The following exercises are designed to practice using the analysis tools within NHSN. This guide includes full navigation for each exercise. There is an accompanying “Analysis Training Guide”, which includes a mix of examples that include step-by-step navigation and those that just include a scenario, so you have the opportunity to practice on your own, and an “Analysis Training Answers” sheet that includes just the answers to specific questions within certain exercises to check your output. These guides are both available on http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm under the “NHSN Resources” section.

Register for access to NHSN Demo Site
These exercises utilize the NHSN general acute care hospital demo site. Please register at http://nhsn.cdc.gov/RegistrationForm/controller?method=demoUser&usertype=FACILITY for a username and password. You do not need a digital certificate in order to use the demo application. Usernames and passwords are valid for one day. You must re-register each day that you plan to use the site.

Any test data that is entered into the site is removed each night at midnight. You will not need to generate data sets once you have access to NHSN demo – updated data sets are compiled each night as the system is refreshed.

Facility Profile
DHQP Memorial Hospital is a 566-bed major teaching acute care hospital in Atlanta, Georgia. You are one of four full-time infection preventionists that perform surveillance in NHSN for all device-associated events each month, select procedures for surgical site infections (SSIs), and facility-wide multi-drug resistant organism (MDRO) inpatient reporting for methicillin-resistant Staphylococcus aureus (MRSA), carbapenem-resistant Klebsiella spp., and carbapenem-resistant E. coli.

The locations selected for surveillance in your facility are as follows:

- 5GNORTH (Inpatient Medical/Surgical Ward),
- 22ICU (Pediatric Cardiac Critical Care),
- 71ICU (Surgical Cardiac Critical Care),
- DIAL (Outpatient Hemodialysis Clinic),
- ICU/CCU (Medical Cardiac Critical Care),
- MICU (Medical Critical Care),
- NICU (Neonatal Critical Care (Level III)),
- ORT (Inpatient Orthopedic Ward), and
- SICU (Surgical Critical Care).
Exercise 1 (Group) – CDC Configured Reports – Line List
You want to run a line list of all the device-associated events you reported to NHSN in 2011 for all locations. You would like to separate the results by unit and sort the events by date.

Step 1: Find the correct CDC base report:
Analysis > Output Options > Device-Associated Module > All Device-Associated Events > CDC Defined Output > Line Listing – All Device-Associated Events

Step 2: Run the report as is to see what the report includes as a default setting.

Step 3: Click modify to update the report with the various changes noted in the scenario above.

Step 4: Set modifications.
A. “Modify Attributes of the Output” section
   • Rename the output name and title so when it saves, it’s separated from the original CDC report. Name is the report file name in the Output Options list. Title will display at the top of your report when you run it.

B. “Select Output Format” section
   • Leave format as HTML for an Internet window pop-up. PDF, CSV (Excel), and RTF (Word) are other options.
   • Check the “Use variable labels” box. This gives you plain text column headings instead of IT shorthand, i.e., evntdt vs. Event Date.

C. “Select a Time Period or Leave Blank for Cumulative Time Period” section
   • You can limit your time period in this section.
   • Pull the drop down menu for the date variable. You will see many different types of dates to choose from. For this scenario, we will be looking at the event date. You can choose to enter the beginning and end date by exact date (evntDate), year (evntDate Yr), half year (evntDate YH), quarter (evntDate YQ), or month (evntDate YM). We need to limit to just the 2011 data, so you can choose any of those ways to enter it. I will use the year (evntDate Yr), entering 2011 in the beginning and ending fields so I just have that year of data.

D. “Specify Other Selection Criteria” section
   • This is the section where you can set filters to limit your line list results.
   • Keep in mind that the “Show Criteria” link above the first column is always available to display the limits you’ve placed on the data set in and/or statements.
   • For this scenario, we do not need to place any limits on the data, other than the time period that has already been identified.
E. “Other Options” section

- The first “Modify List” link shows the column variables that will be displayed. By default for this report, those include OrgID, patientID, DOB, gender, admit date, eventID, event date, event type, specific event, location, central line, permanent central line, temporary central line, umbilical catheter, urinary catheter, and vent used. These are shown in the right “Selected Variables” column. In the left “Available Variables” column, you can see the other variables that can be added to your report to customize it. You can move variables between the lists by highlighting the variable name and using the arrow button to move it from one list to the other. You can also use the up/down buttons to change the order of your columns selected for display.
• I am going to remove the OrgID from the selected list, because I am only working with my hospital’s data, so it will be the same for each entry. This also provides additional room for the variables I would like to add to the report.
• Clicking on the second “Modify List” link displays a similar gray pop up box to choose the sort variables. For this, I will choose to sort by event type to group like events, then by event date.

