



National Healthcare Safety Network Antibiotic Use and Resistance

Jenna Preusker, PharmD, BCPS

Pharmacist, Healthcare Associated Infections and Antibiotic Resistance

Lacey Pavlovsky, RN, MSN, CIC, CIC-LTC

Infection Preventionist, Healthcare Associated Infections and Antibiotic
Resistance

5.19.2023

NEBRASKA

Good Life. Great Mission.

DEPT. OF HEALTH AND HUMAN SERVICES

**DIVISION OF
PUBLIC HEALTH**

Disclosures

The presenters today do not have any relevant disclosures to report related to this presentation.

Disclaimer – neither presenter works for the CDC or CMS!

Objectives



Summarize the benefits of reporting to the NHSN AUR module



Understand the CMS requirements for AUR reporting beginning in CY 2024



Identify where to get started in the process of reporting data to the AUR module



Describe the process for a facility to access funding from the Nebraska DHHS HAI/AR Program for reimbursement of AUR implementation costs

NHSN Antibiotic Use and Antibiotic Resistance

The AUR Module allows hospitals to electronically report & analyze antibiotic-related data



AU Option: Used to assess **use** of specific antimicrobial agents

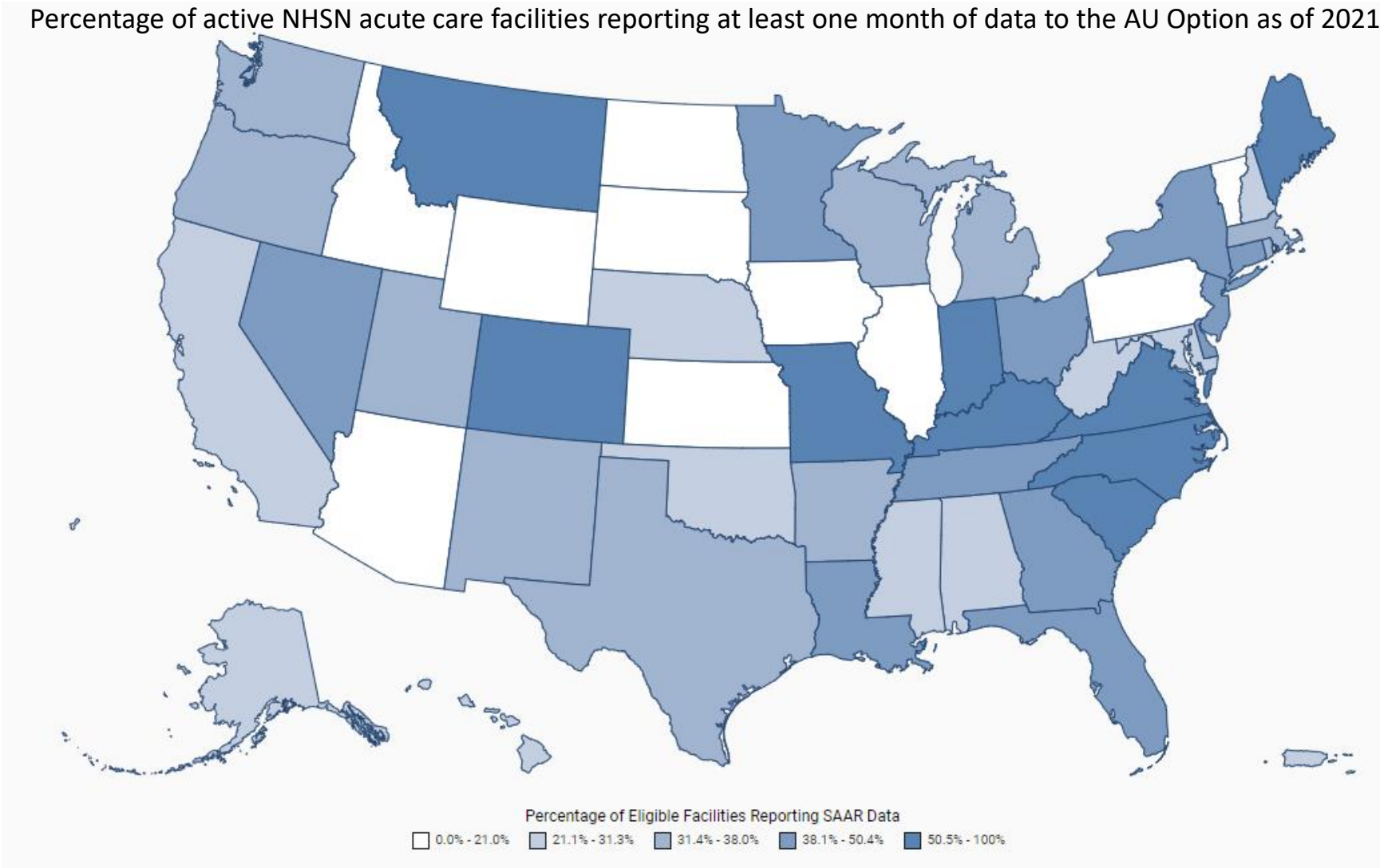


AR Option: Used to assess patient isolates that test **resistant** to specific antimicrobial agents

- **Primary** objective = provide risk adjusted intra-and inter-facility **benchmarking** of antimicrobial usage and resistance
- **Secondary** objective = evaluate **trends** of antimicrobial usage & resistance over time
 - Facility
 - State
