



NHSN Patient Safety Component Data Quality Webinar

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A Message about the Data

- All data in this presentation has been created in a testing environment and is for training purposes only
- Information seen on images during this presentation do not represent any actual data submitted to NHSN by participating facilities

Common Data Quality Checks for Better Reporting in NHSN

Jessamyn Boltz, MPH

Learning Objectives

- Describe the importance of NHSN data quality
- Locate and recognize the NHSN Alerts page
- Explain the importance and data quality uses of the Alerts page
- Navigate and generate Data Quality Reports
- Discuss the difference between routine and targeted Data Quality Outreach communication

Data Quality

Data Quality in NHSN

- NHSN provides data needed to ultimately eliminate HAIs



NHSN - National Healthcare Safety Network (nhsn1150-566bbd4bc9-ck9hp:80)

A screenshot of the NHSN login interface. The form is titled 'Log in to NHSN'. It contains two input fields: 'Email:' and 'Password:'. Below the password field are two buttons: 'Login' and 'Reset'.

- NHSN therefore encourages facilities routinely monitor data entered for **completeness and accuracy**

Data Quality Tools

Alerts

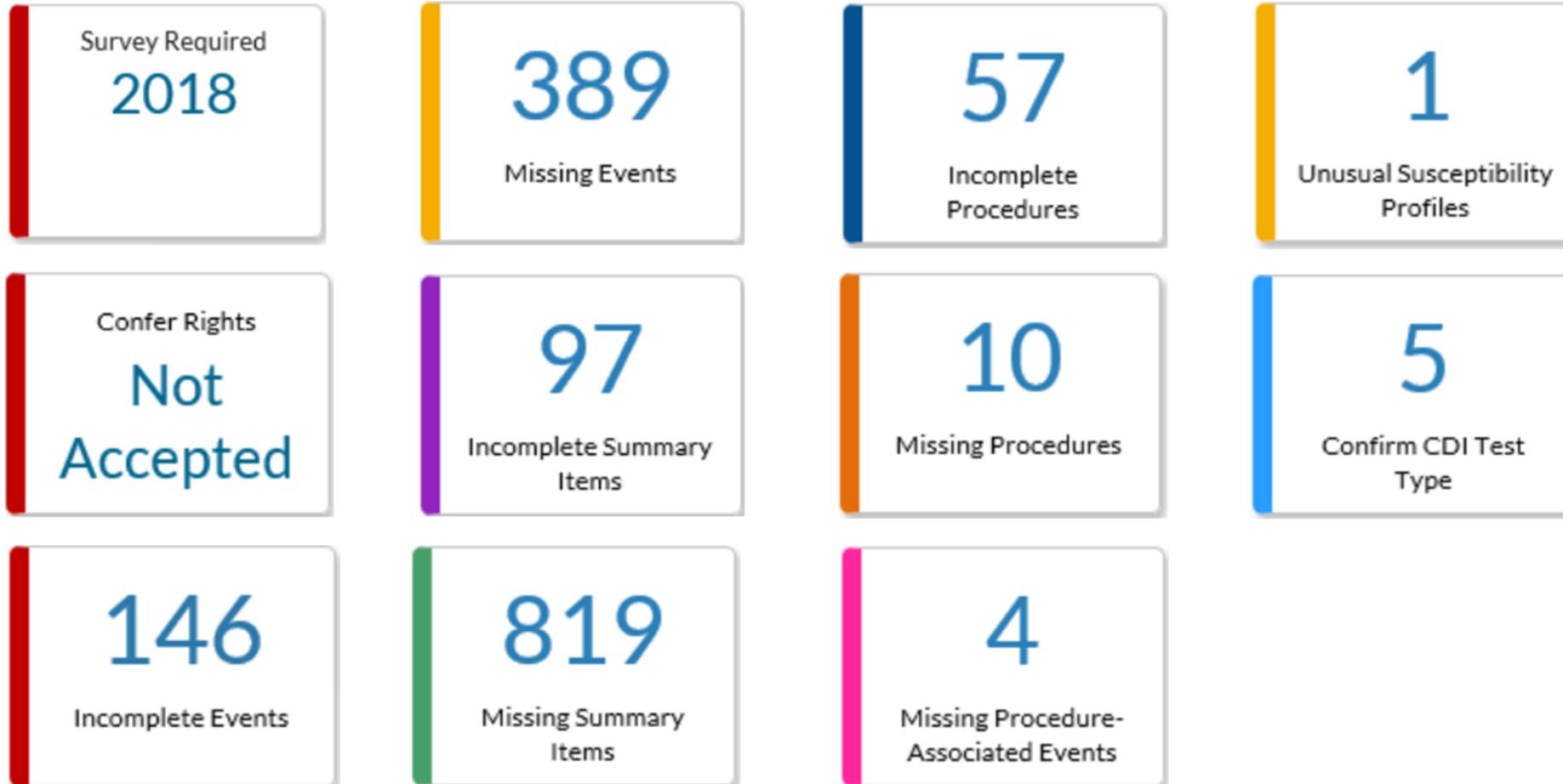
- Alerts are automatic checks in NHSN that remind you of incomplete or missing in-plan data from your Monthly Reporting Plan (MRPs)