• The scenario tells us we want to have a separate table for each unit, so select “location” in the drop down for the page by feature. This will break the list of events out by unit.

Other Options:

Modify Variables To Display ByClicking: Modify List
Specify Sort Variables By Clicking: Modify List
Select Page by variable: location

• Click “Run” at the bottom of the page to test your modified report.
Step 5: Save and publish your report if it will be used again.

- If it meets the needs of your original request and you plan to use it again, click “Save As” to save the modifications with the new file name you selected. This modified report will display in a “Custom Output” folder under Device-Associated Module > All Device-Associated Events. It will also display in the “My Custom Output” folder near the bottom of the folder list.

- If you want to save the report so others in your hospital can use it too without needing to recreate it, click the “Publish” button at the bottom of the modifications option section of your report (to the right of Save As). The report will then be saved in the “Published Output” folder too.
Exercise 2 (On Your Own) – CDC Configured Reports – Line List

You want to run a line list of all the CLABSI events reported to NHSN in the last half of 2011 for all of your ICUs, PICUs, and NICUs, sorted by the event date. You would like to see the number of days from the admit date to the event date and have a separate table for each location.

**Step 1: Find the correct CDC base report:**
Analysis > Output Options > Device-Associated Module > CLABSI > CDC Defined Output > Line Listing – All CLAB Events

**Step 2: Run the report as is to see what the report includes as a default setting.**

**Step 3: Click modify to update the report with the various changes noted in the scenario above.**

**Step 4: Set modifications.**

A. “Modify Attributes of the Output” section
   - Rename the output name and title so when it saves, it’s separated from the original CDC report.

B. “Select Output Format” section
   - Leave format as HTML.
   - Check the “Use variable labels” box.

C. “Select a Time Period or Leave Blank for Cumulative Time Period” section
   - Date variable: evntDate YH.

D. “Specify Other Selection Criteria” section
   - There are a few ways to limit your locations to ICUs, PICUs, and NICUs:
     1. Select “locationType” from the first column drop down. Click the cell directly below “locationType”. A gray box appears to select your inclusions/exclusions. Choose the “in” operator, which means “in a set” so you can select multiple values to which the inclusion/exclusion will apply. Choose “CC-CC” (all critical care units) in the first value drop down and “CC_N-CC_N” (all neonatal critical care units) in the second value. Click “Save”. Your cell below the “locationType” heading now says “IN(CC, CC_N)” to include all ICU and NICU locations. (See screenshot below for this example).
     OR
     2. First column drop down: location, first cell: IN (22ICU, 71ICU, ICU/CCU, MICU, NICU, SICU) – captures all locations by the location name.
     OR
Select a time period or Leave Blank for Cumulative Time Period:

<table>
<thead>
<tr>
<th>Date Variable</th>
<th>Beginning</th>
<th>Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>evtDateYH</td>
<td>2011H2</td>
<td>2011H2</td>
</tr>
</tbody>
</table>

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

Specify Other Selection Criteria:

- Show Criteria
- Column +
- Row +
- Clear Criteria

<table>
<thead>
<tr>
<th>locationType</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN (CC, CC_N)</td>
</tr>
</tbody>
</table>

E. “Other Options” section
- The first “Modify List” link shows the column variables that will be displayed. By default for this report, those include OrgID, patientID, DOB, gender, admit date, eventID, event date, event type, specific event, and location.
  - Remove OrgID.
  - Add admtoEvntDays, which gives you the count of days from the admit date to the event date.
- Click on the second “Modify List” link for the sort options. Choose event date as the sort variable.
- Choose location for the page by variable so we have a separate table for each unit.
- Click “Run”.

Step 5: Save and publish your report if it will be used again.

