

ANTIMICROBIAL RESISTANCE BAR CHART

Description

A bar chart is a graphical representation of data where the length or height of the bars represents counts of records meeting the criteria. Bar charts can only be produced as HTML output and therefore the results will appear in a pop-up window in your browser.

The example below demonstrates a sample modification of a bar chart displaying AR Events reported using the AUR Module.

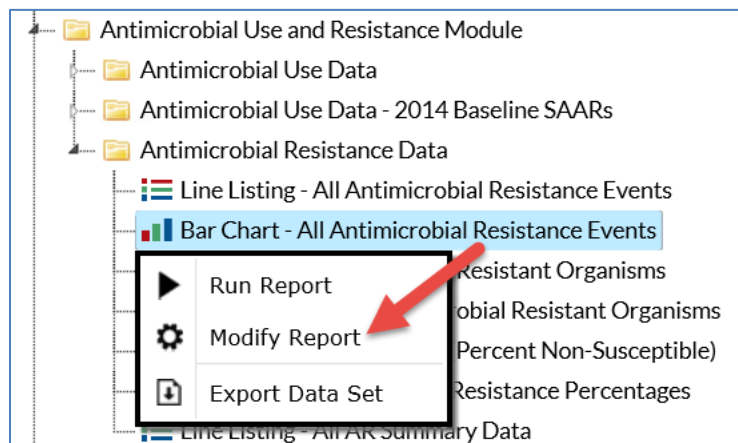
For a general, step-by-step explanation of the NHSN modification screen, refer to this document:

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

Example (Using: Bar Chart – All Antimicrobial Resistance Events)

You would like to create a bar chart to graphically represent the distribution of *Staphylococcus aureus* in each critical care location by half years for 2016 through 2018.

After generating datasets, to run a bar chart report, click Analysis > Reports > Antimicrobial Use and Resistance Module > Antimicrobial Resistance Data. After selecting the report you want, in this case, “Bar Chart – All Antimicrobial Resistance Events,” a pop-up box will appear that will allow you to “Run Report,” “Modify Report,” and “Export Data Set.” Select “Modify Report” to customize your report.



Modifying the Report

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.

To filter the data by time period, choose the “Time Period” tab at the top of the page. In this example, we have limited the report to 2016H1 to 2018H2 (Specimen Date~Yr/Half).

ANTIMICROBIAL RESISTANCE BAR CHART

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).

The screenshot shows the 'Modify "Bar Chart - All Antimicrobial Resistance Events"' window. At the top, there is a checked box for 'Show descriptive variable names (Print List)', the chart type is 'Bar Chart', and the data set was generated on '11/29/2018 10:25:00'. Below this are four tabs: 'Title/Format', 'Time Period' (which is selected and highlighted in green), 'Filters', and 'Display Options'. Under the 'Time Period' tab, there are three input fields: 'Date Variable' (set to 'Specimen Date~Yr/Half'), 'Beginning' (set to '2016H1'), and 'Ending' (set to '2018H2'). There is a 'Clear Time Period' button to the right of these fields. Below the input fields is a checkbox labeled 'Enter Date variable/Time period at the time you click the Run button', which is currently unchecked. At the bottom of the window are four buttons: 'Run', 'Save...', 'Export...', and 'Close'.

The “Filters” tab allows you to further filter the data that will be displayed in the report. For our example, we want to filter the report to only show data for the pathogen *Staphylococcus aureus* in the critical care location type. First, select the variable “Pathogen” from the drop-down menu, set the operator to “equal” then select the value “Staphylococcus aureus - SA”. Next, click “Add rule” to add an additional filter. Then select the variable “Location Type” from the drop-down menu, set the operator to “equal” and select the value “CC - CC”. Please note that this selection type will exclude NICUs and Oncology ICUs from being included in the output.

The screenshot shows the 'Modify "Bar Chart - All Antimicrobial Resistance Events"' window with the 'Filters' tab selected. At the top, the 'Show descriptive variable names (Print List)' checkbox is checked, the chart type is 'Bar Chart', and the data set was generated on '11/29/2018 10:25:00'. The tabs are 'Title/Format', 'Time Period', 'Filters' (selected and highlighted in green), and 'Display Options'. Below the tabs, there are 'Additional Filters:' with 'Show' and 'Clear' buttons. The filter configuration is as follows: a main container with 'AND' and 'OR' options (currently 'AND' is selected) and an 'Add group' button. Inside this container, there is a sub-container with 'AND' and 'OR' options (currently 'AND' is selected) and an 'Add rule' button. The first rule has 'Pathogen' selected in the variable dropdown, 'equal' in the operator dropdown, and 'Staphylococcus aureus - SA' in the value dropdown. The second rule has 'Location Type' selected in the variable dropdown, 'equal' in the operator dropdown, and 'CC - CC' in the value dropdown. Each rule has a 'Delete' button to its right. At the bottom of the window are four buttons: 'Run', 'Save...', 'Export...', and 'Close'.

Tip: For including more than one item in each filter such as multiple pathogens, the “in” operator can be used instead of the “equal” operator.

ANTIMICROBIAL RESISTANCE BAR CHART

The “Display Options” tab allows you to display the chart variable, stratification variable, and the page-by variable to be charted for the entire time period selected.

- The “Chart Variable” is the variable being graphed on the bar chart and will appear on the x-axis; in this case, the variable is Specimen Date~Yr/Half.
 - The count of the AR Events, in this example *Staphylococcus aureus* Events, occurring in each half year will determine the length or height of the bars.
- Different colored bars will be “stacked” on each bar to represent the different values of the “Stratification Variable”; here by “Location”.
- Different bar charts can be created for each value of the “Page by” variable if a page by variable is chosen.
- You can select 2D or 3D bars, placed either horizontally or vertically on the chart.
- You can also decide to place descriptive statistics (i.e., percent and count) either inside or outside the bars.

