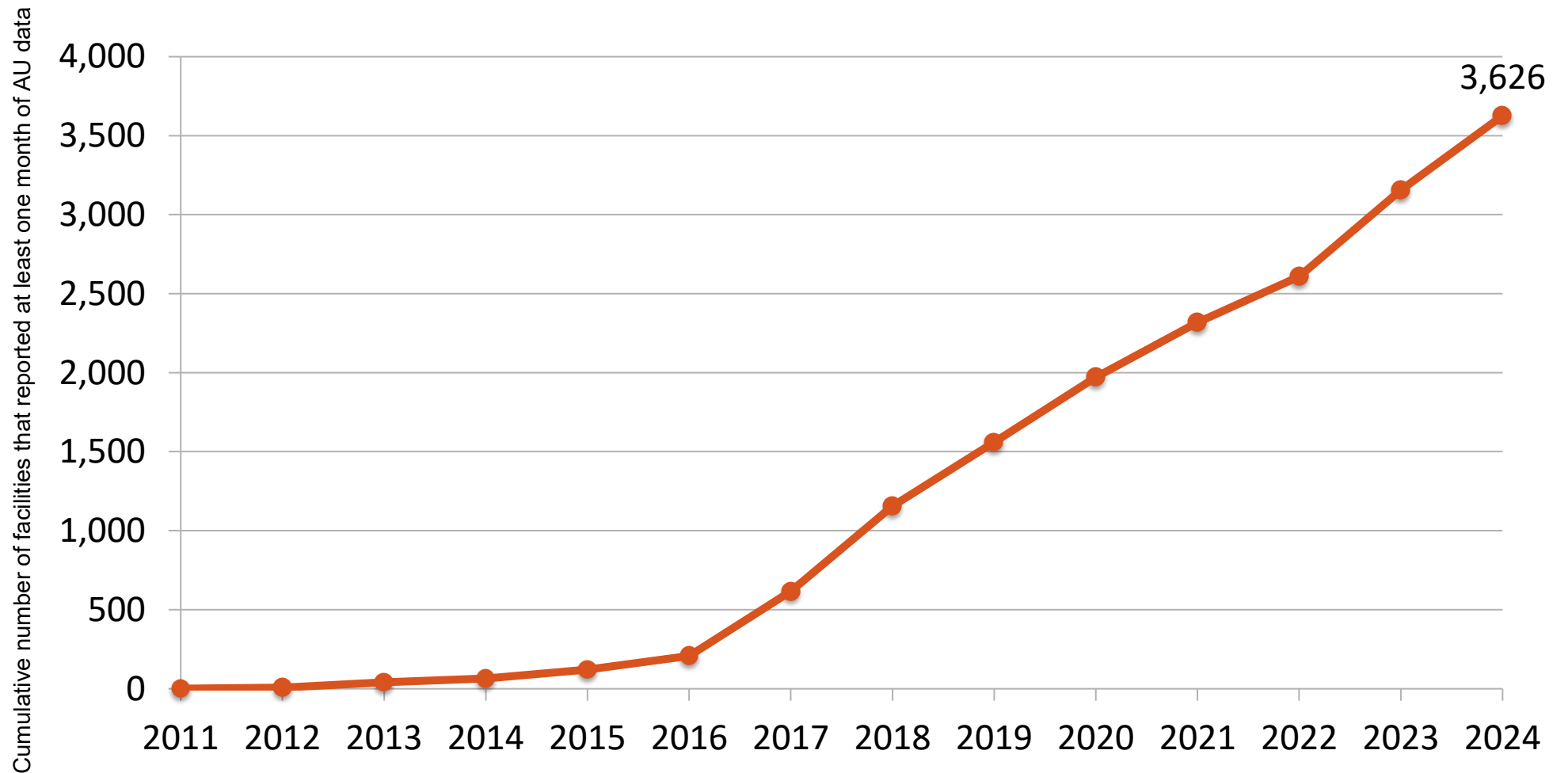
Source of Percentile Distribution for 2017 NHSN All Location Report: https://www.cdc.gov/nhsn/data-reports/2017/AU_Report_503.pdf

Note: Data are fictitious and for example only

SAAR Limitations

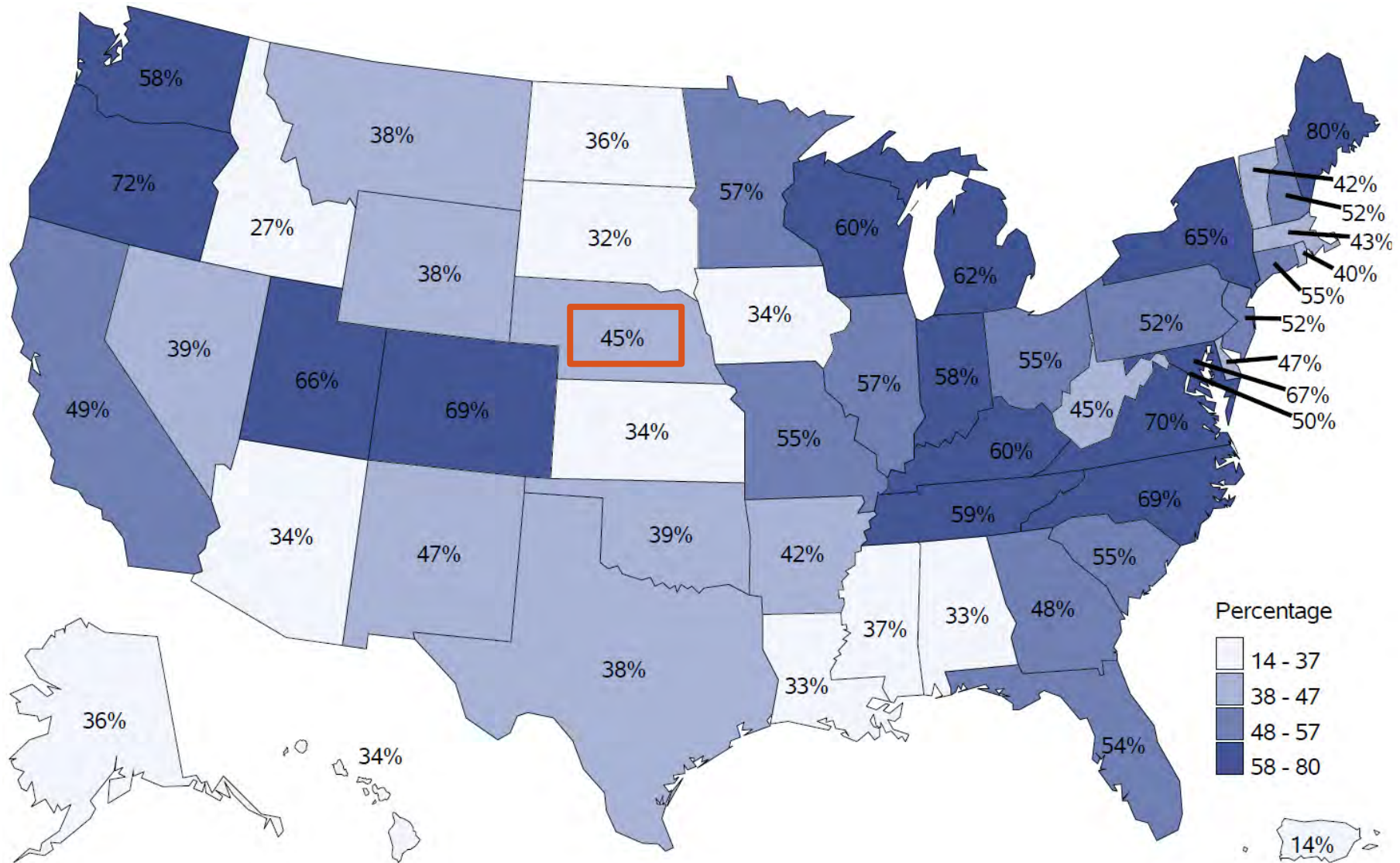
- No patient level data
 - Unable to use indication
 - No patient-level risk factors
- Facility-level information used for risk adjustment
- 2017 Baseline included only those hospitals submitting AU data at the time
 - SAAR re-baselining with 2023 data

