

NHSN Antimicrobial Use and Resistance (AUR) Module

January 2016

OVERVIEW OF NHSN

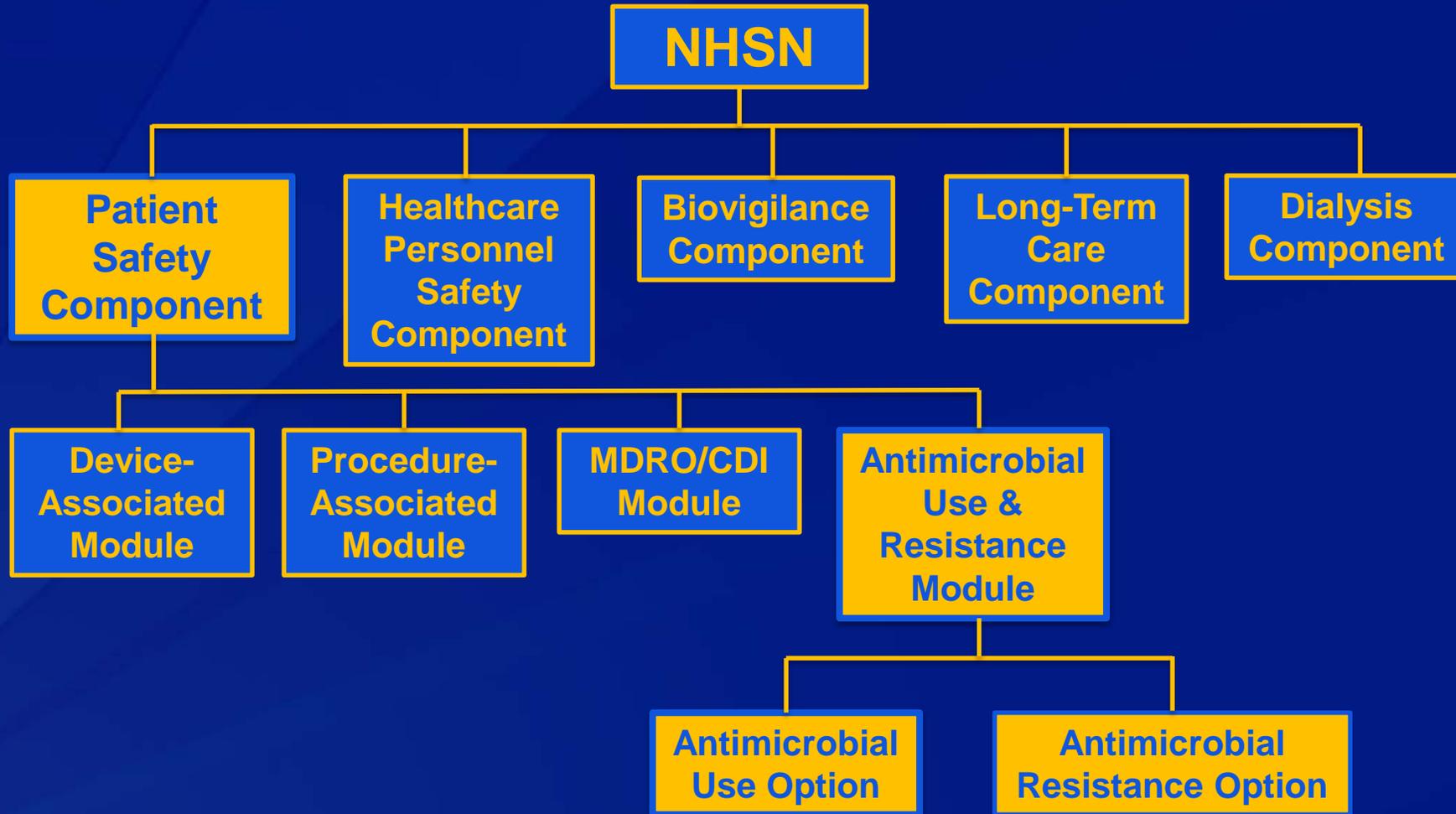
Purposes of NHSN

- ❑ **NHSN is a secure, Internet-based surveillance system managed by the CDC's Division of Healthcare Quality Promotion (DHQP) that is used to:**
 - Collect mandated and voluntarily reported data on:
 - Healthcare-associated infections (HAIs)
 - Antimicrobial use and resistance
 - Healthcare personnel influenza vaccination
 - Blood safety
 - Analyze and report collected data to permit recognition of trends
 - Provide facilities with data that can be used for inter-facility comparisons and local quality improvement activities

Purposes of NHSN

- **Enable healthcare facilities to report healthcare-associated infections (HAI) and prevention practice adherence data via NHSN to fulfill CMS's quality reporting program requirements, state mandate reporting requirements, or collaborative/initiative requirements**
 - **Over 17,000 healthcare facilities enrolled in NHSN**
 - **Acute care hospitals (Gen, ONC, CAH)**
 - **Long term acute care hospitals**
 - **Inpatient rehabilitation facilities**
 - **Dialysis facilities**
 - **Ambulatory surgical centers**
 - **Long term care facilities (NHs/SNFs)**