Questions
- How many days from the admit date to the event date were there for patient ID 94567 in the MICU? 24.
- How many CLABSIs were reported by the SICU in H2 2011? 2.
- Did the ICU/CCU have any CLABSIs during this time period? No (this location is not listed in the output report because no events were found).
- If so, how many? N/A.
- Which patient had the fewest days between the admit date and event date? Patients 973456 in the SICU and 3829455 in the 2 MSICU with 5 days (By selecting all critical care and neonatal critical care units using the location type in our filter, we actually return results for an ICU (2
Exercise 3 – Practice Importing CSV Files – Patients, Surgeons, and Procedures

This exercise allows you to practice importing CSV files for patients, surgeons, and procedures. There are sample Excel files available at [http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm](http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm) under “NHSN Resources” to edit and import into the NHSN demo site. Import guides are also available at [http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm](http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm) to demonstrate with screenshots the navigation of importing these file types. All imports can be done by using the Import/Export menu option on the left navigation bar in NHSN.

You want to import your latest IT download of procedures under surveillance, including attributing each to a surgeon and attaching the patient’s name to certain procedure records.

- Keep in mind that if you want to include patient names and surgeon codes in the procedure record, you need to load those CSV files before you import the procedure record.

**Step 1:** Import patient name file available at [http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm](http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm) under “NHSN Resources”.

- Certain patient demographics (including patientID, DOB, and gender) are required in the CSV file format for importing procedure records. However, patient name is not part of that file. In order to have patient names attached to imported procedures, you need to load a patient name file before the procedure record.
- When the procedure records are loaded, NHSN then knows based on matching of the patientID, DOB, and gender, that the patient is the same and includes the patient name in the procedure record in the database.
- Note that you could also add patient name as a custom field, but then it will not appear in the patient name fields in the demographics section at the top of your procedure record. Instead, it will be listed near the bottom of the record in the “Custom Fields” section.
- The sample patient file included for this exercise is formatted appropriately. You just need to import it into NHSN.
  - To do that, go to “Import/Export” on the left navigation bar.
  - Import/Export Type: CSV Import: Patients.
  - Attach the file (you will need to save the sample file somewhere on your computer (i.e., desktop) in order to navigate and attach it).
  - Click “Submit”.
  - Two patient records appear for insertion (Bucky Badger and Wonder Woman).
  - Click “Update”.
  - Click “OK” when asked if you want to import the records.
  - You will receive a confirmation message that the data was successfully imported.

**Step 2:** Import surgeon file available at [http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm](http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm) under “NHSN Resources”.

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If you plan to include surgeon codes in your procedure import file, you need to load the surgeon codes before you import the procedure file, so NHSN knows what the codes mean. This can be done once and then updated as needed. You do not need to (nor should you) load the same surgeon codes before every procedure file import.

The sample surgeon file included for this exercise is formatted appropriately. You just need to import it into NHSN.

- To do that, go to “Import/Export” on the left navigation bar.
- Import/Export Type: CSV Import: Surgeons.
- Attach the file (you will need to save the sample file somewhere on your computer (i.e., desktop) in order to navigate and attach it).
- Click “Submit”.
- A message lets you know that three surgeon records are available for import.
- Click “Add”.
- You will receive a confirmation message that the data was successfully imported.

Step 3: Import procedure file available at [http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm](http://www.dhs.wisconsin.gov/communicable/HAI/Index.htm) under “NHSN Resources”.

- The last file you plan to import today is the list of procedure records that make up your SSI denominator. This is a file you will regularly import.
- The sample procedure file included for this exercise has a few formatting errors included. You will need to correct these before loading the CSV file into NHSN or will receive warning messages that the file will not load.
- These are the items that need correction:
  - Correct date format for columns D and F is mm/dd/yyyy.
  - Column G, Row 6 – CSEC should be outpatient = N; Column G, Row 12 – RFUSN should be outpatient = N.
  - Column I, Row 5 – HPRO duration needs to be broken out into hours and minutes – 3 hours, 10 minutes.
  - Column J, Row 9 – COLO wound class couldn’t be C, needs to be CC, CO, or D.
  - Column R, Row 12 – RFUSN is missing a required field (spinal level).
  - Remove other tabs.
  - Remove header rows 1-4 and column A.
  - Resave as a CSV file.
- When the file is ready, you can import it into NHSN.
  - To do that, go to “Import/Export” on the left navigation bar.
  - Import/Export Type: CSV Import: Procedures.
  - Check the “All procedures” check box so NHSN will load any procedure, rather than just a selected few (i.e., CBGB, HPRO, etc.).
  - Attach the file (you will need to save the sample file somewhere on your computer (i.e., desktop) in order to navigate and attach it).
  - Click “Submit”.
  - Two tabs of data appear: Inserts and bad data. Click on the “Bad Data” tab. This record has errors in it that prevent it from being loaded. In this case, the height and duration of
labor fields need to be updated per the warning message. To correct this, you can click the edit hyperlink next to the patientID or delete the record for now and enter it later.