 - National

NHSN Antibiotic Use Module

Percentage of active NHSN acute care facilities reporting at least one month of data to the AU Option as of 2021



Nebraska:
Number of facilities reporting: 13
Percentage: 24.1%

Inpatient Antibiotic Use



Antibiotic Resistance &
Patient Safety Portal

Inpatient Antibiotic Use

ADULT: NUMBER OF FACILITIES WITH THE ALL ANTIBACTERIAL SAAR STATISTICALLY SIGNIFICANTLY > 1.0

Acute care hospitals reporting 9 or more months in 2021 from a SAAR-eligible location. See footnote for more information on SAAR-eligibility criteria.

601 / 1703 (35.3%)
Facilities

PEDIATRIC: NUMBER OF FACILITIES WITH THE ALL ANTIBACTERIAL SAAR STATISTICALLY SIGNIFICANTLY > 1.0

Acute care hospitals reporting 9 or more months in 2021 from a SAAR-eligible location. See footnote for more information on SAAR-eligibility criteria.

72 / 327 (22.0%)
Facilities

NEONATAL: NUMBER OF FACILITIES WITH THE ALL ANTIBACTERIAL SAAR STATISTICALLY SIGNIFICANTLY > 1.0

Acute care hospitals reporting 9 or more months in 2021 from a SAAR-eligible location. See footnote for more information on SAAR-eligibility criteria.

204 / 624 (32.7%)
Facilities

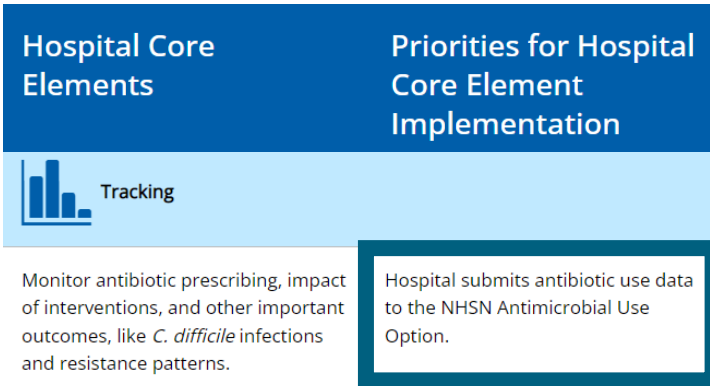
Benefits of AUR Reporting

Insights and Data Benefits

- Benchmarks for antimicrobial stewardship
- Benchmarks for antimicrobial quality improvement activities
- Compare with antimicrobial use trends across the nation (SAAR)
- Identify problem areas within a facility to target interventions
- Antibiotic Stewardship guidance from Nebraska ASAP