NHSN Structure



ANTIMICROBIAL USE OPTION

Antimicrobial Use Option

- ❑ **Released in 2011**
- ❑ **Purpose:**
 - Provide a mechanism for facilities to report and analyze antimicrobial usage as part of antimicrobial stewardship efforts at their facility
- ❑ **Voluntary reporting**

Antimicrobial Use Option

□ Who can participate:

- General acute care hospitals (ACH), long-term acute care hospitals (LTAC/LTCH), inpatient rehabilitation facilities (IRF), oncology hospitals, critical access hospitals (CAH) enrolled in NHSN with:
 - Electronic Medication Administration Record (eMAR) or Bar Coding Medication Administration (BCMA) systems
 - No manual entry allowed
 - Ability to collect and package data using HL7 standardized format: [Clinical Document Architecture](#)
 - Participating 3rd party vendors: <http://www.sidp.org/aurvendors>
 - “Homegrown” vendors

Antimicrobial Use Option

❑ Monthly aggregate, summary-level data

- All inpatient locations individually & combined (FacWideIN)
- 3 outpatient locations (ED, pediatric ED, 24 hour observation)

❑ Numerator: Antimicrobial days (Days of Therapy)

- 89 antimicrobials – includes antibacterial, antifungal, and anti-influenza agents
 - Sub-stratified by route of administration:
 - Intravenous (IV)
 - Intramuscular (IM)
 - Digestive (oral)
 - Respiratory (inhaled)

❑ Denominators:

- Days Present - number of days spent in specific unit or facility
 - Days present ≠ Patient days
- Admissions - number of patients admitted to the facility

Antimicrobial Use Data

CDC Defined Output

SAAR Report - All SAARs	Run	Modify
Line Listing - Most Recent Month of AU Data for ...more	Run	Modify
Line Listing - Most Recent Month of AU Data by L...more	Run	Modify
Line Listing - All Submitted AU Data for FACWIDEIN	Run	Modify
Line Listing - All Submitted AU Data by Location	Run	Modify
Rate Table - Most Recent Month of AU Data - Anti...more	Run	Modify
Rate Table - All Submitted AU Data - Antimicrobi...more	Run	Modify
Rate Table - Most Recent Month of AU Data - Anti...more	Run	Modify
Rate Table - All Submitted AU Data - Antimicrobi...more	Run	Modify
Rate Table - Selected Drugs - FACWIDEIN - Most R...more	Run	Modify
Rate Table - Selected Drugs - FACWIDEIN - All Months	Run	Modify
Rate Table - Selected Drugs - by Location - Most...more	Run	Modify
Rate Table - Selected Drugs - by Location - All ...more	Run	Modify
Pie Chart - Most Recent Month of AU Data by Anti...more	Run	Modify
Pie Chart - All AU Data by Antibacterial Class a...more	Run	Modify
Pie Chart - Most Recent Month of AU Data by Anti...more	Run	Modify
Pie Chart - All AU Data by Antifungal Class and ...more	Run	Modify
Pie Chart - Most Recent Month of AU Data by Anti...more	Run	Modify
Pie Chart - All AU Data by Anti-influenza Class ...more	Run	Modify
Bar Chart - Most Recent Month of AU Data by Anti...more	Run	Modify
Bar Chart - All AU Data by Antibacterial Class a...more	Run	Modify
Bar Chart - Most Recent Month of AU Data by Anti...more	Run	Modify
Bar Chart - All AU Data by Antifungal Class and ...more	Run	Modify

AU Option – NHSN Analysis Output Options

Basic analysis output options available

- Line lists
- Rate tables
- Pie charts
- Bar charts
- SAAR (Standardized Antimicrobial Administration Ratio)

AU Option – Line List by Location

National Healthcare Safety Network

Line Listing - Most Recent Month of AU Data by Location

As of: February 20, 2015 at 5:01 PM

Date Range: All SUMMARYAU1MONTH

Location=MICU

Facility Org ID	Summary Year/Month	Antimicrobial Agent Description	Location	Days Present	Antimicrobial Days	Route: IM	Route: IV	Route: Digestive	Route: Respiratory
13860	2015M01	AMAN - Amantadine	MICU	421	0	0	0	0	0
13860	2015M01	AMK - Amikacin	MICU	421	2	0	2	0	1
13860	2015M01	AMOX - Amoxicillin	MICU	421	0	0	0	0	0
13860	2015M01	AMOXWC - Amoxicillin with Clavulanate	MICU	421	0	0	0	0	0
13860	2015M01	AMP - Ampicillin	MICU	421	4	0	4	0	0

- **Sample line list of the most recent month of AU data by location**
 - Generates a list of each antimicrobial separated by location
 - Shows total antimicrobial days, days present and sub-stratification of routes of administration for each antimicrobial

