

AU Option Data Quality Line List

Facilities capture, aggregate, and submit Antimicrobial Use (AU) Option data to the National Healthcare Safety Network (NHSN) electronically. It is important for facilities to assess the quality of AU data on a regular basis. The [NHSN Antimicrobial Use and Resistance \(AUR\) Module website](#) provides both an Implementation Data Validation Protocol and an Annual Data Validation Protocol for the AU Option, which provide detailed guidance on reviewing AU data quality. As a supplement to those guides, after [generating new data sets](#), facilities can also produce a data quality line list within NHSN. The “Line Listing – Antimicrobial Use Data to Review” helps facilities review data with six potential data quality issues.

Facilities should run this report periodically and follow-up with their vendor to address data quality concerns. After addressing the identified issues with the vendor and correcting the data, facilities can simply re-generate data sets and rerun this report to find out whether you resolved the issues.

Analysis Reports

Expand All Collapse All Search

- Device-Associated (DA) Module
- Procedure-Associated (PA) Module
- HAI Antimicrobial Resistance (DA+PA Modules)
- Antimicrobial Use and Resistance Module
 - Antimicrobial Use Data
 - Targeted Assessment for Stewardship (TAS) Reports
 - Antimicrobial Use Data - 2014 Baseline SAARs
 - Antimicrobial Resistance Data
 - Data Quality
 - Line Listing - Antimicrobial Use Data to Review

If NHSN does not find one of the six potential data quality issues below in your facility’s AU data, NHSN will generate one of the following messages (depending on whether the report was modified):

National Healthcare Safety Network
Line Listing for Antimicrobial Use Data to Review
As of: February 13, 2024 at 2:25 PM
Date Range: AU_DATAQUALITY summaryYM 2021M01 to 2023M08

No Records Met Your Criteria.
Please check your time period and/or filter criteria.

National Healthcare Safety Network
Line Listing for Antimicrobial Use Data to Review
As of: February 12, 2024 at 3:05 PM

No Records in Analysis Dataset: AU_DataQuality
Please check the date that Analysis Datasets were last generated and generate new ones if necessary.



Data Quality Concern #1: Zero or Missing Antimicrobial Days

The first table in the report will show months for which your facility reported zero or missing (".") antimicrobial days for every drug.

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: December 4, 2019 at 4:12 PM
Date Range: AU_DATAQUALITY summaryYM After and Including 2019M01
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.

Facility Org ID=13860

Facility Org ID	Summary Year/Month	Location
13860	2019M04	MEDWARD

Items to review: In the event no patients were present in that location during that month (e.g., unit closed or was under construction), reporting zero antimicrobial days for all drugs would be correct. If patients were present in that location during that month, please review the antimicrobial use data in your source electronic medication administration record (eMAR) or bar-coding medication administration (BCMA) system to verify that no eligible antimicrobials were administered in that location during that month.

Data Quality Concern #2: Antimicrobial Days Reported when Patients were Not Present

The second table in the report will show months your facility reported antimicrobial days for any drug, but also reported zero days present. Reporting zero days present indicates that no patients were present in that location for the entire calendar month.

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: August 19, 2020 at 11:26 AM
Date Range: All AU_DATAQUALITY
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.

Facility Org ID=13860

Facility Org ID	Summary Year/Month	Location	Antimicrobial Agent Description	Antimicrobial Days	Days Present
13860	2020M05	NICU IV	PENG - Penicillin G	1	0

Items to review: If patients were present in that location, check with your vendor to figure out why the vendor system is not accurately reporting the days present. If no patients were present in that location, check with your vendor to figure out why the vendor system is incorrectly attributing antimicrobial days to that location.

Data Quality Concern #3: Antimicrobial Days ≥ Days Present

The third table in the report will show one row for each location/month/drug where the total antimicrobial day count was greater than the days present count for that location. A single patient can contribute just one antimicrobial day per drug per calendar day. Therefore, the total antimicrobial days for a single drug should never be greater than the days present.

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: December 9, 2019 at 2:55 PM

Date Range: AU_DATAQUALITY summaryYM 2019M06 to 2019M06

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.

Facility Org ID=13860

Facility Org ID	Summary Year/Month	Location	Antimicrobial Agent Description	Antimicrobial Days	Days Present
13860	2019M06	MEDWARD	PENG - Penicillin G	701	700

Items to review: Review your eMAR/BCMA system antimicrobial day counts to ensure the vendor system attributes only one total antimicrobial day per drug per patient per calendar day, regardless of how many doses the provider administers to the patient during that day. Review the Admission Discharge Transfer (ADT) system days present to ensure the vendor system attributes one day present per patient if the patient is in the location at any time during that calendar day. Check with your vendor for the next steps on addressing this data quality issue.

Data Quality Concern #4: Sum of Routes < Total Antimicrobial Days

The fourth table in the report will show one row for each location/month/drug where the sum of the routes of administration (intravenous [IV] + intramuscular [IM] + digestive + respiratory) was less than the total antimicrobial day count for that specific drug. The total antimicrobial day count should only include the four routes of administration listed above. The sum of the routes should always be greater than (for example, a provider administers the drug via multiple routes, multiples times a day) or equal to (for example, a provider administers the drug via single or multiple routes but only once daily) the total antimicrobial days for a given drug.