Regulatory and Payment Benefits

- Meet the CMS Promoting Interoperability requirement added for CY 2024
- Satisfy the Joint Commission’s antimicrobial stewardship standard for tracking and reporting
- Added to the CDC Priorities for Hospital Antibiotic Stewardship Core Element Implementation in 2022
 - [Priorities for Hospital Core Element Implementation | Antibiotic Use | CDC](#)



CMS requirements for AUR reporting beginning in CY 2024

CMS Requirement in CY 2024

AUR Module Data

- **Beginning in CY 2024**, AUR Module data are required under the Public Health and Clinical Data Exchange Objective of the CMS Promoting Interoperability Program
- Measure includes submission of **both** AU and AR Option data

- Applies to eligible hospitals and critical access hospitals that participate in the CMS PI Program



How do I know if my facility is participating in CMS PI?

- **Most facilities participate** in the CMS PI Program
- Reach out to the person(s) in charge of quality reporting
- Facilities not paid under the CMS Hospital Inpatient Prospective Payment System (IPPS) are **NOT** included in the CMS PI Program
 - Includes but is not limited to
 - Inpatient rehab hospitals
 - Inpatient psych hospitals
 - Long term acute care hospitals

CMS Requirement in CY 2024 - Promoting Interoperability

Why was this requirement added?

- Growth in voluntary reporting since 2011 suggests that hospitals are finding benefits in reporting and using this data
 - Over 2,000 hospitals and 1,000 CAH are voluntarily reporting currently
- Comparable NHSN reporting (blood stream infections, urinary tract infections, and other healthcare-associated infections) are already required under CMS quality reporting and the Hospital Value-Based Purchasing and Hospital-Acquired Condition Reduction Programs (national compliance 97%)
- Incomplete participation limits generalizability of data (selection bias)
- As more resistance data is available, the system becomes better at detecting emerging threats

For CY 2024, facilities attest to either:



What does **active engagement** mean?

Option 1


- Pre-production and validation
- Registration within NHSN
- Testing & validation of CDA files

Option 2


- Validated data production
- Submitting production AU & AR files to NHSN
 - CY 2023 – 90 continuous days of AUR data submission
 - 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)

For CY 2024, facilities attest to either:



Being in active
engagement with
NHSN to submit
AUR data



Claim an applicable
exclusion

Reporting Exclusions

- 1) The hospital or CAH **does not have any patients in any patient care location** for which data are collected by NHSN during the EHR reporting period
- 2) The hospital or CAH does not **have electronic medication administration records/barcoded medication administration** records or an electronic admission discharge transfer (**ADT**) system during the EHR reporting period
- 3) The hospital or CAH does not have an **electronic laboratory information system** or electronic **ADT** system during the reporting period

- **It is anticipated that these exclusions will be re-evaluated for future EHR reporting periods!**
- CMS is currently in its FY2024 rule making cycle, so it is possible some things will change (though no changes to the AUR measure are currently proposed)
 - [FY 2024 Hospital Inpatient Prospective Payment System \(IPPS\) and Long-Term Care Hospital Prospective Payment System \(LTCH PPS\) Proposed Rule - CMS-1785-P | CMS](#)

Is there anything due in 2023?

- **Bonus points only** for AUR in CY 2023
 - For CY 2023, AUR reporting is within the Public Health Registry Reporting
 - Facilities can receive 5 bonus points for being in active engagement with NHSN to submit AUR data
 - For CY 2024, AUR reporting moves out of the Public Health Registry Reporting measure and becomes its own required measure