*Data for example only

AU Option – Rate Table by Facility-Wide Inpatient

National Healthcare Safety Network

Rate Table - Most Recent Month of AU Data - Antimicrobial Utilization Rates for FACWIDEIN

Rate per 1,000 Days Present

As of: February 23, 2015 at 1:44 PM

Date Range: All AU_RATES1MONTHFACWIDEIN

Facility Org ID=13860

Summary Year/Month	Antimicrobial Category	Antimicrobial Class	Antimicrobial Days	Days Present	Rate per 1000 Days Present
2015M01	Antibacterial	-- All --	1626	2177	746.899
2015M01	Antibacterial	Aminoglycosides	22	2177	10.106
2015M01	Antibacterial	Carbapenems	101	2177	46.394
2015M01	Antibacterial	Cephalosporins	337	2177	154.8
2015M01	Antibacterial	Fluoroquinolones	244	2177	112.081
2015M01	Antibacterial	Folate pathway inhibitors	32	2177	14.699

- **Sample rate table for all submitted AU data by FacWideIN (all inpatient locations reporting AU data)**
 - Generates a rate of utilization per 1,000 days present for each antimicrobial class for all inpatient locations combined
 - Report includes separate rates for each antimicrobial class for each month of data submitted

*Data for example only

AU Option – Rate Table by Location by Selected Antimicrobial

National Healthcare Safety Network

Rate Table - Selected Drugs from Most Recent Month of AU Data - Antimicrobial Utilization Rates by Location

Rate per 1,000 Days Present

As of: July 22, 2015 at 2:00 PM

Date Range: All AU_DRUGRATES1MONLOCATION

if (((drugIngredientDesc = "LNZ")))

orgID=13860 locCDC=IN:ACUTE:CC:M location=MICU

summaryYM	antimicrobialDays	numDaysPresent	RateDaysPresent
2015M01	8	421	19.00

National Healthcare Safety Network

Rate Table - Selected Drugs from Most Recent Month of AU Data - Antimicrobial Utilization Rates by Location

Rate per 1,000 Days Present

As of: July 22, 2015 at 2:00 PM

Date Range: All AU_DRUGRATES1MONLOCATION

if (((drugIngredientDesc = "LNZ")))

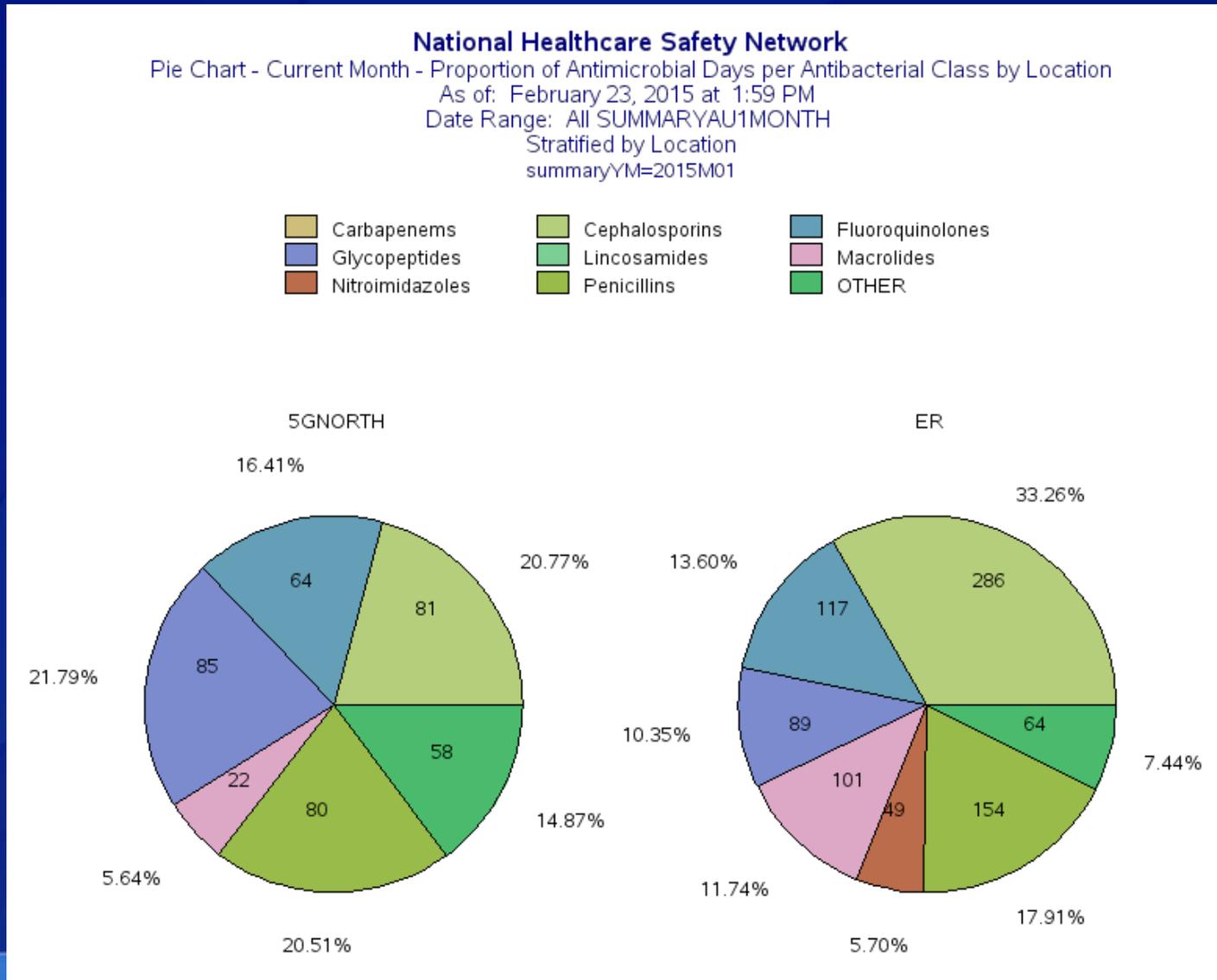
orgID=13860 locCDC=IN:ACUTE:CC:MS location=MSICU