The screenshot shows the NHSN Patient Safety Component Home Page. On the left is a navigation menu with items: NHSN Home, Alerts (highlighted), Reporting Plan, Patient, Event, Procedure, Summary Data, Import/Export, Surveys, Analysis, Users, Facility, Group, and Tools. The main content area has a header 'NHSN Patient Safety Component Home Page' and a section 'COMPLETE THESE ITEMS' with a 'Confer Rights Not Accepted' message. Below this is an 'ALERTS' section with six cards: 132 Incomplete Events, 268 Missing Events, 68 Incomplete Summary Items, 410 Missing Summary Items, 31 Incomplete Procedures, and 1 Unusual Susceptibility Profile.

Alert Category	Count
Incomplete Events	132
Missing Events	268
Incomplete Summary Items	68
Missing Summary Items	410
Incomplete Procedures	31
Unusual Susceptibility Profile	1

Alerts

- Examples of different types of alerts:



Alerts

- Generate datasets after anything is changed in NHSN

The screenshot displays the NHSN interface for generating data sets. At the top left is the CDC logo and text: "Centers for Disease Control and Prevention CDC 24/7: Saving Lives, Protecting People™". At the top right is the NHSN logo and text: "NHSN NATIONAL HEALTHCARE SAFETY NETWORK". Below the logos is a navigation bar with "NHSN - National Healthcare Safety Network (apt-v-nhsn-test:8001)" and a user profile for "REBECCA DHQP MEMORIAL HOSPITAL".

The main content area is titled "Generate Data Sets" and contains the following text:

Generate Patient Safety Analysis Data Sets

Datasets generated will include data for the 3 most recent full calendar years up until today's date for the Patient Safety Component. To include all years check the box below.

For all other components, datasets generated will include all years. Note that any analysis options you run will be limited to the time period shown on the date range bar.

Include all data reported to NHSN for this component within the parameters of rights conferred.

Below the text is a date range bar with a dark grey segment from 1/2013 to 11/2016 and a blue segment from 11/2016 to the present. A "Generate New" button is located below the bar, with the text "Last Generated: Nov 7 2016 1:36PM" next to it.

A red callout bubble with a white border and a red shadow contains the text: "Don't forget to check the check box to include all years of data!". The bubble points to the checked checkbox.

On the left side of the interface is a vertical navigation menu with the following items: NHSN Home, Alerts, Reporting Plan, Patient, Event, Procedure, Summary Data, Import/Export, Surveys, Analysis, Users, Facility, Group, Tools, and Logout. The "Generate Data Sets" link in the "Analysis" section is highlighted with a yellow starburst.

NHSN Data Quality Output Options

- Once datasets have been generated, you may go to Analysis -> Reports

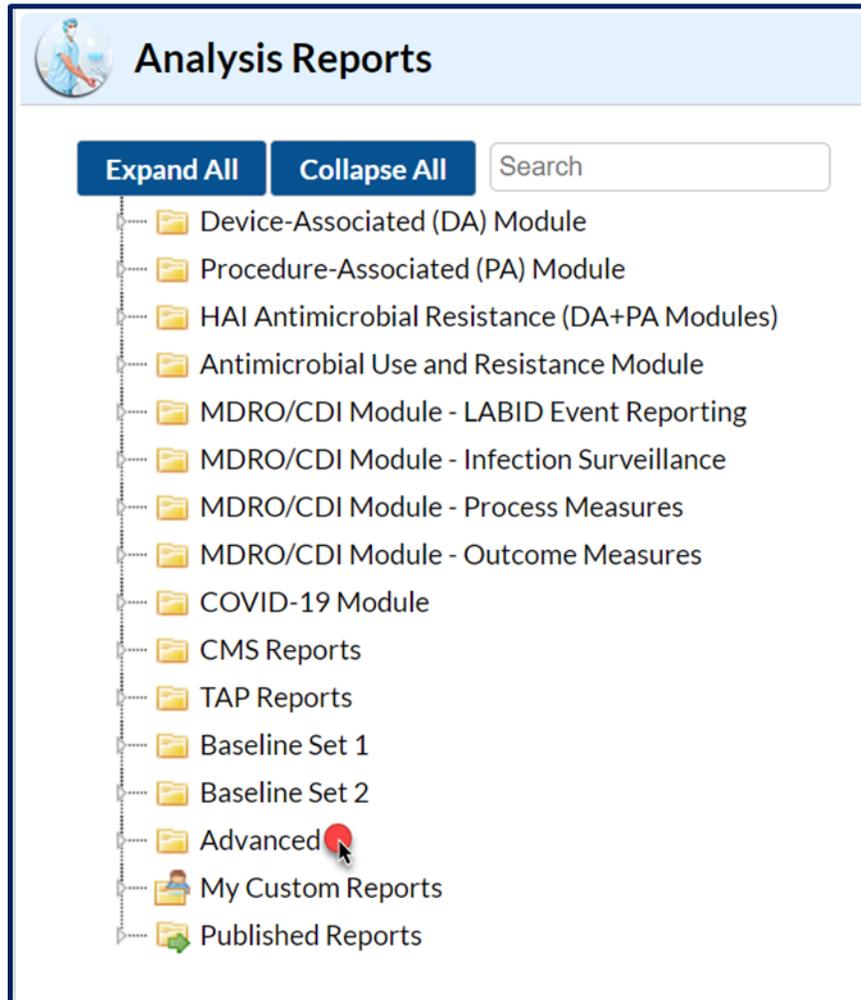
The screenshot displays the NHSN Patient Safety Component Home Page. At the top left is the CDC logo with the text "Centers for Disease Control and Prevention" and "CDC 24/7: Saving Lives, Protecting People™". At the top right is the NHSN logo with the text "NATIONAL HEALTHCARE SAFETY NETWORK". Below the logos is a dark blue header bar containing the text "NHSN - National Healthcare Safety Network (ps1150-7b96c66b5b-77x6w:80)" and a user profile dropdown menu showing "UCD7" and "CDA-XYZ_qa_Test Facility".

On the left side, there is a vertical navigation menu with the following items: NHSN Home, Alerts, Dashboard, Reporting Plan, Patient, Event, Procedure, Summary Data, COVID-19, Import/Export, Surveys, Analysis, Users, and Facility. The "Analysis" item is highlighted in a darker blue. A mouse cursor is hovering over the "Reports" sub-item under "Analysis", which has opened a dropdown menu with three options: "Generate Data Sets", "Reports", and "Statistics Calculator".

The main content area is titled "NHSN Patient Safety Component Home Page" and contains a list of dashboard links: "TAP Strategy Dashboard", "TAS Dashboard", and "HAI Pathogen Dashboard". Below these is a section titled "Action Items" which is currently collapsed.