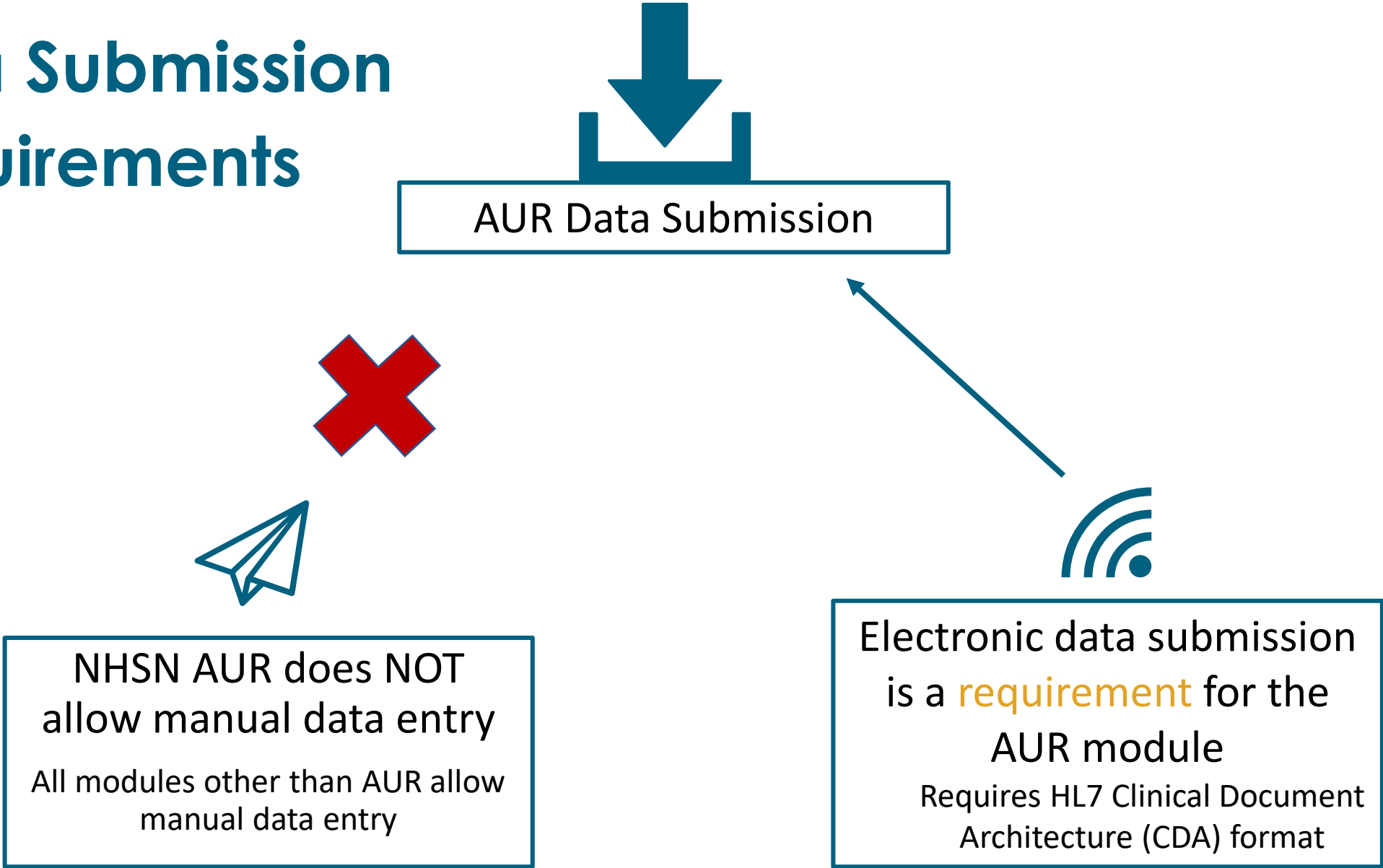
Getting started in the process of reporting data to the AUR module

CDC NHSN Reporting Structure



- Device-associated Module:
 - Bloodstream Infection (CLABSI – Central line-associated bloodstream infection)
 - Central line insertion practices (CLIP) adherence
 - Urinary Tract Infection (CAUTI – Catheter-associated urinary tract infection)
 - Ventilator-associated events (VAE) and Pediatric VAE (PedVAE)
 - Ventilator-associated Pneumonia (VAP)
- Procedure-associated Module:
 - Surgical Site Infection (SSI)
- Antimicrobial Use and Resistance Module (AUR)
- Multidrug-Resistant Organism and *Clostridioides difficile* Infection (MDRO/CDI) Module

Data Submission Requirements



Data Submission Requirements

- Electronic Medication Administration Record (eMAR) or Bar-Coding Medication Administration (BCMA) system
 - Capturing antimicrobial administrations
- Electronic Laboratory Information System (LIS)
 - Capturing antimicrobial susceptibility results
- Electronic Admission, Discharge, Transfer (ADT)
 - Capturing patient movement within the facility



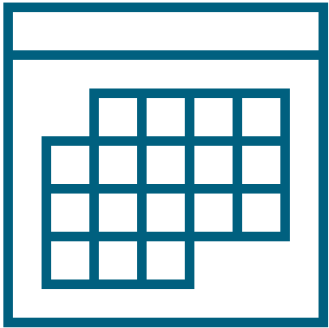
- Ability to collect and package data using HL7 standardized format:
- CDA (Clinical Document Architecture)**
- Commercial software vendors
 - Part of your current EHR
 - “Homegrown” vendors (facility’s internal IT/informatics resources)

How does AUR differ from other HAI uploads?

- Data must be electronically uploaded via CDA
 - **Too much data to enter by hand!**
 - **Every** dose administered, time, date, route, patient location for 91 antibiotics
 - **Every** susceptibility for included organisms
- Provides facilities with standardized way to package & upload data
- AU data is sent at an aggregated level – no patient specific information is sent
- **CDA ≠ CSV (Excel)**
 - CDA uses XML
- Downloading report from EHR and uploading to NHSN should be done every 30 days
 - Takes 15-30 minutes

```
</participant>
<!-- Number of Patient-present Days -->
<entryRelationship typeCode="COMP">
  <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
    <code codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="2525-4"
          displayName="Number of Patient-present Days"/>
    <statusCode code="completed"/>
    <value xsi:type="PQ" unit="d" value="700"/>
  </observation>
</entryRelationship>
<!-- the Drug, aggregate data, no specified route of administration -->
<entryRelationship typeCode="COMP">
  <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
    <code codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="2524-7"
          displayName="Number of Therapy Days"/>
    <statusCode code="completed"/>
    <value xsi:type="PQ" unit="d" value="3"/>
    <participant typeCode="CSM" <!-- antimicrobial Drug -->
      <participantRole classCode="MANU">
        <code codeSystem="2.16.840.1.113883.6.88"
              codeSystemName="RxNorm"
              code="620"
              displayName="Amantadine"/>
      </participantRole>
    </participant>
  </observation>
</entryRelationship>
<!-- stratified data: Drug + route -->
```

How often does data need to be uploaded to NHSN?



- **Monthly Data Submission**
 - Recommend upload within 30 days following the completion of the month
 - Per CMS PI Program guidance, facilities should report data on an ongoing basis during their EHR reporting period

Software Vendors

- As a facility, begin evaluating software vendors
 - Cost considerations
 - Using hospital's EHR vs. third party
 - Additional features (prospective audit and review capabilities)
 - Implementation timeline
 - IT involvement
 - Demonstrations
 - C-suite/IT services approval
- Always use a vendor that has passed SDS validation
- Contact the Nebraska Hospital Association
 - Software demonstrations in July 2023



[AU SDS Vendors](#) | [NHSN](#) | [CDC](#)



[AR SDS Vendors](#) | [NHSN](#) | [CDC](#)

What can our facility get started on today?

Getting started with NHSN AUR

- Fulfill the basic requirements for submission of data into NHSN
 - Hospital is enrolled in NHSN
 - Hospital has mapped NHSN locations
 - Hospital has an NHSN Facility OID
- Get your pharmacist involved!
- Complete online AUR Module training
 - Antimicrobial Use Option
 - Reporting and Analysis (50 minutes)
 - Beginner Analysis (30 minutes)
 - Advanced Analysis (36 minutes)
 - Standardized Antimicrobial Administration Ratio (24 minutes)
 - NHSN Targeted Assessment for Antimicrobial Stewardship (60 minutes)
 - Antimicrobial Resistance Option
 - Reporting and Analysis (1 hour 12 minutes)
 - Facility-Wide Antibigram Report (23 minutes)

Add New NHSN Users

- NHSN Administrator – Enroll new users (i.e., pharmacists)
 - Grid Card or Mobile Soft Token
- Assign user rights – Minimum rights for AUR included below

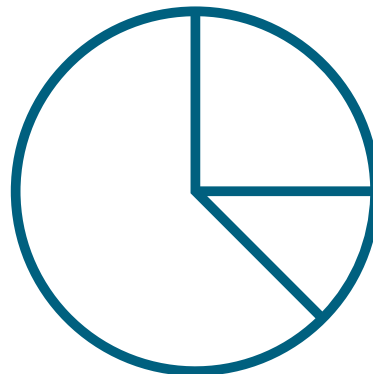
Customize Rights

Denominator Data: Procedure/Summary	View	Add,Edit,Delete	All Rights
AUR - Antimicrobial Use and Resistance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
PROC - Procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PROC - Custom Procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICU - Device Associated - Intensive Care Unit / Other Locations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NICU - Device Associated - Neonatal Intensive Care Unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SCA - Device Associated - SCA/ONC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MDRO - MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plan	View	Add,Edit	All Rights
Patient Safety Monthly Reporting Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Annual Survey	View	Add,Edit	All Rights
Patient Safety Annual Facility Survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analysis			
Patient Safety Data Analysis	<input checked="" type="checkbox"/>		
Antimicrobial Use and Resistance Analysis	<input checked="" type="checkbox"/>		

Next steps

Registration of Intent to Submit Data

- The eligible hospital must first register the facility's intent to submit AU and AR data into NHSN.
- Facilities should **NOT** register intent to submit data until they have verified that the vendor being used is ready (or almost ready) to submit testing data. There is a 60-day response clause.
 - Failure to respond twice within an EHR reporting period would result in the facility not meeting the measure
- Note: Only the NHSN Facility Administrator can view and complete this task.



Registration of Intent to Submit Data

submissions reports

- Analysis
- Users
- Facility
- Group
- Logout

- Customize Forms
- Facility Info
- Add/Edit Component
- Locations
- Surgeons
- Direct Enroll
- AUR PI Registration

AUR Promoting Interoperability (PI) Program Registration

NHSN Antimicrobial Use and Antimicrobial Resistance reporting has been identified as a measure for public health registry reporting under the CMS Promoting Interoperability (PI) Program (§ 170.315(f)(6)).

By checking this box **Mindy Durrance** registers facility **CDA-XYZ_qa_Test Facility (13860)** intent to satisfy a PI Program objective by submitting NHSN Antimicrobial Use and Antimicrobial Resistance (AUR) monthly data via an electronic interface.

For each year, data intended for inclusion in the annual PI Program status report generated by NHSN must be received 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).

The below recipients shall receive NHSN PI Program registration confirmation as well as monthly and annual status report emails. Please enter up to two optional additional email addresses that should receive this information regarding your facility's NHSN PI Program status.

NHSN Facility Administrator: [text box]
Optional facility PI Program contact: [text box]
Optional facility PI Program contact: [text box]

Date Registration of Intent Completed: 01/05/2017

Request AUR PI Program Status Report by Year: **Reports**

To complete registration, verify all information on this page and click the SAVE button.