summaryYM	antimicrobialDays	numDaysPresent	RateDaysPresent
2015M01	2	279	7.17

- Sample rate table for selected antimicrobial(s) by location
 - Generates a rate of utilization per 1,000 days present for each antimicrobial selected on the modification screen separated by location for the most recent month of data imported
 - Report can be generated to include any number of antimicrobials from multiple antimicrobial classes

*Data for example only

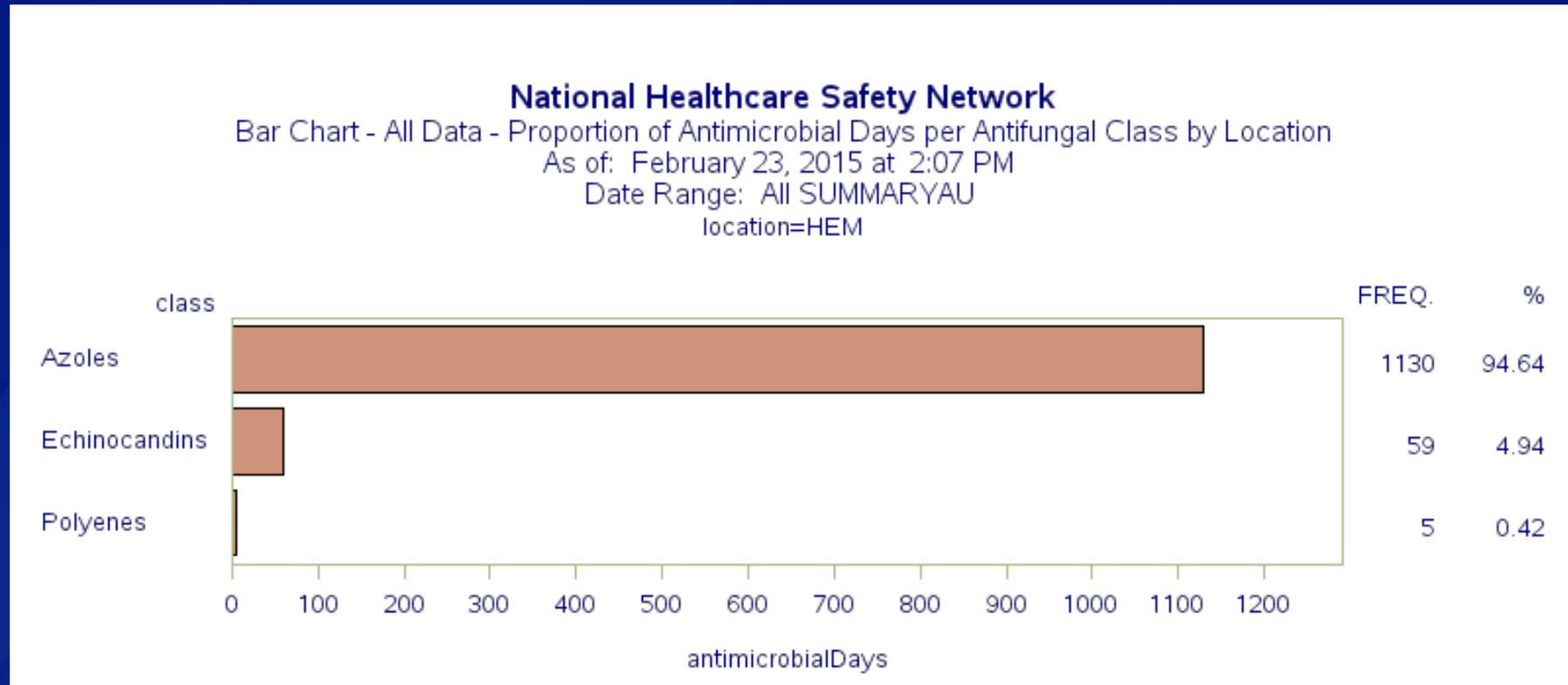
AU Option – Pie Chart by Location



- Sample pie chart by location
- Shows proportion of antimicrobial days per antibacterial class

