Technical Notes for CDI

This dashboard displays annual data reported during years 2015-2018.

The data were downloaded from NHSN after the Centers for Medicare and Medicaid Services (CMS) deadline for the last quarter of the reported year (CMS Deadline is May15th for 4th quarter); any changes made to the data after this date are not reflected in this report. Before reviewing this report, a few clarifications about the data need to be made. Please see detailed information in the **Metrics and Reading Report** tab below.

1. The data within this report are preliminary.
2. There may be differences between results published by the Washington State HAI Program and results published elsewhere (e.g., CMS - Centers for Medicare and Medicaid Services Hospital Compare website).
3. There may be differences in reporting practices among hospitals.
4. CDI LabID events rely on laboratory data only, not clinical symptoms of illness.

SIR Interpretation: Colors and symbols are used to help you quickly understand and interpret the statistical significance of the SIR. This is the "take home message" about the facility's performance on this HAI measure.

SIR Value	Symbol	Table text	Interpretation
<1.0	▲	**Better** than predicted	There were **fewer events/infections** than predicted. *For example, if a facility has a CDI SIR of 0.75, they experienced 25 percent fewer events than predicted.*
1.0	●	**Same** as predicted	The SIR ratio is not significantly different than 1.0 meaning the **number of events/infections was close to or the same** as the number predicted.
>1.0	▼	**Worse** than predicted	There were **more events/infections** than predicted. *For example, if a facility has a CDI SIR of 1.5, they experience 50 percent more events than predicted.*
NA	▪	**No Conclusion**	Not enough information to make a reliable comparison to the national experience (number of predicted infections was less than 1) or reporting was not complete.

Defintions of terms

Patient Days (PAT DAYS): This is a daily count of the number of patients in a patient care location during a time period.

Observed Events (OBS): This is the number of hospital onset events reported by the facility.

Predicted Events (PRED): This is a calculated value that reflects the number of hospital onset events that we have "predicted" to occur in this facility, based on the national experience during the baseline time period.

Standardized Infection Ratio (SIR): This measure divides the number of observed events by the number of predicted events. A value of 1 indicates that the facility observed the same number events than were predicted. Lower SIR values are better.

95 Percent Confidence Interval (CI): We have a high degree of confidence (95 percent) that the true SIR lies within this range of values. If this range includes the value of 1, then the SIR is *not statistically significant* (i.e., the number of observed infections or events is not significantly different than the number predicted). A confidence interval cannot be calculated if the SIR is not calculated.

Metrics and Reading This Report

Purpose and Data Considerations

The dashboard includes annual data reported from 2015-2018. Data are downloaded after the CMS reporting deadline, please note that any changes made to the data after the date pulled are not reflected in this report. Before reviewing this report, a few clarifications about the data need to be made:

1. **The data within this report are preliminary.** Although efforts were made by hospitals and the Washington State HAI Program to ensure that the data were accurate and complete, the data are self-reported and have not been formally "double-checked," or validated. Until data validation is completed, numbers should be interpreted with caution.
2. **There may be differences between results published by the Washington State HAI Program and results published elsewhere** (e.g., CMS - Centers for Medicare and Medicaid Services Hospital Compare website). Results may differ due to using data from different time periods, different facility types, different patient populations, and/or different methods of analysis.
3. **There may be differences in reporting practices among hospitals.** Hospitals with more infection prevention personnel and resources may be able to identify and report more infections compared to a hospital with fewer infection prevention resources.
4. **CDI LabID events rely on laboratory data.** Patients did not have to be ill to have a positive result, and a positive result can be determined without requiring clinical information about the patient. This allows for a much less labor-intensive means to track CDI. Only those LabID events that occurred more than three (3) calendar days after hospital admission are counted as hospital onset are displayed in this report.

The report dashboard looks at how hospitals in Washington State performed in CDI prevention by displaying how many hospital-onset CDI LabID events they reported compared to how many were predicted based on their facility specifications during the reporting year. It shows whether a hospital had more, fewer, or about the same number of CDI LabID events compared to the national baseline (national experience) based on nationally reported data. This comparison takes into account differences between hospitals that impact predicted infection counts such as types of patients and procedures, as well as other factors such as the hospital size and affiliation with a medical school. These risk factors are

adjusted for in the model that predicts the number of predicted infections for each hospital (see page 3).

It's important to understand that numbers alone won't show how well a hospital is doing in preventing HAIs and that LabID events are based on positive test results. This report shows how hospitals performed during a single year and compares each hospital's performance to the national baseline. The 2015 baseline was used in the Standardized Infection Ratio (SIR) calculations. A bar graph showing the state trend and progress towards meeting the Health and Human Services reduction target is shown in the dashboard.

Larger hospitals that see more patients or perform more surgeries may have more infections compared to smaller hospitals. Therefore, it is important not only to consider the "interpretation" for each hospital, but to also look at the total number of patient days and the total number of infections observed (or identified) in that time period.

Please see the definitions and information about the SIR on the landing page for the dashboard.

R v.3.6.1 was used for cleaning, analyzing, and summarizing data; Tableau is used for creating the data visualization dashboard.

$$SIR = \frac{\text{Number of observed infections}}{\text{Number of predicted infections}}$$

The SIR is calculated by dividing the number of observed infections by the number of statistically predicted infections based on the NHSN standard population and appropriate facility/patient population risk adjustment. If the predicted number of infections is less than 1.0, it is not possible to calculate a SIR. Lower SIRs indicate better performance.

Acronyms that may be used on the dashboards

ACH   Acute Care Hospital
CAH   Critical Access Hospital
CDC   Centers for Disease Control and Prevention
CDI   *Clostridioides* (formerly known as *Clostridium difficile*) infection
CI   Confidence Interval
CMS   Centers for Medicare and Medicaid Services
DOH   Department of Health
HAI   Healthcare-Associated Infection
HO   Healthcare Facility Onset
LabID   Laboratory Identification
LTACH   Long-Term Acute Care Hospital
NHSN   National Healthcare Safety Network
SIR   Standardized Infection Ratio
WA   Washington State