

NHSN Antimicrobial Use and Resistance Module – Group Function

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March 22-24, 2022

2022 Virtual NHSN Training

Objectives

- Identify differences between NHSN Group Function and Data Use Agreement (DUA)
- Define steps to create an NHSN group
- Set up Confer Rights Template for AUR
- Run group-specific analysis reports
- Run SAAR report at the group level and aggregate SAARs across multiple facilities
- Run facility-wide antibiogram report at the group level
- Monitor the quality of AUR data at the group level

NHSN Groups

Sharing NHSN Data

- Groups allow NHSN facilities to share some or all their data at a single (Group) level for a mutual purpose
- Facilities can share NHSN data with other entities via Groups but only users at the Group level can see facility-level data – Group members cannot see each other's data
- Facilities can join as many Groups as they want
- Two vehicles to create a Group: NHSN Group Function and Data Use Agreement (DUA)

Group Function vs. Data Use Agreement (DUA)

Group Function

- Anyone can create a Group and invite facilities
- Facilities join voluntarily and manually accept the Confer Rights Template
- Group administrators cannot access data for facilities that don't confer rights

DUA

- State, local, and territorial health departments can gain access to data from facilities in their jurisdiction solely for the purposes of surveillance and prevention
- Facilities in jurisdiction automatically added to group and do not have to accept Confer Rights Template
- No state, local, or territorial reporting mandate required

Group Set Up via DUA

Steps to Creating a DUA

1. Health department submits DUA inquiry to NHSNDUA@cdc.gov and arranges initial call with CDC's Division of Healthcare Quality Promotion (DHQP)
2. DHQP and health department work together to develop DUA
3. Health department and DHQP sign DUA once they agree on the terms
4. Final copy of DUA posted to the CDC State-Based Healthcare Associated Infection Prevention Activities website: <http://www.cdc.gov/hai/state-based/index.html>
5. DHQP works with the health department to host a webinar to inform all local and state associations about DUA and 90-day opt-out period

Group Set Up via Group Function

Steps to Creating a Group

1. Identify a Group Administrator
2. Group Administrator asks NHSN facility for nomination
3. Group Administrator completes Secure Access management services (SAMS) user registration (if needed)
4. Group Administrator adds additional users to the Group and assigns rights
5. Group Administrator sets joining password
6. Group Administrator creates Confer Rights Template
7. Group Administrator invites potential members
8. Member facilities join Group and accept Confer Rights Template

1. Identify a Group Administrator

- First step is identifying a Group Administrator
 - Can be anyone!
 - Should read Group Administrator Guide and manuals:
<https://www.cdc.gov/nhsn/pdfs/groupsstartup/groupadminstartupguidelatest.pdf>
 - Only one person can be the Group Administrator, but other Group users can be given administrative rights and role can be reassigned as needed
 - Only current Group Administrator can reassign
 - Group > Edit Group Info to reassign



2. Ask a Facility to Nominate the Group

- A facility currently participating in NHSN must nominate the Group
 - Group Administrator provides facility with the Group name, type, Group Administrator's contact information, and whether Group Administrator is new or existing NHSN user
 - Email address must match email address used for Group Administrator's SAMS account



2. Ask a Facility to Nominate the Group (cont.)

- Facility navigates to Group > Nominate to access the Nominate Group screen
 - Only one facility should nominate the Group
 - Facility that nominates the Group does not automatically become a Group member



2. Ask a Facility to Nominate the Group – screenshot



NHSN - National Healthcare Safety Network

XGA6
_CDA-XYZ Test Facility (Prod)

NHSN Home

Alerts

Dashboard

Reporting Plan

Patient

Event

Procedure

Summary Data

COVID-19

Import/Export

Surveys

Analysis

Users

Facility

Group

Logout

Nominate Group

Note: This form should be used for nominating organizations that serve as groups. If the proposed administrator for the group is already a user in the NHSN system, check the **Use Existing NHSN User** option below. For that case you will be prompted to enter the unique e-mail address of that person.

If the proposed administrator does not already exist, check the **Create New NHSN User** option. For that case you will be prompted to provide a User ID for that user along with the persons name, email address, and phone number.

Enter group data

Mandatory fields marked with *

Group Name *:

Type of Group *: HCSP - Healthcare system, Private, for profit

If group type is Other, enter type here:

Group Administrator Information *

☐ Use existing NHSN user ☐ Create new NHSN user

Create new NHSN user

Up to 32 letters and/or numbers, no spaces or special characters

First Name *: Middle Name:

Confer Rights

Join

Leave

Nominate

new user as the administrator of this group, enter that persons name, email address, and phone number, and then hit the new group administrator will be notified when the group has been added, and will supply potential member facilities with necessary to join the group including the joining password.

3. Complete SAMS user registration (if needed)

- After the nomination, Group Administrator will receive an email containing the Group's 5-digit NHSN ID and link to register with SAMS
 - SAMS is a federal information technology system that gives authorized personnel secure access to non-public CDC applications like NHSN
 - If Group Administrator is not existing NHSN user, must complete SAMS user registration – existing NHSN users do not need to register again



4. Add Group Users and assign rights

- Group Administrator should now have access to Group in NHSN
- Group Administrator can add Group users and assign rights like Facility Administrator at facility
 - Users > Add
 - Recommended user rights for AUR:
<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-au-user-rights.pdf>



4. Add Group Users and assign rights – screenshot



NHSN - National Healthcare Safety Network

LAURAB
AUR Test Group

NHSN Home

- Dashboard
- Reporting Plan
- Event
- Procedure
- Summary Data
- COVID-19
- Surveys
- Analysis
- Users**
- Group
- Logout

Add User

Mandatory fields marked with *

User ID *: Up to 32 letters and/or numbers, no spaces or special characters

Prefix:

First Name *:

Middle Name:

Last Name:

First Initial:

User Name: Y - Yes

User Type:

Antimicrobial Use Option Contact: ☐ Yes

Antimicrobial Resistance Option Contact: ☐ Yes

5. Set Joining Password (cont.)

- NHSN Groups protected with a joining password, which Group Administrator shares with member facilities
 - Group Administrator sets the joining password by selecting Group > Joining Password
 - Enter joining password, then click Set Password to complete Group setup
 - Group Administrator can change or reset the password at any time



5. Set Joining Password – screenshot

Note: Data are fictitious and for demonstration purposes only.



NHSN - National Healthcare Safety Network

LAURAB
AUR Test Group

NHSN Home

- Dashboard
- Reporting Plan
- Event
- Procedure
- Summary Data
- COVID-19
- Surveys
- Analysis
- Users
- Group**
- Logout

Memberships

Facilities whose data can be accessed by this group

- DHQP Memorial Hospital (10000)
- Testing Facility (10036)
- _CDA-XYZ Test Facility (Prod) (33617)

Evict Member(s)

Set joining password for this group

New Password:

Verify New Password:

Set Password

Back

- Find Facility
- Edit Group Info
- Joining Password**
- Evict Members
- Send Email
- Define Rights
- Rights Acceptance Report

6. Confer Rights Template

- Group Administrator creates template of data elements (Confer Rights Template) that member facilities will share with the Group
 - Group > Define Rights
- For Group Function, Group users will be unable to view data of member facilities that have not accepted Confer Rights Template
- For DUA, facilities in jurisdiction automatically added to group and do not have to accept Confer Rights Template



6. Confer Rights Template – screenshot



NHSN - National Healthcare Safety Network

NHSN Home

- Dashboard
- Reporting Plan
- Event
- Procedure
- Summary Data
- Surveys
- Analysis
- Users
- Group**
- Cheat Sheets
- Logout

Define Rights-Patient Safety

! Please select the rights that facilities joining "AUR Test Group" will confer

General

View Options

Patient

☒ With All Identifiers

☐ Without Any Identifiers

☐ With Specified Identifiers

☐ Sex ☐ DOB ☐ Ethnicity ☐ Race

☐ Medicare # ☐ Name ☐ SSN ☐ Patient ID ☐ Birthweight (NICU only)

Find Facility

Edit Group Info

Joining Password

Evict Members

Send Email

Define Rights

Rights Acceptance Report

Defining Rights for AUR – General & Surveys Sections

- General section
 - Select monthly reporting plan, data analysis and facility information
 - Patient information required for AR Option
- Surveys section
 - Required for SAARs

The screenshot displays the AUR configuration interface, divided into two main sections: General and Surveys.

General Section:

- View Options:**
 - ☒ With All Identifiers
 - ☐ Without Any Identifiers
 - ☐ With Specified Identifiers
 - ☐ Sex
 - ☐ DOB
 - ☐ Ethnicity
 - ☐ Race
 - ☐ Medicare #
 - ☐ Name
 - ☐ SSN
 - ☐ Patient ID
 - ☐ Birthweight (NICU only)
- Event/Procedure:**
 - ☐ Bed Capacity View Data
 - ☒ Monthly Reporting Plan
 - ☒ Data Analysis
 - ☒ Facility Information
 - ☐ Hospital Respiratory Data
 - ☐ Hospital Respiratory CSV Data Upload
 - ☐ Monthly Survey View Data
 - ☐ Monthly Survey CSV Data Upload

Surveys Section:


	Year		Year		Survey Type
	2014	To			(All)

Buttons: Add Row, Clear All Rows

Note: only complete survey data are shared with groups.

Defining Rights for AUR – AUR Section

- Antimicrobial Use and Resistance section
 - Select Location Type = (ALL), Location = (ALL)
 - Includes all individual inpatient and outpatient locations

Antimicrobial Use and Resistance									
	Plan	Month	Year	To	Month	Year	Location Type	Location	Other Location Requirements
	(All) ▾	▾	▾	To	▾	▾	(ALL) ▾	(ALL) ▾	
<input checked="" type="checkbox"/> Antimicrobial Use		<input checked="" type="checkbox"/> Antimicrobial Resistance							
Add Row		Clear All Rows							

Defining Rights for AUR – AUR Section (cont.)

- Select Location Type = FACWIDE, Location = FacWIDEIn
 - Includes FacWideIN
 - Must be included to receive FacWideIN data from facilities

Antimicrobial Use and Resistance									
	Plan	Month	Year	To	Month	Year	Location Type	Location	Other Location Requirements
	(All) ▾	▾	▾	To	▾	▾	(ALL) ▾	(ALL) ▾	
<input checked="" type="checkbox"/> Antimicrobial Use		<input checked="" type="checkbox"/> Antimicrobial Resistance							
	(All) ▾	▾	▾	To	▾	▾	FACWIDE ▾	FacWIDEIn ▾	
<input checked="" type="checkbox"/> Antimicrobial Use		<input checked="" type="checkbox"/> Antimicrobial Resistance							
<input type="button" value="Add Row"/>		<input type="button" value="Clear All Rows"/>							

7. Invite Member Facilities

- Group Administrator invites facilities to join Group
 - Invitation must include Group's NHSN ID and Joining Password
 - May want to include Group's purpose, summary and reasoning for data elements in confer rights template, and information regarding data use and security



8. Member Facilities Join Group

- Any administrative-level user in the invited facility can join Group
 - Group > Join
 - Enter Group ID and Joining Password
- After member facility joins Group, they will be taken directly to confer rights template



8. Member Facilities Join Group – screenshot

Note: Data are fictitious and for demonstration purposes only.



NHSN - National Healthcare Safety Network

XGA6
_CDA-XYZ Test Facility (Prod)

NHSN Home

- Alerts
- Dashboard ▶
- Reporting Plan ▶
- Patient ▶
- Event ▶
- Procedure ▶
- Summary Data ▶
- COVID-19 ▶
- Import/Export
- Surveys ▶
- Analysis ▶
- Users ▶
- Facility ▶
- Group ▶**
- Logout

Memberships

Groups that have access to this facility's data

- AUR Test Group (53664)
- QA TEST Prod Group (21380)
- Test Group (16093)

Confer Rights

Leave Group(s)

Enter ID and Password for this facility to join a new group

Group ID:

Group Joining Password:

Join Group

Back

Confer Rights


Join

Leave

Nominate

Accepting the Confer Rights Template for AUR

- Facilities can elect not to share some or all AUR data requested in the Confer Rights Template by checking "N/A" box

Antimicrobial Use and Resistance										
Plan	Month	Year	Month	Year	Location Type	Location	Other Location Requirements	Your Locations	N/A	
(All)			To		(ALL)	(ALL)		Select options		<input type="checkbox"/>
<input checked="" type="checkbox"/> Antimicrobial Use <input checked="" type="checkbox"/> Antimicrobial Resistance										
(All)			To		FACWIDE	FacWIDEIn				<input type="checkbox"/>
<input checked="" type="checkbox"/> Antimicrobial Use <input checked="" type="checkbox"/> Antimicrobial Resistance										

- Facilities can view and edit rights conferred on Action Items/Alerts screen or by navigating to Group > Confer Rights

Congratulations – you created a Group!

Can now receive data from member facilities and access special group features in NHSN




Group View and Reports

NHSN Group Users' View

NHSN - National Healthcare Safety Network

Welcome to the NHSN Landing Page

 XGA6@cdc.gov

Select component:
Patient Safety

Select facility/group:
Grp: AUR Test Group (ID 53664)

Select facility within the above group:
All Facilities

Submit



CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

NHSN NATIONAL HEALTHCARE SAFETY NETWORK

LAURAB
AUR Test Group


NHSN - National Healthcare Safety Network

NHSN Home

- Dashboard
- Reporting Plan
- Event
- Procedure
- Summary Data
- COVID-19
- Surveys
- Analysis
- Users
- Group**
- Logout

NHSN Patient Safety Component Home Page

Assurance of Confidentiality: The voluntarily provided information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with Sections 304, 306 and 308(d) of the Public Health Service Act (42 USC 242b, 242k, and 242m(d)).

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- Find Facility
- Edit Group Info
- Joining Password
- Evict Members
- Send Email
- Define Rights
- Rights Acceptance Report

Rights Acceptance Report

- Track Group membership
- Shows which member facilities accepted Confer Rights Template and when

Note: Data are fictitious and for demonstration purposes only.

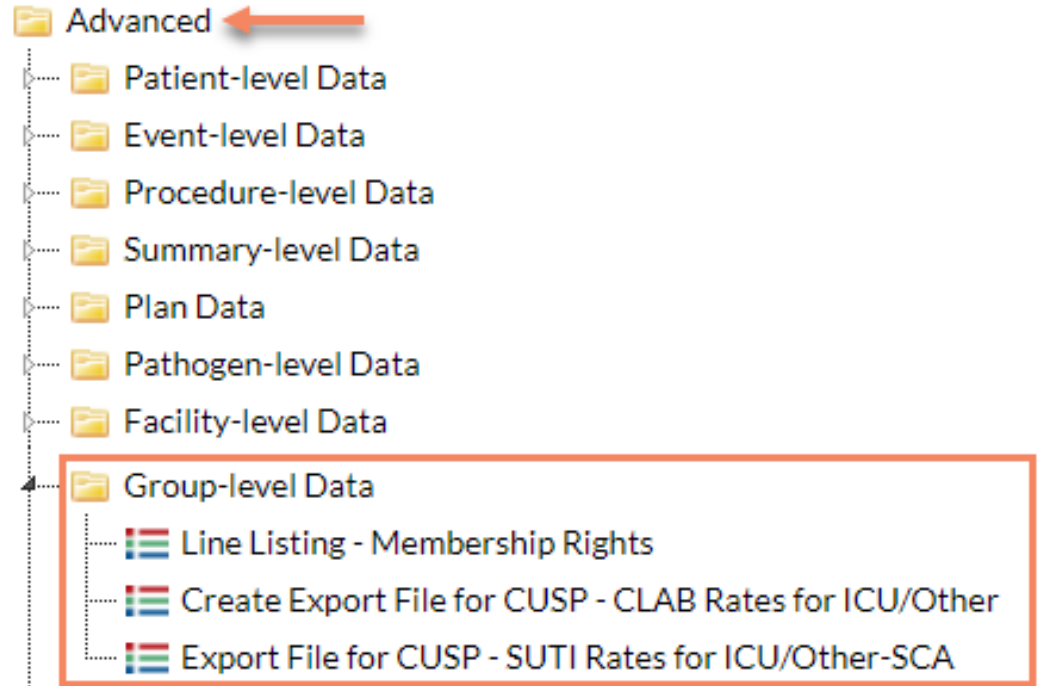
The screenshot displays the NHSN (National Healthcare Safety Network) interface. At the top, the CDC logo and text 'Centers for Disease Control and Prevention CDC 24/7: Saving Lives, Protecting People™' are visible on the left, and the NHSN logo 'NATIONAL HEALTHCARE SAFETY NETWORK' is on the right. Below the header, a dark blue bar contains 'NHSN - National Healthcare Safety Network' and a user profile for 'LAURAB AUR Test Group'. A left-hand navigation menu lists options: NHSN Home, Dashboard, Reporting Plan, Event, Procedure, Summary Data, COVID-19, Surveys, Analysis, Users, Group, and Logout. The 'Group' option is selected, and a dropdown menu is open, showing options like 'Find Facility', 'Edit Group Info', 'Joining Password', 'Evict Members', 'Send Email', 'Define Rights', and 'Rights Acceptance Report', which is highlighted. The main content area is titled 'Rights Acceptance Report' and features a table with the following data:

Facility name	Facility ID	Accepted Date	Defined Date	Status
DHQP Memorial Hospital	10000	Aug 6 2019 10:43AM	Aug 6 2019 10:42AM	Accepted
Testing Facility	10036	Aug 6 2019 10:44AM	Aug 6 2019 10:42AM	Accepted
CDA-XYZ Test Facility (Prod)	33617	Aug 6 2019 10:43AM	Aug 6 2019 10:42AM	Accepted

Below the table is a 'Back' button. The interface also includes pagination controls showing 'Page 1 of 1' and 'View 1 - 3 of 3'.

Group Analysis Reports

- Group view has same reports as available for facilities plus additional options for analysis
 - Advanced > Group-level Data folder exclusive to Group users
- Facilities do not have to generate datasets for Group users to analyze data



Line Listing – Membership Rights



- Exclusive to Group users
- More detailed membership report that describes the rights each facility has conferred
- Line Listing – Membership Rights Quick Reference Guide:
<https://www.cdc.gov/nhsn/pdfs/p-s-analysis-resources/membership-rights-508.pdf>

Line Listing – Registered Vendor Information for AUR Data

Advanced

- Folder Patient-level Data
- Folder Event-level Data
- Folder Procedure-level Data
- Folder Summary-level Data
- Folder Plan Data
- Folder Pathogen-level Data
- Folder Facility-level Data
- Folder Group-level Data
- Folder Vendor Information
 - Line Listing - Registered Vendor Information for AUR Data
- Folder Data Quality

- Available to facilities and Group users
- Provides information about vendor(s) and software each member facility uses to submit AUR data
- Vendors must have passed Synthetic Data Set (SDS) validation
 - Required for AU; AR requirement forthcoming
 - More information about vendors and SDS:
<https://www.cdc.gov/nhsn/cdaportal/au-sds/index.html>

Group-level AUR Data

- Group view has same reports as available for facilities, but Groups will see all facilities in single output by facility orgID
- Facilities do not have to generate datasets for Group users to analyze data
- All AUR reports can be run at the facility or group level, including SAAR reports and facility-wide antibiogram

Examples

Let's imagine ourselves as Group Administrator for a group of hospitals (a main hospital and two satellite campuses) that report to NHSN separately



Analyzing Group-level AU Data

Example: SAAR Report

National Healthcare Safety Network

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

As of: February 10, 2022 at 5:22 PM

Date Range: AU_SAAR_2017 summaryYM 2021M08 to 2021M08

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

orgID	summaryYM	SAARType_2017	antimicrobialDays	numAUDaysPredicted	numDaysPresent	SAAR	SAAR_pval	SAAR95CI
10000	2021M08	Adult_All-Antibacterial_2017	2279	3439.626	4368	0.663	0.0000	0.636, 0.690
10036	2021M08	Adult_All-Antibacterial_2017	2301	3494.261	4299	0.659	0.0000	0.632, 0.686
33617	2021M08	Adult_All-Antibacterial_2017	4502	6215.340	8609	0.724	0.0000	0.703, 0.746

Note: Data are fictitious and for demonstration purposes only.

SAAR Aggregation Across Group Members

- NHSN does not have a built-in option to generate one SAAR for multiple facilities
- Can export and manually pool data to calculate SAARs at different levels of aggregation
- More information in the SAAR Guide under “Scalability of the SAAR – how to aggregate SAAR data” starting on page 18:
<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/au-saar-guide-508.pdf>

Example: SAAR Aggregation

Our healthcare system's C-Suite asked for an aggregate Adult All Antibacterial SAAR for our main hospital and satellite campuses for August 2021

National Healthcare Safety Network

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

As of: February 10, 2022 at 5:22 PM

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33617	2021M08	Adult_All-Antibacterial_2017	4502	6215.340	8609	0.724	0.0000	0.703, 0.746

Note: Data are fictitious and for demonstration purposes only.

Example: SAAR Aggregation – Pooling Data

- Calculate pooled SAAR for aggregation levels not available in NHSN:
 - Sum observed antimicrobial days across desired levels of aggregation
 - Sum predicted antimicrobial days across same levels
 - Divide pooled observed antimicrobial days by pooled predicted antimicrobial days

orgID	summaryYM	SAARType_2017	antimicrobialDays	numAUDaysPredicted	numDaysPresent	SAAR	SAAR_pval	SAAR95CI
10000	2021M08	Adult_All-Antibacterial_2017	2279	3439.626	4368	0.663	0.0000	0.636, 0.690
10036	2021M08	Adult_All-Antibacterial_2017	2301	3494.261	4299	0.659	0.0000	0.632, 0.686
33617	2021M08	Adult_All-Antibacterial_2017	4502	6215.340	8609	0.724	0.0000	0.703, 0.746

Note: Data are fictitious and for demonstration purposes only.

Example: SAAR Aggregation – Calculation

orgID	summaryYM	SAARType_2017	antimicrobialDays	numAUDaysPredicted	numDaysPresent	SAAR	SAAR_pval	SAAR95CI
10000	2021M08	Adult_All-Antibacterial_2017	2279	3439.626	4368	0.663	0.0000	0.636, 0.690
10036	2021M08	Adult_All-Antibacterial_2017	2301	3494.261	4299	0.659	0.0000	0.632, 0.686
33617	2021M08	Adult_All-Antibacterial_2017	4502	6215.340	8609	0.724	0.0000	0.703, 0.746

Note: Data are fictitious and for demonstration purposes only.

$$SAAR = \frac{2279 + 2301 + 4502}{3439.626 + 3494.261 + 6215.340} = \frac{9082}{13149.227} = 0.691$$


We can tell C-Suite that the aggregate Adult All Antibacterial SAAR for our main hospital and satellite campuses for August 2021 was **0.691**

Summary Statistics for Aggregate SAARs

- NHSN Statistics Calculator, a tool within the NHSN application, conducts statistical tests and determines statistical differences
- Can be used to compare SAARs to nominal value or compare two SAAR values to each other
 - NHSN does not recommend comparing aggregate SAARs over time
- More information in the SAAR Guide under “Comparing two SAAR values” starting on page 17: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/au-saar-guide-508.pdf>

Example: Statistics Calculator – Navigation

NHSN - National Healthcare Safety Network

 **LAURAB**
AUR Test Group

NHSN Home

Dashboard ▶

Reporting Plan ▶

Event ▶

Procedure ▶

Summary Data ▶

COVID-19


Surveys ▶

Analysis ▶


Users ▶

Group ▶

Logout

 **NHSN Patient Safety Component Home Page**

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Generate Data Sets

Reports

Statistics Calculator

Preferences

Example: Statistics Calculator – Compare to 1



Statistics Calculator




- Compare Two Proportions
- Compare Two Incidence Density Rates
- Compare Single Proportion to a Benchmark

The options below can be applied to the following standardized ratios: standardized infection ratios (SIRs), standardized utilization ratios (SURs), and standardized antimicrobial administration ratios (SAARs).

- Compare Single Standardized Ratio (for example, SIR) to Nominal Value
- Compare Single Standardized Ratio (for example, SIR) to 1
- Compare Two Standardized Ratios (for example, SIRs)

Example: Statistics Calculator – SAAR



Compare Single Standardized Ratio (for example, SIR) to 1

When comparing a standardized ratio to 1, the hypothesis is that the ratio is not different from 1 (specifically, the number observed is not different than the number predicted). To perform a hypothesis test and calculate a p-value and 95% confidence interval, first select the type of ratio you wish to analyze. Then, enter the values for the appropriate number observed and number predicted. The standardized ratio will be displayed automatically. Click Calculate.

Type of ratio:

SAAR - standardized antimicrobial administration ratio ▾

Data Source #1

Number Observed Antimicrobial Days of Therapy:

Number Predicted Antimicrobial Days of Therapy:


Standardized Antimicrobial Administration Ratio:

Title:

Calculate

Back

Example: Statistics Calculator – Enter Data



Compare Single Standardized Ratio (for example, SIR) to 1

When comparing a standardized ratio to 1, the hypothesis is that the number observed is not different than the number predicted). To perform a hypothesis test and 95% confidence interval, first select the type of ratio you wish to calculate and enter the appropriate number observed and number predicted. The standardized ratio will be calculated.

Type of ratio: SAAR - standardized antimicrobial administration ratio ▾

Data Source #1

Number Observed Antimicrobial Days of Therapy: 9082


Number Predicted Antimicrobial Days of Therapy: 13149.227

Standardized Antimicrobial Administration Ratio: 0.691

Title:

$$SAAR = \frac{9082}{13149.227} = 0.691$$

Example: Statistics Calculator – Title



Compare Single Standardized Ratio (for example, SIR) to 1

When comparing a standardized ratio to 1, the hypothesis is that the ratio is not different from 1 (specifically, the number observed is not different than the number predicted). To perform a hypothesis test and calculate a p-value and 95% confidence interval, first select the type of ratio you wish to analyze. Then, enter the values for the appropriate number observed and number predicted. The standardized ratio will be displayed automatically. Click Calculate.

Type of ratio:

SAAR - standardized antimicrobial administration ratio ▾

Data Source #1

Number Observed Antimicrobial Days of Therapy:

9082

Number Predicted Antimicrobial Days of Therapy:

13149.227

Standardized Antimicrobial Administration Ratio:

0.691

Title:

Compare Aggregate SAAR to 1

Calculate

Back

Example: Statistics Calculator - Results

National Healthcare Safety Network

Compare Aggregate SAAR to 1

As of: March 2, 2022 at 9:08 PM

Number Observed Antimicrobial Days of Therapy	Number Predicted Antimicrobial Days of Therapy	SAAR	SAAR p-value	SAAR 95% CI
9082	13149.227	0.691	0.0000	0.677, 0.705

- p -value is 0.000, which is < 0.05
- True SAAR likely lies between 0.677 and 0.705 (0.691 is most likely value)
- We can tell C-Suite that our aggregate SAAR value of 0.691 is significantly different from 1

Analyzing Group-level AR Data

Facility-wide Antibigram Report

- Facility-wide antibiogram displays calculated percent susceptible (%S) for each pathogen-antimicrobial combination reported to the AR Option

$$\%S = \frac{\text{Number of isolates that tested susceptible}}{\text{Number of isolates tested}}$$

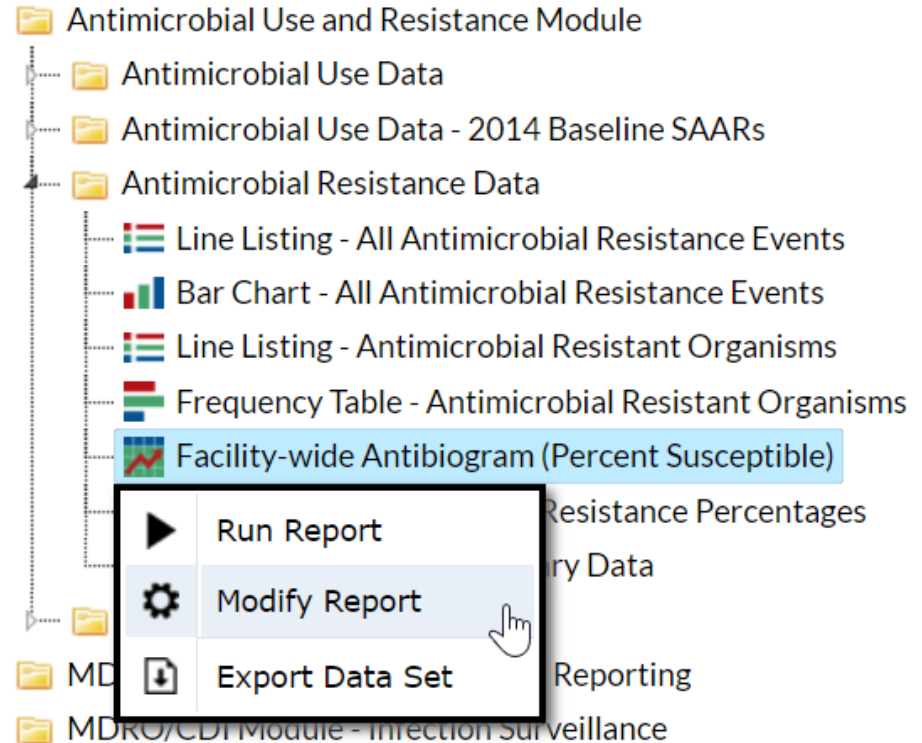
- %S only calculated if at least 30 isolates tested for specific antimicrobial
- AR Option Facility-Wide Antibiogram Quick Reference Guide:
<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/ar-qrg-antibiogram-508.pdf>

AR Facility-wide Antibigram – Default Settings

- Tables by month
- Isolates from:
 - All specimen types (blood, cerebrospinal fluid, urine, and lower respiratory)
 - All patient ages
 - All locations
- All isolates regardless of organism category (gram negative, gram positive, and fungal)
- Both healthcare facility and community onset

Example: Group Antibigram

Our local health department is concerned about *Acinetobacter* and asked us what percent of *Acinetobacter* isolates tested at our hospital and satellite campuses are susceptible to cephalosporins



Example: Group Antibigram – Modify Screen

Modify "Facility-wide Antibigram (Percent Susceptible)"

☒ Show descriptive variable names [\(Print List\)](#)Analysis Data Set: AUR_SummaryType: Rate TableLast Generated: February 15, 2022 12:49 PM

Title/FormatTime PeriodFiltersDisplay Options

Additional Filters: Show Clear

ANDOR

ANDOR

Pathogen

Acinetobacter - ACS

equal

Delete

Add rule

Add group

RunSave...Export...Close

Example: Group Antibigram – Table Details

- At group level, first table displays combined antibiogram for all member facilities that report AR data and subsequent tables display antibiograms by orgID

Note: Data are fictitious and for demonstration purposes only.

National Healthcare Safety Network		
Facility-wide Antibigram (Percent Susceptible)		
Rate per 100 Isolates		
As of: March 5, 2022 at 9:03 PM		
Date Range: All AUR_SUMMARY		
if (((Pathogen = "ACS")))		
		Pathogen
		Gram-Negative
Drug Class	Drug	Acinetobacter - ACS
Aminoglycosides	AMK	51.0
	GENTA	86.0
	TOBRA	94.0
B-lactam/ B-lactamase inhibitor combination	AMPIWS	29.0
	PIPERWT	91.0
	TICARWC	.
Carbapenems	DORI	.
	IMIPWC	46.0
	MERO	89.0
Cephalosporins	CEFEP	37.0
	CEFID	.
	CEFOT	89.0
	CEFTAZ	91.0
	CEFTRX	94.0
Fluoroquinolones	CIPRO	83.0

Example: Group Antibigram – Organism Category

- Organisms are grouped by category:
 - Gram-negative
 - Gram-positive
 - Fungal

Note: Data are fictitious and for demonstration purposes only.

National Healthcare Safety Network Facility-wide Antibigram (Percent Susceptible) Rate per 100 Isolates		
As of: March 5, 2022 at 9:03 PM Date Range: All AUR_SUMMARY if (((Pathogen = "ACS")))		
		Pathogen
		Gram-Negative
Drug Class	Drug	Acinetobacter - ACS
Aminoglycosides	AMK	51.0
	GENTA	86.0
	TOBRA	94.0
B-lactam/ B-lactamase inhibitor combination	AMPIWS	29.0
	PIPERWT	91.0
	TICARWC	.
Carbapenems	DORI	.
	IMIPWC	46.0
	MERO	89.0
Cephalosporins	CEFEP	37.0
	CEFID	.
	CEFOT	89.0
	CEFTAZ	91.0
	CEFTRX	94.0
Fluoroquinolones	CIPRO	83.0

Example: Group Antibigram – Drug Class & Drug

- Drugs are sorted into drug classes organized alphabetically
- Full drug names can be found in Eligible Antimicrobial Agents document: <https://www.cdc.gov/nhsn/xls/aur/aur-eligible-antimicrobial-agents.xlsx>

Note: Data are fictitious and for demonstration purposes only.

National Healthcare Safety Network Facility-wide Antibigram (Percent Susceptible) Rate per 100 Isolates		
As of: March 5, 2022 at 9:03 PM Date Range: All AUR_SUMMARY if (((Pathogen = "ACS")))		
		Pathogen
		Gram-Negative
Drug Class	Drug	Acinetobacter - ACS
Aminoglycosides	AMK	51.0
	GENTA	86.0
	TOBRA	94.0
B-lactam/ B-lactamase inhibitor combination	AMPIWS	29.0
	PIPERWT	91.0
	TICARWC	.
Carbapenems	DORI	.
	IMIPWC	46.0
	MERO	89.0
Cephalosporins	CEFEP	37.0
	CEFID	.
	CEFOT	89.0
	CEFTAZ	91.0
	CEFTRX	94.0
Fluoroquinolones	CIPRO	83.0

Example: Group Antibigram – Invalid Combinations

- Though not present in our example, cells shaded in grey represent invalid pathogen/drug combinations
- Susceptibility tests for those drugs are not reported for those pathogens
- Refer to the AUR Module protocol for all valid pathogen/drug combinations:
<https://www.cdc.gov/nhsn/pdfs/pscmanu/11pscaurcurrent.pdf>

Note: Data are fictitious and for demonstration purposes only.

National Healthcare Safety Network Facility-wide Antibigram (Percent Susceptible) Rate per 100 Isolates				
As of: March 5, 2022 at 9:40 PM Date Range: All AUR_SUMMARY				
Drug Class	Drug	Acinetobacter - ACS	Acinetobacter baumannii - ACBA	Acinetobacter calcoaceticus - ACIC
Aminoglycosides	AMK	51.0	.	.
	GENTA	86.0	.	.
	STREP			
	TOBRA	94.0	.	.
Azoles	FLUCO			
	ITRA			
	POSAC			
	VORI			
B-lactam/ B-lactamase inhibitor combination	AMOXWC			
AMPRWS		29.0		

Example: Group Antibigram – Interpretation

- We can show the health department our group-level antibiogram, specifically the cephalosporins
 - Only 36% of *Acinetobacter* isolates tested were susceptible to cefepime (CEFEP)
 - Tested less than 30 *Acinetobacter* isolates for cefiderocol (CEFID) susceptibility
 - Remaining cephalosporins had fairly high susceptibility

Note: Data are fictitious and for demonstration purposes only.

National Healthcare Safety Network		
Facility-wide Antibiogram (Percent Susceptible)		
Rate per 100 Isolates		
As of: March 5, 2022 at 9:03 PM		
Date Range: All AUR_SUMMARY		
if (((Pathogen = "ACS")))		
		Pathogen
		Gram-Negative
Drug Class	Drug	Acinetobacter - ACS
Aminoglycosides	AMK	51.0
	GENTA	86.0
	TOBRA	94.0
B-lactam/ B-lactamase inhibitor combination	AMPIWS	29.0
	PIPERWT	91.0
	TICARWC	.
Carbapenems	DORI	.
	IMIPWC	46.0
	MERO	89.0
Cephalosporins	CEFEP	37.0
	CEFID	.
	CEFOT	89.0
	CEFTAZ	91.0
	CEFTRX	94.0
Fluoroquinolones	CIPRO	83.0

Monitoring AUR Data Quality at the Group Level

Participation Alerts

The screenshot displays the NHSN Patient Safety Component Home Page. At the top, the CDC logo and text 'Centers for Disease Control and Prevention CDC 24/7: Saving Lives, Protecting People™' are on the left, and the NHSN logo 'NHSN NATIONAL HEALTHCARE SAFETY NETWORK' is on the right. Below this is a dark blue header bar with 'NHSN - National Healthcare Safety Network' on the left and a user profile 'XGA6 DHQP Memorial Hospital' on the right. A left sidebar contains a menu with items like 'NHSN Home', 'Alerts', 'Dashboard', 'Reporting Plan', 'Patient', 'Event', 'Procedure', 'Summary Data', 'COVID-19', 'Import/Export', 'Surveys', 'Analysis', 'Users', 'Facility', 'Group', and 'Logout'. The main content area is titled 'NHSN Patient Safety Component Home Page' and lists several dashboards: 'TAP Strategy Dashboard', 'Reliability-Adjusted Ranking', and 'TAS Dashboard'. Below these is an 'Action Items' section with the heading 'COMPLETE THESE ITEMS'. Under this heading, there is an 'ALERTS' section containing four cards, each with a large number and a description: '157 Missing Events' (yellow bar), '7 Incomplete Summary Items' (purple bar), '844 Missing Summary Items' (green bar), and '29 Incomplete Procedures' (blue bar). These four alert cards are circled in orange.

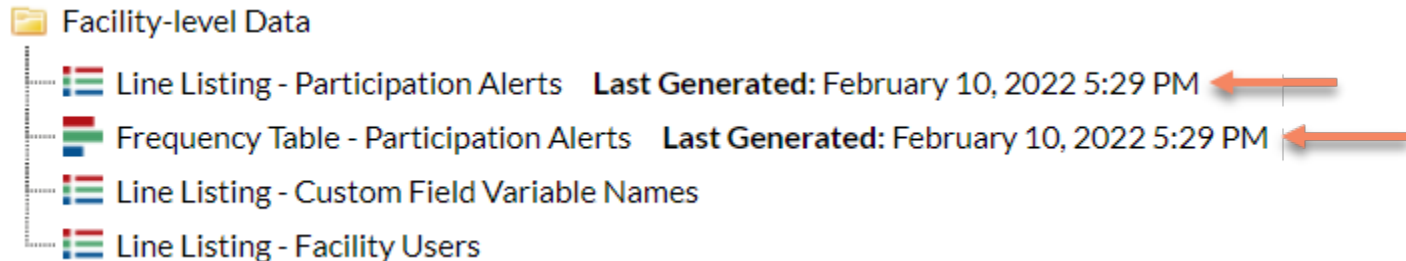
Alerts Data:

Alert Type	Count
Missing Events	157
Incomplete Summary Items	7
Missing Summary Items	844
Incomplete Procedures	29

Note: Data are fictitious and for demonstration purposes only.

Line Listing – Participation Alerts

- Groups do not have access to facilities' Alert screens
- Groups can access alerts created for each facility through the Line Listing – Participation Alerts and frequency table
- Line Listing – Participation Alerts Quick Reference Guide:
<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/group-alerts.pdf>



Note: Data are fictitious and for demonstration purposes only.

Generating Participation Alerts

The screenshot displays the NHSN National Healthcare Safety Network interface. At the top, the CDC logo and text 'Centers for Disease Control and Prevention CDC 24/7: Saving Lives, Protecting People™' are on the left, and the NHSN logo 'NHSN NATIONAL HEALTHCARE SAFETY NETWORK' is on the right. Below the header, the user 'LAURAB AUR Test Group' is logged in. The main navigation bar shows 'NHSN - National Healthcare Safety Network'. On the left, a sidebar menu includes 'NHSN Home', 'Dashboard', 'Reporting Plan', 'Event', 'Procedure', 'Summary Data', 'COVID-19', 'Surveys', 'Analysis', 'Users', 'Group', and 'Logout'. The 'Analysis' menu is expanded, showing 'Generate Data Sets', 'Reports', 'Statistics Calculator', and 'Preferences'. The 'Generate Data Sets' option is selected, leading to the 'Generate Data Sets (Patient Safety)' page. This page has two tabs: 'Reporting Data Sets' and 'Participation Alerts Data Set (Optional)', with the latter being active and highlighted. Below the tabs, a gear icon is shown next to the text 'Include the following Alerts:'. A list of alerts follows, all of which are checked: 'All Alerts', 'Missing Survey', 'Incomplete Survey', 'Incomplete Events', 'Missing Events', 'Incomplete Procedures', 'Missing Procedures', 'Incomplete Summary Items', 'Missing Summary Items', and 'Conferred Rights Not Accepted'. Below this list, the text 'Include alerts for the following time period:' is followed by a form with 'Time Period' set to 'Month', 'Beginning' set to '01/2021', and 'Ending' set to 'mm/yyyy'. A 'Clear Time Period' button is also present. At the bottom, a 'Generate Participation Alerts Data Set' button is visible, along with a yellow box stating 'Last Generated: February 10, 2022 5:29 PM to include data beginning 01/2021'.

Note: Data are fictitious and for demonstration purposes only.

Example: Participation Alerts Line List – Modification Screen

View participation alerts for the AUR Module by modifying the Line Listing – Participation Alerts and filtering by module

Modify "Line Listing - Participation Alerts"

☐ Show descriptive variable names ([Print List](#))Analysis Data Set: ParticipationAlertType: Line ListingLast Generated: February 10, 2022 5:29 PM

Title/FormatTime PeriodFiltersDisplay VariablesSort VariablesDisplay Options

Additional Filters: Show Clear

AND OR

AND OR

moduleequalAUR

Delete

Add groupAdd rule

RunSave...Export...Close

Example: Participation Alerts Line List – Output

National Healthcare Safety Network

Line Listing - Participation Alerts

As of: February 11, 2022 at 1:35 PM

Date Range: PARTICIPATIONALERT planYM 2021M08 to 2021M08

if (((module = "AUR")))

alertType=Missing Summary Data

orgID	CCN	module	planYM	location	locCDC	eventTypePath	summaryDataType	procCode	setting	surveyYr	surveyType	groupID	alertMessage	alertType
10000	31C0001043	AUR	2021M08	FACWIDEIN	FACWIDEIN	AU Summary	AU			.		.	Missing Summary Data	Missing Summary Data
10000	31C0001043	AUR	2021M08	MED ICU	IN:ACUTE:CC:M	AU Summary	AU			.		.	Missing Summary Data	Missing Summary Data
10036	999999	AUR	2021M08	24HROBS	OUT:ACUTE:WARD	AR Event	AR			.		.	Missing Summary Data	Missing Summary Data
10036	999999	AUR	2021M08	24HROBS	OUT:ACUTE:WARD	AU Summary	AU			.		.	Missing Summary Data	Missing Summary Data
10036	999999	AUR	2021M08	FACWIDEIN	FACWIDEIN	AU Summary	AU			.		.	Missing Summary Data	Missing Summary Data
10036	999999	AUR	2021M08	ICU-B	IN:ACUTE:CC:S	AU Summary	AU			.		.	Missing Summary Data	Missing Summary Data
33617	N/A	AUR	2021M08	1020-7	IN:NONACUTE:CLINIC:SLEEP	AU Summary	AU			.		.	Missing Summary Data	Missing Summary Data
33617	N/A	AUR	2021M08	EMER	OUT:ACUTE:ED	AR Event	AR			.		.	Missing Summary Data	Missing Summary Data
33617	N/A	AUR	2021M08	EMER	OUT:ACUTE:ED	AU Summary	AU			.		.	Missing Summary Data	Missing Summary Data
33617	N/A	AUR	2021M08	FACWIDEIN	FACWIDEIN	AR Event	AR			.		.	Missing Summary Data	Missing Summary Data
33617	N/A	AUR	2021M08	ICU-C	IN:ACUTE:CC:S	AU Summary	AU			.		.	Missing Summary Data	Missing Summary Data

Sorted by orgID module planYM location locCDC eventTypePath summaryDataType procCode setting surveyYr surveyType groupID

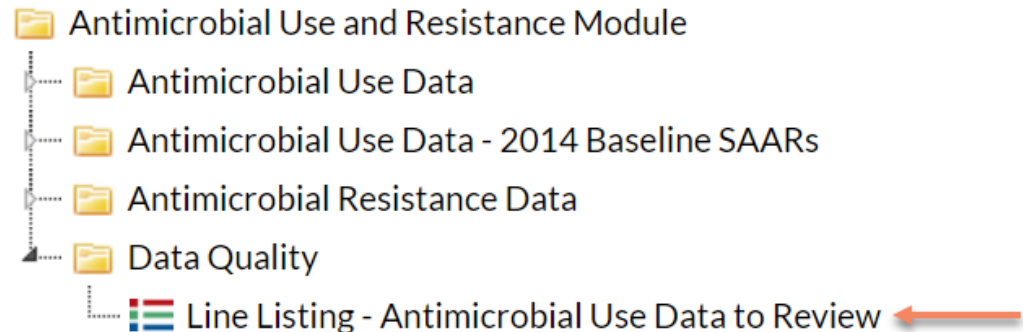
Data contained in this report were last generated on February 10, 2022 at 5:29 PM: for the following alerts beginning January 2021: All Alerts

If you are a group user or a facility user with limited rights, alerts may indicate limited rights as opposed to missing data.

Note: Data are fictitious and for demonstration purposes only.

AU Option Data Quality Line List

- Line Listing – Antimicrobial Use Data to Review provides opportunity to review data containing four potential data quality issues
- Group users can monitor AU data quality at group level and conduct outreach to member facilities with potential data quality issues
- AU Option Data Quality Line List Quick Reference Guide:
<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/au-dataquality-linelist-508.pdf>



AU Option Data Quality Line List: Table 1

- Facility reported antimicrobial days for every drug as zero or missing (“.”)
- Not always an error but unlikely to have zero antimicrobial administrations if patients were present during a calendar month

National Healthcare Safety Network

Line Listing for Antimicrobial Use Data to Review

Zero and/or “.” antimicrobial days for all drugs in a specific location or FacWideIN

As of: February 24, 2022 at 3:54 PM

Date Range: AU_DATAQUALITY summaryYM 2020M01 to 2020M12

Locations appearing in this table have reported zero or N/A antimicrobial days for all antimicrobials in the given month. Please review these records to ensure data accuracy.

In the event that no patients were present in this unit during this month, these data are accurate.

orgID	summaryYM	location
10000	2020M05	5 WESTT

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.

Data contained in this report were last generated on February 15, 2022 at 12:44 PM to include data beginning January 2017.

AU Option Data Quality Line List: Table 2

- Facility reported antimicrobial days for any drug, but also reported zero days present
- Zero days present indicates no patients present in that location for the entire calendar month so no antimicrobials should be administered

National Healthcare Safety Network

Line Listing for Antimicrobial Use Data to Review

Antimicrobial days reported for any drug when days present are zero for any location or FacWideIN

As of: February 24, 2022 at 3:54 PM

Date Range: AU_DATAQUALITY summaryYM 2020M01 to 2020M12

Carefully review this list which includes locations for which zero days are present, meaning zero patients, were reported in the location during the given month; however, antimicrobial days were reported for one or more drugs. If no patients were present in the location, no antimicrobial days should be reported. This is a data quality error that should be addressed.

orgID	summaryYM	location	drugIngredientDesc	antimicrobialDays	numDaysPresent
33617	2020M05	NICU IV	PENG - Penicillin G	1	0

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.

Data contained in this report were last generated on February 15, 2022 at 12:44 PM to include data beginning January 2017 .

AU Option Data Quality Line List: Table 3

- Total antimicrobial days reported for individual drug were greater than days present
- Patient can only attribute one antimicrobial day per drug per day

National Healthcare Safety Network

Line Listing for Antimicrobial Use Data to Review

Antimicrobial days for a single drug greater than or equal to days present for given location or FacWideIN

As of: February 24, 2022 at 4:00 PM

Date Range: AU_DATAQUALITY summaryYM 2020M01 to 2020M12

Carefully review this list which includes individual drugs for which the total number of antimicrobial days are greater than or equal to the number of days present in the given location and month.

Since a patient can contribute only one antimicrobial day per drug per location, the total antimicrobial days should never be greater than or equal to days present. This is a data quality error that should be addressed.

orgID	summaryYM	location	drugIngredientDesc	antimicrobialDays	numDaysPresent
33617	2020M01	24HROBS	AMAN - Amantadine	63	6
33617	2020M01	24HROBS	AMK - Amikacin	12	6
33617	2020M01	24HROBS	AMOX - Amoxicillin	6	6
33617	2020M01	24HROBS	AMOX - Amoxicillin	6	6

AU Option Data Quality Line List: Table 4

- Sum of routes of administration < total antimicrobial day count for an individual drug; sum of routes should always be \geq total antimicrobial days

National Healthcare Safety Network

Line Listing for Antimicrobial Use Data to Review

Sum of routes (IM_Count, IV_Count, Digestive_Count, Respiratory_Count) less than total antimicrobial days for a single drug in any location or FacWideIN

As of: February 24, 2022 at 4:00 PM

Date Range: AU_DATAQUALITY summaryYM 2020M01 to 2020M12

Carefully review this list which includes drugs for which the sum of the routes of administration are less than the total number of antimicrobial days for a given drug. The total antimicrobial

day count should only include IV, IM, digestive, and respiratory administrations as outlined in the AU Option protocol. Therefore, the total antimicrobial days should always be less than or equal

to the sum of the routes. This is a data quality error that should be addressed.

orgID	summaryYM	location	drugIngredientDesc	antimicrobialDays	sumRoutesAdmin
33617	2020M01	24HROBS	AMAN - Amantadine	63	12
33617	2020M01	24HROBS	PENG - Penicillin G	630	12
33617	2020M01	AD_STP_DN	AMAN - Amantadine	33	12

Example: Data Quality Outreach

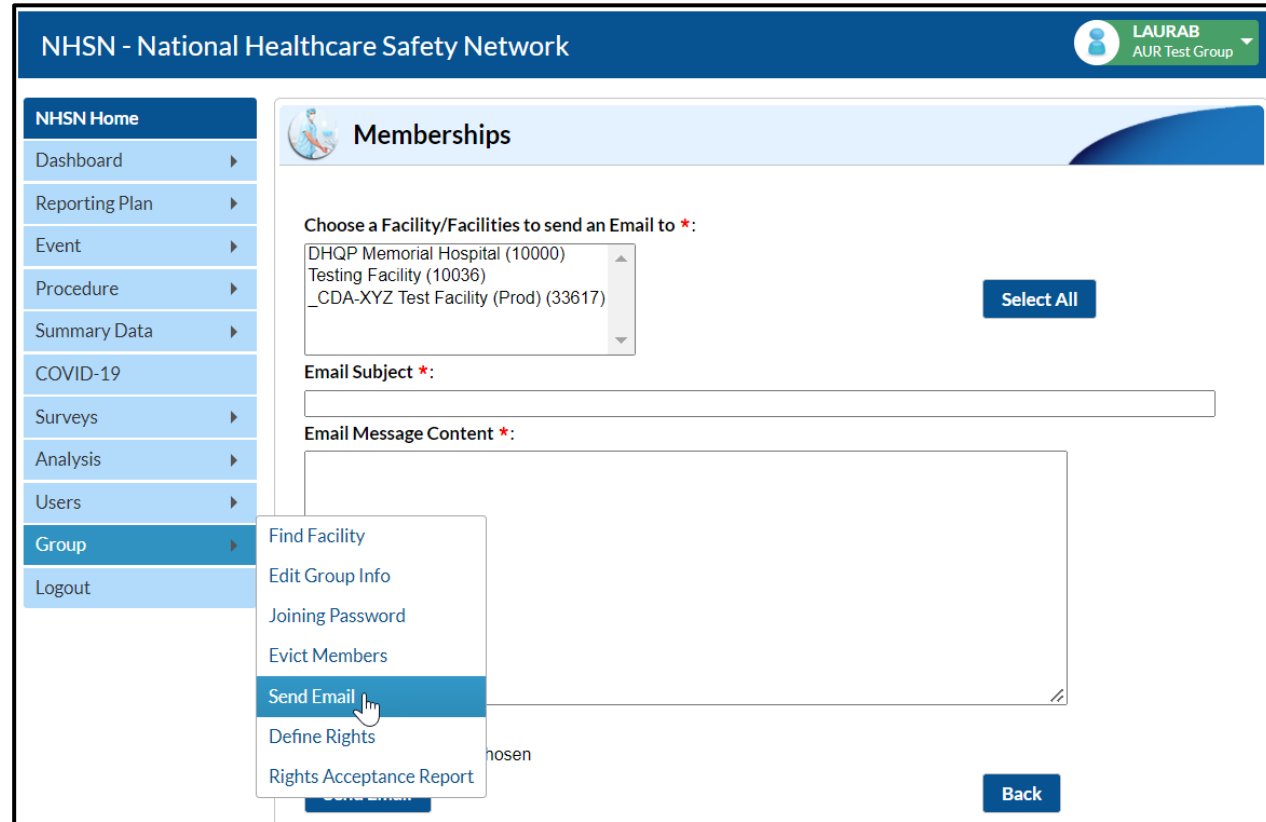
OrgID 33617 had quite a few potential data quality issues – healthcare system wants us to ask them to validate their AU data.



Example: Data Quality Outreach – Email All Users

- Group > Send Email
- This option emails **ALL** users at the selected facilities
- Preferable to send outreach only to relevant users

Note: Data are fictitious and for demonstration purposes only.



NHSN - National Healthcare Safety Network

LAURAB
AUR Test Group

NHSN Home

- Dashboard
- Reporting Plan
- Event
- Procedure
- Summary Data
- COVID-19
- Surveys
- Analysis
- Users
- Group**
- Logout

Memberships

Choose a Facility/Facilities to send an Email *:

DHQP Memorial Hospital (10000)
Testing Facility (10036)
_CDA-XYZ Test Facility (Prod) (33617)

Select All

Email Subject *:

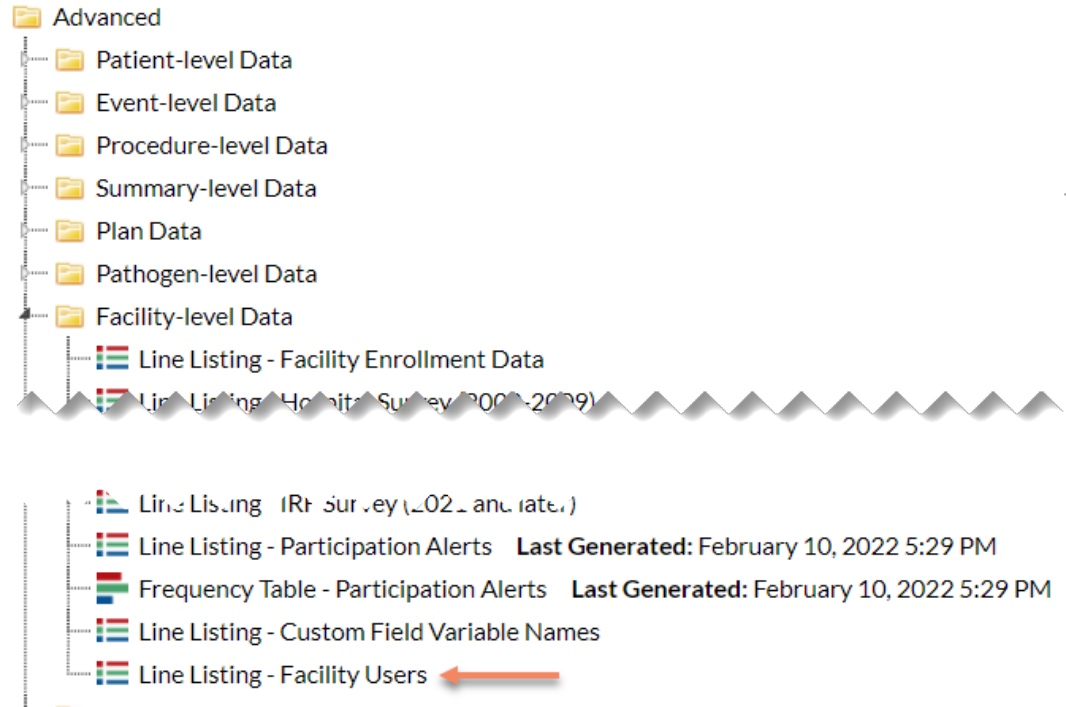
Email Message Content *:

Find Facility
Edit Group Info
Joining Password
Evict Members
Send Email
Define Rights
Rights Acceptance Report

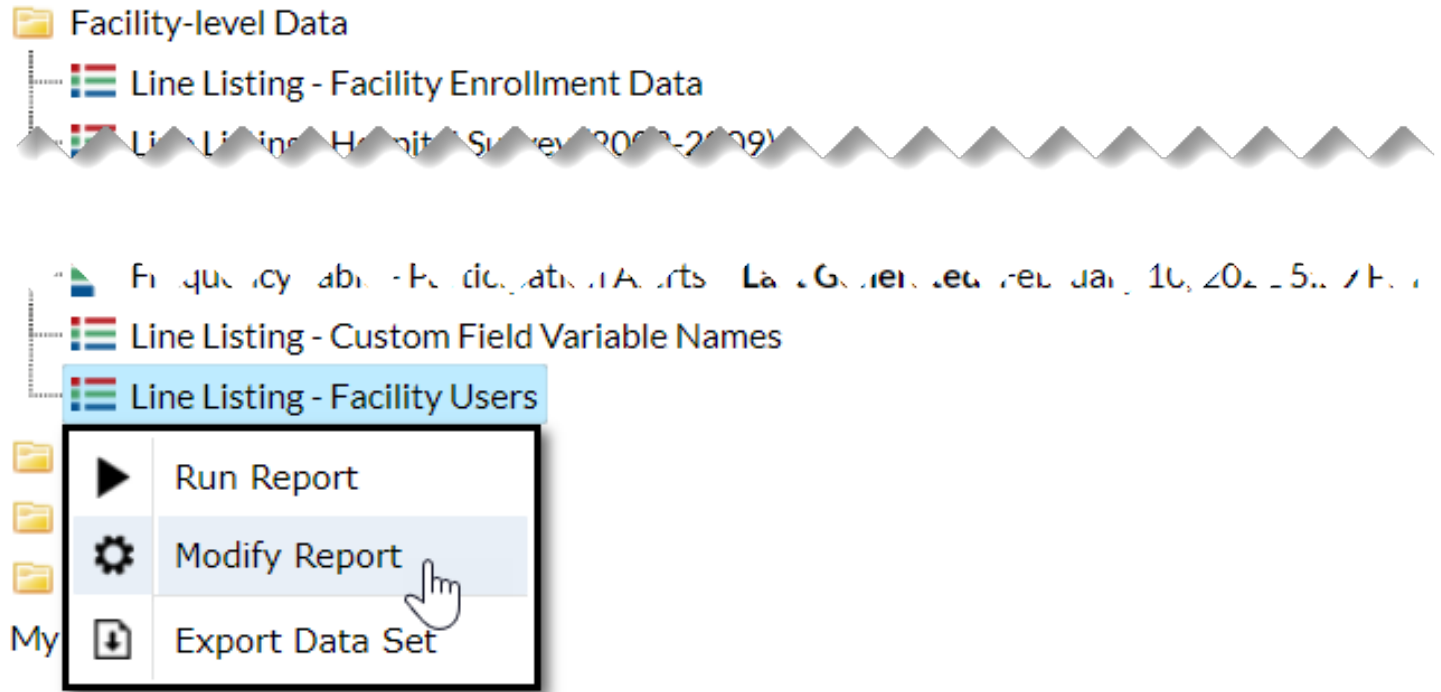
Back

Line Listing – Facility Users

- Exclusive to Group users
- Provides name, date last logged in, and contact info for users at every member facility
- Identifies special contacts such as Facility Administrator and Patient Safety Primary Contact



Example: Data Quality Outreach – Modifications



Example: Data Quality Outreach – Filters

Modify "Line Listing - Facility Users"

☒ Show descriptive variable names ([Print List](#))Analysis Data Set: PSFacility_UsersType: Line ListingLast Generated: **February 15, 2022 12:49 PM**

Title/FormatTime PeriodFiltersDisplay VariablesSort VariablesDisplay Options

Additional Filters:

ANDOR

ANDOR

Facility Org IDequal33617

contactTypeequalFADMIN

75

Example: Data Quality Outreach – Display Variables

Modify "Line Listing - Facility Users"

☒ Show descriptive variable names ([Print List](#))Analysis Data Set: PSFacility_Users Type: Line Listing Last Generated: [February 15, 2022 12:49 PM](#)

Title/FormatTime PeriodFilters**Display Variables**Sort VariablesDisplay Options

Display Variables:

Available Variables:

Address 1
Address 2
Address 3
City
CMS Certification Number
county
County Name
Fax
Last Modified
lastLoggedInBV
lastLoggedInDIAL
lastLoggedInHPS
lastLoggedInLTCF
lastLoggedInPS
lastLoggedInSAMS

All

Selected

Selected

All

Selected Variables:

Facility Org ID
Facility Name
Salutation
First Name
Middle Name
Last Name
Title
contactType
userType
Active?
email

Up

Down

Undo

RunSave...Export...Close

Example: Data Quality Outreach – Output

National Healthcare Safety Network

Line Listing - Facility Users

As of: March 2, 2022 at 9:51 PM

Date Range: All PSFACILITY_USERS

if (((orgID = "33617") AND (contactType = "FADMIN")))

Facility Org ID	Facility Name	Salutation	First Name	Middle Name	Last Name	Title	contactType	userType	Active?	email
33617	CDA-XYZ TEST FACILITY (PROD)		AMY		WEBB		FADMIN		Y	

Data contained in this report were last generated on February 15, 2022 at 12:44 PM to include data beginning January 2017 .

We can email Amy and ask her to validate her facility's AU data using data validation resources on the AUR Module webpage: <https://www.cdc.gov/nhsn/psc/aur/index.html>



Resources

Group Resources

- NHSN Group Users: <https://www.cdc.gov/nhsn/group-users/index.html>
- NHSN DUA Announcement: <https://www.cdc.gov/hai/state-based/dua-announcement.html>
- NHSN DUA FAQ: <https://www.cdc.gov/hai/state-based/dua-faq.html>
- User Rights in NHSN – AUR Module: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-au-user-rights.pdf>

Thank you!

Q&A Session: 11:15-11:30am ET on March 24, 2022

NHSN Help Desk: NHSN@cdc.gov

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



NHSN•AU

NATIONAL HEALTHCARE SAFETY NETWORK
ANTIMICROBIAL USE OPTION

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.

