NHSH Antibiotic Use and Resistance

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12/18/2023

Agenda

- NHSN AU/AR Updates

- Northwestern Medicine Hospital AU/AR Road Map

- CDPH Guidance Document

- Open Discussion / Q&A

NHSN AU/AR Updates

NHSN Antimicrobial Use and Resistance (AUR) Module Updates

December 18 – NHSN AU/AR Acute Care Workgroup – Chicago Department of Public Health

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Agenda

- AUR Reporting for CMS PI Program
- AUR Data Validation
- 2024 AUR Module Reporting
- 2022 AU Data Report & AR&PSP

AUR Reporting for CMS PI Program

Two ways to be in active engagement with NHSN

- Option 1 – Pre-production and validation
  - Registration within NHSN
  - Testing & validation of the CDA files
- Option 2 – Validated data production
  - Registration within NHSN
  - Submitting production AU & AR files to NHSN
    - CY 2024 – 180 continuous days of AUR data submission

- **Note:** Beginning in CY 2024, facilities can only spend one calendar year in Option 1 (pre-production and validation)

Three exclusions currently

1. Does not have any **patients** in any patient care location for which data are collected by NHSN during the EHR reporting period; or

2. Does not have **electronic medication administration records (eMAR)/barcoded medication administration (BCMA)** records or an **electronic admission discharge transfer (ADT)** system during the EHR reporting period; or

3. Does not have an **electronic laboratory information system (LIS)** or **electronic ADT** system during the EHR reporting period.

- Hospitals enter exclusion in the CMS Hospital Quality Reporting (HQR) system & CMS reviews

HQR system: https://hqr.cms.gov/hqrng/login
HQR User guide: https://www.cms.gov/files/document/hqr-user-guide.pdf

Notes on exclusions

- NHSN can provide guidance but ultimately CMS must decide whether a specific scenario meets exclusion criteria
  - Exclusions are submitted at the same time PI Program attestations are submitted (specifically, last day in February each year)
- Hospitals claiming an exclusion on AU or AR would claim an exclusion on the measure as a whole
  - NHSN encourages facilities to report the data you have available
- If the eligible hospital does not have access to results for all eligible organisms as outlined in the AUR Module Protocol, the hospital should claim an exclusion to the AUR Measure

Documentation/Verification of Facility Status

- Option 1 – Pre-production & Validation
    - First email that you've successfully registered & to send test files
        - Sent to NHSN FacAdmin and any optional PI Program users
    - Second email that your test files pass validation
        - Sent to NHSN FacAdmin and any optional PI Program users
        - Only sent after 1 file for all three types (AU, AR Event, AR Summary) are validated by NHSN

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Documentation/Verification of Facility Status (2)

- Option 2 – Validated Data Production
  - Monthly email showing AUR data submission status
    - Sent to NHSN FacAdmin and any optional PI Program users
    - Generated the 1st day of each month
    - Annual letter generated February 1st
  - Ad hoc letters can also be generated at any time by the FacAdmin
    - https://www.cdc.gov/nhsn/pdfs/cda/PHDI-Facility-Guidance-508.pdf

Subject: PI Program Report of 2023 NHSN AUR data

This notice serves as written confirmation of your CMS Promoting Interoperability (PI) Program status with the National Healthcare Safety Network (NHSN) as of November 29, 2023 for the PI Program Antimicrobial Use and Resistance (AUR) reporting objective according to certification criterion (§ 170.315(f)(6)).

Reporting for this PI Program objective includes reporting of Antimicrobial Use Summary, Antimicrobial Resistance Event, and Antimicrobial Resistance Summary data to NHSN.

For each year, data intended for inclusion in the annual PI Program status report must be uploaded into NHSN no later than the end of January of the following year (i.e., AUR data for 2022 must be reported into NHSN by January 31, 2023).

Registration of Intent Completed: ███

The following is a status report of received Antimicrobial Use Summary, Antimicrobial Resistance Event, and Antimicrobial Resistance Summary data per month for 2023.

Month/Year	Antimicrobial Use Summary	Antimicrobial Resistance Events	Antimicrobial Resistance Summary
01/2023	Yes	Yes	Yes
02/2023	Yes	Yes	Yes
03/2023	Yes	Yes	Yes
04/2023	Yes	No	Yes
05/2023	Yes	Yes	Yes
06/2023	Yes	No	No
07/2023	Yes	No	Yes
08/2023	Yes	No	No
09/2023	Yes	Yes	No

Thank you for partnering with NHSN to support antimicrobial stewardship via electronic reporting.

Please retain this notification for your facility's records.

EXAMPLE

AUR Data Validation

Three Distinct Types of Validation

1. Data validation
   - Conducted by the individual facility/system
   - Validates data are accurate and complete (e.g., antimicrobial days)
2. CDA file validation
   - Part of the CMS PI Program process
   - Validates that CDA files pass NHSN business rules (e.g., correct drugs in the file, include all required fields)
3. Vendor software validation
   - Also known as Synthetic Data Set (SDS) Validation
   - Validates vendor software can correctly apply rules of the AUR Protocol
   - Required for all vendors: https://www.cdc.gov/nhsn/cdaportal/sds/index.html

AUR Data Validation Resources

- See Data Validation section: https://www.cdc.gov/nhsn/psc/aur/index.html

- More detailed protocols to use during implementation

- Annual AU protocol

- AU Data Quality Line List within the NHSN application
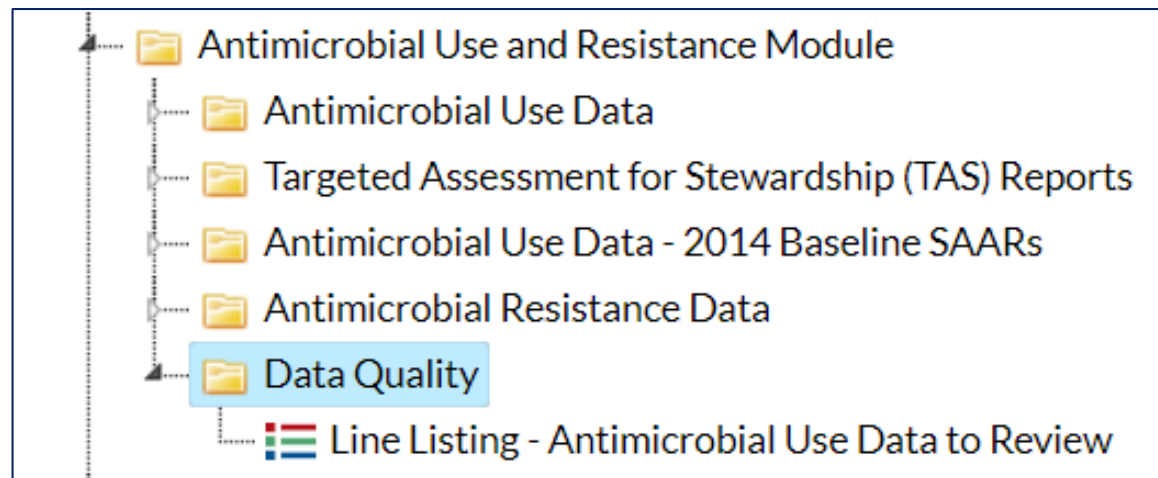
2024 AUR Module Reporting