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: December 9, 2019 at 2:59 PM

Date Range: AU_DATAQUALITY summaryYM 2019M03 to 2019M03

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.

Facility Org ID=13860

Facility Org ID	Summary Year/Month	Location	Antimicrobial Agent Description	Antimicrobial Days	sumRoutesAdmin
13860	2019M03	MEDWARD	TETRA - Tetracycline	89	85

Items to review: For each location/month/drug listed in this table, review the data in your source eMAR/BCMA system to figure out if your vendor system is incorrectly including additional routes of administration (for example, intrapleural, irrigation, topical) in your total antimicrobial day counts. If so, work with your vendor to correct the route mapping for your facility. If that is not the case, review your eMAR/BCMA system antimicrobial day counts to ensure the vendor system attributes only one antimicrobial day per drug per route per patient per calendar day, regardless of how many doses the provider administers to the patient during that day. You may also want to ensure that your vendor system calculates the antimicrobial days independently and does not just sum of the routes of administration.

Data Quality Concern #5: FacWideIN Antimicrobial Days > Sum of Antimicrobial Days for All Inpatient Locations

The fifth table in the report will show one row for each month/drug where the facility-wide inpatient (FacWideIN) antimicrobial day count was greater than the sum of antimicrobial days for all inpatient locations. A patient can contribute just one antimicrobial day per drug for FacWideIN, but more than one antimicrobial day to the sum of locations if the patient is administered antimicrobials in more than one location in a given calendar day (for example, if the patient is transferred from one inpatient unit to another in the same calendar day and is administered doses of the same antimicrobial in both units). Therefore, FacWideIN antimicrobial day counts should always be less than the sum of the inpatient locations.

National Healthcare Safety Network Line Listing for Antimicrobial Use Data to Review Antimicrobial day counts for FacWideIN greater than antimicrobial day counts for the sum of the locations

As of: June 1, 2023 at 8:43 AM

Date Range: AU_DATAQUALITY summaryYM After and Including 2022M02
if (((table = "5") AND (drugIngredientDesc = "AMK")))

Carefully review this list which includes individual drugs where the antimicrobial day count reported in the FacWideIN record is greater than the antimicrobial day count reported for the sum of the location-specific records. Since a patient can contribute only one antimicrobial day per drug for FacWideIN but more than one antimicrobial day per drug to the sum of location-specific records if in more than one location in a given calendar day, the FacWideIN antimicrobial day count should be less than the count for the sum of locations. This is a data quality error that should be addressed.

orgID=33617

Facility OrgID	Summary Year/Month	Antimicrobial Agent Description	FacWideIN Antimicrobial Days	Sum of Locations Antimicrobial Days
33617	2022M02	AMK - Amikacin	600	277

Items to review: Review the inpatient locations in your facility included in FacWideIN reporting with your vendor. Keep in mind that you should not include NHSN-defined outpatient locations (emergency department [ED], pediatric ED, and 24-hour observation) in FacWideIN reporting. Compare that list of locations with the inpatient locations listed in the AUR Module section of your monthly reporting plan. Ensure that you’re reporting AU data for all individual locations. Review “Aggregating FacWideIN Antimicrobial days” in “Section B – Review Aggregations” of the [AU Option Implementation Data Validation Protocol](#) for more guidance.

Data Quality Concern #6: FacWideIN Days Present > Sum of Days Present for All Inpatient Locations

The sixth and final table in the report will show one row for each month where the FacWideIN days present was greater than the sum of days present for all inpatient locations. A patient can contribute just one day present per calendar day for FacWideIN, but more than one day present if they were present in more than one location in a given calendar day (for example, if the patient transfers between two inpatient units in the same calendar day). Therefore, the FacWideIN day present count should always be less than the sum of the inpatient locations.

National Healthcare Safety Network
Line Listing for Antimicrobial Use Data to Review
Days present counts for FacWideIN greater than days present counts for the sum of the locations

As of: May 25, 2023 at 2:49 PM
Date Range: AU_DATAQUALITY summaryYM After and Including 2021M08
if (((table = "6")))

Carefully review this list which includes months in which the days present count reported in the FacWideIN record is greater than the days present count reported for the sum of the location-specific records. Since a patient can contribute only one day present per calendar day for FacWideIN but more than one present if in more than one location in a given calendar day, the FacWideIN days present count should be less than the count for the sum of locations. This is a data quality error that should be addressed.

orgID=33617

Facility OrgID	Summary Year/Month	FacWideIN Days Present	Sum of Locations Days Present
33617	2021M08	29981	22087

Items to review: Review the inpatient locations in your facility that in FacWideIN reporting with your vendor. Keep in mind that you should not include NHSN-defined outpatient locations (ED, pediatric ED, 24-hour observation) in FacWideIN reporting. Compare that list of locations with the inpatient locations listed in the AUR Module section of your monthly reporting plan. Ensure that you're reporting AU data for all individual locations. Review "Aggregating FacWideIN Days Present" in "Section B – Review Aggregations" of the [AU Option Implementation Data Validation Protocol](#) for more guidance.

Additional Resources

AU Option Implementation Data Validation Protocol: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/AU-Option-Implementation-Data-Validation-P.pdf>

AU Option Annual Data Validation Protocol: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/annual-au-data-validation-508.pdf>

AUR Module Protocol: <https://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>