

Annual AU Option Data Validation

The following guidance can be used on an annual basis or in the event of extreme high or low SAAR values. These questions were developed by the NHSN AU Option Team to focus validation efforts on key AU Option protocol definitions and common data errors. This document is meant to be used internally by your facility and not expected to be returned to NHSN.

Facilities in the AU implementation process or that have recently switched EHR systems should use the separate, more detailed AU Option Implementation Data Validation Protocol available [here](#).

Please email questions to the NHSN Helpdesk: NHSN@cdc.gov.

Validation Checklist

	Complete	Page
NHSN Locations	<input type="checkbox"/>	2
Review for changes in patient mix	<input type="checkbox"/>	2
Add brand new locations	<input type="checkbox"/>	2
Inactivate permanently closed locations	<input type="checkbox"/>	2
NHSN Monthly Reporting Plans	<input type="checkbox"/>	3
Check for inactive locations	<input type="checkbox"/>	3
Add brand new locations	<input type="checkbox"/>	3
Review calendar year for completeness	<input type="checkbox"/>	3
NHSN Users	<input type="checkbox"/>	4
Confirm two active AU users	<input type="checkbox"/>	4
Deactivate former AU users	<input type="checkbox"/>	4
NHSN AU Data	<input type="checkbox"/>	4
Review location-specific SAARs	<input type="checkbox"/>	4
Examine drug-specific trends	<input type="checkbox"/>	6
Spot check data	<input type="checkbox"/>	8
Check and compare denominators	<input type="checkbox"/>	10

NHSN Location Mapping

It's important to keep your facility's NHSN Locations up to date so that your data can be appropriately risk adjusted in the SAAR calculations. **Locations should be discussed with your facility's Infection Prevention department since the exact same NHSN locations should be used for reporting all NHSN data, which includes both HAI and AU.** Details on the location mapping process as well as the detailed descriptions of all CDC Location Types can be found in the [NHSN Location Protocol](#). Common NHSN location FAQs can be found [here](#).

Users with Administrative rights within the NHSN facility can see the NHSN locations after logging into NHSN by clicking "Facility" then "Locations" on the left-hand navigation bar. On the Locations screen, click "Find" to generate a table of all active locations within your NHSN facility. To work on the locations outside of NHSN from an excel file, click "Export Location List" on the Locations screen.

After reviewing the current list of active locations within your NHSN facility, address the following questions:

1. Of the locations that are currently listed as active, are there any changes in patient mix (e.g., location that was previously a Medical Ward should now be classified as a Medical/Surgical Ward)?
 - a. If there are changes that need to occur, **work with the IP** to:
 - i. Add the new location(s) with a unique "Your Code" value and the appropriate CDC Location Description.
 - ii. Once **all** historical NHSN data have been entered/uploaded, set the old location(s) to inactive.
 - iii. Update your monthly reporting plan to remove the old inactive(s) location and add the new location(s).
 - iv. Make/confirm the change in your vendor system. Be sure to use the exact "Your Code" and CDC Location Description values that were used in the new NHSN location(s). Those values are used in the CDA file upload process.
2. Are there any new locations (e.g., new construction) that need to be added to NHSN?
 - a. If there are any new locations, **work with the IP** to:
 - i. Add the new location(s) with a unique "Your Code" value and the appropriate CDC Location Description.
 - ii. Update your monthly reporting plan to add the new location(s).
 - iii. Make/confirm the appropriate addition in your vendor system. Be sure to use the exact "Your Code" and CDC Location Description values that were used in the new NHSN location(s). Those values are used in the CDA file upload process.
3. Are there any locations that are permanently closed (e.g., no longer have an inpatient rehabilitation location at the facility)?
 - a. If there are any locations that are permanently closed, **work with the IP** to:
 - i. Set the location(s) to inactive status within the NHSN Location Manager.
 - ii. Once **all** historical NHSN data have been entered/uploaded, set the old location(s) to inactive.
 - iii. Update your monthly reporting plan to remove the old inactive location(s).
 - iv. Make/confirm the appropriate change in your vendor system.

Monthly Reporting Plans

Monthly reporting plans outline which locations the facility plans to submit data for each month. AU Option data cannot be uploaded off-plan. This means if the given location is not listed in the monthly reporting plan for that month, the AU CDA file will fail to upload. Additionally, the NHSN Alerts for missing data are generated based on the selections in the monthly reporting plan. Monthly reporting plans can be completed at the beginning of the year for the entire calendar year or be completed prior to monthly upload of AU data. **The exact same monthly reporting plan is used for both HAI and AU data so it is important to make changes only to the Antimicrobial Use & Resistance Module section of the plan. If your IP normally completes the reporting plan for the AU Option, please work with them to complete the below review.**

Users with specific rights within the NHSN facility can see the monthly reporting plans after logging into NHSN by clicking “Reporting Plan” then “Find” or “Add” on the left-hand navigation bar. Select the Month and Year for the specific reporting plan you’d like to add or find. To edit an existing plan, scroll down to the bottom of the reporting plan screen and click “Edit”.

1. Are all locations in the AU section of the reporting plan for this current calendar year still active?
Inactive locations will have “[INACTIVE]” in the location name (see below screenshot):

Antimicrobial Use and Resistance Module			
	Locations	Antimicrobial Use	Antimicrobial Resistance
	[INACTIVE] MEDWARD - MEDICAL WARD - AU	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- a. Remove inactive locations from the AU reporting plan by clicking “Edit” at the bottom of the reporting plan screen, then click the trash can icon next to the inactive location. Click “Save” to save the updated reporting plan. Complete these steps for additional months as necessary.
2. Are all new NHSN locations included in the AU reporting plan? This includes new locations due to both a [change in patient mix](#) and [new construction](#). **Note:** Only include locations where both the numerator and denominator can be accurately electronically captured.
 - a. Add new locations to the AU reporting plan by clicking “Edit”, then clicking “Add Row”. Make sure to check the “Antimicrobial Use” box(s), then click “Save” to save the updated reporting plan.
3. If reporting plans are completed for the entire calendar year, is the AU section of the reporting plan complete for **all** months of the calendar year?
 - a. Add the appropriate locations to the reporting plan by clicking “Edit”, then clicking “Copy from Previous Month” within the AU section of plan. Then click “Save” to save the updated plan.

AU Option Users

NHSN recommends having at least two active AU Option users within each NHSN facility to ensure continuous reporting in the event of extended illness, vacation, or termination of employment. AU Users can be assigned a variety of user rights depending on the specific duties that user will be fulfilling for your AU reporting. A document outlining three levels of user rights applicable to the AU Option can be found [here](#). Questions about NHSN User Rights can be emailed to the NHSN Helpdesk: NHSN@cdc.gov.

Users with Administrative rights within the NHSN facility can see the list of active NHSN users by clicking “Users” then “Find” on the left-hand navigation bar. Information on managing NHSN users can be found in the [December 2014 NHSN Newsletter](#).

1. Are there currently two active AU Option users within your NHSN facility?
 - a. Users with Administrative rights can add new users by clicking “Users” then “Add” on the left-hand navigation bar. Complete the fields on the Add User screen and click “Save”. Then assign the appropriate level of user rights and click “Save”.

2. Are there AU Option users that are no longer at the facility or no longer responsible for the AU Option data?
 - a. Users with Administrative rights can deactivate users following the instructions starting on page 14 of the [December 2014 NHSN Newsletter](#).

AU Option Data

The following steps assume that the facility has been continuously submitting AU data into NHSN. Facilities in the AU implementation process or that have recently switched EHR systems should use the separate, more detailed AU Option Implementation Validation Protocol available upon request from the NHSN Helpdesk (NHSN@cdc.gov). We recommend that the most recent three years of AU data within NHSN be used to review these questions in order to spot trends in the data. All questions can be answered by running reports and/or reviewing data that have been entered into NHSN. No external review of data is necessary.

Prior to reviewing your AU data, remember to generate new data sets by clicking “Analysis” then “Generate Data Sets” on the left-hand navigation bar. On the Generate Data Sets screen, click “Generate New”. When the data sets have finished generating, you’ll see a new Last Generated date on this screen.

To find the AU Option analysis reports, click “Analysis” then “Reports” on the left-hand navigation bar. On the Analysis Reports page, click the “Antimicrobial Use and Resistance Module” folder then click the “Antimicrobial Use Data” folder. For guidance on how to run and interpret the available AU Option reports, refer to the AU Option Analysis Training and the AU Option Analysis Quick Reference Guides on the [AUR Module webpage](#).

Review of Location-Specific SAARs

Within the Antimicrobial Use Data analysis folder, select the report titled “SAAR Report – All SAARs by Location”. Click “Run Report” to run the default report displayed by month. The default report shows one table per SAAR category. Within each table, you’ll see rows for each applicable SAAR location (e.g., adult and pediatric medical, surgical, and medical/surgical ICUs and wards) displayed by month.

1. Do your location-specific SAARs seem to follow expected trends over time? (i.e., SAARs are not drastically changing from month to month [for example: SAAR of 0.8 to SAAR of 2.3] for a given location)
2. Are there any outliers for a specific location or a specific month? (e.g., SAAR = 0 or SAAR higher than 3)
 - a. For outlier SAARs, review antimicrobial days and days present for outlier values.

Using Bar Charts to Review Distributions

For SAARs under review (excluding SAAR for All Antimicrobials), use a Bar Chart report to see distribution of drugs in that specific SAAR category (for the list of drugs included in each SAAR category, review the Appendix D of the [AUR Module Protocol](#)).

- Within the Antimicrobial Use Data analysis folder, select the report titled “Bar Chart – All Data – Selected Agent Distribution by Month”. Click “Modify Report” to make the necessary modifications.
- Check box for “Show descriptive variable names” at the top left of the modification screen.
- On the **Time Period** tab, select “Summary Year/Month” as the Date Variable and a 12 month time period for review. (The Bar Charts display best with 12 bars or less.)
- On the **Filters** tab, you’ll notice that the default filter shows the antimicrobials for the broad spectrum antibacterial agents predominantly used for hospital-onset/multi-drug resistant infections SAAR. If running the bar chart for another SAAR category, remove the default antimicrobials and add the appropriate antimicrobials. For example, the screenshot below shows the default for broad spectrum antibacterial agents predominantly used for hospital-onset/multi-drug resistant infections SAAR:

The screenshot shows the 'Modify "Bar Chart - All Data - Selected Agent Distribution by Month"' interface. At the top, there are tabs for 'Title/Format', 'Time Period', 'Filters', and 'Display Options', with 'Filters' currently selected. Below the tabs, there are buttons for 'Additional Filters: Show' and 'Clear'. The main area contains a filter configuration section with 'AND OR' options. A dropdown menu is set to 'Antimicrobial Agent' and the operator is 'in'. A list of 16 antimicrobial agents is displayed, each with a dropdown arrow and a delete icon (X). The agents listed are: AMK - Amikacin, CEFEF - Cefepime, CEFTAVI - Ceftazidime/Avibactam, COLIST - Colistimethate, GENTA - Gentamicin, MERO - Meropenem, PIPERWT - Piperacillin with Tazobactam, TICARWC - Ticarcillin with Clavulanate, TOBRA - Tobramycin, AZT - Aztreonam, CEFTAZ - Ceftazidime, CEFTOTAZ - Ceftolozane/Tazobactam, DORI - Doripenem, IMIPWC - Imipenem with Cilastatin, PIPER - Piperacillin, PB - Polymyxin B, and TIG - Tigecycline. At the bottom right, there are buttons for 'Run', 'Save...', 'Export...', and 'Close'.

- On the **Display Options** tab, select the options as shown in the below screenshot:

The screenshot shows the 'Modify Bar Chart - All Data - Selected Agent Distribution by Month' interface. At the top, there is a header with the title and a checkbox for 'Show descriptive variable names (Print List)'. Below the header are four tabs: 'Title/Format', 'Time Period', 'Filters', and 'Display Options' (which is selected). The 'Bar Chart Options' section contains several dropdown menus: 'Chart Variable' (Summary Year/Month), 'Stratification Variable' (Antimicrobial Agent), 'Page by' (Location), and 'Select Numeric Variable to Chart' (antimicrobialDays). There are also three more dropdown menus: 'Orientation of Bars' (2D Vertical), 'Placement of the Percent' (None), and 'Placement of the Value' (Inside). At the bottom right, there are four buttons: 'Run', 'Save...', 'Export...', and 'Close'.

- Click “Run” to generate the bar charts. **Note:** Drugs that were included in the filter but are not showing on bar chart equal 0 antimicrobial days for that month.

1. Are there any drugs that are lower or higher than anticipated for a given month/location?
2. Are there any drugs that have drastic changes from month to month?

Using Line Lists to Review Outlier Values

For any specific drugs that seem to have unexpected or abnormal values, run a line list to pinpoint the exact antimicrobial day values reported. Within the Antimicrobial Use Data analysis folder, select the report titled “Line List – All Submitted AU Data by Location”. Click “Modify Report” to make the necessary modifications.

- Check box for “Show descriptive variable names” at the top left of the modification screen.
- On the **Filters** tab, add a rule and select “Antimicrobial Agent” as the variable. To view more than one antimicrobial in the line list use “in” as the operator. To see only one antimicrobial in the line list, use “equal” as the operator.
- Click “Run” to generate the line list. The report will show one table per location. Within that table, each drug will be listed for all months of data reported.

1. Review the data to determine which values need further investigation within the eMAR/BCMA system and/or with your vendor.

Review Specific Drugs for Trends Over Time

Remember that drug shortages may affect drug-specific trends. Pick the three antibacterials (e.g., ceftriaxone, metronidazole, piperacillin/tazobactam, vancomycin), one antifungal (e.g., fluconazole), and one anti-influenza (e.g., oseltamivir) that are most commonly used within your facility to review.

Reviewing trends over time can be done within NHSN either by running rate tables or bar charts. Keep in mind that while bar charts are a more visual way to look at the data, they are limited to showing only 12 bars per chart. The instructions for both methods are below. **Pick the one method of your choice.**

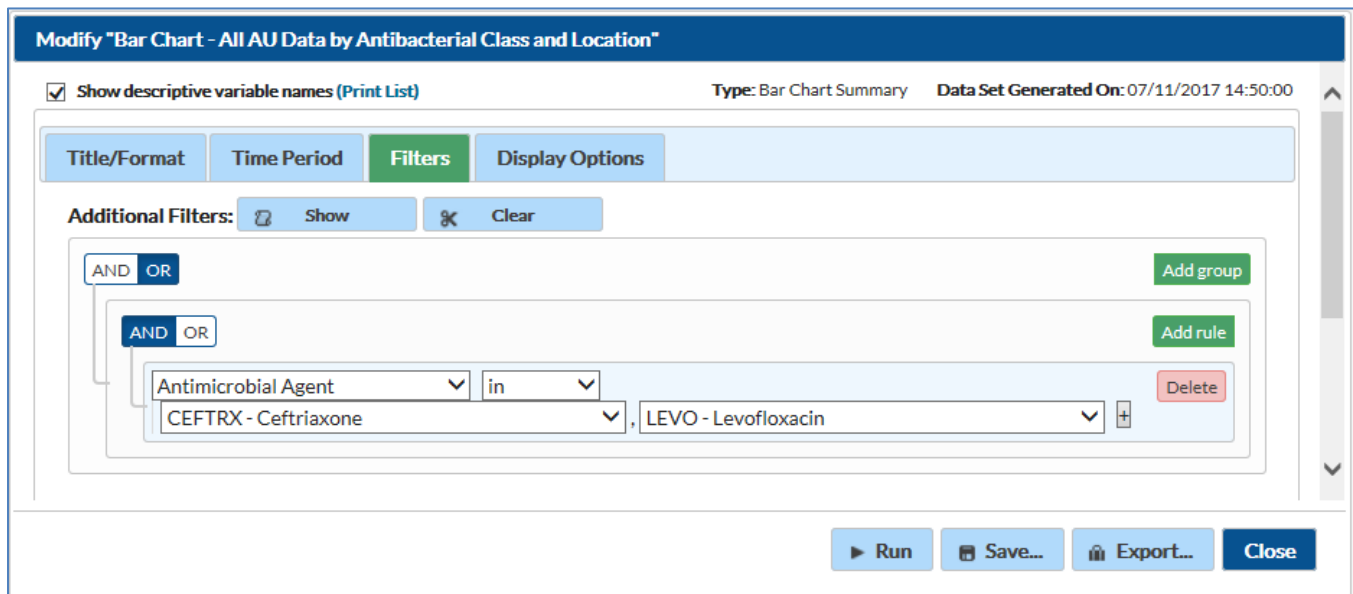
Rate Tables:

- Within the Antimicrobial Use Data analysis folder, select the report titled “Rate Table – Selected Drugs – by Location – All Months”. Click “Modify Report”.
- Check box for “Show descriptive variable names” at the top left of the modification screen.
- On the **Filters** tab, select “Antimicrobial Agent~Description” as the variable. We recommend viewing one drug at a time so use “equal” as the operator and select your antimicrobial of interest.
- Click “Run” to generate the rate table. The report will show one table per location. Within that table, a rate is generated per month of data submitted.

[Skip down to the questions](#)

Bar Charts:

- Within the Antimicrobial Use Data analysis folder, select the report titled “Bar Chart – All AU Data by Antibacterial Class and Location”. Click “Modify Report”.
- Check box for “Show descriptive variable names” at the top left of the modification screen.
- On the **Time Period** tab, select “Summary Year/Month” as the Date Variable and a 12 month time period for review. (The Bar Charts display best with 12 bars or less.) Enter the beginning and ending dates (for example: 07/2016 - 07/2017).
- On the **Filters** tab, delete the existing filter for antibacterial class. Click “Add rule” and select “Antimicrobial Agent” as the variable and “in” as the operator if viewing one drug and “equal” as the operator if viewing multiple drugs. Select the specific drugs you’d like to view. (see below example)



- On the **Display Options** tab, select the options as shown in the below screenshot:

Modify "Bar Chart - All AU Data by Antibacterial Class and Location"

Show descriptive variable names (Print List) Analysis Data Set: SummaryAU Type: Bar Chart Summary Data Set Generated On: 07/11/2017 14:50:00

Title/Format Time Period Filters **Display Options**

Bar Chart Options

Chart Variable	Stratification Variable	Page by	Select Numeric Variable to Chart
Summary Year/Month	Antimicrobial Agent	Location	antimicrobialRate

Orientation of Bars: 2D Vertical

Placement of the Percent: None

Placement of the Value: Inside

▶ Run Save... Export... Close

- Click "Run" to generate the bar charts. **Note:** Drugs that were included in the filter but are not showing on bar chart equal 0 antimicrobial days for that month.
1. Are there any drug-specific rates that are lower or higher than anticipated for a given month/location?
 2. Are there any drug-specific rates that have drastic changes from month to month?
 3. Are these changes a result of the antimicrobial day counts, the days present counts or both?

For drugs that are lower or higher than anticipated for a given month/location, run a line list for that drug to look for trends over time. Instructions for running a drug-specific line list can be found [above](#).

Spot Check of the Data

Line lists can be used to spot check specific items such as the routes of administration and drug-specific trends or general items such as numerator and denominator aggregations. For each item below, use the report titled "Line List – All Submitted AU Data by Location". Click "Modify Report" to make the necessary modifications.

- Check box for "Show descriptive variable names" at the top left of the modification screen.
- On the **Filters** tab, make the modifications as outlined in each scenario below. Delete the existing filter for location "not equal" to FacWideIN. For filters that require more than one variable, make sure to click "Add Rule" for each new filter you apply.
- On the **Sort** tab, make the modifications as outlined in each scenario below.
- After filters have been selected, click "Run" to generate the line list.

Routes of Administration

1. Intramuscular (IM) administrations
 - a. Look for IM administrations in ED location (if applicable). Are IM ED administrations being appropriately captured/reported?
 - i. **Filters:** CDC Location “equal” to Emergency Department; Route:IM “greater” than 0
 - ii. **Sort:** Antimicrobial Agent~Description or Summary Year/Month
 - b. Confirm IM use is rarely occurring in inpatient locations.
 - i. **Filters:** CDC Location “not in” Emergency Department and 24-hour Observation Area; Route:IM “greater” than 0
 - ii. **Sort:** Antimicrobial Agent~Description or Summary Year/Month
2. Intravenous (IV) administrations
 - a. If using continuous or extended infusion, confirm usage in those specific locations.
 - i. **Filter:** Location “in” (specific locations with continuous or extended infusion); Route:IV “greater” than 0
 - ii. **Sort:** Antimicrobial Agent~Description or Summary Year/Month
3. Digestive tract administrations
 - a. If using IV formulation of vancomycin for oral or rectal administrations, confirm usage in those specific locations.
 - i. **Filter:** Location “in” (oral or rectal vancomycin administration locations); Route:Digestive “greater” than 0; Antimicrobial Agent~Description “equal” to vancomycin
 - ii. **Sort:** Antimicrobial Agent~Description or Summary Year/Month
4. Respiratory tract administrations
 - a. If using inhaled drugs, confirm usage in those specific locations.
 - i. **Filter:** Location “in” (inhaled administration locations); Route:Respiratory “greater” than 0
 - ii. **Sort:** Antimicrobial Agent~Description or Summary Year/Month

Drug-Specific Trends

1. Confirm that there are higher antimicrobial days for commonly used drugs within your facility (e.g., piperacillin/tazobactam, cefazolin, vancomycin).
 - a. **Filter:** Antimicrobial Agent~Description “in” (commonly used drugs)
2. Confirm that there are lower antimicrobial days for less commonly used drugs within your facility (e.g., oral cephalosporins, nafcillin).
 - a. **Filter:** Antimicrobial Agent~Description “in” (less commonly used drugs)
3. Confirm higher usage of beta-lactams such as ampicillin and penicillin G in mother/baby locations (e.g., Labor & Delivery Ward, Postpartum Ward, Labor/Delivery/Recovery/Postpartum Suite [LDRP], and/or Nursery).

- a. **Filter:** Antimicrobial Agent~Description “in” ampicillin and penicillin G; Location “in” (mother/baby locations)

Antimicrobial Days versus Days Present

Note: Antimicrobial days for a given drug should always be less than the days present count for the location/month since a patient can only attribute 1 total antimicrobial day per drug per calendar day.

1. Review antimicrobial days for specific drugs to ensure they are less than days present for a given location for up to five individual locations. Antimicrobial days for a given drug in a specific location should never be higher than the days present for that location.
 - a. **Filter:** Antimicrobial days “greater” than 0; Location “in” (5 selected locations)
 - b. **Sort:** Antimicrobial days and Days Present
 - c. **Display Options:** Facility Org ID

Total Antimicrobial Days versus Sum of the Routes of Administration

Note: Drug-specific antimicrobial days (total) attributes one antimicrobial day for any route of administration. For example, a patient to whom Tobramycin was administered intravenously and via a respiratory route on the same day would be attributed “one Tobramycin Day (Total)”; the stratification by route of administration would be “one Tobramycin Day (IV)” and “one Tobramycin Day (Respiratory)”. Drugs given more than once daily via multiple routes should have a route sum higher than the total antimicrobial days. Drugs given once daily via multiple routes should have a route sum equal to the total antimicrobial days.

1. Confirm that drugs given more than once daily via multiple routes have a route sum higher than total antimicrobial days (e.g., ciprofloxacin, doxycycline, metronidazole)
 - a. **Filter:** Antimicrobial Agent~Description “in” (drugs given more than once daily via multiple routes)
2. Confirm that drugs given once daily via multiple routes have a route sum equal to total antimicrobial days (e.g., azithromycin, levofloxacin, moxifloxacin).
 - a. **Filter:** Antimicrobial Agent~Description “in” (drugs given once daily via multiple routes)

FacWideIN versus Sum of Locations

Note: For location specific reporting, administrations should be counted in each location where the patient was physically located at the time of administration. However, when calculating FacWideIN, the patient can only attribute one total antimicrobial day per drug, regardless of how many different patient care locations they received the drug that calendar day. For example, the location specific piperacillin-tazobactam antimicrobial days may add up to be higher than the FacWideIN piperacillin-tazobactam antimicrobial days because piperacillin-tazobactam can be administered more than once daily. Therefore, if a patient received piperacillin-tazobactam once in the medical ward in the morning then was transferred and received the remaining doses in the medical ICU, that patient would attribute 1 total piperacillin-tazobactam antimicrobial day to both the medical ward and the medical ICU but could still only attribute 1 total piperacillin-tazobactam for the FacWideIN count.

1. Confirm that the sum of the location-specific antimicrobial days for a given drug are higher than the FacWideIN antimicrobial days for same month for drugs that are given more than once daily (e.g., piperacillin/tazobactam, cefazolin, meropenem, imipenem).
 - a. **Filter:** Antimicrobial Agent~Description “in” (drugs given more than once daily)
 - b. **Sort:** Antimicrobial Agent~Description, Location
 - c. **Display:** Summary Year/Month
2. Confirm that the sum of the location-specific antimicrobial days for a given drug are equal to the FacWideIN antimicrobial days for the same month for drugs that are given once daily (e.g., azithromycin, levofloxacin, moxifloxacin).
 - a. **Filter:** Antimicrobial Agent~Description “in” (drugs given once daily)
 - b. **Sort:** Antimicrobial Agent~Description, Location
 - c. **Display:** Summary Year/Month

Zero versus N/A Usage

Note: According to the [AU Option protocol](#) “Not applicable (N/A)” is used when antimicrobial can’t be electronically captured from eMAR/BCMA. “N/A” will display in the NHSN AU report as “.”. “Zero” is used when the facility had no patients administered the drug and/or route of administration during the given month. “Zero” will display in the NHSN AU report as “0”.

1. Are there any drugs that would require reporting N/A because they cannot be accurately electronically captured?
 - a. **Filter:** Antimicrobial Agent~Description “in” (drugs not captured in eMAR/BCMA)

Denominator Review

The days present denominator is an important part of the SAAR models and therefore should also be validated. For the items below, use the report titled “Line List – All Submitted AU Data by Location”. Click “Modify Report” to make the necessary modifications.

- Check box for “Show descriptive variable names” at the top left of the modification screen.
- On the **Filters** tab, make the modifications as outlined in each scenario below. For filters that require more than one variable, make sure to click “Add Rule” for each filter you apply. Because the same denominator is reported for all 89 drugs for a given location/month, include a filter to view only one drug.
- On the **Sort** tab, make the modifications as outlined in each scenario below.
- After filters have been selected, click “Run” to generate the line list.

Reviewing AU Days Present

1. Examine the days present for trends within specific locations. Double check steep increases or drop offs to confirm validity. Double check locations reporting zero days present for a given month to confirm that the location was in fact closed or did not house patients during that month.
 - a. **Filter:** Antimicrobial Agent~Description “equal” to vancomycin

2. For a given month, confirm that the sum location-specific days present are higher than the FacWideIN days present count for same month.
 - a. **Filter:** Antimicrobial Agent~Description “equal” to vancomycin

Comparing AU Days Present to HAI Patient Days

If submitting data into other NHSN Modules (i.e., HAI, MDRO), those denominator data can be compared to the AU Option denominator data with help of NHSN Facility Administrator or IP staff. For facilities participating in CMS reporting, all adult, pediatric, and neonatal ICU locations along with adult and pediatric medical, surgical, and medical/surgical ward locations will have reported location-specific HAI patient days. Additionally, FacWideIN patient days are required to be reported within the monthly MDRO summary record. Facilities with EDs and/or 24-hour observation locations participating in CMS reporting are required to report location-specific MDRO encounters in the monthly MDRO summary record. You may need to ask your IP for help in finding these numbers within NHSN.

Here are a few key definitions:

Days Present in AU Option: Patient is counted in a location if they are there at any time during the calendar day. The patient cannot be counted more than once in a specific location during a single calendar day (i.e., patient was transferred out and back into the location is still only counted as 1 day present in that location).

Patient Days in other Modules: Patient is counted in a location only if they are in that location at the time of the once daily census count (generally done around midnight).

Admission: Patient is counted as an admission if they are admitted to an inpatient location within the facility starting on the first day of each calendar month. The definition of admissions is the same in both the AU Option and the MDRO Module.

MDRO Outpatient Encounter: Patient is counted if they visit the outpatient location at any time during the calendar day. The definition of MDRO Outpatient Encounter counts in the same way as the AU Days Present denominator.

Location-Specific AU Days Present versus HAI Patient Days

Populate the table below using data from the AU and HAI submissions and calculate the percent difference. These HAI patient days will come from the NHSN Device-associated summary records used for CLABSI/CAUTI reporting. We recommend checking at least two ICU locations, two ward locations, and one NICU location (if applicable).

Note: Based on internal NHSN analysis of AU and HAI data, on average, the AU days present for adult and pediatric ICUs and wards are 29% higher than the HAI patient days for the same location. On average, the AU days present for NICU locations are 14% higher than the HAI patient days for the same location.

Percent Difference: $\frac{(AU\ Days\ Present - HAI\ Patient\ Days)}{AU\ Days\ Present} \times 100$

Month/Year	Location Name	Total AU Days Present	Total HAI Patient Days	Percent Difference

1. If the percent difference is considerably higher than the average for the specific location type, consider discussing the denominator counts with your vendor. Check for double counting (for AU reporting, a patient can only be counted once in a location per day).
2. If AU Days Present are equal to the HAI patient days, check with your vendor as this should never happen.
3. If AU Days Present are lower than the HAI patient days, check with your vendor to make sure all patients are being included in the location counts regardless of patient status (e.g., observation, emergency).

FacWideIN AU Days Present versus FacWideIN MDRO Patient Days

Populate the table below using data from the AU and HAI submissions. These HAI FacWideIN patient days will come from the NHSN MDRO summary records used for LabID reporting. We recommend checking at least four months.

Month/Year	Total AU Days Present for FacWideIN	Total HAI Patient Days for FacWideIN MDRO

1. If the counts for FacWideIN HAI patient days are higher than AU days present, are additional locations being included in the HAI patient day counts? For AU reporting, FacWideIN should only include those locations where both the numerator and denominator can be accurately electronically captured so some locations might be excluded from AU FacWideIN and included in HAI FacWideIN.

FacWideIN AU Admissions versus FacWideIN MDRO Admissions

Populate the table below using data from the AU and HAI submissions. These HAI FacWideIN admissions will come from the NHSN MDRO summary records used for LabID reporting. We recommend checking at least four months.

Month/Year	Total AU Admissions for FacWideIN	Total HAI Admissions for FacWideIN MDRO

1. Are the admissions numbers reported within the AU Option and the MDRO Module roughly the same? Some variation is expected as these numbers are most likely coming from different data sources.

Emergency Department & 24-hour Observation area AU Days Present versus MDRO Outpatient Encounters

Populate the table below using data from the AU and HAI submissions. These HAI MDRO outpatient encounters will come from the NHSN MDRO summary records used for LabID reporting. We recommend checking at least two months for each location type (if applicable).

Location	Month/Year	Total AU Days Present	Total HAI MDRO Encounters
Emergency Department			
24-hour Observation			

1. Are ED and 24-hour observation AU days present roughly equal to the HAI encounters for those outpatient locations for same time period? Some variation is expected as these numbers are most likely coming from different data sources.

Appendix

Complete web addresses for references hyperlinked in this document in the order of appearance:

NHSN Location Protocol: https://www.cdc.gov/nhsn/pdfs/pscmanual/15locationsdescriptions_current.pdf

NHSN Location FAQs: <https://www.cdc.gov/nhsn/faqs/faq-locations.html>

NHSN AU Option User Rights: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-au-user-rights.pdf>

December 2014 NHSN Newsletter: <https://www.cdc.gov/nhsn/pdfs/newsletters/Newsletter-Dec2014.pdf>

NHSN AUR Module Webpage: <https://www.cdc.gov/nhsn/acute-care-hospital/aur/index.html>

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