Update to AU Option Drugs

- Planned update
  - Additions: Nirsevimab, Rezafungin, and Sulbactam/Durlobactam
  - Removals: Gemifloxacin and Quinupristin with Dalfopristin

- Changes effective for AU CDA files for January 2024 moving forward

Update to AR Option Pathogens

- Add *Citrobacter freundii* complex
- Add *Citrobacter braakii*
- Add *Citrobacter youngae*
- Remove *Lelliottia amnigena* (formally *Enterobacter amnigenus*)
- Refreshed Pathogen Roll-up Workbook
  - See AR CDA Toolkit here: https://www.cdc.gov/nhsn/cdaportal/toolkits.html

Update to AR Option Drug Panels

- Add high level LOINC terms for high potency gentamicin and streptomycin for the *Enterococcus* drug panel (AntiP23)

Organism	Specimen Type	Antimicrobial Agents
Enterococcus (All *Enterococcus* species noted in the AR Option Pathogen Roll-up Workbook) *Enterococcus faecalis* *Enterococcus faecium*	Blood, Urine, Lower Respiratory, CSF	Ampicillin Dalbavancin Daptomycin Gentamicin Gentamicin high potency Linezolid Oritavancin Penicillin[b] Quinupristin-dalfopristin Streptomycin Streptomycin high potency Tedizolid Telavancin Vancomycin Note: For Gentamicin and Streptomycin only: Synergistic = Susceptible Non-synergistic = Resistant

Protocol updates (1)

- Clarification on isolate ID/accession number
  - Isolate identifier unique for each isolate within laboratory based upon the isolate being reported with its own AST results.
  - For example, a urine specimen yields an *E. coli* isolate and a *K. pneumoniae* isolate and both have AST performed and reported; each isolate should be reported with a unique isolate identifier.

Protocol updates (2)

- Clarification on patientID
    - Alphanumeric patient ID assigned by the hospital and may consist of any combination of numbers and/or letters. This ID remains the **same** for the patient across all visits and admissions for all NHSN reporting.

Protocol updates (3)

- Clarification that encounter starts once patient has been triaged (both AU and AR) even though patient may not have a bed
  - Start counting for both:
    - Numerators (AR specimens, AU drugs administered) and
    - Denominators (AR encounters & AU days present)
  - For outpatient locations: ED, pediatric ED, 24-hour observation area

Protocol updates (4)

- AR Events can only include final interpretation (S, SDD, I, R, NS) for the drugs in the panel in Appendix F of AUR Module Protocol
  - And specific test results for the MIC, e-test and disk diffusion tests if available
- Also include two extra tests specific to *S. aureus* (Penicillin-binding protein 2a-agglutination and Polymerase chain reaction (PCR) mec-gene) (positive/negative/unknown)

Protocol updates (4) (cont.)

- Cannot report tests that are used only to aid decision making/help generate final interpretation (example: cefoxitin screen, inducible clindamycin test)

  - But we want the final interpretation provided to clinician to be reported in AR Event

- Example: if the lab updated the result for erythromycin based on the result of the inducible clindamycin test, you should report the changed erythromycin result (same result reported to clinician) to NHSN

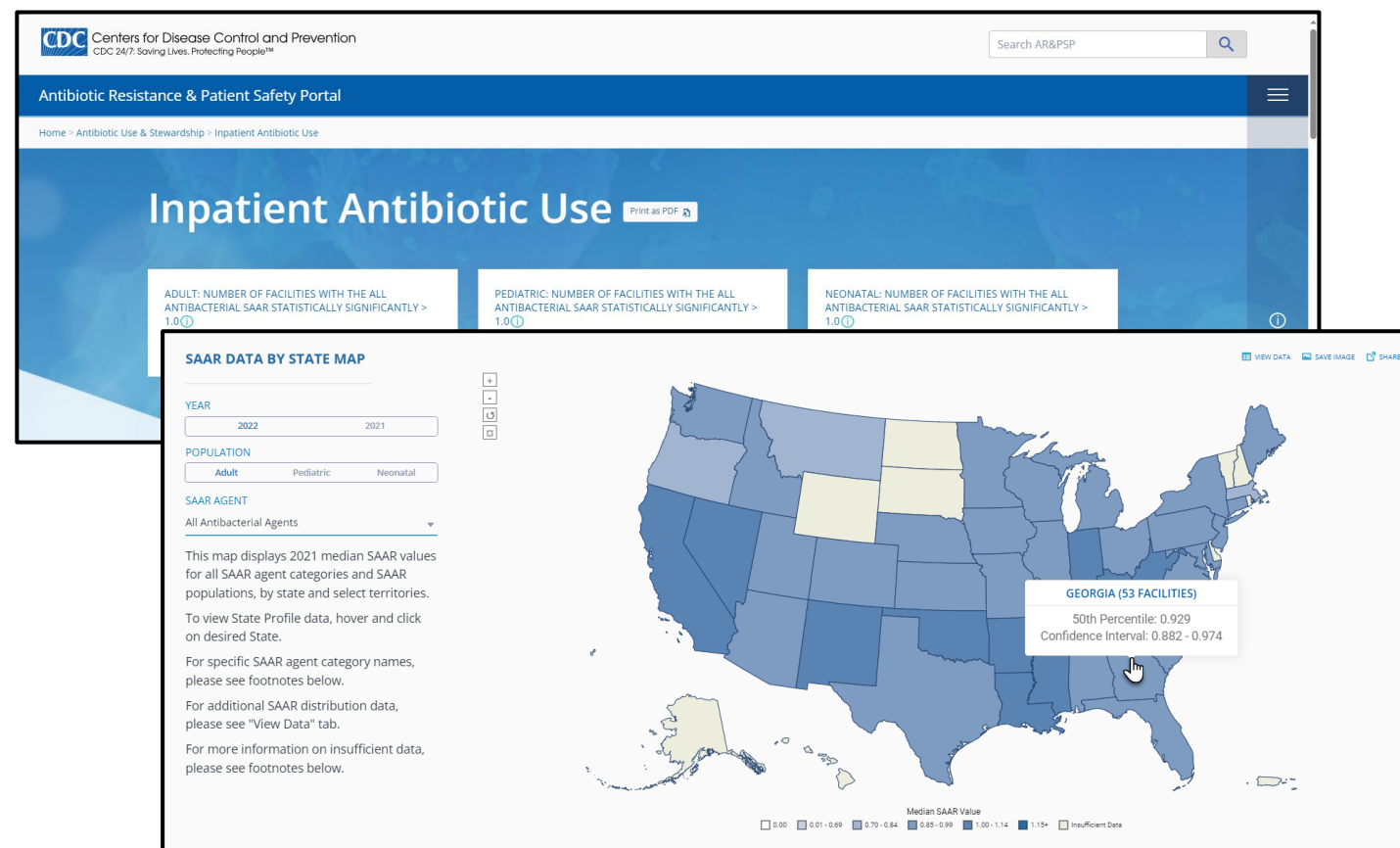# 2022 AU Data Report & AR&PSP
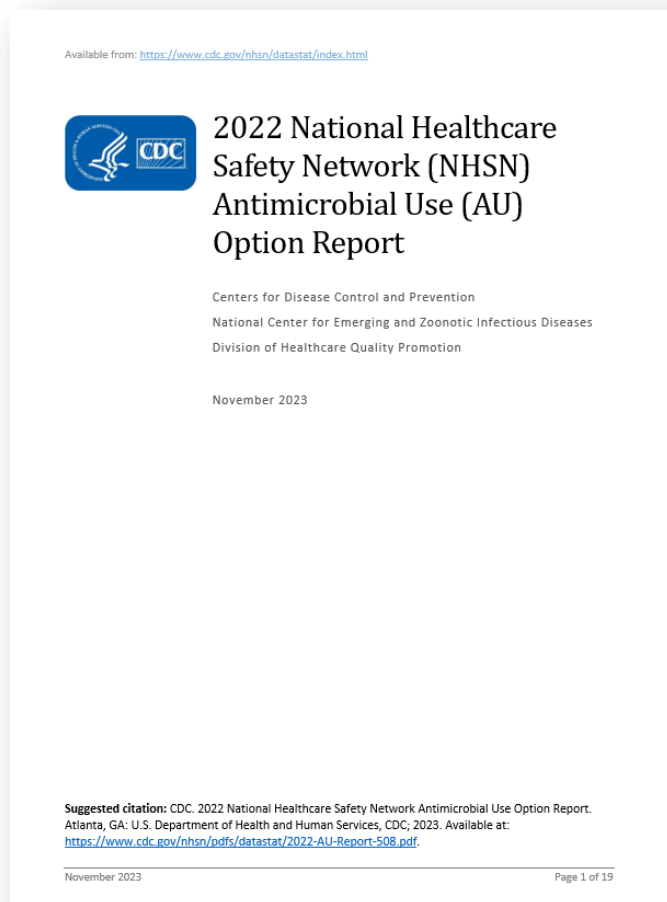
2022 AU Option Data Report

