Using the “SIR – VAE Data for LTCHQR” Report

The NHSN Analysis Report, “SIR – VAE Data for LTCHQR” was created in order to allow long term acute care facilities (also known as Long Term Care Hospitals, or LTCHs) to review VAE data that would be submitted to CMS on their behalf. It’s important to keep in mind the following as you begin to use this report:

a. These data will only be submitted for those facilities that are participating in the CMS Long Term Care Hospital Quality Reporting (LTCHQR) Program, as indicated by their CCN recorded in NHSN.

b. The SIRs generated in this output will be calculated using the 2015 national baseline data. To learn more about the standardized infection ratio (SIR) under the 2015 baseline as it pertains to VAE data, please see: https://www.cdc.gov/nhsn/2015rebaseline/.

c. This report will only include in-plan VAE data beginning with 2015. Earlier years for which you may have reported these data will not be included in this output. Data that have previously been submitted to CMS for participation in a Quality Reporting Program can be found at the following folders: Baseline Set 1 > CMS- Long Term Acute Care Hospitals (LTCHQR) > Rate Table – VAE Data for LTCH PPS.

d. IMPORTANT! Facilities must appropriately Report No Events for those locations and months for which no VAE events were identified.

e. This report provides an SIR for each LTACH, not each CCN. If your LTACH shares a CCN, the SIR will only represent the data that your LTACH has contributed to the overall SIR for all LTACHs that share the CCN. You may wish to use the Group function in NHSN to obtain a single SIR for all the LTACHs that share a CCN. More information about the Group function can be found here: http://www.cdc.gov/nhsn/group-users/index.html.

f. The data in this report will represent data current as of the last time you generated datasets. NOTE: Quarterly data are frozen as of the final submission date for that quarter (e.g., Q1 data will be frozen as of 3am ET on August 16th); any changes made to these data in NHSN after the final submission deadline will not be reflected in the data submitted to CMS.

g. The information in this document should be used in conjunction with the document, “Monthly Checklist for the CMS Long Term Care Hospital Quality Reporting Program”, available at: https://www.cdc.gov/nhsn/pdfs/cms/Ltch-monthly-checklist-cms-iqr.pdf.
Example of the “SIR – VAE Data for LTCHQR”: Interpretation and Data Checking

Before running this output option, remember to generate datasets! This action ensures that the most recently entered data for the facility is included in the datasets used to create the “SIR – VAE Data for LTCHQR” report. To generate datasets, go to Analysis > Generate Data Sets, then click “Generate New”.

1. After selecting Analysis > Reports, navigate through the following folders: CMS Reports > Long Term Acute Care Hospitals (LTCHQR) > SIR – VAE Data for LTCHQR. After clicking the title of the report, click “Run” on the subsequent pop-up menu.

2. By default, the results will appear in an HTML window. If a second window does not pop-up, please be sure to check your pop-up blocker and allow pop-ups from *.cdc.gov.

3. Four tables are created within the report for both IVAC Plus and Total VAE data for a total of 8 tables. Each of the following tables will be created based on vaeCategory (e.g., IVAC Plus, Total VAE).
   i. SIR for VAE Data for LTCHQR (2015 Baseline) – By OrgID
   ii. SIR for VAE Data for LTCHQR (2015 Baseline) – By OrgID/Location Type
   iii. SIR for VAE Data for LTCHQR (2015 Baseline) – By OrgID/CDC Location Code
   iv. SIR for VAE Data for LTCHQR (2015 Baseline) – By OrgID/Location
4. For example:
   i. “SIR for VAE Data for LTCHQR (2015 Baseline) – By OrgID”

   Again, a table is created for each vaeCategory, IVAC Plus and Total VAE. The first two tables present an SIR for each calendar-year quarter, for the entire facility. This is the information that will be submitted to CMS for your facility.

### Table 1: IVAC Plus

<table>
<thead>
<tr>
<th>orgid</th>
<th>summaryYQ</th>
<th>infCount</th>
<th>numPred</th>
<th>numventdays</th>
<th>SIR</th>
<th>SIR_pval</th>
<th>SIR95CI</th>
<th>vaeCategory</th>
</tr>
</thead>
<tbody>
<tr>
<td>10000</td>
<td>2016Q3</td>
<td>1</td>
<td>0.407</td>
<td>608</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>IVAC Plus</td>
</tr>
<tr>
<td>10000</td>
<td>2016Q4</td>
<td>1</td>
<td>0.438</td>
<td>655</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>IVAC Plus</td>
</tr>
</tbody>
</table>

### Table 2: Total VAE

<table>
<thead>
<tr>
<th>orgid</th>
<th>summaryYQ</th>
<th>infCount</th>
<th>numPred</th>
<th>numventdays</th>
<th>SIR</th>
<th>SIR_pval</th>
<th>SIR95CI</th>
<th>vaeCategory</th>
</tr>
</thead>
<tbody>
<tr>
<td>10000</td>
<td>2016Q3</td>
<td>5</td>
<td>1.701</td>
<td>608</td>
<td>2.94</td>
<td>0.0377</td>
<td>1.077</td>
<td>6.516</td>
</tr>
<tr>
<td>10000</td>
<td>2016Q4</td>
<td>5</td>
<td>1.832</td>
<td>655</td>
<td>2.73</td>
<td>0.05</td>
<td>1.000</td>
<td>6.049</td>
</tr>
</tbody>
</table>

1. This report includes in-plan VAE data from long term acute care hospitals for 2015 and forward. Excludes Chronic Care locations.
2. The SIR is only calculated if the number predicted (numPred) is >= 1. Lower bound of 95% Confidence Interval only calculated when number of observed events >= 0.
3. The number of predicted events is calculated based on national aggregate NHSM data from 2015. It is risk adjusted for CDC location, hospital beds, length of stay, and proportion of admissions on hemodialysis, and proportion of admissions on a ventilator.
4. If the risk factor data are missing, the record will be excluded from the SIR.
Source of aggregate data: 2015 NHSM VAE Data
Data contained in this report were last generated on February 21, 2017 at 1:32 PM.

From this output, we can conclude the following for Table 2:

- During the fourth quarter of 2016 (summaryYQ), the facility reported 5 total VAEs (infCount) and 655 ventilator days (numventdays). Of the 5 events, 1 was categorized as IVAC Plus.
- Based on the National baseline data, 1.832 total VAEs were predicted (numPred) and 0.438 IVAC Plus events were predicted. The SIR for Total VAE was 2.73 for the fourth quarter of 2016, indicating that the facility observed 173% more infections
than predicted. Based on the p-value \((SIR\_pval)\) and the 95% confidence interval \((SIR95CI)\), the Total VAE SIR for this facility is significantly different from 1.

- However, since the number predicted for IVAC Plus is less than 1, the SIR, p-value \((SIR\_pval)\), and 95% Confidence Interval \((SIR95CI)\) are not calculated for IVAC Plus.

ii. “SIR for VAE Data for LTCHQR (2015 Baseline) – By OrgID/Location Type”

The second table provides an SIR for each quarter and location type (e.g., LTAC WARD) with reported in-plan VAE data during each time period.

Table 1: IVAC Plus

<table>
<thead>
<tr>
<th>orgid</th>
<th>LocationType</th>
<th>summaryYQ</th>
<th>infCount</th>
<th>numPred</th>
<th>numventdays</th>
<th>SIR</th>
<th>SIR_pval</th>
<th>SIR95CI</th>
<th>vaeCategory</th>
</tr>
</thead>
<tbody>
<tr>
<td>10000</td>
<td>WARD_LTAC</td>
<td>2016Q3</td>
<td>1</td>
<td>0.407</td>
<td>608</td>
<td>.</td>
<td>.</td>
<td>.</td>
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Table 2: Total VAE

<table>
<thead>
<tr>
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<th>LocationType</th>
<th>summaryYQ</th>
<th>infCount</th>
<th>numPred</th>
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</tbody>
</table>

1. This report includes in-plan VAE data from long term acute care hospitals for 2015 and forward. Excludes Chronic Care locations.
2. The SIR is only calculated if the number predicted \((\text{numPred})\) is \(\geq 1\). Lower bound of 95% Confidence Interval only calculated when number of observed events \(> 0\).
3. The number of predicted events is calculated based on national aggregate NHSN data from 2015. It is risk adjusted for CDC location, hospital beds, length of stay, and proportion of admissions on hemodialysis, and proportion of admissions on a ventilator.
4. If the risk factor data are missing, the record will be excluded from the SIR.