The screenshot shows a software interface titled "Modify 'Bar Chart - All Antimicrobial Resistance Events'". At the top, there are several status indicators: a checked box for "Show descriptive variable names (Print List)", "Analysis Data Set: AUR_Detail", "Type: Bar Chart", and "Data Set Generated On: 02/05/2019 15:20:00". Below this is a navigation bar with four tabs: "Title/Format", "Time Period", "Filters", and "Display Options" (which is highlighted in green). The "Display Options" section contains a "Bar Chart Options" panel with three dropdown menus: "Chart Variable" set to "Specimen Date~Yr/Half", "Stratification Variable" set to "Location", and "Page by" set to an empty dropdown. Below these are three more dropdown menus: "Orientation of Bars:" set to "2D Vertical", "Placement of the Percent:" set to "Outside", and "Placement of the Value:" set to "Inside". At the bottom right of the interface are four buttons: "Run", "Save...", "Export...", and "Close".

Final Report

The example bar chart below is the result of the modifications shown in this document. This example displays counts of *Staphylococcus aureus* AR Events in critical care location types from 2016 through 2018.

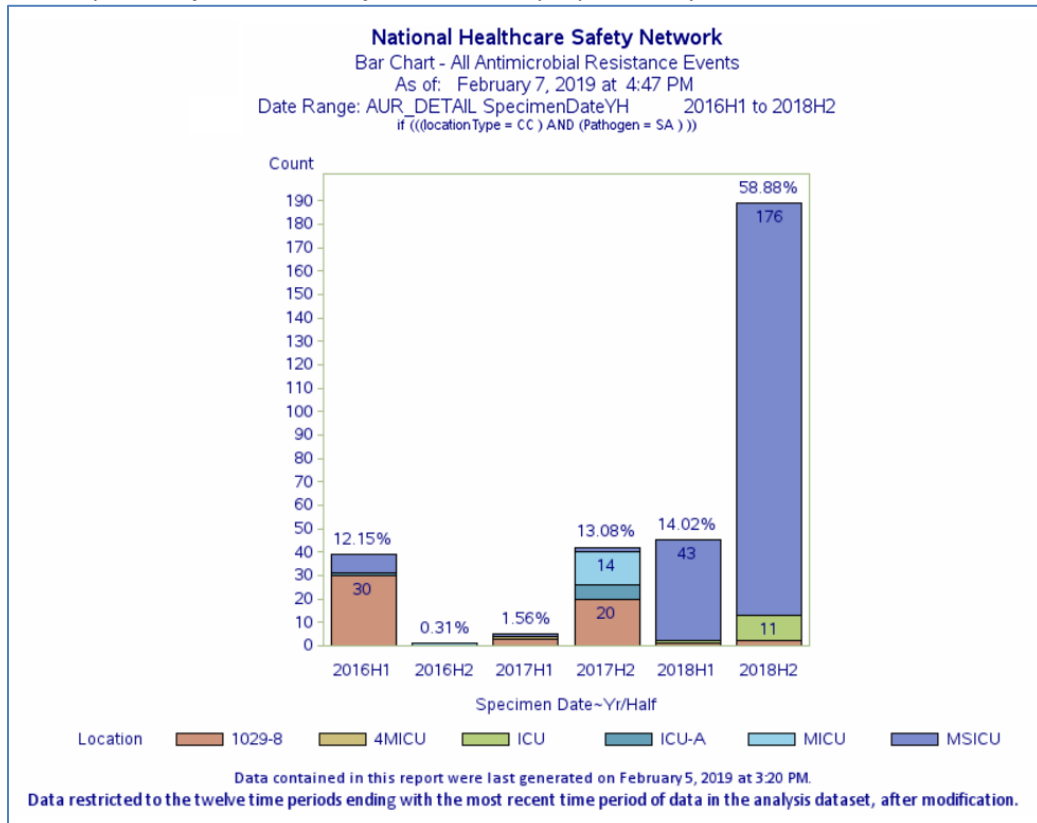
- The y-axis (Count) is the total number of reported *Staphylococcus aureus* AR Events and is represented by the height of the bars.
- The x-axis is Specimen Date (Yr/Half in this example). One bar is displayed for each half year.
- In this example, we choose to stack each bar by critical care location for easier comparison of which locations are contributing *Staphylococcus aureus* AR Events to the total count for each half year.
- The taller the bar, the greater number of reported *Staphylococcus aureus* AR Events in that half year. In this example, the tallest bar is for the second half of 2018 with 58.88% of all *Staphylococcus aureus* AR

ANTIMICROBIAL RESISTANCE BAR CHART

Events reported for the time period 2016 through 2018. The majority of reported *Staphylococcus aureus* AR Events in the second half of 2018 are from the critical care location MSICU.

- Since the 2018H2 count of reported *Staphylococcus aureus* AR Events is dramatically larger than the each of the previous half year counts, we would investigate these reported data to ensure accuracy and to determine if action is needed.

Note: This example uses fictitious data for illustrative purposes only



Additional Resources

Introduction to NHSN Analysis: <https://www.cdc.gov/nhsn/pdfs/training/2018/intro-to-analysis-508.pdf>

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

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

Surveillance for Antimicrobial Resistance Option: <http://www.cdc.gov/nhsn/acute-care-hospital/aur/>