Edit **Back**

Validation of the AUR CDA Files






- NHSN will send the facility an invitation letter to begin testing and validation
- Three test CDA files are to be emailed to the NHSN CDA Helpdesk (NHSNCDA@cdc.gov) following the specifications outlined in the invitation – **ask your software vendor for these!**
 - Antimicrobial Use Summary CDA
 - Antimicrobial Resistance - Numerator CDA
 - Antimicrobial Resistance - Denominator CDA
- As the NHSN CDA Helpdesk receives and validates the test files, details will be returned to the facility via email describing any errors that were identified during the validation process
- The facility will **work with their vendor** to correct the errors and resend the updated test CDA file(s)



Submission of Production AUR Data into NHSN

- Once the testing and validation steps are complete, the facility will be invited to submit AU and AR data into the NHSN production environment.
- Prior to uploading AU and AR CDA files, enter AUR on your monthly reporting plans within NHSN
 - Locations for monthly recording plan must be specified prior to upload
 - Same monthly reporting plan used for HAI reporting

Antimicrobial Use and Resistance Module

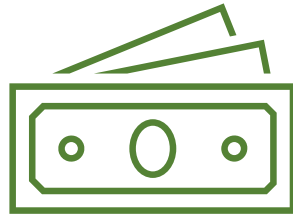
	Locations	Antimicrobial Use	Antimicrobial Resistance
	FACWIDEIN - Facility-wide Inpatient (FacWIDEIn) <input type="text"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MEDWARD - MEDICAL WARD - AU <input type="text"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MICU - MEDICAL ICU - AU <input type="text"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	PEDMED - PED MED WARD-AU <input type="text"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	SURGWARD - SURGICAL WARD - AU <input type="text"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Nebraska DHHS HAI/AR Support Project for reimbursement of AUR implementation costs

NHSN AUR Implementation in Nebraska – Funding Assistance

- **Nebraska DHHS HAI/AR program currently has funding available to dedicate towards assisting hospitals with implementing NHSN Antibiotic Use and Resistance module**
- Funding distributed by **reimbursing** at least part of their expenses for program implementation incurred **between February 2022 – July 2024**
- Facilities meeting all requirements for funding may request reimbursement for related eligible expenses up to the maximum amount allowed for their facility based on licensed bed size as follows:
 - Facilities with <100 licensed beds can request a maximum of \$10,000 in reimbursement
 - Facilities with 101-200 licensed beds can request a maximum of \$15,000 in reimbursement
 - Facilities with ≥201 licensed beds can request a maximum of \$20,000 in reimbursement

Eligible Expenses



- **Technology enhancements** necessary for successful data submission to the Antibiotic Use and/or Antibiotic Resistance Module in NHSN.
 - Purchasing add-on software
 - Updating the hospital's existing electronic health record
- **Staff time** spent on implementation activities. Relevant staff includes, but is not limited to, pharmacists, hospital administrators, infection preventionists, information technologists, quality improvement personnel, and physicians.
- **Other** related expenses (subject to HAI/AR Program Approval)

Needed Documentation for Reimbursement

- Facilities have completed a baseline Antibiotic Stewardship Program self-assessment through the Nebraska Antimicrobial Stewardship Assessment and Promotion Program (ASAP) at least once since Feb 1, 2022.
 - [Baseline ASP Assessment for ACH](#)
- The facility should complete the online survey below to participate in the reimbursement process:
 - [Nebraska DHHS NHSN AUR Facility Reporting Capacity Survey](#)
- At least one month of data successfully submitted to NHSN and available for review by Nebraska DHHS
- Submission of receipts, invoices, and forms for eligible expenses via DHHS Redcap Survey (still in development)

What if we still have questions?

- 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
- Nebraska DHHS Contacts
 - Jenna Preusker (jenna.preusker@nebraska.gov) or
 - Lacey Pavlovsky (lacey.pavlovsky@nebraska.gov)

Nebraska Antimicrobial Stewardship Summit

Saving Antibiotics so Antibiotics Can Save Lives

Friday, June 2, 2023 | 7:30 am – 4:00 pm

Embassy Suites LaVista Hotel and Conference Center

Registration: [2023 Antimicrobial Stewardship Summit: Saving Antibiotics So Antibiotics Can Save Lives | Center for Continuing Education | University of Nebraska Medical Center \(unmc.edu\)](#)

Thank you!
Questions?