*Data for example only

AU Option – Bar Chart by Location



□ Sample bar chart by location

- Shows proportion of antimicrobial days per antifungal class

*Data for example only

STANDARDIZED ANTIMICROBIAL ADMINISTRATION RATIO (SAAR)

Standardized Antimicrobial Administration Ratio (SAAR)

SAAR is an Observed-to-Expected (O-to-E) ratio

- ❑ **Observed antibacterial use** – Days of therapy reported by a healthcare facility for a specified category of antimicrobial agents in a specified patient care location or group of locations
- ❑ **Predicted/Expected antibacterial use** – Days of therapy predicted on the basis of nationally aggregated AU data for a healthcare facility's use of a specified category of antimicrobial agents in a specified patient care location or group of locations

The SAAR metric is constructed by using an indirect standardization method for comparing observed to expected days of therapy. Detailed information on the SAAR can be found in the NHSN AUR Module Protocol: <http://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>.

Interpreting the SAAR

- ❑ A high SAAR that achieves statistical significance may indicate excessive antibacterial use.
- ❑ A SAAR that is not statistically different from 1.0 indicates antibacterial use is equivalent to the referent population's antibacterial use.
- ❑ A low SAAR that achieves statistical significance (i.e., different from 1.0) may indicate antibacterial under use.

Note: A SAAR alone is not a definitive measure of the appropriateness or judiciousness of antibacterial use, and any SAAR may warrant further investigation. For example, a SAAR above 1.0 that does not achieve statistical significance may be associated with meaningful excess of antimicrobial use and further investigation may be needed. Also, a SAAR that is statistically different from 1.0 does not mean that further investigation will be productive.

Patient Care Locations Used for the SAARs

SAARs are generated for antimicrobial use in six specified groupings of adult and pediatric patient care locations:

1. Adult medical, surgical, and medical/surgical *intensive care units*
2. Adult medical, surgical, and medical/surgical *wards*
3. Pediatric medical, surgical, and medical/surgical *intensive care units*
4. Pediatric medical, surgical, and medical/surgical *wards*
5. All adult medical, medical/surgical, and surgical *intensive care units and wards*
6. All pediatric medical, medical/surgical, and surgical *intensive care units and wards*

Five Antibacterial Agent Categories Used for the SAARs*

High value targets for antimicrobial stewardship programs:

1. **Broad spectrum agents predominantly used for hospital-onset/multi-drug resistant bacteria** – aminoglycosides, some carbapenems, some cephalosporins, some fluoroquinolones, penicillin B-lactam/b-lactamase inhibitor combinations, and other agents
2. **Broad spectrum agents predominantly used for community-acquired infection** – ertapenem, some cephalosporins, and some fluoroquinolones
3. **Anti-MRSA agents** – ceftaroline, dalbavancin, daptomycin, linezolid, oritavancin, quinupristin/dalfopristin, tedizolid, telavancin, iv, and vancomycin (IV route only)
4. **Agents predominantly used for surgical site infection prophylaxis** – cefazolin, cefotetan, cefoxitin, cefuroxime (IV route only)

High level indicators for antimicrobial stewardship programs:

5. **All antibacterial agents** – All antibacterial agents included in NHSN AUR protocol

*A complete list of all antimicrobials used in each SAAR can be found here:

<http://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>

SAARs for High Value Targets

SAARs for broad spectrum antibacterial agents predominantly used for hospital-onset/multidrug resistant infections:

1. Adult medical, medical/surgical, and surgical ICUs
2. Adult medical, medical/surgical, and surgical wards
3. Pediatric medical, medical/surgical, and surgical ICUs
4. Pediatric medical, medical/surgical, and surgical wards

SAARs for broad spectrum antibacterial agents predominantly used for community-acquired infections:

5. Adult medical, medical/surgical, and surgical ICUs
6. Adult medical, medical/surgical, and surgical wards
7. Pediatric medical, medical/surgical, and surgical ICUs
8. Pediatric medical, medical/surgical, and surgical wards

SAARs for High Value Targets (continued)

SAARs for anti-MRSA antibacterial agents:

9. Adult medical, medical/surgical, and surgical ICUs
10. Adult medical, medical/surgical, and surgical wards
11. Pediatric medical, medical/surgical, and surgical ICUs
12. Pediatric medical, medical/surgical, and surgical wards

SAARs for antibacterial agents predominantly used for surgical site infection prophylaxis:

13. Adult ICUs and wards (medical, medical/surgical, and surgical)
14. Pediatric ICUs and wards (medical, medical/surgical, and surgical)

High Level Indicator SAARs

SAARs for all antibacterial agents:

15. Adult ICUs and wards (medical, medical/surgical, and surgical)
16. Pediatric ICUs and wards (medical, medical/surgical, and surgical)

SAAR Output in NHSN

National Healthcare Safety Network
SAARs Table - All Standardized Antimicrobial Administration Ratios (SAARs) High-Level Indicators and High-Value Targets
 As of: November 17, 2015 at 3:10 PM
 Date Range: All AU_SAAR

SAAR title

All antimicrobials used in adult ICUs and wards

Denominator

Facility Org ID	Summary Yr/Qtr	SAAR Type	Antimicrobial Days	Predicted Antimicrobial Days	Days Present	SAAR	SAAR p-value	95% Confidence Interval
13860	2014Q1	IND-Adult-1	4416	4421.364	6326	0.999	0.9437	0.970, 1.029
13860	2014Q2	IND-Adult-1	3998	3856.677	5668	1.037	0.0240	1.005, 1.069
13860	2014Q3	IND-Adult-1	3568	3952.912	5765	0.903	0.0000	0.873, 0.933
13860	2014Q4	IND-Adult-1	6835	5731.061	9247	1.193	0.0000	1.165, 1.221
13860	2015Q1	IND-Adult-1	4060	3113.877	5358	1.304	0.0000	1.264, 1.344

Observed Use **Predicted Use** **Calculated SAAR Values**

Includes data for January 2014 and forward.
 Data restricted to medical, medical/surgical and surgical locations.
 Source of aggregate data: 2014 NHSN AU Data
 Data contained in this report were last generated on November 11, 2015 at 5:57 PM.

- ❑ Sample SAAR table for all antimicrobials used in adult medical, surgical, and medical/surgical ICU and ward locations submitting AU data from the facility
 - SAARs are generated per quarter
 - Includes to total observed antimicrobial days and the predicted antimicrobial days that are used to calculate the SAAR values

*Data for example only

ANTIMICROBIAL RESISTANCE (AR) OPTION

Antimicrobial Resistance (AR) Option

- ❑ **Released in July 2014**

- ❑ **Purpose:**
 - Facilitate evaluation of antimicrobial resistance data using standardized approach
 - Provide facilities with improved awareness of a variety of AR issues to aid in clinical decision making and prioritize transmission preventions efforts

- ❑ **Voluntary reporting**

Requirements for AR Data Submission

Who Can Participate?

□ Hospitals* that have:

- Electronic Laboratory Information System (LIS) and
- Admission Discharge Transfer (ADT) System
- *Or electronic access to required data elements*

AND

- Ability to collect and package data using HL7 standardized format: [Clinical Document Architecture](#)

*General acute care hospitals, long-term acute care hospitals, inpatient rehabilitation facilities, oncology hospitals, critical access hospitals enrolled in NHSN

AR Data Elements What Data Are Collected?

- ❑ **Numerator: Patient-level susceptibility results for 19 specific organisms**
 - DOB, gender, date admitted to facility, location
 - Specimen collection date, specimen source
 - Blood, cerebral spinal fluid (CSF), urine, lower respiratory
 - Organism & antimicrobial susceptibility data for each antimicrobial required for the isolated organism/specimen type
 - Values for E-test, MIC, or Zone
 - Final lab interpretation
 - S, S-DD, I, R, NS, N

- ❑ **Denominator: patient days & admissions (facility-wide only)**

AR Option – Eligible Organisms

- ❑ *Acinetobacter*
- ❑ *Candida albicans*
- ❑ *Candida glabrata*
- ❑ *Citrobacter freundii*
- ❑ *Enterobacter*
- ❑ *Enterococcus faecalis*
- ❑ *Enterococcus faecium*
- ❑ *Enterococcus* spp. (when not specified to the species level)
- ❑ *Escherichia coli*
- ❑ Group B *Streptococcus*
- ❑ *Klebsiella oxytoca*
- ❑ *Klebsiella pneumoniae*
- ❑ *Morganella morganii*
- ❑ *Proteus mirabilis*
- ❑ *Pseudomonas aeruginosa*
- ❑ *Serratia marcescens*
- ❑ *Staphylococcus aureus*
- ❑ *Stenotrophomonas maltophilia*
- ❑ *Streptococcus pneumoniae*

AR Option – Organism/Agent Combinations

Organism	Specimen Type	Antimicrobial Agents
<i>Acinetobacter</i>	Blood, Urine, Lower Respiratory, CSF	Amikacin Ampicillin-sulbactam Cefepime Cefotaxime Ceftazidime Ceftriaxone Ciprofloxacin Doxycycline Gentamicin Imipenem with Cilastatin Levofloxacin Meropenem Minocycline Piperacillin Piperacillin-tazobactam Tetracycline Ticarcillin-clavulanate Tobramycin Trimethoprim-sulfamethoxazole
	Additional Agents for Urine	None

- ❑ Selected antimicrobial agents are required to be reported for each of the 19 organisms per specimen type
 - Full list can be found in the NHSN AUR Module Protocol:
<http://www.cdc.gov/nhsn/PDFs/pscManual/11pscAURcurrent.pdf>