Cumulative annual submission to the AU Option*



*As of May 1, 2024

Cumulative percentage of facilities reporting at least one month of data to the AU Option*

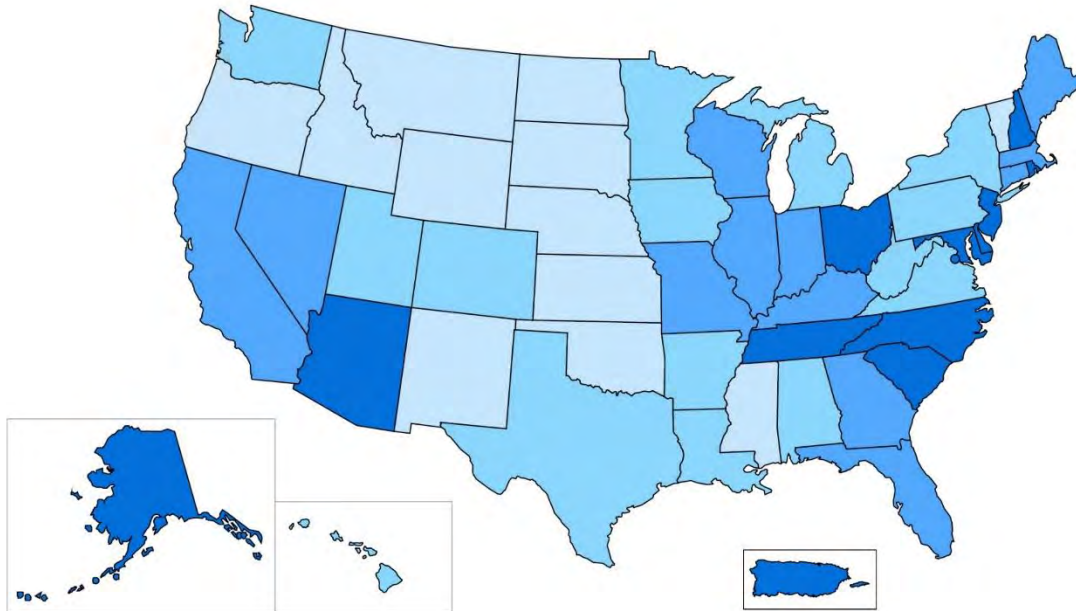


*As of May 1, 2024

Antibiotic Resistance & Patient Safety Portal



**BE
ANTIBIOTICS
AWARE**
SMART USE, BEST CARE



Explore and Visualize Data on
Antibiotic Use and Stewardship

For more information, visit www.cdc.gov/antibiotic-use or call **1-800-CDC-INFO**.



CS335177-A

Antibiotic Use & Stewardship



Antibiotic Use & Stewardship

Antibiotic Use

Antibiotic Stewardship Core Elements

These data reflect antibiotic use data from inpatient facilities enrolled in the NHSN's Patient Safety Component Antimicrobial Use and Resistance (AUR) Module Antimicrobial Use (AU) Option and oral antibiotic prescriptions dispensed to humans in US outpatient pharmacies during 2019-2021.

Hospital AU

NHSN AU Option Standardized Antimicrobial Administration Ratio (SAAR)



Inpatient Antibiotic Use

The Standardized Antimicrobial Administration Ratio (SAAR) is a risk-adjusted summary measure of antimicrobial use available to acute care hospitals participating in the National Healthcare Safety Network (NHSN) Antimicrobial Use (AU) Option. Hospitals can use the SAAR to track AU, compare their AU to a national benchmark, and assess the impact of interventions aimed at improving prescribing practices.

DATA SOURCE

NATIONAL HEALTHCARE SAFETY NETWORK (NHSN)

YEARS INCLUDED

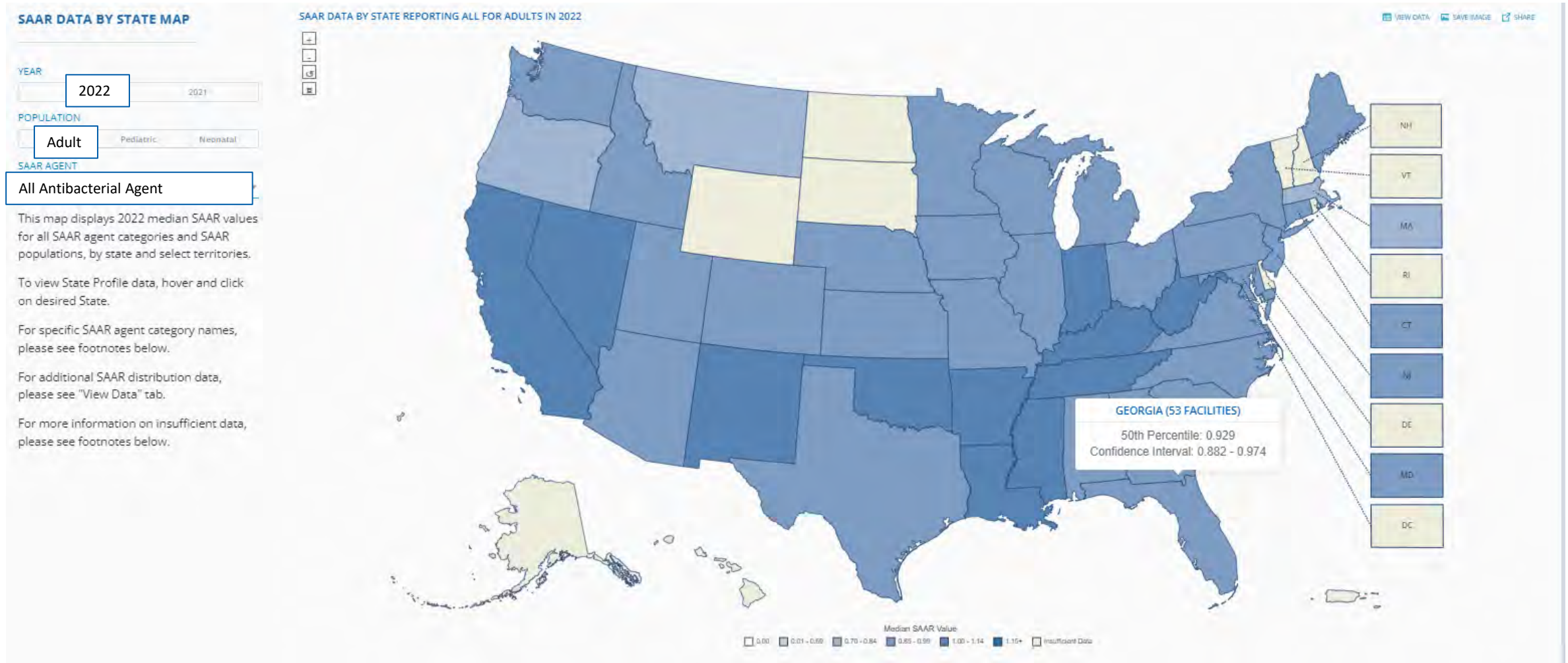
(2021 - 2022)