The data in these tables can be interpreted similar to the first two SIR tables, described above. Note that these table will allow you to see the how many total VAEs (or IVAC plus) and device days were reported in each location type, as defined by CDC.

The third table provides an SIR for each quarter and CDC location (e.g., LTAC WARD). Note that if your facility reports data for more than one location of the same CDC type (for example, 2 LTACs), these locations will be grouped into one SIR in this table.

<table>
<thead>
<tr>
<th>Location Type</th>
<th>CDC Location Description</th>
<th>CDC Location Code (loccdc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC_LTAC</td>
<td>LTAC ICU</td>
<td>IN:ACUTE:CC:LTAC</td>
</tr>
<tr>
<td>WARD_LTAC</td>
<td>LTAC Ward</td>
<td>IN:ACUTE:WARD:LTAC</td>
</tr>
</tbody>
</table>

For example, if your LTAC has 2 LTAC Wards, the data for both of these locations would be combined into the SIR for the WARD_LTAC location type.

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<table>
<thead>
<tr>
<th>orgid</th>
<th>Loccdc</th>
<th>summaryQY</th>
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<th>numPred</th>
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2. The SIR is only calculated if the number predicted (numPred) is >= 1. Lower bound of 95% Confidence Interval only calculated when number of observed events > 0.
3. The number of predicted events is calculated based on national aggregate NSN data from 2015. It is risk adjusted for CDC location, hospital beds, length of stay, and proportion of admissions on hemodialysis, and proportion of admissions on a ventilator.
4. If the ratio of factor data are missing, the record will be excluded from the SIR.

Source of aggregate data: 2015 NSN VAE Data
Data contained in this report were last generated on February 21, 2017 at 1:32 PM.

iv. “SIR for VAE Data for LTCHQR (2015 Baseline) – By OrgID/Location”

The fourth table provides an SIR for each quarter and individual location within your facility. This is also the only table that will allow you to see how many months of data are included in each location’s quarterly SIR.
For example, look at location “10000” below for both Table 1 and Table 2 for quarters 3 and 4, we can see that the “months” columns show a value of 3, indicating that 3 months of data have contributed to the quarterly SIR for this location. This indicates that the SIRs in this output option are complete since a quarter year of data would contain 3 months of data.

Table 1: IVAC Plus

Table 2: Total VAE

5. What can be done if data are incomplete (months equal less than 3 for each location), or if the number of infections or ventilator days is incorrect?
   
i. Check that the summary data for this location have been entered for each month in the quarter. This includes ventilator days and patient days.
   
ii. If summary data have been entered, double-check your monthly reporting plan for each month in the quarter. Check to make sure that each location is included in your monthly reporting plan with the VAE box checked.
   
iii. If summary data have been entered and no VAEs have been identified, be sure to check the ‘Report No Events’ box on the summary record, next to the ventilator days count.
iv. If the number of infections is less than you reported and you’ve confirmed that the summary data have been entered in-plan, double check the VAE events in NHSN.

6. REMEMBER: If you have made any changes to your data, regenerate your datasets in order to review your output options with the most up-to-date data in NHSN

Additional Resources:

Surveillance for Ventilator-associated Events:
https://www.cdc.gov/nhsn/ltach/vae/index.html

Ventilator-Associated Event (VAE) Protocol, January 2017:

Monthly Checklist for the CMS Long Term Care Hospital Quality Reporting Program:

Operational Guidance for LTACHs to report Ventilator-associated Event (VAE) Data to CDC’s NHSN for the Purpose of fulfilling CMS’s Quality Reporting Requirements:

Analysis Quick Reference Guides: