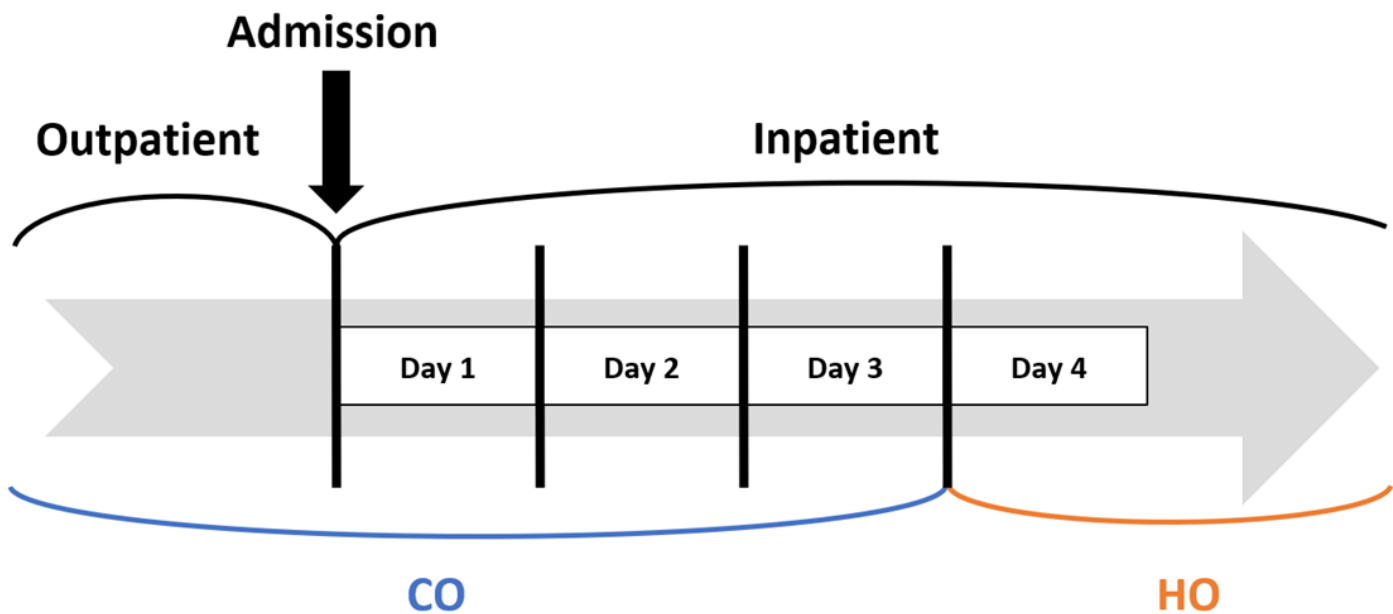


# Hospital-onset Antimicrobial Resistance Incidence Rate Table

## Description

The Hospital-onset Antimicrobial Resistance Incidence Rate Table is one of six incidence and prevalence reports for the Antimicrobial Resistance (AR) Option. This report includes a set of tables that display the calculated incidence rates for hospital-onset AR Events with susceptibility results reported from all inpatient locations to the AR Option that meet the definition for one of the 16 AR phenotypes. The AR phenotype definitions can be found here: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/ar-phenotype-definitions-508.pdf>. NHSN classifies AR Events as hospital-onset (HO) or community-onset (CO) based on the specimen collection date and date of admission (see screenshot below). Facility admission date is considered Day 1. If the specimen was collected in an outpatient location or in an inpatient location on Days 1, 2, or 3, the AR Event is classified as CO. If the specimen was collected in an inpatient location on Day 4 or after, the AR Event is classified as HO. The specific panel requirements for each organism are in Appendix F of the AUR Module protocol: <https://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>.



NHSN calculates the incidence rate per 10,000 patient days for each AR phenotype using the following formula:

$$\text{Incidence rate} = \frac{\# \text{ Hospital-onset AR Events}}{\# \text{ Patient Days}} \times 10,000$$

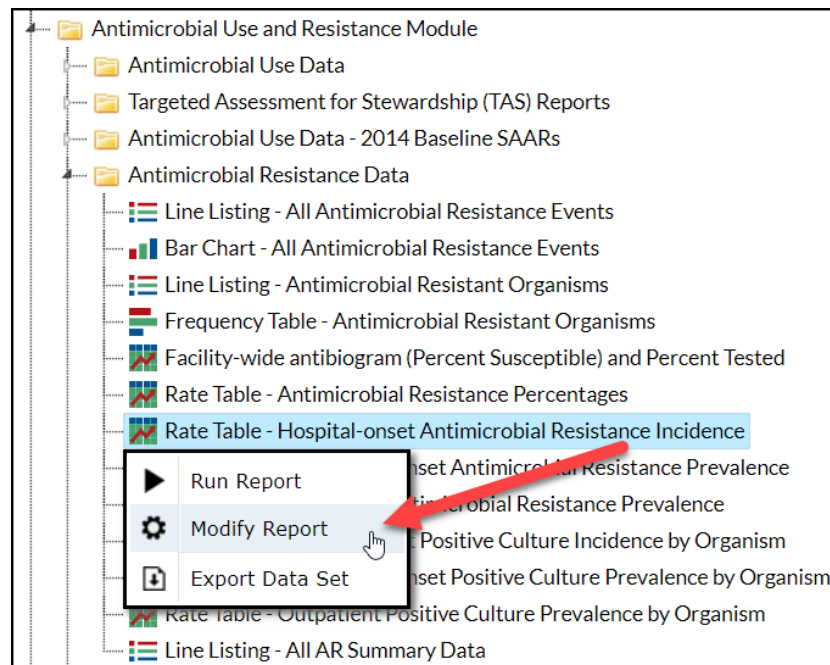
The default settings for the Hospital-onset Antimicrobial Resistance Incidence Rate Table produce a report by quarter, but users can make modifications to display the data by half-year, year, or cumulative time periods. Users do not have the option to run the report by month. Additionally, NHSN includes rates by individual specimen source (blood, cerebrospinal fluid [CSF], lower respiratory specimen [LRS], and urine) and a combined rate for all specimen sources in the report by default, for a total of five rates per table. The default option will include 16 rate tables, one for each AR phenotype.



## Example

Suppose you want to review the incidence rates for hospital-onset carbapenem-non-susceptible *Acinetobacter* spp. for 2021-2022 by quarter for your facility.

After generating data sets, to run the report, click Analysis > Reports > Antimicrobial Use and Resistance Module > Antimicrobial Resistance Data. After selecting the report, “Rate Table – Hospital-onset Antimicrobial Resistance Incidence” in this case, a pop-up box will appear that will allow you to “Run Report,” “Modify Report,” or “Export Data Set.” Select “Modify Report” to customize your report.



## Modifying the Report

For a general, step-by-step explanation of the NHSN modification screen, please refer to this document:

<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/howtomodifyreport.pdf>.

When you choose to modify the report, the modification screen appears showing multiple tabs containing available modifications for the given report. The “Title/Format” tab allows you to update the report title and select the format in which you want the report displayed, such as HTML or PDF. To filter the data by time period, choose the “Time Period” tab at the top of the page. To display data for 2021-2022, select Summary~Yr with a beginning date of 2021 and an ending date of 2022.

**Tip:** For more descriptive variable labels on your report, check the box “Show descriptive variable names” that appears near the top of the modification window (recommended).

**Modify "Rate Table - Hospital-onset Antimicrobial Resistance Incidence"**

Show descriptive variable names ([Print List](#)) Type: Rate Table    Last Generated: May 17, 2023 9:50 AM

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

Time Period:

Date Variable	Beginning	Ending
Summary~Yr ▾	2021	2022

Enter Date variable/Time period at the time you click the Run button

▶ Run    Save...    Export...    Close

The “Display Options” tab allows you to pick how you’d like the tables displayed in your final report. For this example, we’d like the tables to display by quarter, which is the default option. Make sure Summary~Yr/Qtr is selected as the Group by value.

**Modify "Rate Table - Hospital-onset Antimicrobial Resistance Incidence"**

Show descriptive variable names ([Print List](#)) Type: Rate Table    Last Generated: May 17, 2023 9:50 AM

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

Rate Table Options:

Group by: Summary~Yr/Qtr ▾

▶ Run    Save...    Export...    Close

## Final Report

The example rate table shown below is the result of the modifications shown in this document. The report will display 16 rate tables; scroll down to the carbapenem-non-susceptible *Acinetobacter* spp. table.

*Note: This example uses fictitious data for illustrative purposes only.*

## National Healthcare Safety Network

### Rate Table for Incidence of Hospital-onset Antimicrobial Resistance by Phenotype (per 10,000 patient days) <sup>1</sup>

As of: May 22, 2023 at 4:02 PM

Date Range: ANTILOGRAMRATES\_HO\_PHEN summaryYr 2021 to 2022

<sup>2</sup> Facility Org ID=10009 Phenotype Description=Carbapenem-non-susceptible Acinetobacter spp.

Phenotype_AR	<sup>3</sup> Summary Yr/Qtr	<sup>4</sup> Patient Days	Blood Count	Blood Incidence Rate	CSF Count	CSF Incidence Rate	LRS Count	LRS Incidence Rate	Urine Count	Urine Incidence Rate	<sup>5</sup> All Specimen Type Count	<sup>6</sup> All Specimen Type Incidence Rate
carbNS_Acine_AR	2021Q1	13535	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
carbNS_Acine_AR	2021Q2	5035	0	0.00	0	0.00	0	0.00	1	1.99	1	1.99
carbNS_Acine_AR	2021Q3	7750	0	0.00	0	0.00	0	0.00	1	1.29	1	1.29
carbNS_Acine_AR	2021Q4	8951	0	0.00	0	0.00	1	1.12	1	1.12	2	2.23
carbNS_Acine_AR	2022Q1	2750	0	0.00	0	0.00	1	3.64	0	0.00	1	3.64
carbNS_Acine_AR	2022Q2	8211	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
carbNS_Acine_AR	2022Q3	5589	3	5.37	1	1.79	5	8.95	0	0.00	9	16.10
carbNS_Acine_AR	2022Q4	6750	2	2.96	3	4.44	11	16.30	4	5.93	20	29.63

- <sup>7</sup> 1. This phenotype includes any *Acinetobacter* spp. that has tested either Intermediate (I) or Resistant (R) to imipenem, meropenem, or doripenem.  
2. Incidence: number of hospital-onset AR Events / patient days \* 10,000.

- The title of the report specifies which rates are being displayed. Here, we are looking at the incidence of hospital-onset antimicrobial resistance by phenotype (per 10,000 patient days).
- NHSN prints out the Facility Organization ID and a description of the AR phenotype being displayed in each table. In this example, we are looking at the rates for hospital-onset carbapenem-non-susceptible *Acinetobacter* spp. The first column in the table (Phenotype\_AR) displays the abbreviation for the AR phenotype.
- The second column in the table specifies the time period. In the modifications screen, we filtered the time period to only include data from 2021 and 2022, and we specified the report to group the data by quarter. Each row in the table represents one quarter starting with 2021Q1 and ending with 2022Q4.
- The third column in the table specifies the denominator of the rates. For the AR incidence rates, the denominator is patient days. In this example as shown in the purple box, patients contributed 6,750 patient days for all facility inpatient locations in 2022Q4.
- Each table will include the number of hospital-onset AR Events that meet the AR phenotype definition isolated from each of the four specimen sources (blood, CSF, LRS, and urine) as well as a combined count for all specimen sources. In 2022Q4, there were 2 carbapenem-non-susceptible *Acinetobacter* spp. isolated from blood, 3 from CSF, 11 from LRS, and 4 from urine for a total of 20 carbapenem-non-susceptible *Acinetobacter* spp. reported to the AR Option.
- Each table will include rates for each of the four specimen sources (blood, CSF, LRS, and urine) as well as a combined rate for all specimen sources. In 2022Q4, the rate of hospital-onset carbapenem-non-susceptible *Acinetobacter* spp. isolated from blood was 2.96 events per 10,000 patient days. The rate for CSF was 4.44 events per 10,000 patient days. The rate for lower respiratory was 16.30 events per 10,000 patient days. The rate for urine was 5.93 events per 10,000 patient days. The overall incidence rate of hospital-onset carbapenem-non-susceptible *Acinetobacter* spp. from all specimen sources in 2022Q4 was 29.63 events per 10,000 patient days.
- In the footnotes, you will find the definition of each AR phenotype and the formula for calculating incidence. This example's phenotype includes any *Acinetobacter* spp. that has tested either Intermediate (I) or Resistant (R) to imipenem, meropenem, or doripenem. Incidence = number of hospital-onset AR Events / patient days x 10,000.

**Note:** If denominator data (*i.e.*, patient days, admissions, encounters) are not reported for a month, but AR Events were reported for that month, then the AR Events for that month will be excluded from the counts and rates for the rollup (*e.g.*, quarter, half-year, year, cumulative). If denominator data (*i.e.*, patient days, admissions, encounters) are not reported for all three months in a quarter, all six months in a half-year, all 12 months in a year, or at all (cumulative), but AR Events were reported for that time period, then the AR Events will be included in the counts, but both the denominator and rates will be suppressed/appear missing ('').

## Additional Resources

AR Option Incidence and Prevalence Reports Session from the 2023 NHSN Annual Training:

Video recording: <https://www.youtube.com/watch?v=1seKabgmCIA>

Slides: <https://www.cdc.gov/nhsn/pdfs/training/2023/AR-Option-Incidence-Prevalence.pdf>

How to Export Data from NHSN: <http://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/exportdata.pdf>

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

AUR Training: <https://www.cdc.gov/nhsn/training/patient-safety-component/aur.html>

NHSN Analysis Quick Reference Guides: <http://www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.html>