RESOURCES

- NHSN Antimicrobial Use Report
- AUR Module Protocol

Hospital AU

Median SAAR values in 2022 for all agent category for adult population



Nebraska State Profile

SAAR AGENT CATEGORY COMPARISON TO NATIONAL MEDIAN

2022

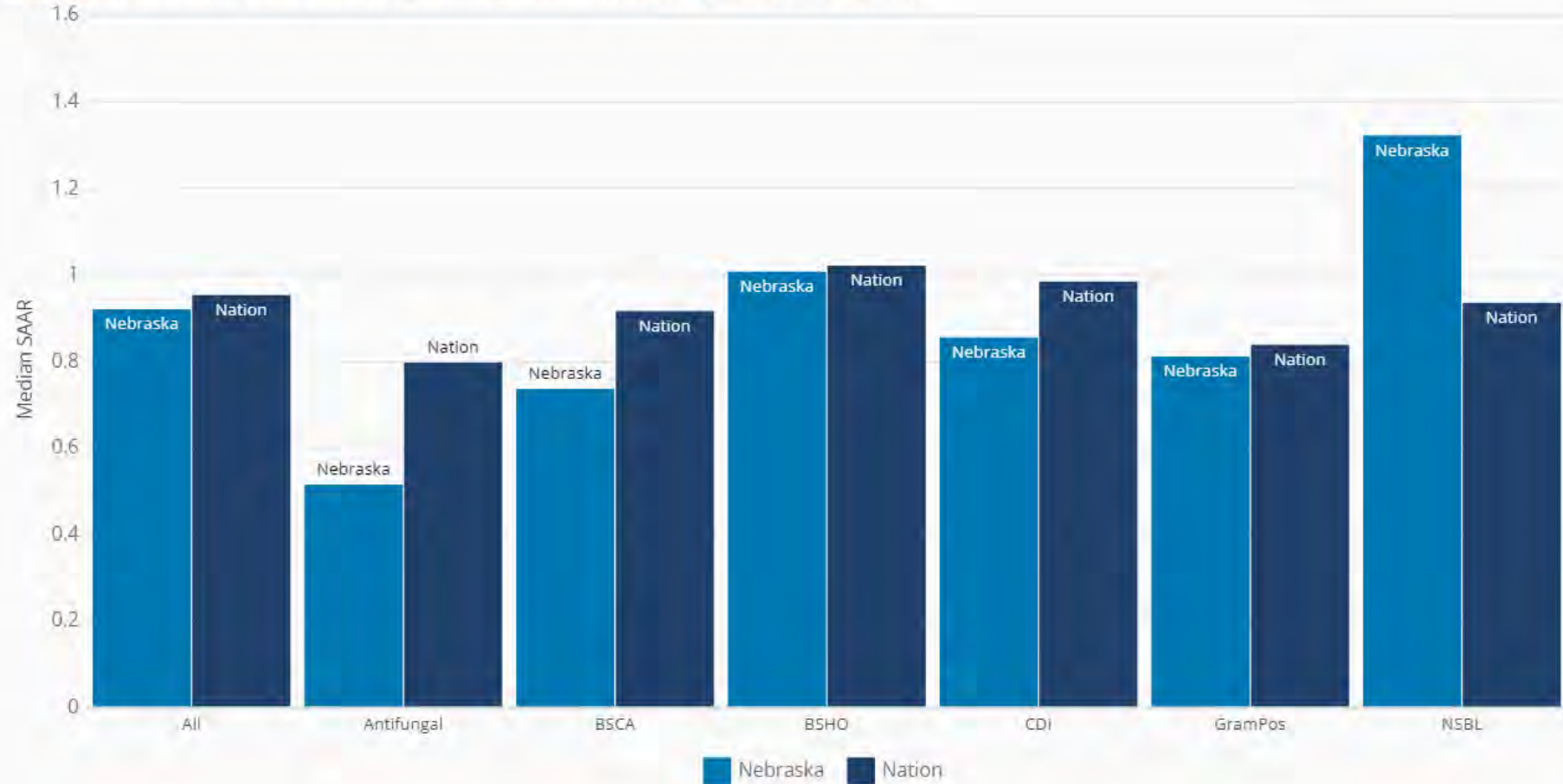
2021

This graphic shows the Nebraska median SAAR value comparison of each SAAR agent category under the specified filter type of 'Adult', 'Pediatric', and 'Neonatal' in comparison to the National median, for 2022.

For specific SAAR agent category names, please see footnotes below.

If insufficient data is provided for a given geographic area or SAAR agent category, the visualization will appear blank for relevant categories.

SAAR AGENT CATEGORY COMPARISON TO NATIONAL MEDIAN IN 2022 (ADULT POPULATION)