Exercise 4 – Running CDC’s Standardized Infection Ratio (SIR) Reports

CDC’s SIR Newsletter Resource:

You want to run a report of your facility’s SSI SIR, including a SIR across all procedures and then by each procedure type for 2011 to determine which procedures have infection counts above the national experience.

Step 1: Find the correct CDC base report:
Analysis > Output Options > Procedure-Associated Module > SSI > CDC-defined Output> SIR – All SSI Data by Procedure

- All data vs. in-plan data reports
Step 2: Run the report as is to see what the report includes as a default setting.

- There are multiple SIR reports within the file, each with a slightly different break-down.
  - Each is rolled up by half year, which is the default time period setting for SIRs.
  - Report 1: All procedures rolled up by half year.
  - Report 2: By procedure code by half year.
  - Report 3: By procedure code and outpatient status by half year (will likely be the same for you – most are only capturing inpatient procedures).
  - Incomplete and custom procedures not included in SIR
    - Can look up a line listing of which procedures specifically are not being included (Analysis > Output Options > Procedure-Associated Module > SSI > CDC-defined Output > Line Listing – Incomplete Procedures for SSI SIR).
    - Reasons for exclusion are included in the NHSN SIR Newsletter (http://www.cdc.gov/nhsn/PDFs/Newsletters/NHSN_NL_OCT_2010SE_final.pdf).

Step 3: Click modify to update the report with the various changes noted in the scenario above.

Step 4: Set modifications.
A. “Modify Attributes of the Output” section
   - Rename the output name and title so when it saves, it’s separated from the original CDC report.

B. “Select Output Format” section
   - Leave format as HTML for an Internet window pop-up.
   - Check the “Use variable labels” box.

C. “Select a Time Period or Leave Blank for Cumulative Time Period” section
   - Pull the drop down menu for the date variable and select SummaryYr.
   - Choose 2011 for the beginning and ending date to limit your results to just the 2011 data.
   - Keep in mind that NHSN will run the data only if the time period is complete, so if you would like a SIR for the first half of 2012 and it’s June 22, you need to wait until July 1 before the first half of 2012 will display. However, if you want to run a quarterly SIR for 2012 and it is June 22, you will see the first quarter. You’ll just need to wait until July for the second quarter to display.
D. “Specify Other Selection Criteria” section
   - We’re looking for data on all of the SSI procedures, so we do not need to set any limits to the data in this section.

E. “Other Options” section
   - The only other option for a SIR report is the “Group by” section. You will select the level of data you’d like the SIR to run as in this section. In this case, we would like to see one SIR for the entire year, so we’ll pick SummaryYr. Keep in mind that your time period filter and this group by section can be at different levels of time (time filter by quarter, group by as half-year). It is the group by section that tells NHSN how to group the time for the SIR though.
   - Click “Run” at the bottom of the page to test your modified report.

Select a time period or Leave Blank for Cumulative Time Period:

<table>
<thead>
<tr>
<th>Date Variable</th>
<th>Beginning</th>
<th>Ending</th>
<th>Clear Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>summaryYr</td>
<td>2011</td>
<td>2011</td>
<td></td>
</tr>
</tbody>
</table>

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

Specify Other Selection Criteria:

Show Criteria  Column +  Row +  Clear Criteria

Other Options:

Group by: summaryYr

Print Variable Reference List

Step 5: Save and publish your report if it will be used again.
   - If it meets the needs of your original request and you plan to use it again, click “Save As” to save the modifications with the new file name you selected. This modified report will display in a “Custom Output” folder under the Procedure-Associated Module > SSI folder. It will also display in the “My Custom Output” folder. If you want to save the report so others in your hospital can use it too, click the “Publish” button at the bottom of the modifications option.
section of your report (to the right of Save As). The report will then be saved in the “Published Output” folder too.