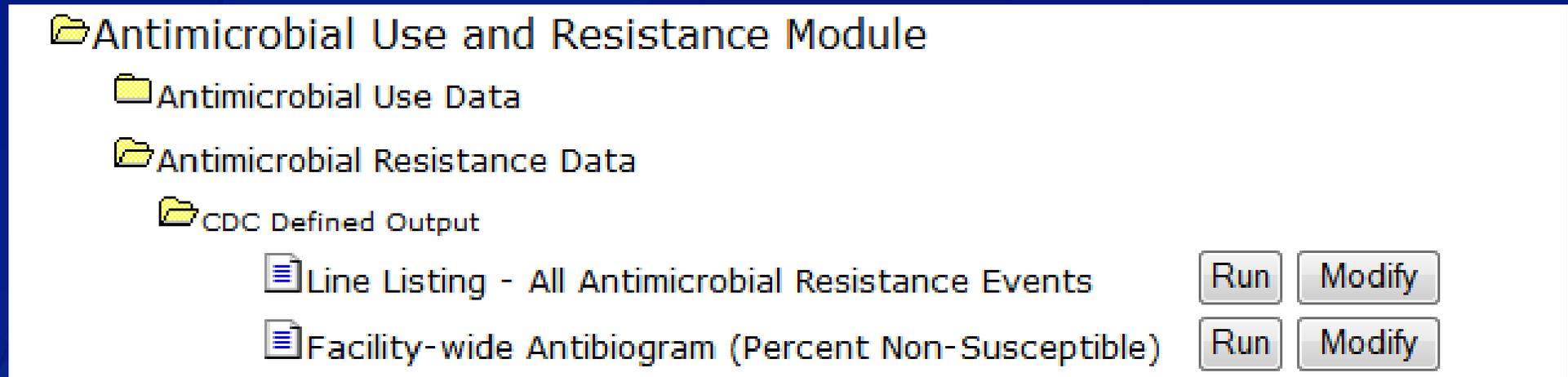
AR Option Reporting Rules

- ❑ Same organism from invasive specimen source (blood & CSF) reported once per patient per 14 day period
- ❑ Same organism from non-invasive source (urine & lower respiratory) reported once per patient per month

Please see NHSN AUR Module Protocol for further details:

<http://www.cdc.gov/nhsn/PDFs/pscManual/11pscAURcurrent.pdf>

AR Option – Output Options



The screenshot displays a hierarchical menu structure for the Antimicrobial Use and Resistance Module. It includes folders for Antimicrobial Use Data and Antimicrobial Resistance Data, with the latter containing a sub-folder for CDC Defined Output. Under this sub-folder, two report options are listed: 'Line Listing - All Antimicrobial Resistance Events' and 'Facility-wide Antibigram (Percent Non-Susceptible)'. Each report option has 'Run' and 'Modify' buttons next to it.

- Antimicrobial Use and Resistance Module
 - Antimicrobial Use Data
 - Antimicrobial Resistance Data
 - CDC Defined Output
 - Line Listing - All Antimicrobial Resistance Events
 - Facility-wide Antibigram (Percent Non-Susceptible)

- ❑ **Basic analysis output options available**
 - Line listing
 - Facility-wide antibiogram

AR Option – Line List

National Healthcare Safety Network Line Listing - Antimicrobial Resistance Events by Pathogen

As of: August 15, 2014 at 10:05 AM

Date Range: All AUR_DETAIL

Pathogen=CA

orgID	patID	dob	gender	eventID	admitDate	location	specimenDate	isolateID	SpecimenGroup	Pathogen
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA

Sample line list of AR events by pathogen

- Lists each patient, specimen collection date, specimen source, and pathogen

*Data for example only

AR Option – Line List

National Healthcare Safety Network

Line Listing - Antimicrobial Resistance Events by Pathogen

As of: August 15, 2014 at 10:05 AM

Date Range: All AUR_DETAIL

Pathogen=CA

orgID	patID	dob	gender	eventID	admitDate	location	specimenDate	isolateID	SpecimenGroup	Pathogen
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Urine	11/25/1954	M	43733	01/15/2013	1029-8	01/21/2013	123456-7u	Urine	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_Bld	11/25/1954	M	43734	01/15/2013	1029-8	01/21/2013	123456-7	Blood	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA
10846	Candida_csf	11/25/1954	M	43735	01/15/2013	1029-8	01/21/2013	123456-7	CSF	CA

□ Reading the line list

- Patient ID 'Candida_Urine' had a urine specimen taken on Jan 21, 2013 while he was in the location '1029-8.' Candida albicans was identified in the specimen.