- Provides summary of SAAR distributions and percentages of use within SAAR antimicrobial agent categories in adult, pediatric, and neonatal locations

  - SAAR distributions can inform stewardship efforts by enabling hospitals to see how their SAARs compare to the national distribution

  - Stewards may set SAAR targets for TAS based on national distributions, if clinically appropriate

  - Percentage of AU by class and drug within a SAAR antimicrobial agent category provides insight to prescribing practices across differing patient locations

AUR Module Data Reports: https://www.cdc.gov/nhsn/datastat/aur-reports.html

Antibiotic Resistance & Patient Safety Portal (AR&PSP)

- Inpatient Antibiotic Use webpage provides median SAAR values by state within SAAR antimicrobial agent categories in adult, pediatric, and neonatal locations

  - Median SAARs by state can inform stewardship efforts by enabling hospitals to see how their SAARs compare to others in their state

  - Stewards may set SAAR targets for TAS based on state median, if clinically appropriate

AR&PSP Inpatient Antibiotic Use: https://arpsp.cdc.gov/profile/inpatient-antibiotic-use/all

2022 AU Option Data Report and AR&PSP Publication

- Available now: https://www.cdc.gov/nhsn/datastat/aur-reports.html & https://arpsp.cdc.gov/

Resources

Use 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]

FAQs: AUR Reporting for the CMS Promoting Interoperability Program – October 2023

Promoting Interoperability – Guidance for Facilities – March 2023 📕 [PDF – 250 KB]

Office Hours: AUR Module Reporting for the CMS Promoting Interoperability Program – Fall 2023 📕 [PDF – 715 KB]

Next NHSN AUR Office Hours: January 9

- Office Hours: NHSN AUR Module for CMS Promoting Interoperability Program

- Tuesday, January 9 from 1:00-2:00 PM Eastern Time

- Same format as previous NHSN AUR Office Hours Sessions

- Register in advance for this session: https://cdc.zoomgov.com/webinar/register/WN_zmkFg5cvTte4LgEVPnTYcw

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.

Northwestern Medicine AU/AR Road Map

Insights into NHSN AUR Reporting

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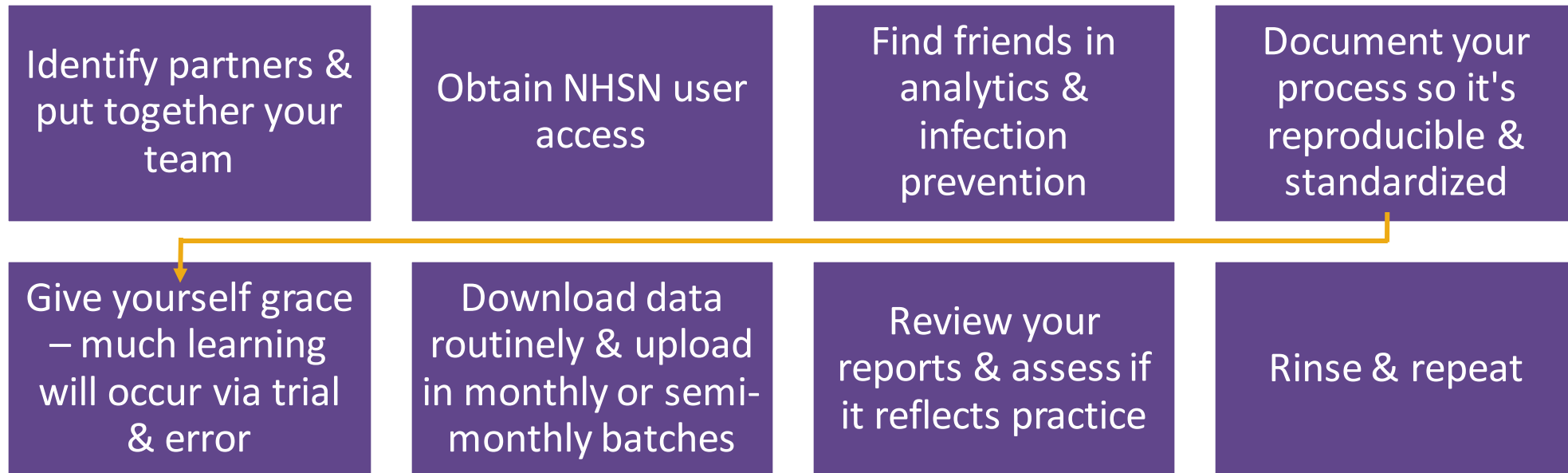**Antimicrobial & Diagnostic Stewardship Program (ADSP)**

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Chicago Department of Public Health
December 2023

Overview

Navigating the NHSN AUR Process

Start here

Identify partners & put together your team	Obtain NHSN user access	Find friends in analytics & infection prevention	Document your process so it's reproducible & standardized
Give yourself grace – much learning will occur via trial & error	Download data routinely & upload in monthly or semi-monthly batches	Review your reports & assess if it reflects practice	Rinse & repeat

Implementing AUR in Epic

- **A**ntimicrobial **U**sage and **A**ntimicrobial **R**esistance reporting are separate reports and have distinct workflows, but share much of the same foundation
- Facility and department configuration – add NHSN identifiers in Epic
  - Must match information found in the NHSN
  - Ongoing maintenance with facility structure changes and department moves
- Map med administration routes and MAR actions in accordance with CDC guidelines
- Watch out for custom med build
  - Medications map automatically based on RxNorm codes
- AR requires specific discrete data from lab microbiology results

Process

- Facility-level
- Department-level

Antimicrobial Use

7 adult antimicrobial categories:
- All antibacterial agents
- Broad spectrum antibacterial agents predominantly used for hospital-onset infections (BSHO)
- BSCA
- Antibacterial agents predominantly used for resistant Gram-positive infections
- Narrow spectrum beta-lactam agents (NSBL)
- Antibacterial agents posing the highest risk for *Clostridioides difficile* infection (CDI)
- Antifungal agents predominantly used for invasive candidiasis

8 pediatric antimicrobial categories:
- All antibacterial agents
- BSHO
- BSCA
- Antibacterial agents predominantly used for resistant Gram-positive infections
- NSBL
- Azithromycin
- Antibacterial agents posing the highest risk for CDI

Antimicrobial Resistance

Invasive — Blood, CSF

Non-invasive — Urine, Lower Respiratory
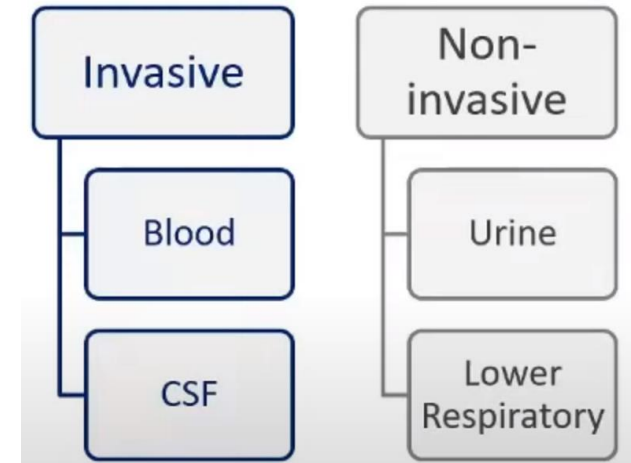
AUR – Facility Level Report

NM Facility-Level AU Data (Last Month) [44338132] as of Fri 12/15/2023 1:12 PM

Export AU Data   Export AR Data   Detail List - C

Detail List   Explore

Filter   Re-run Report   Refresh Selected

Regulatory Definition	ID	AUR Reporting?	Days Present	MDRO/CDI Admission Count	Total Patient Days	AU Status	Last AU Error Message	AR Status	AR Error Message
	N998005951442559	Yes	14322	2653	10926	⚑		⚑	
	N998005951442495	Yes	5397	1166	4120	⚑		⚑	
	N200115	Yes	5220	1058	3946	⚑		⚑	
	N998005951442618	Yes	2968	572	2390	⚑		⚑	
	N998005951438840	Yes	4457	870	3465	⚑		⚑	
	N200113	Yes	3809	262	3535	⚑		⚑	
	N200114	Yes	4016	723	3274	⚑		⚑	
	N200116	Yes	0	0	0	✚		✚	
	N998005951442617	Yes	28869	4212	23823	⚑		⚑	
	N200240	Yes	10247	1864	8300	⚑		⚑	
	N998005951442817	Yes	332	64	256	⚑		⚑	
	N200117	Yes	664	90	572	⚑		⚑	
	N200148	Yes	679	49	628	✚		✚	

AUR – Department Level Report

NM Department-Level AU Data past months [44338039] as of Fri 12/15/2023 1:07 PM

Export AU Data Export AR Data

Detail List - Original

Detail List Explore

Filter   Re-run Report   Refresh Selected   Select A

Regulatory Definition	ID	NHSN Location Code	NHSN Dept Type	Reporting Hospital	AUR Reporting?	AU Status	Last AU Error Message	AUR Allowed?	Days Present
	N200225	ED	DA-ICU		Yes			Yes	6491
	N200292	HP 2 OBS	DA-ICU		Yes			Yes	1370
	N200227	HP3	DA-ICU		Yes			Yes	1343
	N200228	HP4	DA-ICU		Yes			Yes	1311
	N200229	HP5	DA-ICU		Yes			Yes	1302
	N200224	CVU-SG	DA-ICU		Yes			Yes	461
	N200231	IMCU	DA-ICU		Yes			Yes	427
	N200230	HP7	DA-ICU		Yes			Yes	881
	N200235	PEDS	DA-ICU		Yes			Yes	0
	N200221	2N	DA-ICU		Yes			Yes	453
	N200233	NURS INTER	DA-ICU		Yes			Yes	8
	N200232	MCH	DA-ICU		Yes			Yes	227
	N200223	CDU	DA-ICU		Yes			Yes	0

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AR Reports

★ AR events

★ AR isolate review

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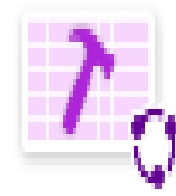
AR Isolate Review

test AR isolate review [44338777] as of Fri 12/15/2023 1:41 PM

Abstract | Edit | Void | Abstract All | Hospital Chart | Edit Department | Edit Pathogen | Edit Specimen

Detail List | Explore

Filter

Patient	Collected	Isolate Status	Collection Department	Specimen	Pathogen	Reasons Invalid	Order ID
	10/24/2023 1509	✕		Specimen from Wound	Pseudomonas aeruginosa	Not Admitted Invalid Specimen	1766020017
	10/24/2023 1509	✕		Specimen from Wound	Klebsiella aerogenes	Not Admitted Invalid Specimen	1766020017
	10/24/2023 1509	✕		Specimen from Wound	Escherichia coli	Not Admitted Invalid Specimen	1766020017
	10/20/2023 1817	✓		Specimen from trachea	Enterobacter cloacae		1765686445
	10/20/2023 1817	▤		Specimen from trachea	Klebsiella pneumoniae		1765686445
	10/20/2023 1740	✓		Bronchoalveolar lavage fluid sample	Enterobacter cloacae		1766028941
	10/20/2023 1947	✓		Urinary specimen	Enterobacter cloacae		1766064195
	10/20/2023 1947	✓		Urinary specimen	Enterococcus		1766064195
	10/23/2023 1522	✕		Voided urine specimen	Klebsiella aerogenes	Not Admitted	1758480444

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AR Events

test AR events [44338853] as of Fri 12/15/2023 1:45 PM

Hospital Chart | Export Selected | Export All | Edit Case | ✕ Void Case | ✔ Review ▾ | Unreview

Detail List   Explore

▼ Filter   ▷ Re-run F

Patient	Collected	Reviewed	Error Message	Collection Department	Associated Hospital	Specimen Type	Organism	Reg. ID	Status
						Urine	Escherichia coli	975414...	Exported
						Urine	Klebsiella pneumoniae	975409...	Exported
						Lower Respiratory	Escherichia coli	975417...	Exported
						Urine	Escherichia coli	975419...	Exported
						Urine	Escherichia coli	975417...	Exported
						Blood	Escherichia coli	975417...	Exported
						Blood	Escherichia coli	975417...	Exported
						Urine	Escherichia coli	975417...	Exported
						Lower Respiratory	Staphylococcus aureus	975416...	Exported

AU Reporting Menu

- Antimicrobial Use and Resistance Module
  - Antimicrobial Use Data
    - SAAR Report - All Adult and Ped SAARs (2017 Baseline)
    - SAAR Report - All Adult and Ped SAARs by Location (2017 Baseline)
    - SAAR Report - All Neonatal SAARs (2018 Baseline)
    - SAAR Report - All Neonatal SAARs by Location (2018 Baseline)
    - SAAR Plot - All Adult and Pediatric SAARs (2017 Baseline)
    - SAAR Plot - All Neonatal SAARs (2018 Baseline)
    - Rate Table - Drugs Predominantly Used for Extensively AR Bacteria (2017 Baseline)
    - Rate Table - Select Antimicrobial Groupings for Neonatal Units (2018 Baseline)
    - Line Listing - Most Recent Month of AU Data for FACWIDEIN
    - Line Listing - Most Recent Month of AU Data by Location
    - Line Listing - All Submitted AU Data for FACWIDEIN
    - Line Listing - All Submitted AU Data by Location
    - Rate Table - Most Recent Month of AU Data - Antimicrobial Utilization Rates for FACWIDEIN
    - Rate Table - All Submitted AU Data - Antimicrobial Utilization Rates for FACWIDEIN
    - Rate Table - Most Recent Month of AU Data - Antimicrobial Utilization Rates by Location
    - Rate Table - All Submitted AU Data - Antimicrobial Utilization Rates by Location
    - Rate Table - Selected Drugs - FACWIDEIN - Most Recent Month
    - Rate Table - Selected Drugs - FACWIDEIN - All Months
    - Rate Table - Selected Drugs - by Location - Most Recent Month
    - Rate Table - Selected Drugs - by Location - All Months
    - Pie Chart - Most Recent Month of AU Data by Antibacterial Class and Location
    - Pie Chart - All AU Data by Antibacterial Class and Location
    - Pie Chart - Most Recent Month of AU Data by Antifungal Class and Location
    - Pie Chart - All AU Data by Antifungal Class and Location
    - Pie Chart - Most Recent Month of AU Data by Anti-influenza Class and Location
    - Pie Chart - All AU Data by Anti-influenza Class and Location
    - Bar Chart - All Data - Selected Agent Distribution by Month
    - Bar Chart - Most Recent Month of AU Data by Antibacterial Class and Location
    - Bar Chart - All AU Data by Antibacterial Class and Location
    - Bar Chart - Most Recent Month of AU Data by Antifungal Class and Location
    - Bar Chart - All AU Data by Antifungal Class and Location
    - Bar Chart - Most Recent Month of AU Data by Anti-influenza Class and Location
    - Bar Chart - All AU Data by Anti-influenza Class and Location

AR Reporting Menu

📁 Antimicrobial Resistance Data
- **SRIR** SRIR Report - All Standardized Resistant Infection Ratios (2019 Baseline)
- **pSIR** pSIR Report - All Pathogen-Specific Standardized Infection Ratios (2019 Baseline)
- Line Listing - All Antimicrobial Resistance Events
- Bar Chart - All Antimicrobial Resistance Events
- Line Listing - Antimicrobial Resistant Organisms
- Frequency Table - Antimicrobial Resistant Organisms
- Facility-wide antibiogram (Percent Susceptible) and Percent Tested
- Rate Table - Antimicrobial Resistance Percentages
- Rate Table - Hospital-onset Antimicrobial Resistance Incidence
- Rate Table - Community-onset Antimicrobial Resistance Prevalence
- Rate Table - Outpatient Antimicrobial Resistance Prevalence
- Rate Table - Hospital-onset Positive Culture Incidence by Organism
- Rate Table - Community-onset Positive Culture Prevalence by Organism
- Rate Table - Outpatient Positive Culture Prevalence by Organism
- Line Listing - All AR Summary Data

Frequency Table – Antimicrobial Resistant Organisms

National Healthcare Safety Network
Frequency Table - Antimicrobial Resistant Organisms
As of: December 15, 2023 at 12:54 PM
Date Range: All ANTIBIOGRAM_AR
if (((phenotype_AR IN ("MRSA_AR", "ESCecoli_AR", "ESCklebsiella_AR", "carbNS_Acine_AR", "carbNS_PA_AR", "MDR_Acine_AR", "MDR_PA_AR", "VREfaecium_AR", "VREfaecalis_AR", "CREexpanded_AR", "FR_Candi_AR", "DR_SP_AR"))))

Frequency	Table of phenotype_AR by specDateYM					
			specDateYM			
phenotype_AR	2023M07	2023M08	2023M09	2023M10	2023M11	Total
ESCecoli_AR	14	17	13	7	8	59
ESCklebsiella_AR	1	2	3	1	2	9
MDR_Acine_AR	1	1	1	1	0	4
MDR_PA_AR	1	0	0	0	0	1
MRSA_AR	3	6	6	7	6	28
VREfaecalis_AR	0	0	0	1	2	3
VREfaecium_AR	0	0	2	0	0	2
carbNS_Acine_AR	1	1	1	1	0	4
carbNS_PA_AR	3	1	3	4	0	11
Total	24	28	29	22	18	121

1. Please find the document containing Phenotype_AR definitions at https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/ar-phenotype-definitions-508.pdf
Data contained in this report were last generated on December 15, 2023 at 10:54 AM to include data beginning January 2020 through November 2023 .

More info here: NHSN Antimicrobial Use and Resistance (AUR) Module Protocol (cdc.gov)

National Healthcare Safety Network
Bar Chart - All Antimicrobial Resistance Events
As of: December 18, 2023 at 11:03 AM
Date Range: All AUR_DETAIL
location=10 SE
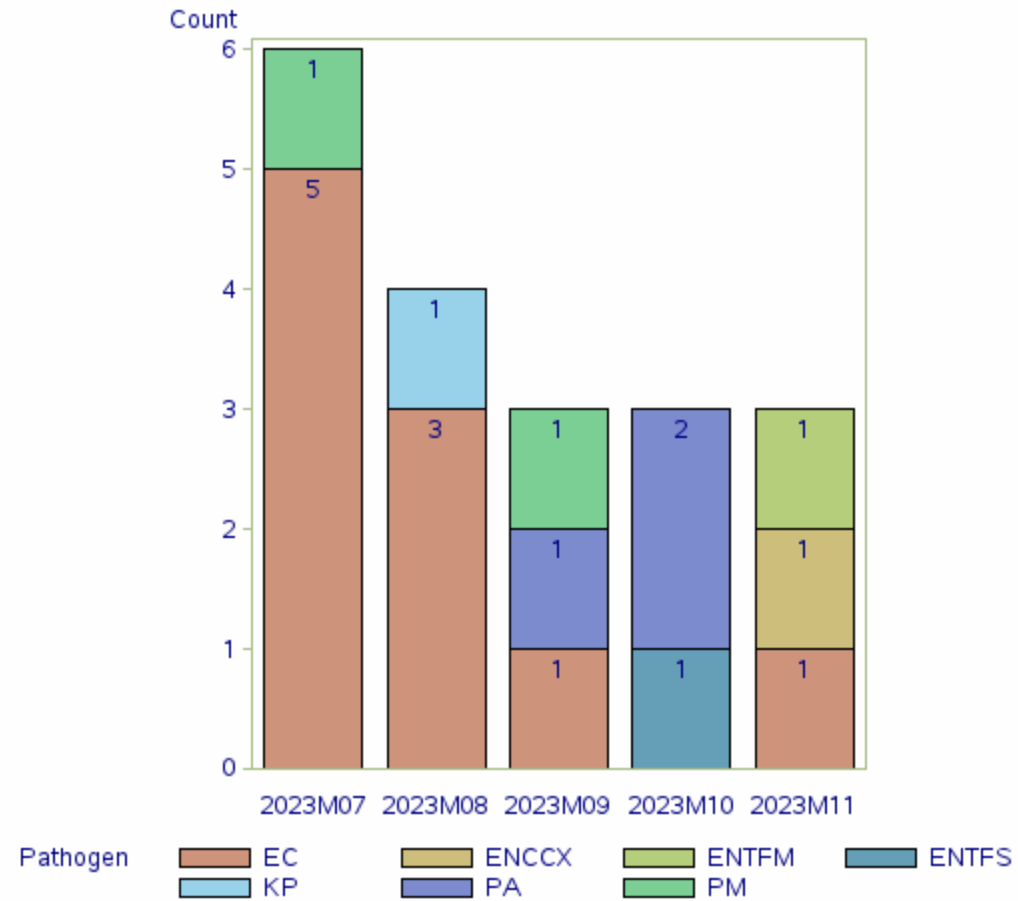
Data contained in this report were last generated on December 15, 2023 at 11:33 AM to include data beginning January 2023 through November 2023 .
Data restricted to the twelve time periods ending with the most recent time period of data in the analysis dataset, after modification.

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National Healthcare Safety Network
Facility-wide antibiogram (Percent Susceptible) and Percentage of Isolates with Susceptibility Results
Percent Susceptible per 100 Isolates
As of: December 18, 2023 at 11:14 AM
Date Range: All AUR_SUMMARY

SpecimenDateYQ=2023Q3

Drug Class	Drug	Acinetobacter baumannii & calcoaceticus-baumannii complex (12)	Acinetobacter spp. (12)	Citrobacter amalonaticus, freundii, koseri, & diversus (34)	Enterobacter spp. (52)	Escherichia coli (450)	Klebsiella aerogenes (20)	Klebsiella oxytoca (34)	Klebsiella pneumoniae (203)	Morganella morganii (12)	Proteus penneri & vulgaris (8)	Proteus mirabilis (81)	Pseudomonas aeruginosa (135)	Serratia marcescens (28)	Stenotrophomonas maltophilia (22)	Enterococcus faecalis (135)	Enterococcus faecium (60)	Enterococcus spp. (202)	Staphylococcus aureus (90)	Streptococcus agalactiae (group B streptococci) (10)	Streptococcus pneumoniae (5)	Candida albicans, auris, glabrata, parapsilosis, & tropicalis (13)
Aminoglycosides	AMK			100	98.0	99.0	.	100	99.0	.	.	99.0	99.0	.								
	GENTA	.	.	100	92.0	83.0	.	82.0	86.0	.	.	93.0	93.0	.		88.0	.	91.0	98.0			
	STREP															94.0	.	75.0				
	TOBRA	.		97.0	90.0	83.0	.	82.0	84.0	.	.	94.0	98.0	.								
Azoles	FLUCO																					.
	POSAC																					.
	VORI																					.
B-lactam/ B-lactamase inhibitor combination	AMOXWC			.	.	.	.	.	.	.	.	.		.						.		
	AMPIWS	.	.	.	.	55.0	.	56.0	64.0	.	.	88.0		.								
	CEFTAVI			100	98.0	100	.	94.0	100	.	.	100	98.0	.								
	CEFTOTAZ			91.0	73.0	98.0	.	91.0	92.0	.	.	100	97.0	.								
	IMICILRE	.	.	.	.	.	.	.	.	.	.	.		.								
	MEROVAB	.	.	.	.	.	.	.	.	.	.	.		.								
	PIPERWT	.		85.0	60.0	92.0	.	76.0	78.0	.	.	100	87.0	.								
Carbapenems	DORI	.	.	.	.	.	.	.	.	.	.	.		.								
	ERTA			97.0	78.0	99.0	.	91.0	94.0	.	.	98.0		.					.			
	IMIPWC	.	.	97.0	92.0	100	.	94.0	96.0	.	.	5.0	36.0	.								
	MERO	.	.	97.0	94.0	100	.	94.0	97.0	.	.	100	72.0	.								
Cephalosporins	CEFAZ			.	0	78.0	.	47.0	73.0	.	.	84.0										
	CEFEP	.	.	88.0	81.0	85.0	.	79.0	75.0	.	.	91.0	90.0	.						.	.	
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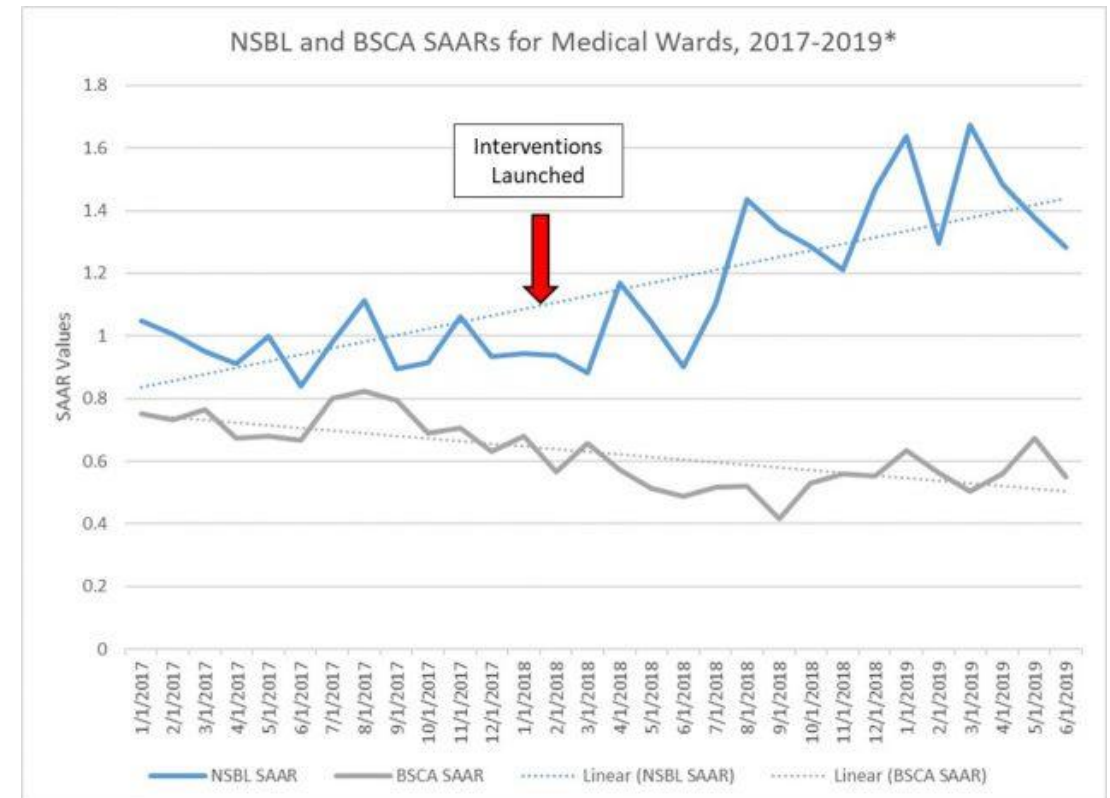Northwestern Medicine

SAAR Tracking per Quarter and Site
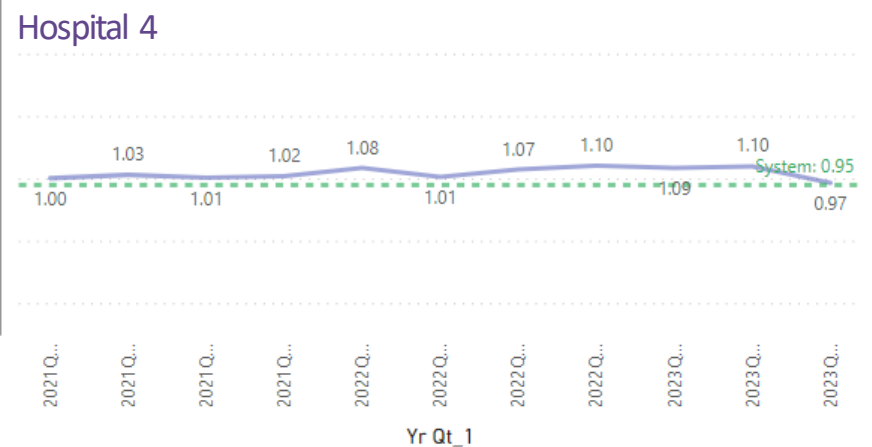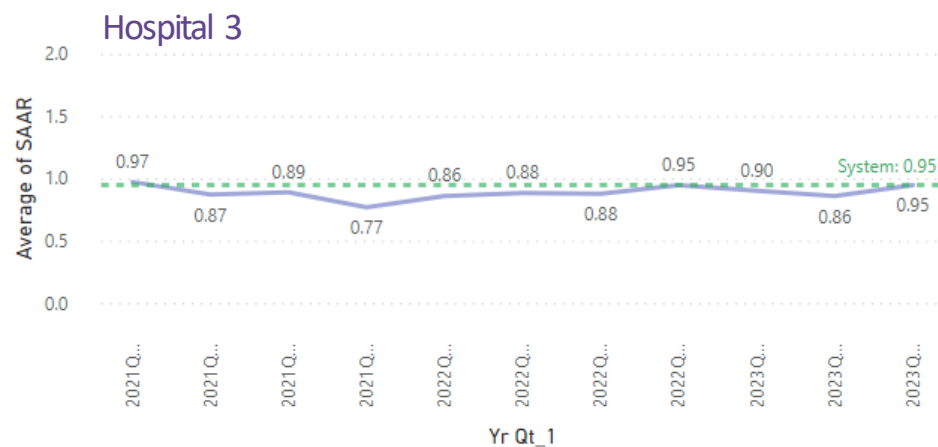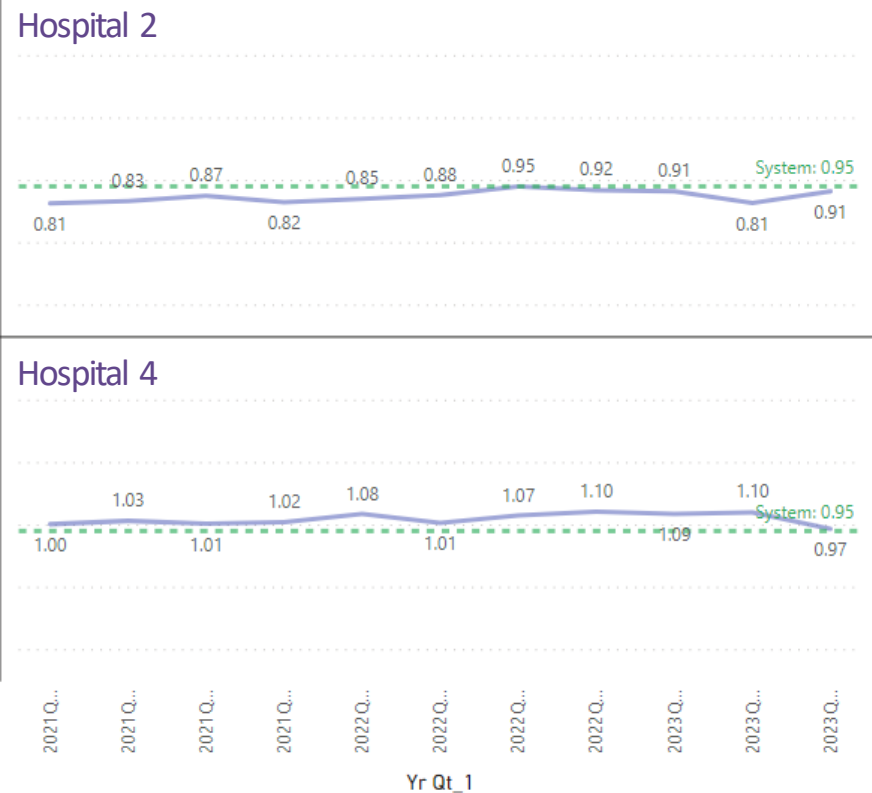
Best Practices

Lessons Learned & Available Resources

- Review available resources from NHSN
  - AUR Overview: NHSN Antimicrobial Use and Resistance (AUR) Module Protocol (cdc.gov)
  - FAQ: NHSN Antimicrobial Use and Resistance (AUR) Module Protocol (cdc.gov)
  - AU: 2022 NHSN Training - Antimicrobial Use (AU) Option: Advanced Analysis - YouTube
  - AR: 2022 NHSN Training - Antimicrobial Resistance (AR) Option: Reporting and Analysis - YouTube
  - California DPH: Antibiotic Resistance Training for CDPH (ca.gov)
- Critically assess data/reports to gauge validity
- Refine process overtime & be patient
- Share NHSN info with local teams to enhance patient safety/care & antimicrobial stewardship efforts
  - Ex – AU data + Prospective audit & feedback + Antibiogram trends used to demonstrate:
    - Overuse of levofloxacin for oral step-down therapy in community-acquired pneumonia
    - Excessive ceftriaxone use for urinary infections, when cefazolin may be preferred
  - Intervention launched (Jan 2018): Updated local CAP & UTI Guidelines to promote use of narrow cephalosporins along with Stewardship monitoring & outreach
  - Shift from Broad-spectrum community acquired (BSCA) agents (FQ, Ceftriaxone) to Narrow-spectrum community beta-lactams (BSCA)
  - Tracking Multiple Interventions - AU Option Case Example | NHSN | CDC
- Leverage data to gain resources – IP, ASP, Informatics, Analytics

NSBL and BSCA SAARs for Medical Wards, 2017-2019*

Insights into NHSN AUR Reporting

Northwestern Medicine
Antimicrobial & Diagnostic Stewardship Program (ADSP)

Questions? Email: ADSP@nm.org

Chicago Department of Public Health
December 2023

CDPH NHSN Guidance Document

Coming Soon to the HAN!

CDPH
Chicago Department
of Public Health

2023 NHSN Antimicrobial Use and Resistance (AUR) Fact Sheet

What's this all about?[1]

The NHSN Antimicrobial Use (AU) and Antimicrobial Resistance (AR) (AUR) Module reporting was identified as one option to meet the Public Health Registry reporting element within the Centers for Medicare and Medicaid Services (CMS) Medicare Promoting Interoperability (PI) Program for eligible hospitals and critical access hospitals (CAHs) in 2017.