Nebraska State Profile

SAAR AGENT CATEGORY COMPARISON TO NATIONAL MEDIAN

2022

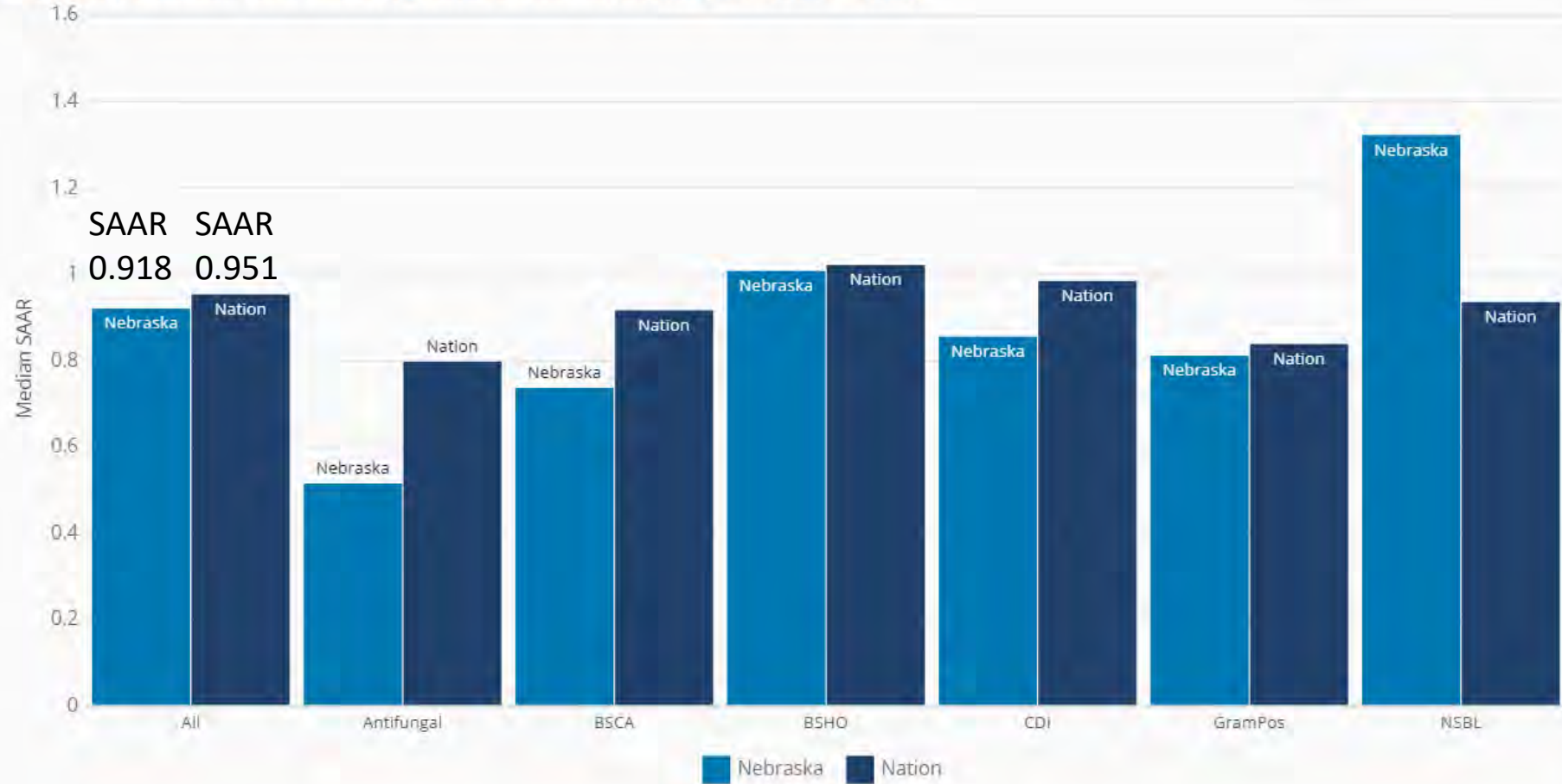
2021

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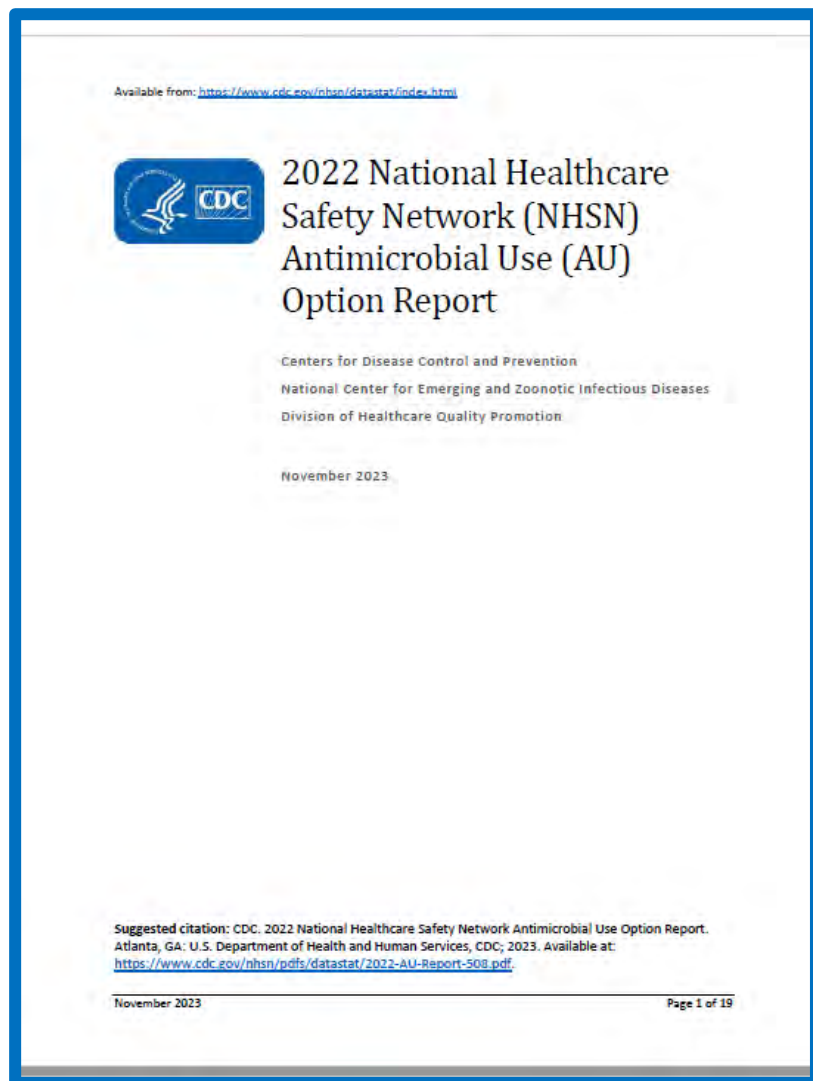
If insufficient data is provided for a given geographic area or SAAR agent category, the visualization will appear blank for relevant categories.

SAAR AGENT CATEGORY COMPARISON TO NATIONAL MEDIAN IN 2022 (ADULT POPULATION)



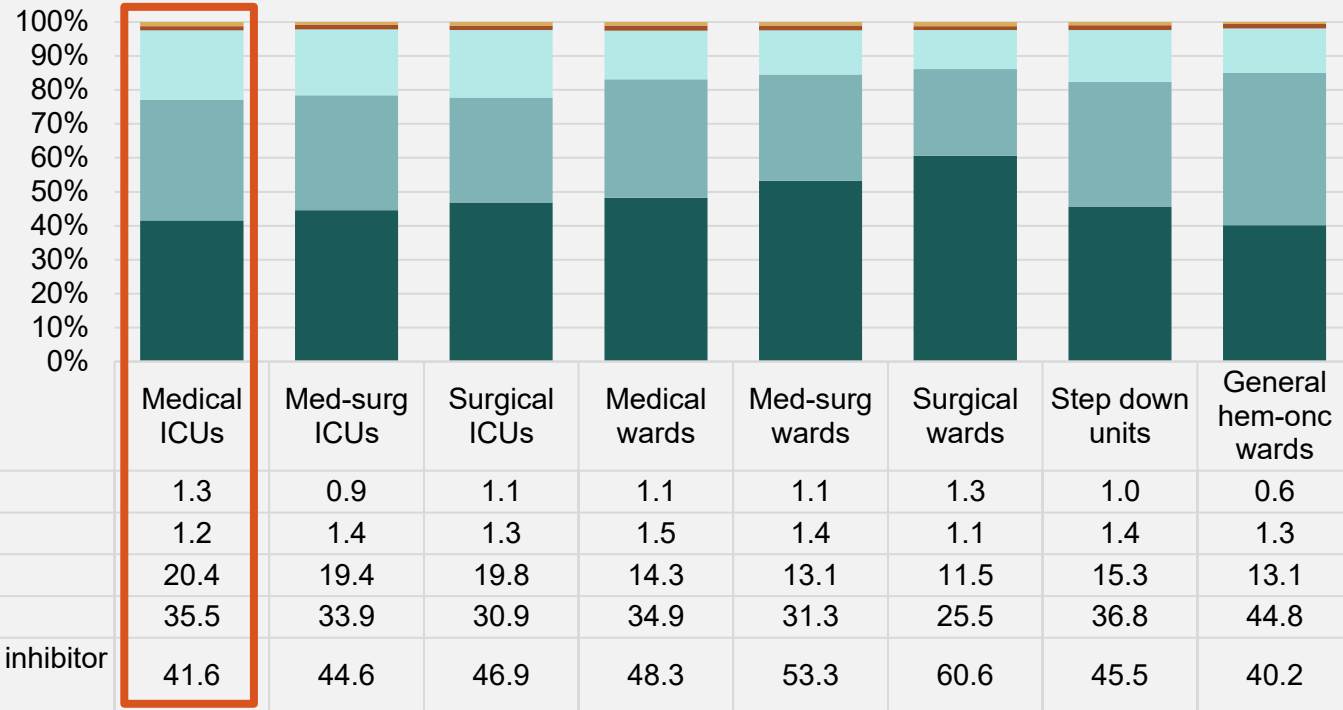
Resources for Using AU Data for Action

2022 NHSN AU Option Report



- Summary of **SAAR distribution** and **percentages of use** within SAAR antimicrobial agent categories in adult, pediatric, and neonatal patient care locations.
- **Inform stewardship efforts** by showing hospitals how their SAARs compare to national or state distributions.

Adult broad spectrum antibacterial agents predominantly used for hospital-onset infections: Percentage of agent use by antimicrobial class and location type

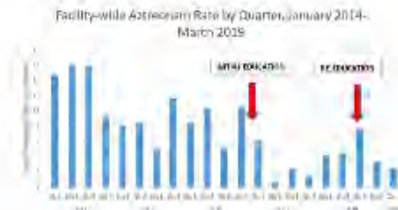


Adult SAAR location type (n) ¹	Antimicrobial ²	Antimicrobial Class	Antimicrobial Subclass	Pooled antimicrobial days	Percentage of antimicrobial days
Medical ICUs (n=499)	Piperacillin/Tazobactam	B lactam/B lactamase inhibitor combination		371,009	41.6
	Cefepime	Cephalosporins	Cephalosporin 4th generation	307,672	34.5
	Meropenem	Carbapenems		179,997	20.2
	Aztreonam (IV)	Monobactams		10,466	1.2
	Ceftazidime	Cephalosporins	Cephalosporin 3rd generation	8,939	1.0
	Amikacin (IV)	Aminoglycosides		3,945	0.4
	Tobramycin (IV)	Aminoglycosides		3,801	0.4
	Gentamicin (IV)	Aminoglycosides		3,790	0.4
	Imipenem/Cilastatin	Carbapenems		2,192	0.3

Best practices for using AU data for action

- Submit monthly hospital AU data to the NHSN AU Option to guide tracking and reporting for ASPs.
- Regularly conduct validation to ensure accuracy of AU data.
- Review NHSN AU data at least quarterly to track SAAR/AU data over time to both inform and assess stewardship interventions.
- Report SAAR/AU data on a regular basis to senior leadership, hospital board, hospital committees and providers.
- Establish facility-specific SAAR target goals for quality improvement.
- Create and/or participate in the NHSN AU Option Group Function as part of a healthcare system, health department and/or collaborative.

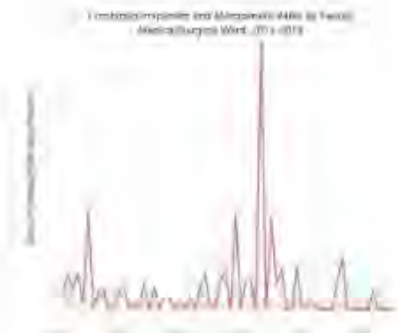
AU Option Case Examples



Decreasing Aztreonam Use in a Veterans Affairs Hospital

Jesse Brown VA Medical Center has submitted data to the National Healthcare Safety Network (NHSN) Antimicrobial Use (AU) Option since January 2013. In response to high aztreonam use, the facility developed training and educational materials to evaluate the risk of an adverse reaction from beta-lactam administration in a patient whose recorded medical history included a penicillin allergy. [Read More.](#)

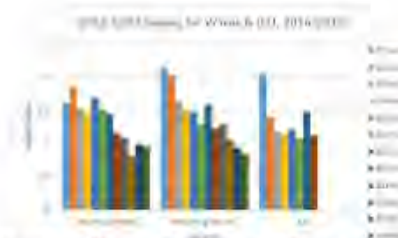
Posted On: June 18, 2019



Using Telehealth to Decrease Carbapenem Use in a Critical Access Hospital

Using NHSN Antimicrobial Use (AU) Option data submitted from 2013-2018, Intermountain Healthcare system compared carbapenem use among its facilities and identified an outlier. After meeting with the local stewardship physician and pharmacist champions, an active prospective audit and feedback approach was initiated using telehealth. [Read More.](#)

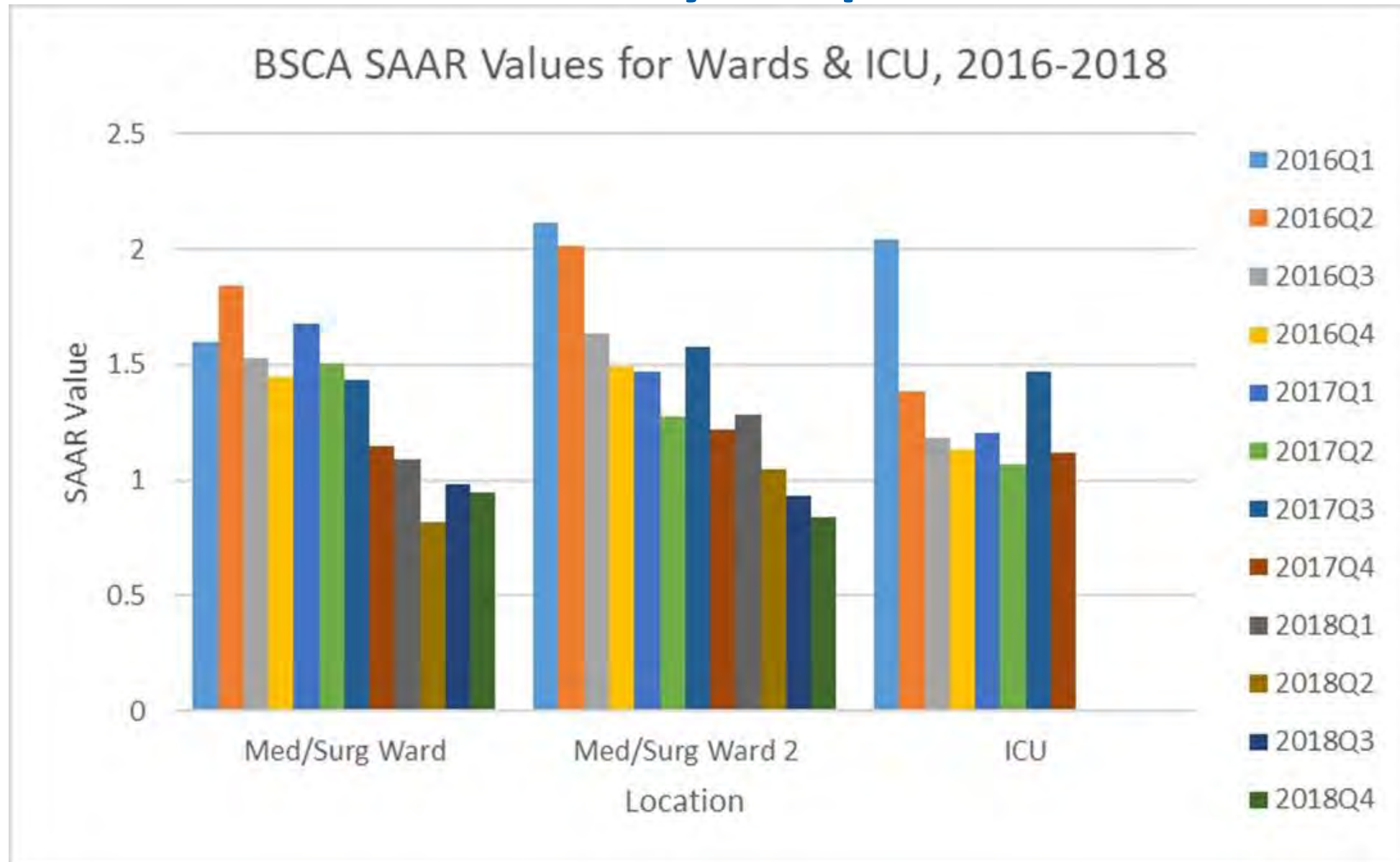
Posted On: April 16, 2019



Targeting a Reduction in Fluoroquinolone Use within a Community Hospital

Submitting data into the NHSN Antimicrobial Use (AU Option) since 2016, Wilson Medical Center, a community hospital in North Carolina, used AU Option data to identify an area

Targeting a Reduction in Fluoroquinolone Use within a Community Hospital



New 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](#)





New interactive web-based tools

Leveraging NHSN AU Option to inform, implement and assess antibiotic stewardship activities

Category 1: Using AU Data to Identify and Inform Stewardship Opportunities for High Antimicrobial Use

- + 1. Individual SAAR category
- + 2. Targeted antimicrobial within a SAAR category
- + 3. SAAR category on a targeted unit type
- + 4. Specific antimicrobial in a select population

Category 2: Using AU Data to Assess Opportunities to Optimize Antimicrobial Use

- + 1. Intravenous to oral conversions
- + 2. De-escalation tracking with AU data
- + 3. Targeting providers or provider groups
- + 4. Long antimicrobial durations
- + 5. Guideline adherence
- + 6. Select antimicrobials/SAAR category for a targeted indication

Category 3: Using AU Data to Support Other Quality Initiative Implementation

- + 1. NHSN CDI rates in context of AU data
- + 2. HAI outbreak investigation
- + 3. Antimicrobial adverse events
- + 4. High-cost antimicrobial use reduction

Example Clinical Scenario-IV to PO Conversion

Using Data to Track Intravenous (IV) to Oral (PO) Conversions

Example Scenario: During a pharmacy budget review, IV doxycycline was identified as a large, potentially modifiable expense. IV doxycycline costs considerably more than its oral (PO) counterpart (~\$30/day vs. <\$1/day). The hospital pharmacy leadership requested that the antibiotic stewardship program track and report IV and PO doxycycline and identify opportunities to optimize the IV to PO conversion. The hospital pharmacy has a Pharmacy & Therapeutics approved IV to PO conversion protocol that includes doxycycline.

Background: The NHSN AU Option Line List provides each antimicrobial agent as total days of therapy (DOT) and is stratified by route of administration (IV, intramuscular, digestive (i.e., PO) and respiratory). Stewards can export total doxycycline days of therapy stratified by IV and PO route to an external spreadsheet program (such as Excel™) and create reports for tracking IV and PO administration of doxycycline.

This approach can be applied to other tracking and reporting scenarios where route of administration is of interest (such as the respiratory route for inhalational antimicrobials).

Data Visualization-NHSN Extracts

Data Visualizations using NHSN AU Option for Days of Therapy by Route of Administration At the Facility-level

Quarterly doxycycline DOT stratified by route are shown in Figures 1 & 2.

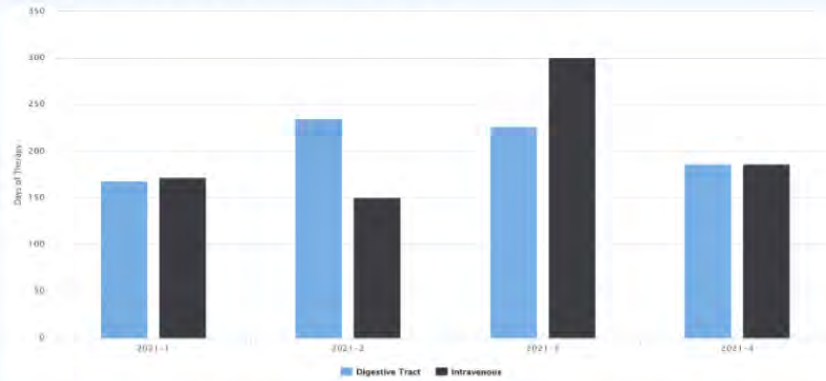


Figure 1. Quarterly Doxycycline Use Stratified by Route (2021)

