# NHSN Antimicrobial Use (AU) Option Helpful Hints

## Important URLs

- NHSN AU Option Protocol: http://www.cdc.gov/nhsn/acute-care-hospital/aur/index.html
- NHSN CDA Submission Support Portal (CSSP)
- For validation of CDAs without all the business rules of NHSN, use the Lantana CDA validator: https://www.lantanagroup.com/validator/

## Helpful Hints

### Data Import/Deletion

- AU Option Summary data cannot be entered or modified by hand through the web interface. AU data can only be entered and modified through the CDA Import Function or import via DIRECT CDA Automation.
- For an AU import to occur for a facility, the facility must have the Patient Safety Component activated.
- AU is required to be included in the Monthly Reporting Plan for the month in which you are reporting.
  - AU data cannot be entered "off-plan."
- Application Business Rule for the monthly reporting plan:
  - If an AU location ≠ FACWIDEIN, then it *may* be the only location followed for a month.
  - If an AU location = FACWIDEIN, then it MUST have at least one other location added to the monthly plan.
- The system will allow CDA import for a month that is completed.
  - Example: October data may be uploaded beginning November 1.
- NHSN recommends that data be entered into NHSN for a given calendar month by the end of the subsequent calendar month.
- Each CDA represents a specific location and month.
- For manual CDA upload, multiple CDAs from one facility may be included in ONE zip file.
  - Example:
    - One CDA reporting data for FACWIDEIN for September. (both days present and admissions must be reported for this location)
    - One CDA reporting data for medical ICU for September
    - One CDA reporting data for surgical ICU for September
    - One CDA reporting data for surgical ward for September
    - One CDA reporting data for medical ward for September
    - One CDA reporting data for the labor and delivery ward for September
    - One CDA reporting data for emergency department for September
    - One zip file containing all September AU CDAs
- For DIRECT upload, multiple CDAs from multiple facilities may be included in one zip file as long as the same DIRECT address is used.
- The NHSN User Interface includes a delete capability for AU.
  - Summary Data > Delete AUR Data
    - Select the Summary Data Type, Location, Month and Year to be deleted. Then click the Delete button.

- The updating of an existing record is achieved through the use of succession management as defined in the HAI CDA Implementation Guide. Specifics found at http://www.cdc.gov/nhsn/cdaportal/faqs.html.

**AU Option CDA Specifications**
- Create the AU CDA using the R6 or R1 Normative IG. The R6 AU CDA version will continue to be a valid CDA import. However, a facility will be required to use the R1 Normative AU CDA import if they wish to satisfy the requirements for Meaningful Use Stage 3 (MU3). Guidance on the AU CDA based on the R1 Normative IG, can be found in the AU Tool kit. http://www.cdc.gov/nhsn/cdaportal/toolkits.html
- In the CDA, each antimicrobial should be coded in a separate summary encounter.
- All antimicrobial ingredients are required to be reported in the CDA. Refer to the Numerator section for additional details on how to indicate antimicrobials that are not used in a given month.
- Total Number of Days Present, Number of Therapy Days, and Number of Admissions must be reported as a whole number (not a decimal number).
- High level example of data:
  - Month Range
  - Location
  - # of Admissions (only reported for location = FACWIDEIN)
  - Patient present days (aka days present)
  - Each specific drug
    - Aggregate data for the antimicrobial
    - Stratified data of antimicrobial for 4 Routes of administration:
      - Respiratory tract route
      - Digestive tract route
      - Intravenous route
      - Intramuscular route

**AU Option Location Specifications**
- NHSN strongly encourages the submission of data from all NHSN-defined inpatient locations, facility-wide inpatient (FacWideIN), and select outpatient acute-care settings (i.e., outpatient emergency department, pediatric emergency department, and 24-hour observation area) from which the numerator and denominator data can be accurately captured.
  - If data from a given location are not able to be accurately electronically captured, data should not be submitted from that location. Additionally, that location should not be included in the FacWideIN record.
- An AU summary record should only be uploaded to NHSN for a specific location if both the numerator (antimicrobial days) and denominator (days present & admissions) data are electronically available.
- CDC Location Codes that will be accepted for AU Option summary data import can be found in the "Locations" tab of the IDM. These locations will have a 'Y' in the AUR column of the "Locations" tab.
  - The only outpatient location types currently accepted are Emergency Department, Pediatric Emergency Department and 24-hour observation area.
- FacWideIN (facility-wide inpatient) – should include reporting of all inpatient location types that fall under one of the definitions of a specific inpatient type in the healthcare service location value set specified by NHSN.
  - Represents all inpatient locations for the facility where appropriate numerator and accurate denominator counts can be collected.
    - If a location's numerator and/or denominator cannot be electronically captured, the location's numerator and denominator data should be excluded from the FacWideIN numerator and denominator data.

- o   All of the facility's inpatient locations (where patients are intended to stay overnight) with electronically captured numerator (antimicrobial days) and denominator (days present & admissions) data should be represented in the FacWideIN record for full inpatient facility coverage.
- For inpatient locations, <u>all</u> patients residing in that location should be included in the location-specific and FacWideIN data regardless of patient status (inpatient, outpatient, observation, etc.).

**Numerator (Antimicrobial Days)**
- Antimicrobial days are aggregated by month for each patient care location and overall for inpatient areas facility-wide (FacWideIN) as documented in the eMAR and/or BCMA.
- A value (e.g., a specific number, 0, or NA) must be reported for <u>every</u> antimicrobial listed in <u>Appendix A of AU Protocol</u> regardless of whether the antimicrobial was used in the location/facility for a given month.
  - o   Zero (0) – Use when the facility has the ability to electronically capture that antimicrobial (in the eMAR/BCMA), but did not administer it to any patients during the given month.
    - ▪   Example: If Amoxicillin is used at the facility, but was not given to any patients during the month, the Amoxicillin count would be 0.
  - o   Not applicable (NA) – use when antimicrobial can't be electronically captured at the facility
    - ▪   Example: If Meropenem is given to patients throughout the month, but cannot be captured by eMAR/BCMA, the Meropenem count would be 'NA'.
    - ▪   Expressed in CDA as nullFlavor="NA".
- The total antimicrobial days for a given antimicrobial should include only the counts administered using one of the four routes accepted into the AU Option (IV, IM, digestive, respiratory). Administrations via any route other than the four accepted routes should be totally <u>excluded</u> from all AU Option data.
  - o   Total antimicrobial days for a given drug should not simply be the sum of the routes of administration for that drug. 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)".
- Cannot aggregate all locations to equal facility-wide inpatient (FacWideIN) – must be a separate summation
  - o   Sum of antimicrobial days for location-specific analyses would be higher than antimicrobial days for the facility because multiple administrations of an antimicrobial would account for multiple "antimicrobial days" for a given patient.

**Denominator (Days present [aka patient present days])**
- **NOTE: Days present ≠ Patient days**
  - o   Days present are used in the AU Option only.
  - o   Patient days are used throughout the rest of the NHSN Patient Safety Component modules.
  - o   For a given location or FacWideIN, the days present count should almost always be higher than the patient day count since days present takes into account patient transfers and discharges.
- The "Patient-Present Days" value is required for the summary records reporting for all location types.
  - o   Value must be >= 0.
  - o   If location = 'FACWIDIN' then Total Number of days must be <= 99999; Otherwise, must be <= 10000.
  - o   The value is required to be the same number throughout the R6 AU CDA version. In the R1 Normative AU CDA, "Patient-Present Days" is only listed once in the CDA.
- One day is defined as the time between 12:00am and 11:59pm or one calendar day.
- For patient-care location-specific analyses

- o Days present – number of patients who were present for <u>any portion</u> of each day in a specific patient care location
  - Example: Patient X starts the day in the Medical ICU and then gets transferred to the Medical Ward at 11:00am. Patient X would be counted once in the Medical ICU and once in the Medical Ward for that day.
- o Patients cannot count for more than one day in a specific patient-care location
  - Example: Patient X starts the day in the Medical ICU, gets transferred to the Medical Ward at 11:00am, and then gets transferred back to the Medical ICU at 9:00pm. Patient X would be counted only once in the Medical ICU and once in the Medical Ward for that day.
- For facility-wide-inpatient (FacWideIN) analyses
  - o Days present – number of patients who were present for any portion of each day somewhere within the facility in any inpatient location (**Not the same as patient-days used in the rest of NHSN therefore you cannot use the FacWideIN total patient day count that is used for the MDRO Summary Record.**)
    - Example: Patient Y was admitted to the hospital Medical Ward on Monday at 10:00pm and was discharged on Thursday at 8:30am. Patient Y would count for 4 days present in an inpatient location.
    - Example: Patient Z was admitted to the hospital Medical Ward on Monday at 10:00pm. On Tuesday at 1:00pm he was transferred to the Surgical ICU and at 11:30pm he was transferred to the Surgical Ward. He was discharged on Thursday at 8:30am. Patient Z would still count for 4 days present in an inpatient location.
  - o Throughout the entire inpatient facility a patient can only be counted once per day.
  - o Cannot sum days present for location-specific analysis to get facility-wide inpatient(FacWideIN) – must be a separate summation
    - Sum of days present for location-specific analyses would be higher than days present for the facility because transfers between wards would account for multiple "days present" for a given patient
  - o Outpatient locations (Emergency Department, Pediatric Emergency Department and 24-hour observation area) are <u>not</u> included in the FacWideIN days present counts.

## Denominator (Admissions)
- The "Number of Admissions" value is valid for summary records reporting for a "facility wide inpatient" (FACWIDEIN) location only.
  - o Value must be >= 0 and <= 99999
- If location = FACWIDEIN, then number of admissions is only coded in the first antimicrobial encounter.
- How to count patient admissions for AUR calculations when a patient's stay extends from one month to another:
  - o The time at which a patient enters the door to a facility or a location, is the time of their admission to that facility or specific location. If they do not leave, then that stay is all part of that same admission, no matter how long. So, a stay that continues across multiple months is still only one admission.
  - o If the patient is discharged or transferred and then returns at a later time, then they are counted as a new admission with a new admission date at that time.
- Outpatient locations (Emergency Department, Pediatric Emergency Department and 24-hour observation area) are not included in the FacWideIN admission counts.

## AU Option Analysis Reports
- Reports can only be generated in the NHSN production environment. They are not available in the NHSN pre-production environment.

- AU Option data can be reviewed using the NHSN Analysis function. Specific details on the AU Option analysis can be found in the [protocol](protocol) or in the Analysis Resources section of the NHSN AUR Module [webpage](webpage).
- Specific 2-3 page analysis quick reference guides have been developed to assist with viewing, modifying, and interpreting the AU Option data:
  - [AU Option Line List](AU Option Line List)
  - [AU Option Rate Table – By Location](AU Option Rate Table – By Location)
  - [AU Option Rate Table – FacWideIN](AU Option Rate Table – FacWideIN)
  - [AU Option Bar Chart](AU Option Bar Chart)
  - [AU Option Pie Chart](AU Option Pie Chart)
  - [AU Option SAAR Table](AU Option SAAR Table)

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