Keys to Success with NHSN Data

Let's talk p-value.

As far as the SIR goes…

The **p-value** is a statistical measure that tells us whether the number of observed infections is statistically significantly different than the number of predicted infections (i.e., whether the SIR is significantly different from 1.0).

If the **p-value ≤ 0.05**, we can conclude that the number of observed infections is statistically significantly different than the number of predicted infections.

If the **p-value > 0.05**, we conclude that the number of observed infections is **not** statistically significantly different than the number of predicted infections.

Presenting - wait for it - *the* Standardized Infection Ratio (SIR)!

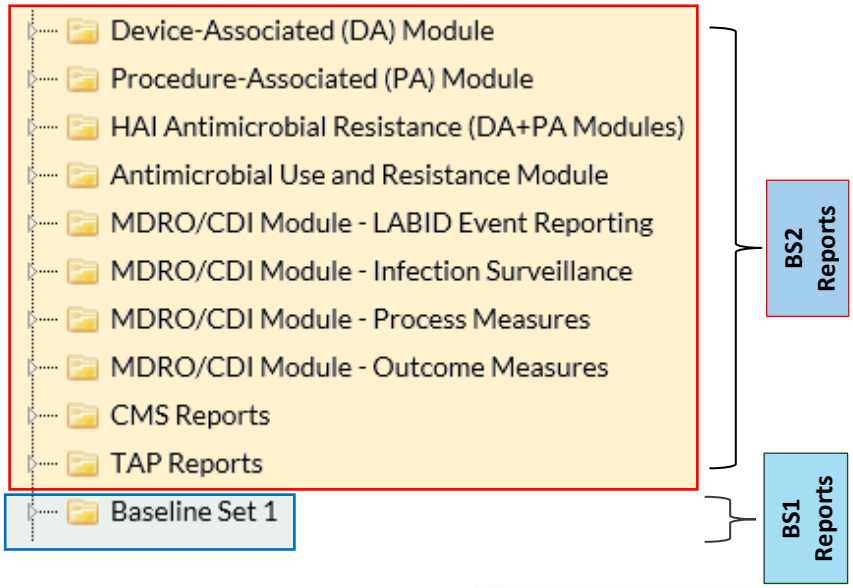
$$SIR = \frac{Observed\ (O)\ HAIs}{Predicted\ (P)\ HAIs}$$

If the **SIR > 1.0**, then **more** HAIs were observed than predicted, based on the 2015 national aggregate data.

If the **SIR < 1.0**, then **fewer** HAIs were observed than predicted, based on the 2015 national aggregate data.

If the **SIR= 1.0**, then the **same** number of HAIs were observed as predicted, based on the 2015 national aggregate data.

Analysis Reports: Baseline Set 1 *vs.* Baseline Set 2



And how about that *95% Confidence Interval (CI)?*

The 95% CI is a statistical range of values for which we have a high degree of confidence that the true SIR lies within that range.

If the **CI does not include 1**, then the SIR is significantly different than 1.0 (i.e., the number of observed infections is significantly different than the number predicted).

Example: 95% CI= (0.85, 0.92)

If the **CI includes the value of 1**, then the SIR is **not** significantly different than 1.0 (i.e., the number of observed infections is not significantly different than the number predicted).

Example: 95% CI= (0.85, 1.24)

If the **SIR is 0.000** (i.e., the infection count is 0 and the number of predicted infections is ≥ 1.0), the lower bound of the 95% CI will **not** be calculated.

Remember

The SIR will **not** be calculated if the number of predicted infections is **less than 1.0**.

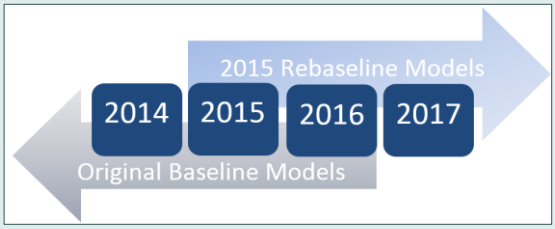
This rule was instituted to avoid the calculation and interpretation of statistically imprecise SIRs, which typically have extreme values.

Name that Baseline!

Original models:
Data from **December 31, 2016** and earlier

2015 Rebaseline models:
Data from **January 1, 2017** and forward

***note:** both original and 2015 baseline models are available for **Jan 1, 2015 – Dec 31, 2016** data



National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

Accessible Version: https://www.cdc.gov/nhsn/ps-analysis-resources/keys-to-success.html

Additional Resources

SIR Guide: *https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf*
Information about Transitioning to 2015 SIR Baselines:
NHSN Rebaseline webpage: *https://www.cdc.gov/nhsn/2015rebaseline/*

Original SIR Baselines for Acute Care Hospitals:
CLABSI (original baseline= 2006-2008): *https://www.cdc.gov/nhsn/PDFs/dataStat/2009NHSNReport.pdf*
CAUTI (original baseline= 2009): *https://www.cdc.gov/nhsn/PDFs/NHSNReport_DataSummaryfor2009.pdf*
SSI (original baseline= 2006-2008): *https://www.cdc.gov/nhsn/PDFs/pscManual/SSI_ModelPaper.pdf*
MRSA bacteremia and CDI LabID event (original baseline= 2010-2011):
https://www.cdc.gov/nhsn/pdfs/mrsa-cdi/riskadjustment-mrsa-cdi.pdf
December 2010 Special Edition NHSN Newsletter - Introduction to SIR (original baseline):
https://www.cdc.gov/nhsn/pdfs/newsletters/nhsn_nl_oct_2010se_final.pdf

Original SIR Baselines for Long-term Acute Care Hospitals (LTACHs) and Inpatient Rehabilitation Facilities (IRFs):
https://www.cdc.gov/nhsn/xls/reportdatatables/nhsn-2013-report.xlsx

NHSN Analysis Trainings & Other Resources:
Analysis Resources, Trainings, and NHSN Data Dictionary:
https://www.cdc.gov/nhsn/ps-analysis-resources/index.html
Targeted Assessment for Prevention (TAP) General Information*: https://www.cdc.gov/hai/prevent/tap.html*
Quick Reference Guides: How to run and interpret NHSN reports (including SIR and TAP reports):
https://www.cdc.gov/nhsn/ps-analysis-resources/reference-guides.html
Quick Reference Guides: Standardized Utilization Ratio (SUR): *https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/run-interpret-sur-reports.pdf*