Percentage of DOT Administered Orally

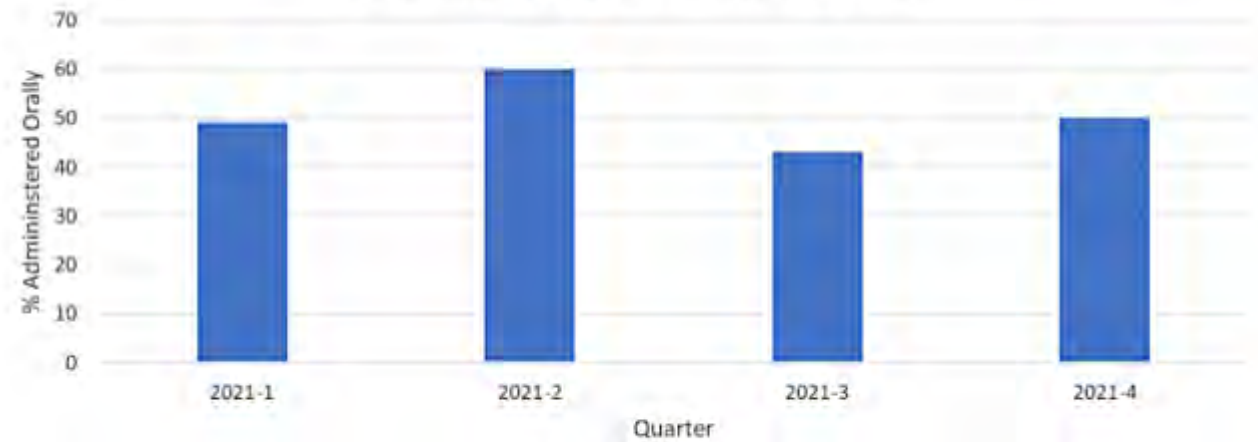


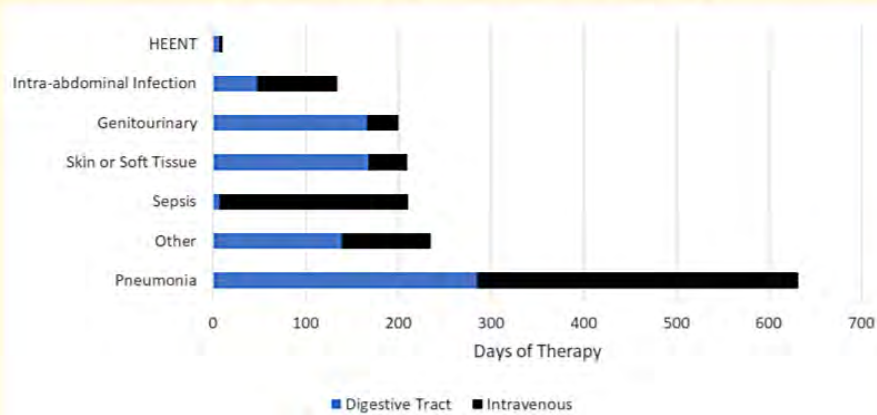
Figure 2. Percentage of Doxycycline Days of Therapy (DOT) Given Orally by Quarter (2021)

Data visualization-Local Data Sources

Metrics Using Local Data Sources (Augmented Data)

Data Visualizations using Augmented Data for Provider-Selected Clinical Indication and Route of Administration

Local data sources, such as clinical indication, can be used to augment NHSN AU data to inform potential stewardship interventions.



Data Visualizations using Augmented Data by Prescriber and Route of Administration

Stratifying DOTs by prescriber using augmented data can help inform audit and feedback stewardship interventions.

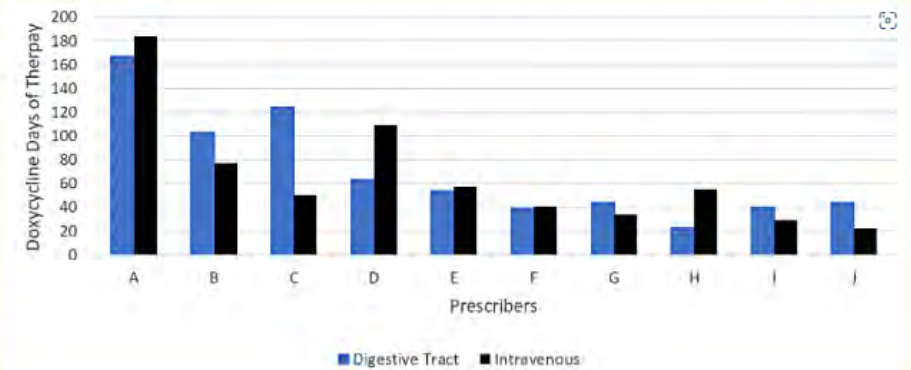


Figure 5. Oral and Intravenous Doxycycline Days of Therapy by Prescriber (2021)

Stewardship Interventions and Resources

Potential Stewardship Interventions:

To address the high rate of IV doxycycline, there are several potential targets for stewardship intervention:

- Review the IV to PO conversion protocol:
 - Does the IV to PO conversion protocol exist in the policy manual?
 - Does the current policy include doxycycline as part of the protocol?
 - Are the inclusion/exclusion criteria in the protocol too strict, preventing appropriate changes?
 - What is the timing of the switch in the protocol? Earlier IV to PO switches could lead to more oral agent use.
- Review cases of IV doxycycline and/or IV to PO conversion to see how often the protocol was followed and to see if there are common reasons why it might not have been followed.
- Who is implementing the IV to PO switch protocol?
 - Is this group aware that doxycycline is included in the protocol?
 - If using an electronic task list in the electronic health record, is doxycycline included in the work list?
 - Does this work sometimes get triaged due to other higher-acuity tasks?
- Make sure that PO doxycycline is an option on order sets when appropriate. Also, consider adding durations for doxycycline to order sets.
- Engage nursing staff in encouraging IV to PO switches in patients who are tolerating oral therapy.

Resources:

<https://www.idstewardship.com/resource-help-changing-iv-po-antibiotics/>

Refer to Moment 3: <https://www.ahrq.gov/antibiotic-use/acute-care/four-moments/index.html>

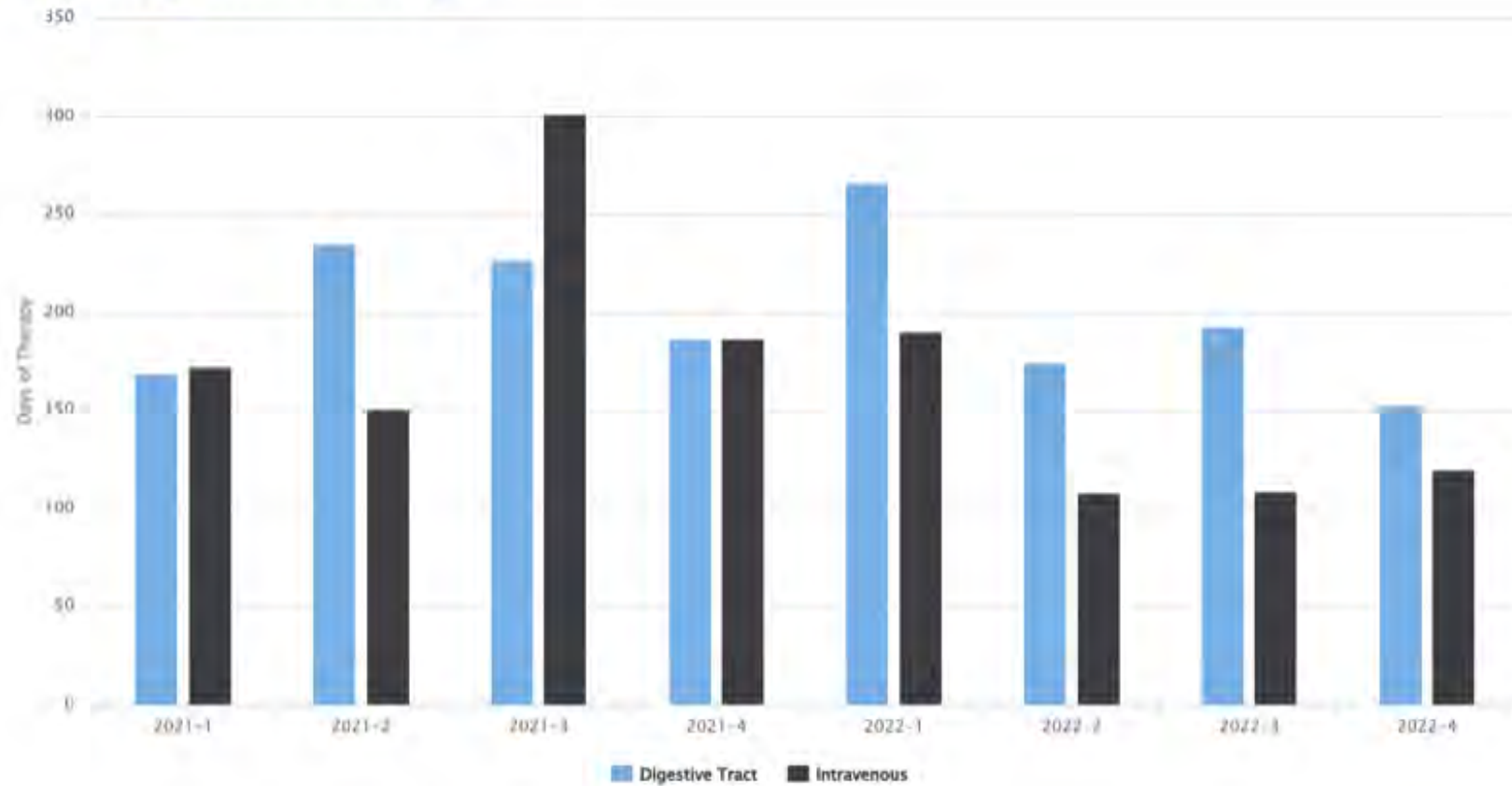
Nurse-driven IV To PO Programs: http://static1.1.sqspcdn.com/static/f/920943/28132630/1558564927807/Poster_Brenden.pdf?token=DYYc4nYDI92nt6901LH5ISr1zf8%3D

Nurse-drive stewardship Programs: <https://pubmed.ncbi.nlm.nih.gov/32645472/>

Economic and Clinical Outcomes of IV to PO Programs: <https://pubmed.ncbi.nlm.nih.gov/24399573/>

Monitoring

Suggestions for Ongoing Monitoring:



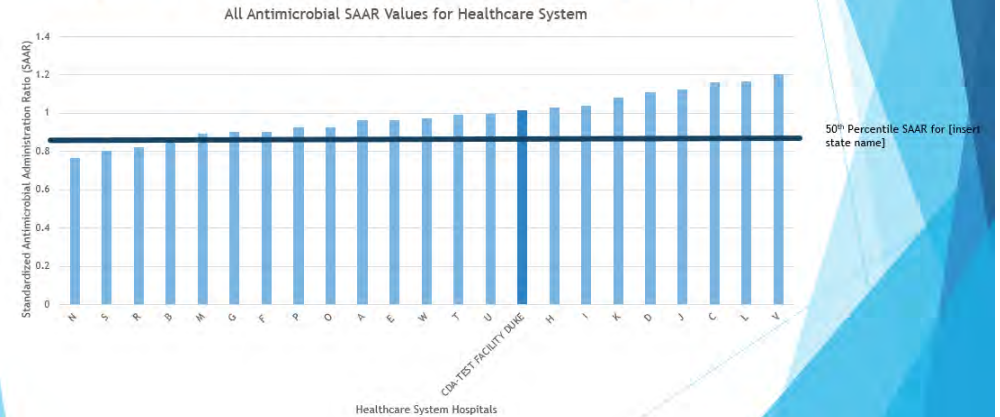
Slide Template for AS Leaders

Antimicrobial Stewardship Program Annual Update

ASP PROGRAM LEADERS



How does our hospital compare to other hospitals within our healthcare system?



Slide Template for Reporting to Facility Administration User Guide

These template slides have been prepared as an example of an antimicrobial stewardship program (ASP) can use antimicrobial use (AU) data in routine reports to senior hospital leadership. Reporting to leadership at least annually is recommended and included in the REPORTING element of the [CDC Core Elements of Hospital Antibiotic Stewardship Programs](#). These template slides should be considered a minimum set of information to provide to hospital leadership and should be supplemented, where appropriate, with information on facility-specific interventions and outcomes.

Slide 1- Title Slide- Please update with the name of the facility and the name(s) of the stewardship leader(s) for the facility. Some ASP programs have an internal acronym or logo. It is always best to use this for your slide presentation template where possible.



AUR Module Resources

- AUR Module website: <https://www.cdc.gov/nhsn/psc/aur/index.html>
- AUR Trainings: <https://www.cdc.gov/nhsn/training/patient-safety-component/aur.html>
- NHSN/CMS Requirements: <https://www.cdc.gov/nhsn/cms/ach.html>

Antimicrobial Use and Resistance

[Operational Guidance for reporting AUR data – August 2023](#)  [PDF – 239 KB]


[AUR Module Reporting for the CMS Promoting Interoperability Program – March 2023](#)

[YouTube](#)


[Slide set](#)  [PDF – 3 MB]

[Slide set – En Español](#)  [PDF – 2 MB]

[FAQs: AUR Reporting for the CMS Promoting Interoperability Program – October 2023](#)

[Promoting Interoperability – Guidance for Facilities – March 2023](#)  [PDF – 250 KB]

[Promoting Interoperability – Guidance for Facilities – March 2023 – En Español](#)  [PDF – 358 KB]

[Office Hours: AUR Module Reporting for the CMS Promoting Interoperability Program – Spring 2024](#)  [PDF – 1 MB]

Thank you!

Reach out to us at the NHSN Helpdesk

With SAMS access:

<https://servicedesk.cdc.gov/nhsncsp>

Without SAMS access:

NHSN@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

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