Beginning in CY 2024, CMS finalized changes to the Medicare Promoting Interoperability Program for eligible hospitals and critical access hospitals (CAHs) that include a new AUR Surveillance measure under the Public Health and Clinical Data Exchange Objective. To obtain credit for calendar year 2024, eligible hospitals and CAHs must attest to being in active engagement with CDC's NHSN to submit AUR data for the electronic health record (EHR) reporting period, or else claim an applicable exclusion. Further, to meet the CMS PI Program requirement, facilities must use CEHRT updated to meet 2015 Edition Cures Update criteria, including criteria at 45 CFR 170.315 (f)(6).

So, what do we need to do?[1]

In short, hospitals and critical access hospitals need to submit an attestation to CMS, through the NHSN system, that they will be in active engagement with NSHN to submit AUR data for 2024. This doesn't necessarily mean that you must submit AUR data for 2024, but that you will attest to *beginning* the process. Also, your Electronic Health Record system must adhere to standards explained here and here.

What do I need to begin?[1]

- Required data systems or electronic access to required data elements for NHSN AUR Module:
  - Electronic Medication Administration Record (eMAR) or Bar Coding Medication Administration (BCMA) system for capturing antimicrobial administrations
  - Electronic Laboratory Information System (LIS) for capturing antimicrobial susceptibility results

Updated 11/2023

FAQs

What are the exclusions for the AUR measure?[2]

There are three exclusions currently:

1. Your facility does not have any **patients** in any patient care location for which data are collected by NHSN during the EHR reporting period
   OR
2. Your facility does not have **electronic medication administration records (eMAR)/barcoded medication administration (BCMA)** records or an **electronic admission discharge transfer (ADT)** system during the EHR reporting period
   OR
3. Your facility does not have an **electronic laboratory information system (LIS)** or **electronic ADT** system during the EHR reporting period.

- Hospitals enter exclusion in the CMS Hospital Quality Reporting (HQR) system & CMS reviews
- Email NHSN with further questions about exclusions.

What is the reporting period for the CMS PI Program? Do I need to be reporting AUR data into NHSN by January 1, 2024?[2]

It depends...
- On the calendar year
  - CY 2023 – 90 continuous days (bonus points only)
  - CY 2024 – 180 continuous days
- On the facility's designated EHR reporting period
  - CY 2024
    - Facility must use the same 180-day period for **ALL** CMS PI Program measures
    - AU and AR data must be reported for the same 180 days

How do facilities find out if their hospital participates in the CMS Promoting Interoperability (PI) Program?[3]

- Most acute care hospitals* participate in the CMS PI Program
- Reach out to person(s) in charge of quality reporting within the facility and/or C-suite
- Critical access hospitals are eligible to participate

*Long term care facilities (skilled nursing/nursing home), outpatient dialysis clinics & ambulatory surgery centers cannot submit data into the AUR module

Other types of hospitals that provide inpatient care are not included in the CMS PI Program. This Includes, but is not limited to:
- Inpatient rehab hospitals (IRF)
- Inpatient psych hospitals (IPF)
- Long term acute care hospitals (LTCH/LTAC/LTACH)

Updated 11/2023

Health Alert Network (HAN)

https://www.chicagohan.org/antimicrobial-stewardship-program

Panel 1

Overview

U.S. Antibiotic Awareness Week +

Webinars +

Antimicrobial Stewardship Resources −

Additional Antimicrobial Stewardship Resources for Nursing Homes

Title	Source	Type
Agency for Healthcare Research and Quality (AHRQ): Nursing Home Antimicrobial Stewardship Guide	AHRQ	Website
Alberta Health Services (AHS) and British Columbia Center for Disease Control (BC CDC)	Do Bugs Need Drugs?	Website
CDC Core Elements of Antimicrobial Stewardship for Nursing Homes	CDC	Website
CDC Core Elements of Antimicrobial Stewardship for Nursing Homes - main pdf	CDC	PDF
CDC Core Elements of Antimicrobial Stewardship for Nursing Homes – Checklist	CDC	PDF
Massachusetts Coalition: Improving Evaluation and Treatment of UTI in the Elderly	Macoalition	Website
Minnesota Department of Public Health Antimicrobial Stewardship Program Toolkit for Long-term Care Facilities	Minnesota Department Of Health	Website
Nebraska Antimicrobial Stewardship Assessment and Promotion Program (ASAP) Tool and Templates for Long-Term Care	Nebraska Medicine	Website
Rochester Patient Safety *Clostridium difficile* Prevention Collaborative – Resources for Nursing Homes	Rochester Patient Safety	Website
Telligen: Antimicrobial Stewardship in Long-term Care Resources	Telligenqinqio	Website

Antimicrobial Stewardship Resources for Outpatient Clinics

Title	Source	Type
CDC Core Elements for Outpatient Antimicrobial Stewardship - main pdf	CDC	PDF
CDC Core Elements for Outpatient Antimicrobial Stewardship Appendix A: Supplemental Evidence Supporting Outpatient	CDC	PDF

Panel 2

Resources For One Health Veterinary Guidance +

Additional Antimicrobial Stewardship Information +

Related Links −

Chicago Department of Public Health & Illinois Department of Public Health:

Chicago Department of Public Health Healthcare Associated Infections

Illinois Department of Public Health Healthcare Associated Infections & Antimicrobial Resistance Prevention Program

Illinois Department of Public Health - Antimicrobial Stewardship Website

Other Antimicrobial Stewardship Related Links:

Infectious Disease Society of America Practice Guidelines

CDC Core Elements of Antimicrobial Stewardship in Nursing Homes Website

CDC Core Elements of Hospital Antimicrobial Stewardship Programs Website

CDC Core Elements of Outpatient Antimicrobial Stewardship Website

Antimicrobial Stewardship Toolkits:

https://www.chicagohan.org/antimicrobialstewardship/outpatienttoolkit

https://www.chicagohan.org/antimicrobialstewardship/dentaltoolkit

Panel 3

Resources For One Health Veterinary Guidance −

Infection Control

Title	Source	Type
Infection Prevention and Control (IPC) Best Practices for Small Animal Veterinary Clinics	Ontario Animal Health Network	Website
2018 AAHA Infection Control, Prevention, and Biosecurity Guidelines	AAHA	Website
How to Read a Disinfectant Label (PDF)	Iowa State University	PDF
Infection Control Pocket Guide (Poster)	UMN VMC ARSI	Poster
Antimicrobial Spectrum of Disinfectants	Iowa State	Website
MDRO Infection Control Pocket Guide (Poster)	UMN VMC	Poster
Areas for special consideration (aaha.org)	AAHA	Website
Veterinary Standard Precautions- 2015	National Association for State Public Health Veterinarians	Compendium

Prescribing Guidelines

Title	Source	Type
(ISCAID) Bacterial Folliculitis Guidelines Table	Antimicrobial Guidelines Working Group of the International Society for Companion	PDF

Discussion / Q&A

Additional Resources

AUR Module Resources

- NHSN Helpdesk: NHSN@cdc.gov
- 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

CMS-related Questions

- QualityNet help desk: QnetSupport@cms.hhs.gov or 1-866-288-8912

Chicago DPH Contacts

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- Kelly Walblay (kelly.walblay@cityofchicago.org) NHSN Senior Epidemiologist
- Clarissa Najera (clarissa.nejera@cityofchicago.org) Antimicrobial Stewardship Epidemiologist