Exercise 5 – Running CDC’s SIR Reports
You want to run a SIR report for the facility’s in plan CLABSIs in 2011. Compare the first half of 2011 to the second half of 2011 for the SICU. Are the SIRs above the national experience? Are they statistically significantly higher/lower?

Step 1: Find the correct CDC base report:
Analysis > Output Options > Device-Associated Module > CLABSI > CDC Defined Output > SIR – In-plan CLAB Data

Step 2: Run the report as is to see what the report includes as a default setting.

Step 3: Click modify to update the report with the various changes noted in the scenario above.

Step 4: Set modifications.
A. “Modify Attributes of the Output” section
   • Rename the output name and title so when it saves, it’s separated from the original CDC report.

B. “Select Output Format” section
   • Leave format as HTML.
   • Check the “Use variable labels” box.

C. “Select a Time Period or Leave Blank for Cumulative Time Period” section
   • Date variable: SummaryYr (can use any other time period as well, but it should be limited to just 2011 data).
   • Beginning: 2011.
   • Ending: 2011.

D. “Specify Other Selection Criteria” section
   • You want to limit the report to just the SICU: Second column drop down (because the first column is limiting the data to just those with BSI in plan): location, first cell: = SICU.

E. “Other Options” section
   • Group by: SummaryYH.
   • Click “Run”.

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Select a time period or Leave Blank for Cumulative Time Period:

<table>
<thead>
<tr>
<th>Date Variable</th>
<th>Beginning</th>
<th>Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>summaryYr</td>
<td>2011</td>
<td>2011</td>
</tr>
</tbody>
</table>

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

Specify Other Selection Criteria:

Show Criteria  Column +  Row +  Clear Criteria

- bsPlan
- location
  = Y
  = SICU

Other Options:

Group by: summaryYr

Print Variable Reference List

Step 5: Save and publish your report if it will be used again.

Questions:

SICU SIR 2011H1: 0.881.
SICU SIR 2011 H2: 0.953.

Is H1 higher or lower than the national experience? Lower.
By how much? 12%.
Is this difference statistically significant? No, the p-value is 0.6.

Is H2 higher or lower than the national experience? Lower.
By how much? 5%.
Is this difference statistically significant? No, the p-value is 0.7.

Exercise 6 – Reviewing CMS SIR Preview Reports

- There are currently three reports available, one for each of the required CMS topics for PPS hospitals in 2012: CLABSI, CAUTI, and SSI for HYST and COLO.
- Analysis > Output Options > Advanced > Summary-level Data > CDC-defined Output >
  o SIR – CLAB Data for CMS IPPS.
  o SIR – CAUTI Data for CMS IPPS.
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Analysis Training  
Full Explanation Guide

- SIR – Complex 30-Day SSI Data for CMS IPPS.
  - There is really no need to modify these reports – they are set up to run based on the CMS requirements.
  - If you have a group of hospitals set up, you can run these reports at the group level and will see each hospital’s data listed individually.
  - You can run each to see what is included:
    - SIR – CLAB Data for CMS IPPS
      - Table 1: Rolled up SIR by quarter – groups all ICUs, NICUs, and PICUs.
      - Table 2: Breaks down the SIR by quarter between ICU-OTHER and NICU.
      - Table 3: Breaks down the SIR by quarter between each type of ICU.
      - Table 4: Breaks down the SIR by quarter for each location using your selected location name (SICU, 4SICU, etc.).
      - Table 5: Any months with missing or 0 device days.
    - SIR – CAUTI Data for CMS IPPS
      - Table 1: Rolled up SIR by quarter – groups all ICUs and PICUs.
      - Table 2: Breaks down the SIR by quarter and CDC location type (ICU-OTHER).
      - Table 3: Breaks down the SIR by quarter between each type of ICU.
      - Table 4: Breaks down the SIR by quarter for each location using your selected location name (SICU, 4SICU, etc.).
      - Table 5: Any months with missing or 0 device days.
    - Table 4 is the report to really go through to check whether your CLABS/CAUTI data is in for CMS.
      - Make sure you have data in for each quarter that is complete.
      - You can also see the number of months included in each quarter. If it’s less than 3 months, you need to dig deeper to see which month is missing.
      - Keep in mind that a month may register as missing even if the data is in if you do not have that location identified in your monthly reporting plan for that module or if you have not checked the “Report No Events” box/entered an infection each month.
      - Double check the number of infections and CL days.
  - SIR – Complex 30-Day SSI Data for CMS IPPS
    - CMS is only including in-plan, inpatient COLO and HYST for patients >=18 years of age who had an SSI within 30 days of the procedure date and it was identified upon admission or readmission to the hospital where the procedure was performed.
    - Table 1: Overall SIR by procedure (COLO/HYST).
    - Table 2: SIR by hospital and procedure code.
    - These will be the same if you’re only looking at one hospital. It’s only different if you’re looking at the group level (aggregate for table 1 and then a break down by hospital for table 2).
Exercise 7 – Graphing SIRs Over Time