*Data for example only

AR Option – Line List

orgID	patID	isolateID	SpecimenGroup	Pathogen	arDrugDesc	eTestValue	eTestSign	eTestInterp	MICValue	MICSign	MICInterp	ZoneValue	ZoneSign	ZoneInterp	FinalInterpDesc
10846	Candida_Urine	123456-7u	Urine	CA	ANID - Anidulafungin	0.100	<	S	0.100	<=	S	2.500	=	I	NS - Non-Susceptible
10846	Candida_Urine	123456-7u	Urine	CA	CASPO - Caspofungin	0.100	<	S	0.100	<=	S	2.500	=	I	S - Susceptible
10846	Candida_Urine	123456-7u	Urine	CA	FLUCO - Fluconazole	0.100	<	S	0.100	<=	S	2.500	=	I	S - Susceptible
10846	Candida_Urine	123456-7u	Urine	CA	FLUCY - Flucytosine	0.100	<	S	0.100	<=	S	2.500	=	I	S - Susceptible
10846	Candida_Urine	123456-7u	Urine	CA	ITRA - Itraconazole	0.100	<	S	0.100	<=	S	2.500	=	I	S - Susceptible
10846	Candida_Urine	123456-7u	Urine	CA	MICA - Micafungin	0.100	<	S	0.100	<=	S	2.500	=	I	S - Susceptible
10846	Candida_Urine	123456-7u	Urine	CA	POSAC - Posaconazole	0.100	<	S	0.100	<=	S	2.500	=	I	S - Susceptible
10846	Candida_Urine	123456-7u	Urine	CA	VORI - Voriconazole	.		N	.		N	.		N	N - Not Tested

- ☐ Modifications can be made to the output option to show the antimicrobial tested, susceptibility test values, and final susceptibility interpretation

AR Option – Facility-wide Antibigram

**National Healthcare Safety Network
Facility-wide Antibigram (Percent Non-Susceptible)
Rate per 100 Isolates**

As of: August 15, 2014 at 4:32 PM
Date Range: All AUR_SUMMARY

orgID=13860 CCN=N/A SpecimenDateYM=2014M01

Drug	Pathogen	
	Acinetobacter spp. - ACS	Staphylococcus aureus - SA
AMK	0	
AMPIWS	100	
AZITH		100
CEFEP	0	
CEFOT	0	
CEFOX		49.0
CEFTAZ	0	
CEFTRX	0	
CHLOR		0
CIPRO	33.0	0
CLARTH		0
CLIND		0
DAPTO		0
DOXY	33.0	0
ERYTH		0
GENTA	33.0	0
IMIPWC	33.0	
LEVO	33.0	0
LNZ		0
LOM		.
MERO	33.0	
MINO	33.0	0
MOXI		0

□ Sample facility-wide antibiogram

- Shows the pathogens from the specimens reported into the AR Option for a given month
- Lists all antimicrobials and the percent of isolates that were non-susceptible to the pathogen
- Percent non-susceptible only calculated when ≥ 30 isolates have been tested for a particular drug. Cells with "." represent pathogen-drug combinations for which there were less than 30 isolates tested.
- Cells shaded in grey represent non-valid pathogen/drug combinations

*Data for example only

AR Option – Facility-wide Antibigram

**National Healthcare Safety Network
Facility-wide Antibigram (Percent Non-Susceptible)
Rate per 100 Isolates**

As of: August 15, 2014 at 4:32 PM
Date Range: All AUR_SUMMARY

orgID=13860 CCN=N/A SpecimenDateYM=2014M01

Drug	Pathogen	
	Acinetobacter spp. - ACS	Staphylococcus aureus - SA
AMK	0	
AMPIWS	100	
AZITH		100
CEFEP	0	
CEFOT	0	
CEFOX		49.0
CEFTAZ	0	
CEFTRX	0	
CHLOR		0
CIPRO	33.0	0
CLARTH		0
CLIND		0
DAPTO		0
DOXY	33.0	0
ERYTH		0
GENTA	33.0	0
IMIPWC	33.0	
LEVO	33.0	0
LNZ		0
LOM		.
MERO	33.0	
MINO	33.0	0
MOXI		0

□ Reading the antibiogram:

- In January 2014, 33.0% of *Acinetobacter* spp. isolates tested were non-susceptible to Ciprofloxacin
- In January 2014, 0% of *Staphylococcus aureus* isolates were non-susceptible to Ciprofloxacin

*Data for example only

NHSN Antimicrobial Use and Resistance (AUR) Module Resources

- ❑ **NHSN AUR Protocol:**
 - <http://www.cdc.gov/nhsn/PDFs/pscManual/11pscAURcurrent.pdf>
- ❑ **Intro to NHSN AUR Module Training Slides:**
 - <http://www.cdc.gov/nhsn/PDFs/training/AUR-training.pdf>
- ❑ **NHSN Analysis Quick Reference Guides:**
 - <http://www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.html>

- ❑ **NHSN Helpdesk:**
 - NHSN@cdc.gov
- ❑ **NHSN CDA Helpdesk (technical questions):**
 - NHSNCDA@cdc.gov

Thank you!

For more information please contact Centers for Disease Control and Prevention

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E-mail: cdcinfo@cdc.gov Web: 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.

Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases