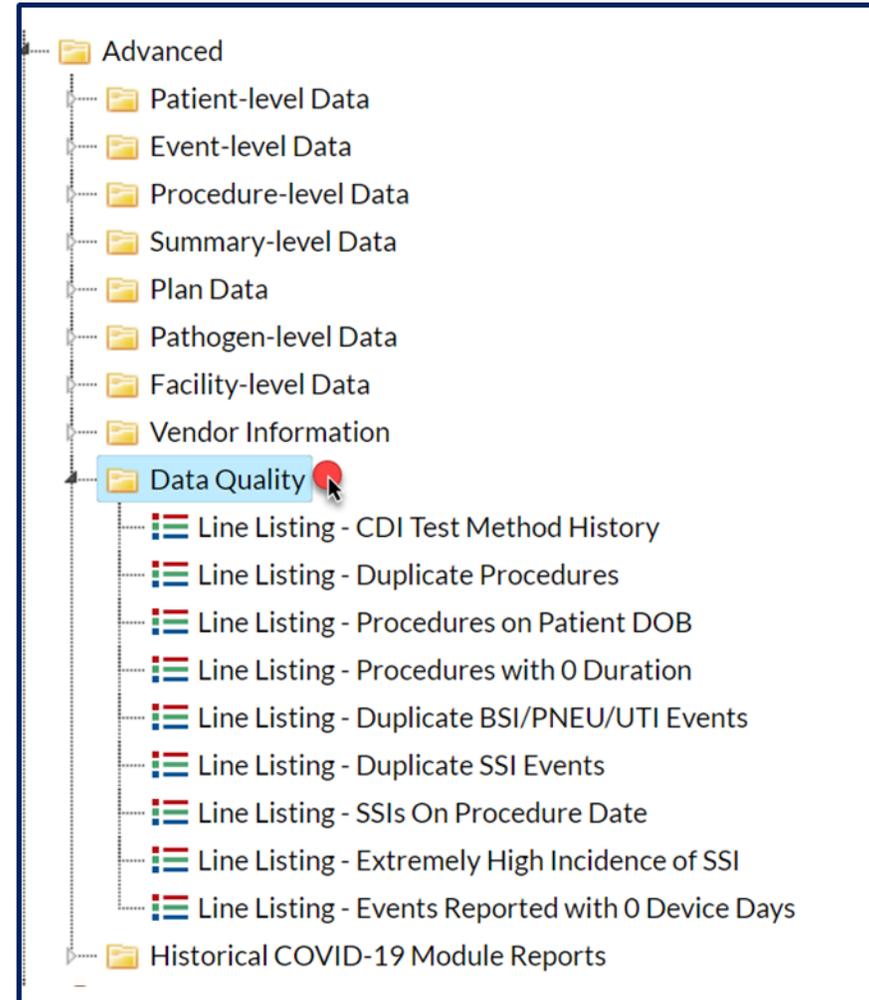
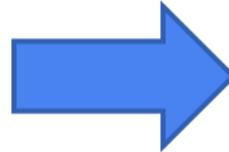
NHSN Data Quality Reports

- Under Reports select Advanced, and then Data Quality:



The screenshot shows the 'Analysis Reports' interface. At the top, there is a search bar and two buttons: 'Expand All' and 'Collapse All'. Below these are several report categories, each with a folder icon and a dropdown arrow. The 'Advanced' category is highlighted with a red circle and a mouse cursor pointing to it. The categories listed are:

- Device-Associated (DA) Module
- Procedure-Associated (PA) Module
- HAI Antimicrobial Resistance (DA+PA Modules)
- Antimicrobial Use and Resistance Module
- MDRO/CDI Module - LABID Event Reporting
- MDRO/CDI Module - Infection Surveillance
- MDRO/CDI Module - Process Measures
- MDRO/CDI Module - Outcome Measures
- COVID-19 Module
- CMS Reports
- TAP Reports
- Baseline Set 1
- Baseline Set 2
- Advanced
- My Custom Reports
- Published Reports



The screenshot shows the 'Data Quality' reports list. The 'Data Quality' folder is highlighted with a blue background and a red circle. The reports listed are:

- Advanced
- Patient-level Data
- Event-level Data
- Procedure-level Data
- Summary-level Data
- Plan Data
- Pathogen-level Data
- Facility-level Data
- Vendor Information
- Data Quality
 - Line Listing - CDI Test Method History
 - Line Listing - Duplicate Procedures
 - Line Listing - Procedures on Patient DOB
 - Line Listing - Procedures with 0 Duration
 - Line Listing - Duplicate BSI/PNEU/UTI Events
 - Line Listing - Duplicate SSI Events
 - Line Listing - SSIs On Procedure Date
 - Line Listing - Extremely High Incidence of SSI
 - Line Listing - Events Reported with 0 Device Days
- Historical COVID-19 Module Reports

NHSN Data Quality Reports

- “No records in Analysis datasets”

National Healthcare Safety Network
Line Listing of Events Reported with 0 Device Days
As of: August 4, 2023 at 8:44 PM

No Records in Analysis Dataset: missingDDays

Please check the date that Analysis Datasets were last generated and generate new ones if necessary.

- Note: The output options are not limited to a specific time period, they are based on **the last time** you generated analysis datasets

NHSN Data Quality Reports

- When there are observations requiring action:

National Healthcare Safety Network
Line Listing of Procedures Performed on Patient's DOB
As of January 30, 2020 at 9:54 AM
Date Range: DUPROCEDURES
Carefully review this list, which includes those procedures with a procDate equal to the patient DOB and considered illogical. Please update NHSN to reflect the correct DOB or procDate.
procCode=KPRO

<i>orgID</i>	<i>Patid</i>	<i>Dob</i>	<i>Procidpro</i>	<i>linkedEvent</i>	<i>procCode</i>	<i>procDate</i>	<i>imported</i>
10018	BT109BB	10/21/2019	2533361253333	N	KPRO	10/21/2019	Y

Sorted by patID procDate

- We recommend proactively running these output options monthly

Data Quality Outreach - Routine

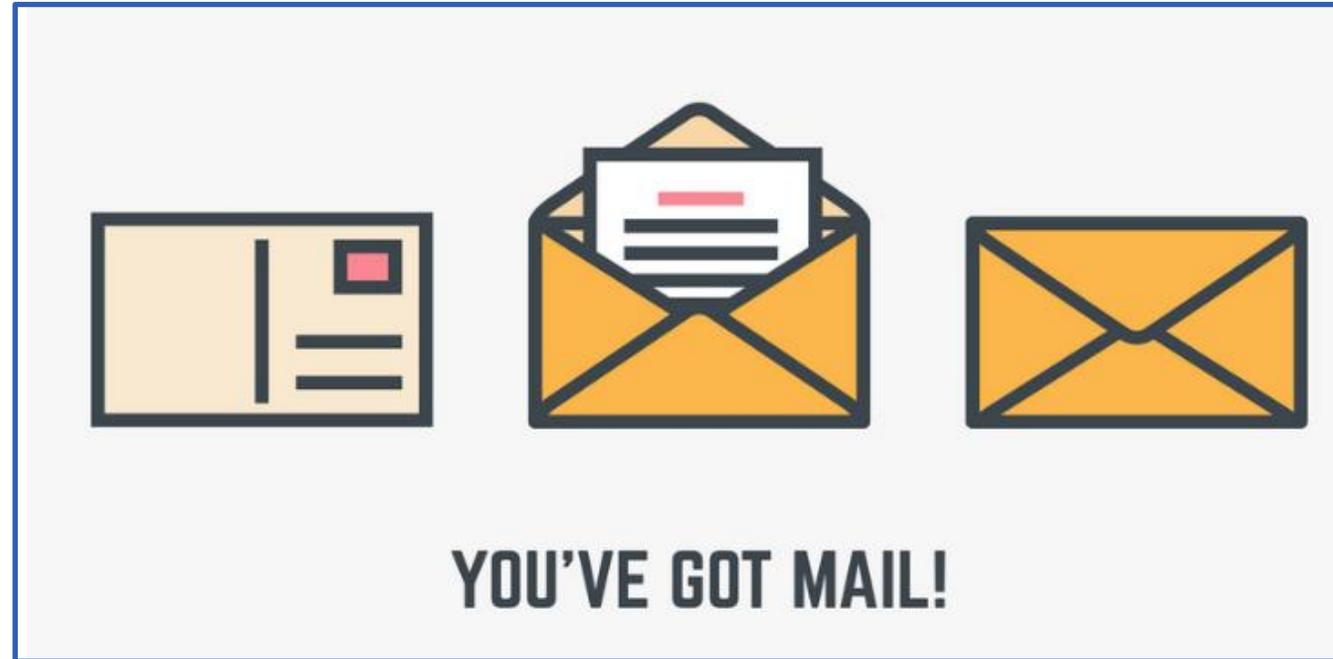
The screenshot shows the NHSN user profile page. At the top left, it says "Centers for Disease Control and Prevention" and "Saving Lives, Protecting People™". At the top right is the NHSN logo: "NHSN NATIONAL HEALTHCARE SAFETY NETWORK". Below the logo is a blue navigation bar with "Healthcare Safety Network (ps1150-7b96c66b5b-77x6w:80)" and a user profile icon. The main content area has a "View User" header with a person icon. Below this is a form with the following fields: "Mandatory fields marked with *", "User ID *:" (with a tooltip "Up to 32 letters and/or numbers, no spaces or special characters"), "Prefix:", "First Name *:", "Middle Name:", "Last Name *:", and "Title:". On the right side, there is a green navigation menu with options: "Welcome", "NHSN Home", "My Info" (highlighted with a red circle), "Contact us", and "Log Out". Below the menu is a table of effective dates:

Effective Date(s):	
EFFDATE_9_5_5	07/12/2021
EFFDATE_9_5_3_1	05/10/2021
EFFDATE_9_5_3	04/05/2021

There is also an "Expand" link below the table.

- Keep current contact information for your NHSN account(s)

Data Quality Outreach - Targeted



- Note: data quality outreach is not intended to replace internal and external data quality checks performed by the facility, state health department, or CMS

Available Resources

Resources Used for this Presentation

- Data Quality
<https://www.cdc.gov/nhsn/ps-analysis-resources/data-quality/index.html>
- Instructions to Address Data Quality Outreach
https://www.cdc.gov/nhsn/pdfs/pscmanual/Instructions_DQ.pdf
- How to Resolve Alerts
<https://www.cdc.gov/nhsn/pdfs/gen-support/NHSN-Alerts.pdf>
- Introduction to NHSN Analysis
<https://www.cdc.gov/nhsn/pdfs/training/2022/Introduction-Analysis-508.pdf>

Antimicrobial Use and Resistance (AUR) Module Data Quality Outreach

Laura Blum, MPH

AUR Module Data Reports

- AU Option Data Report
 - Provide summaries of SAAR distributions and percentages of use within SAAR antimicrobial agent categories in adult, pediatric, and neonatal locations since 2019
 - 2022 AU Option Data Report currently in progress
- AR Option Data Report
 - Currently in progress and will be available for the first time late 2023/early 2024!

2022 AU Option Data Report outreach

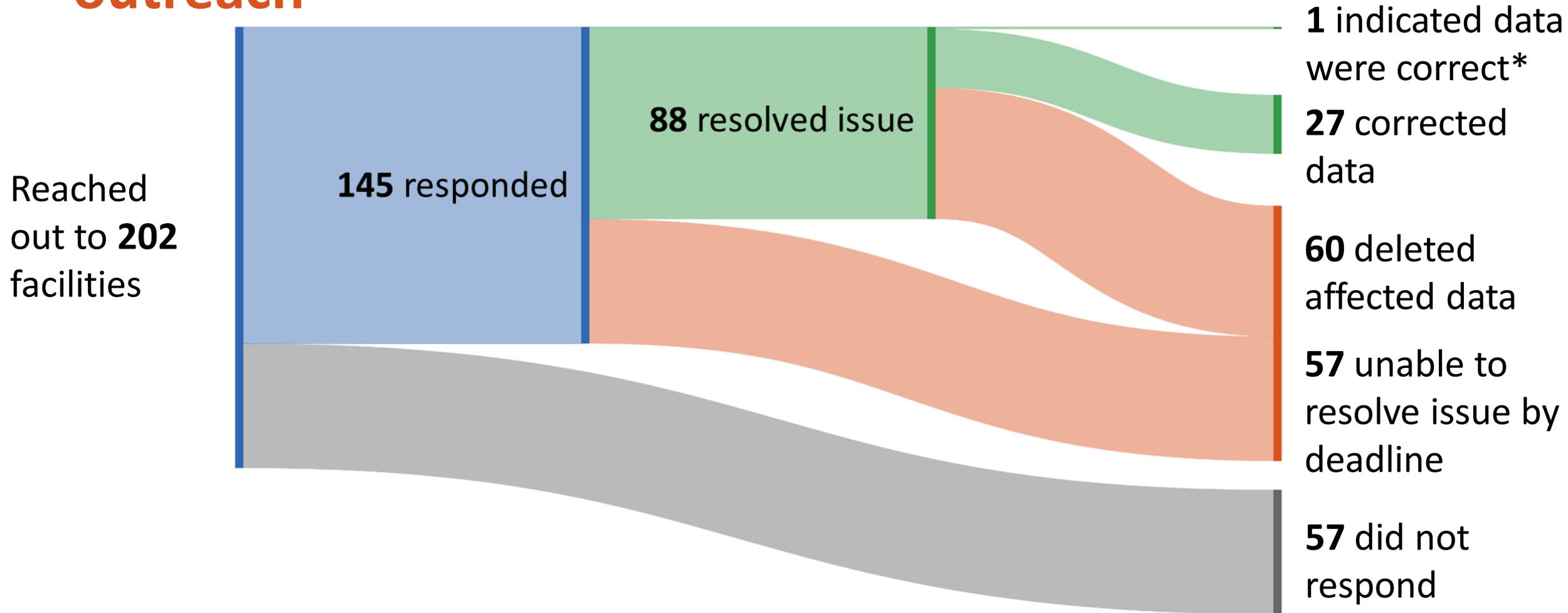
- Performed data quality outreach for issues typically excluded from AU Option Data Report to give facilities a chance to correct them prior to data freeze on 8/1/2023
- Outreach included:
 - Specific data quality issues that required data to be corrected or deleted (202 facilities)
 - Reminder to fill out 2022 PSC Annual Hospital Survey (8 facilities)
 - Reminder that facilities need at least 9 months of AU data in 2022 to be included in AU Option Data Report (all facilities submitting AU Option data)

Data quality issues affecting the 2022 AU Option Data Report

- Outreach (202* facilities):
 - 56% reported more antimicrobial days than days present for one or more antimicrobials
 - 43% reported antimicrobial days with zero days present
 - Zero days present indicates no patients present in that location for the entire month so there should be no antimicrobial administrations
 - 15% reported all antimicrobials as missing
 - 4% reported sum of routes of administration < total antimicrobial days
 - Sum of routes of administration should always be \geq total antimicrobial days because drugs may be administered more than once per day via multiple routes

*19% of facilities had more than one issue

Summary of responses to 2022 AU Option Data Report outreach



2022 AR Option Data Report outreach

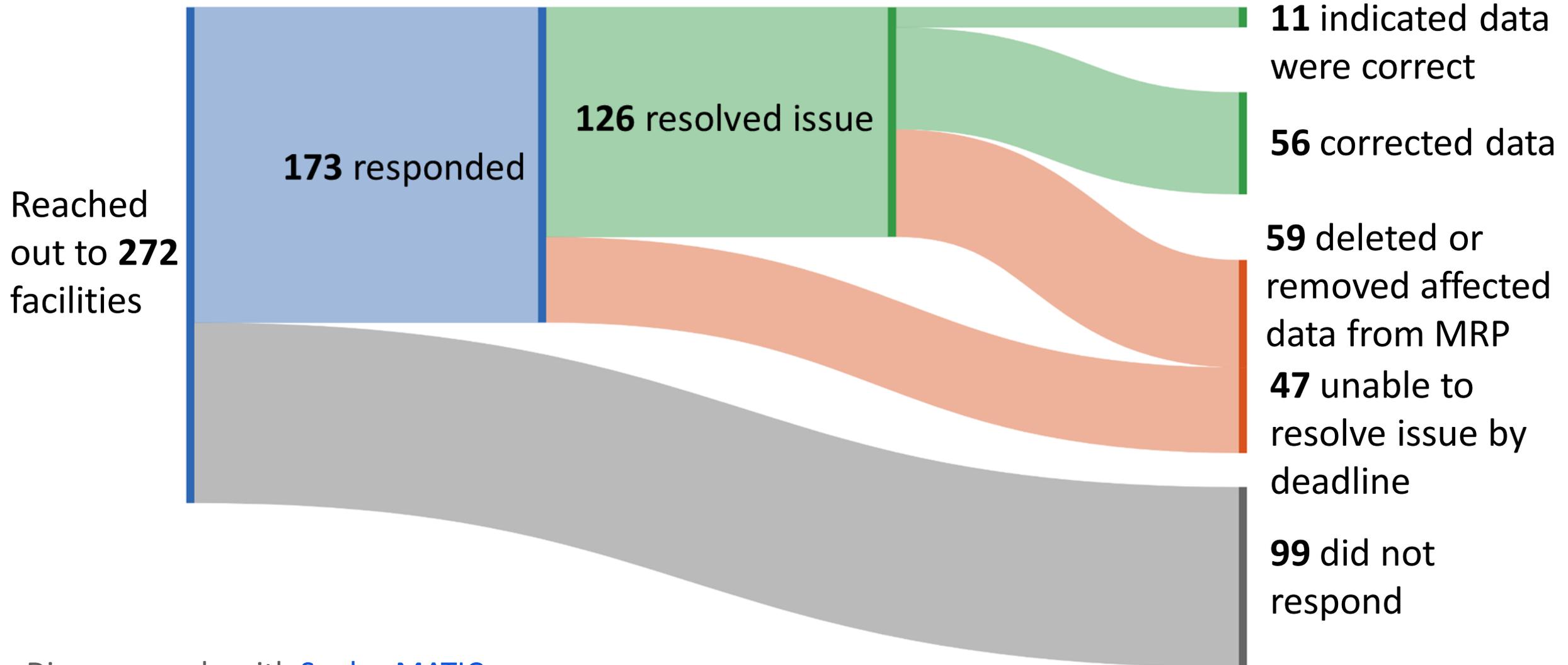
- Performed data quality outreach for issues that may result in exclusion from AR Option Data Report to give facilities a chance to correct them prior to data freeze on 9/1/2023
- Outreach about specific data quality issues that required data to be corrected or deleted sent to 272 facilities

Data quality issues affecting the 2022 AR Option Data Report

- Outreach (272* facilities):
 - 37% were missing AR Event (numerator) data
 - 28% were missing AR Summary (denominator) data
 - 15% reported zero patient days for facility-wide inpatient (FacWideIN)
 - Zero patient days for FacWideIN indicates no patients present in any inpatient location for the entire month
 - 14% reported more admissions than patient days
 - 6% reported unusually high number of patient days
 - Patient days > (number of beds x 31) + number of admissions

*7% of facilities had more than one issue

Summary of responses to 2022 AR Option Data Report outreach



Additional 2022 AR Option Data Report outreach

- 2022 AR Option Data report will use data submitted for isolates collected in 2022 and information from 2022 Patient Safety Annual Facility Survey
- AUR Team will send outreach asking facilities to review responses to questions about revised Clinical and Laboratory Standards Institute (CLSI) breakpoints on the 2022 Patient Safety Annual Facility Survey
 - If your survey response was correct, no action is needed
 - If your response needs to be corrected, please update the survey no later than August 31, 2023

Reminder about correcting NHSN data

- Received concerns during outreach about correcting AUR Module data after CMS reporting deadline
 - NHSN does not send any AUR Module data to CMS
 - NHSN encourages users to update their data in the NHSN application whenever a data discrepancy is noted, even after the CMS deadline, to achieve the highest data accuracy possible

AUR Module data quality resources

- AU Option Data Quality Line List: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/au-dataquality-linelist-508.pdf>
 - Updated to identify six potential AU data quality issues!
- AU Option Implementation Data Validation: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/AU-Option-Implementation-Data-Validation-P.pdf>
- Annual AU Option Data Validation: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/annual-au-data-validation-508.pdf>
- AR Option Data Validation: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/ar-validation-508.pdf>

Call for AUR case examples

- AU Option case examples provide real life examples of how facilities and public health departments have used AU Option data to improve antimicrobial stewardship
- We would love more AU case examples, especially ones using Targeted Assessment for Stewardship (TAS), and AR Case Examples – if interested in working with us to write one, please email NHSN@cdc.gov

AU Option Case Examples

[Print](#)

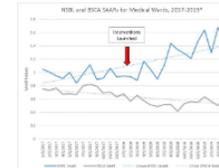
Antimicrobial Usage Reported for one (long column) Days Present Reported on Date

Facility	State	Days Present	Antimicrobial Usage
201001	MI	20100101	10
201001	MI	20100102	10
201001	MI	20100103	10
201001	MI	20100104	10
201001	MI	20100105	10
201001	MI	20100106	10
201001	MI	20100107	10
201001	MI	20100108	10
201001	MI	20100109	10
201001	MI	20100110	10

Disseminating Quarterly Data Quality Reports for NHSN AU Option Users in the State of Tennessee

Using the NHSN Group Function, the Tennessee Department of Health (TDH) Healthcare Associated Infections and Antimicrobial Resistance Program created automated data quality reports for Tennessee facilities submitting to NHSN Antimicrobial Use (AU) Option. In 2021, the TDH began disseminating data quality reports quarterly to assist facilities in validating submitted AU Option data. [Read More.](#)

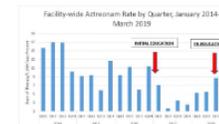
Posted On: October 12, 2021



Using the SAAR to Track Impact of Multiple Concurrent Antimicrobial Stewardship Interventions

The stewardship team at Northwestern Memorial Hospital in Chicago, IL identified the need for oral step-down antimicrobial therapy guidelines for community-acquired pneumonia. Additionally, after reviewing Northwestern Memorial's antibiogram, the team determined that treatment of urinary tract infections could be optimized. They used the Antimicrobial Use (AU) Option Standardized Antimicrobial Administration Ratios (SAARs) to track the progress of both interventions. [Read More.](#)

Posted On: September 9, 2019



Decreasing Aztreonam Use in a Veterans Affairs Hospital

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

Posted On: June 18, 2019

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