We want to graph our overall SSI SIRs identified as part of exercise 4, but we want to remove the filter that limits the data to just 2011. Instead, we will leave the time period open and graph the SIRs by half years.

- Access the saved SSI SIR report saved from exercise 4 (“My Custom Output” folder).
- Click “Modify”.
- Remove the filter for the time period and change “Group by” to SummaryYH.
- Scroll all the way to the bottom of the report and click “Export Output Data Set”.
- Choose “Excel Spreadsheet (*.xls)” or “delimited file (comma-separated values) (*.csv)” as the export format. Excel will reformat the time selection from 2011H1 to Jan-11. CSV will maintain the 2011H1 format.
- Click “Export”.
- Open the export file that appears.
- You may want to hide (right click on the column letter and click “hide”) any columns/rows you will not be working with while graphing the SIRs (columns that can be hidden: OrgID, procCount, infCountAll, numExpAll, SIRAll_pval, proccode, outpatient, months; rows 8+).

Graph SIRs

- Separate the confidence intervals into two columns, one for lower limit and one for upper limit. The columns need to be in order from left to right: summary YH, upper confidence limit, lower confidence limit, and SIR.
- Click on the Excel Chart Wizard.
- Choose stock as the chart type.
- Choose the first option for the subtype (high-low-close).
- Click “Next”.
- Highlight your data range, clicking the icon with the red arrow to return to the chart and highlight the SIR, upper confidence interval, and lower confidence interval data. Click the icon with the red arrow again after highlighting the data range to return to the chart wizard box.
- At the bottom of the Series tab, click the icon with the red arrow for “Category (X) axis labels” and highlight the summaryYH values for the data columns so each SIR point is attributed to a specific time period. Click the red arrow icon to return to the chart wizard box.
- Click “Next”.
- Add labels for the chart title, x-axis, and y-axis.
- Click “Next”.
- Click “Finish”.

Format Plot Area (Optional)

- You can change the background of the graph from gray to white by right clicking anywhere in the graph and choosing Format Plot Area.
- In the Area section (right column), click white and then OK.
Change the Scale of the SIR (Y-Axis)

- Right click on the y-axis line and choose Format Axis.
- Choose the Scale tab.
- Adjust the minimum, maximum, major unit, and minor unit until your 1 line is approximately in the middle of the graph.
- Make sure your x-axis is crossing at your minimum point (this may not be 0) so the time period labels are below the graph.
- When done, click OK – you may want to play around a bit with this as you adjust it appropriately.

Format Data Points

- Right click the top point of any one of the SIR/confidence interval vertical lines and dots will appear at the top of all of them. Choose Format Data Series.
  - In the Patterns tab, under Marker (right column of options), click custom, choose the “—“ symbol to represent your upper confidence interval hash.
  - Choose the same foreground color and background color you want your line to appear in.
  - Increase size to 6 points.
  - Click OK.
- Right click on the bottom point of any one of the lines and choose Format Data Series.
  - Again, choose the “—“ symbol to represent the lower confidence interval hash, choosing the same color and size.
  - Click OK.
- Right click on any one of the vertical lines and choose Format High-Low Lines.
  - Line should be custom.
  - Choose a weight, style, and color (I tend to thicken the line up a bit to make it more visible).
- Look at your first SIR value and hover over the vertical line around that spot on the line.
  - Right click on Format Data Series.
  - Line section (left column) will now be custom so the SIR data points are connected, choose the same style, color, and weight as your other line.
  - Click custom in the marker (right column) section.
  - Choose a different marker (square, diamond, etc.), which will represent your SIR data points. Choose the same color for the foreground and background.
  - Increase the size to 6 points.
  - Click OK.

Add Red Line at 1 for National Comparison

- Click View, Toolbars, Drawing on your top menu.
- Beneath the tabs, you’ll see options to draw. Click the diagonal line icon.
- Put your cursor down on the 1 data point for the SIR on the y-axis of the graph and drag your mouse all the way across the graph at that line.
- Click on the line so there is an “o” on each end to show it is selected.
- On the bottom toolbar where you selected the diagonal line, click the arrow just to the right of the paintbrush and select the color red.
- Now click the series of stacked lines (line style if you mouse over it) and increase the weight of the line to 2 ¼ point so it stands out.
Exercise 8 (On Your Own) – Graphing SIRs Over Time

- Export the In-Plan CLABSI SIR without making any modifications to it and graph the half years over time.

<table>
<thead>
<tr>
<th>summary/Upper CI</th>
<th>Lower CI</th>
<th>SIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009H1</td>
<td>5.113</td>
<td>3.182</td>
</tr>
<tr>
<td>2009H2</td>
<td>1.99</td>
<td>0.067</td>
</tr>
<tr>
<td>2010H1</td>
<td>2.757</td>
<td>0.750</td>
</tr>
<tr>
<td>2010H2</td>
<td>3.298</td>
<td>1.71</td>
</tr>
<tr>
<td>2011H1</td>
<td>2.074</td>
<td>1.214</td>
</tr>
<tr>
<td>2011H2</td>
<td>0.934</td>
<td>0.278</td>
</tr>
</tbody>
</table>

Questions

- What is your scale for the y-axis? Approximately 7 to -5 (can vary).
- Are any of the half years for the in plan CLABSI SIR above the national experience? Yes.
- If so, which? All except 2011H2, but only 2009H1, 2010H2, and 2011H1 are statistically significantly above because their confidence intervals do not cross the 1 line.
- Are any of the half years statistically significantly below the national experience? Yes.
- If so, which? 2011H2.

Exercise 9 – CDC Data Quality Reports

- CDC currently has eight data quality reports available under the Advanced folder that address some of the common issues identified early on with data entry errors and internal data quality validation needs.
• The reports are available at Analysis > Output Options > Advanced > Data Quality > CDC Defined Output.

- Data Quality
- CDC Defined Output

  - Line Listing - Duplicate Procedures
  - Line Listing - Procedures on Patient DOB
  - Line Listing - Procedures with 0 Duration
  - Line Listing - Duplicate BSI/PNEU/UTI Events
  - Line Listing - Duplicate SSI Events
  - Line Listing - SSIs On Procedure Date
  - Line Listing - Extremely High Incidence of SSI
  - Line Listing - Events Reported with 0 Device Days

• It is a good idea to regularly run through these reports to identify duplicate data entry issues or other items flagged as potentially error-prone.

• Keep in mind that for some of the reports, especially the “Extremely High Incidence of SSI” report, this is just flagged for your review. It does not mean the SSI data reported is inaccurate. For some hospitals with smaller volumes and a few infections, they may legitimately have a high SSI rate (i.e., 2 infections among 10 procedures performed). However, it may also be a flag that the denominator data was not fully entered for every procedure every month.

• Other reports you may want to run regularly to check for data quality issues include:
  - Incomplete/Missing Alerts list that displays each time you log in (or if you click Event/Procedure/Summary Data > Incomplete).
  - CMS preview reports.
  - Advanced folder line lists – all infections, all procedures to double check all procedures were imported, all summary data to check for inconsistencies and that the “No Events Reported” box was checked, etc.
  - Don’t forget about the Find feature within every data menu (Event, Procedure, Summary Data). It can be a quick way to double check on missing data or investigate which months are missing if identified in a different report. If you leave the search criteria blank and then click Find again at the bottom of the search criteria section, the system will pull up all of the data in that category. You can also fill out only certain sections of the search criteria to limit your results (i.e., a certain location’s summary data or only the procedures for a certain code during a month).