

MEASUREMENT AND PREDICTION OF CLABSI

Central Line Associated Blood Stream Infections

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CLABSI

- ⦿ Central Line Associated Blood Stream Infections - CLABSI.
- ⦿ Each year as many people die with CLABSI as breast cancer.

RISK ADJUSTMENT

- Standardized Infection Ratio (SIR)

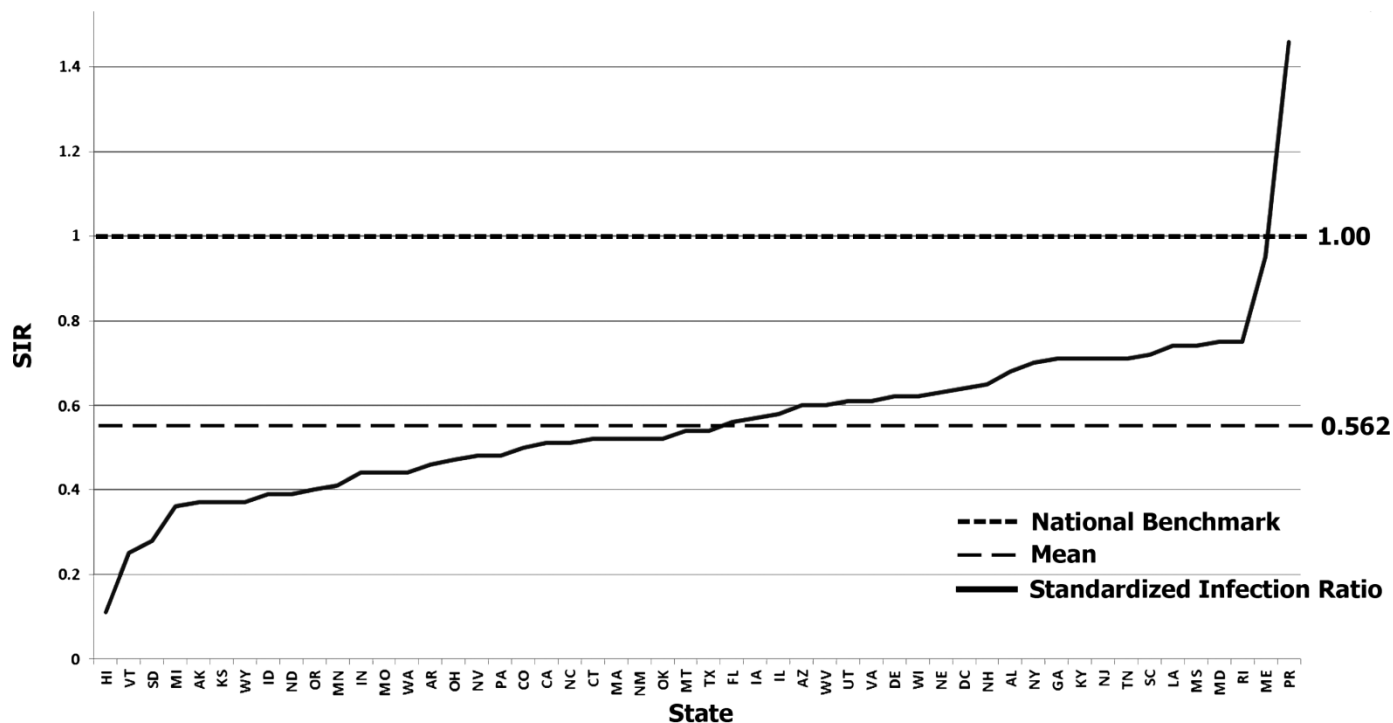
The Standardized Infection Ratio (SIR) is the ratio of the number of “Observed HAI” to the number of “Expected HAI”.

The National Benchmark was defined using old data before effective prevention protocols were widely adopted. National Benchmark = 1.0

Poster Presentation: *Kavanagh KT and Saman DM. Meaningful Definition of the Standardized Infection Ratio. The 2012 HAI Data Summit. US Dept of Health and Human Services. Kansas City, MO. May 31, 2012*

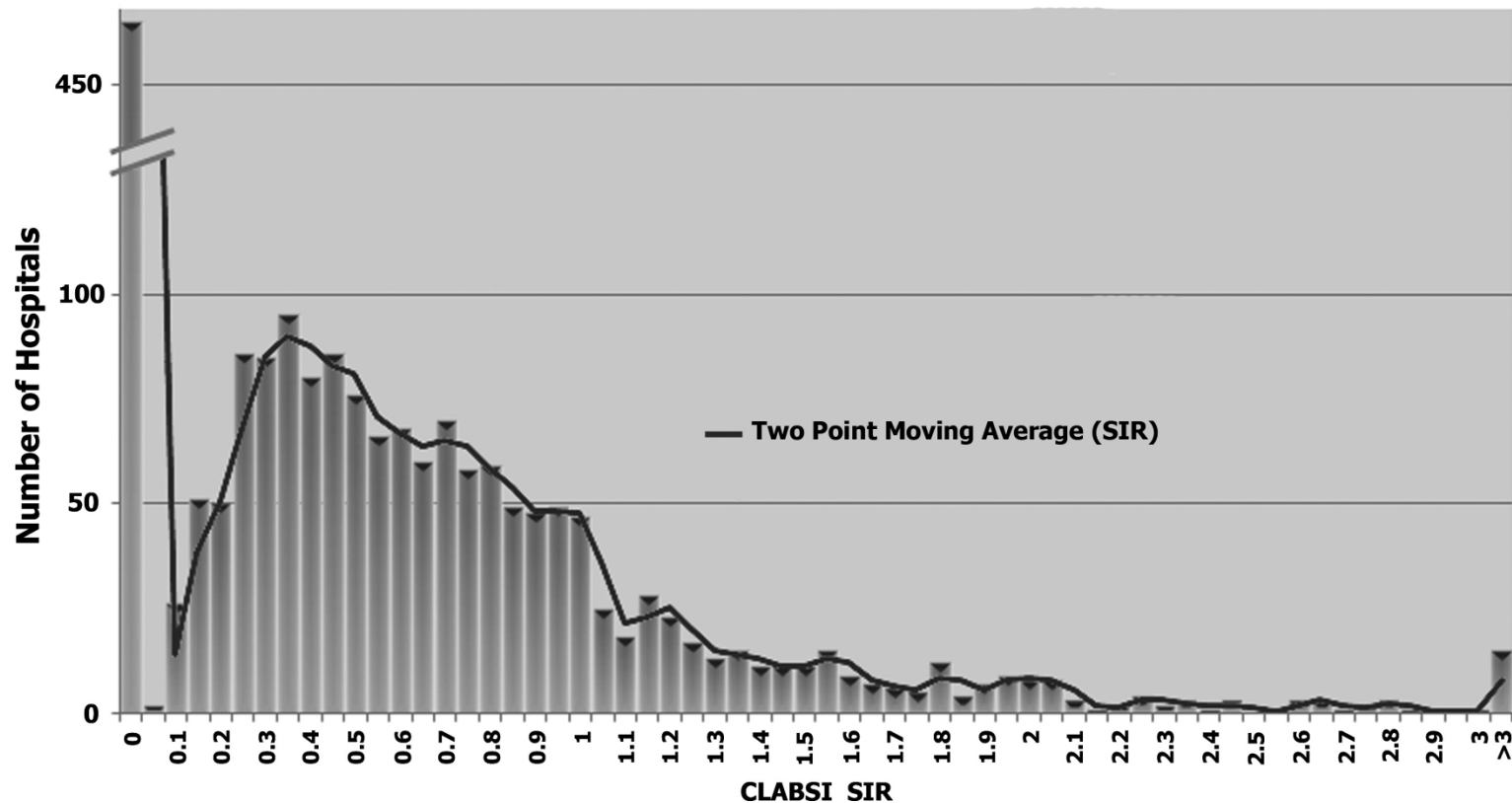
Saman DM, Kavanagh KT and Abusalem S. Redefining the Standardized Infection Ratio to Aid in Consumer Value Purchasing. Published Ahead of Print. *Journal of Patient Safety.* 2013 Jun;9(2):55-8. PMID: 23370222

ALL STATES HAVE AN AVE. SIR < 1.0



Derived from State Aggregate Data File on Hospital Compare, collection period from 1/1/2011 to 12/31/2012 .
Central Line-Associated Infections (CLABSI) in ICUs Only.

THE AVERAGE SIR = 0.562 *



Medicare Data from 01/01/11 to 12/31/2011

RISK ADJUSTMENT

- Standardized Infection Ratio (SIR)

- “Expected HAIs” for CLABSI is based upon the type of ICU.

- 1) Medical vs. Surgical
 - 2) Size of Facility
 - 3) Major Teaching vs. Non-Teaching

RISK ADJUSTMENT

- ◉ Adjustment for Type of Facility is Controversial
- ◉ Major Teaching vs. Non-Teaching

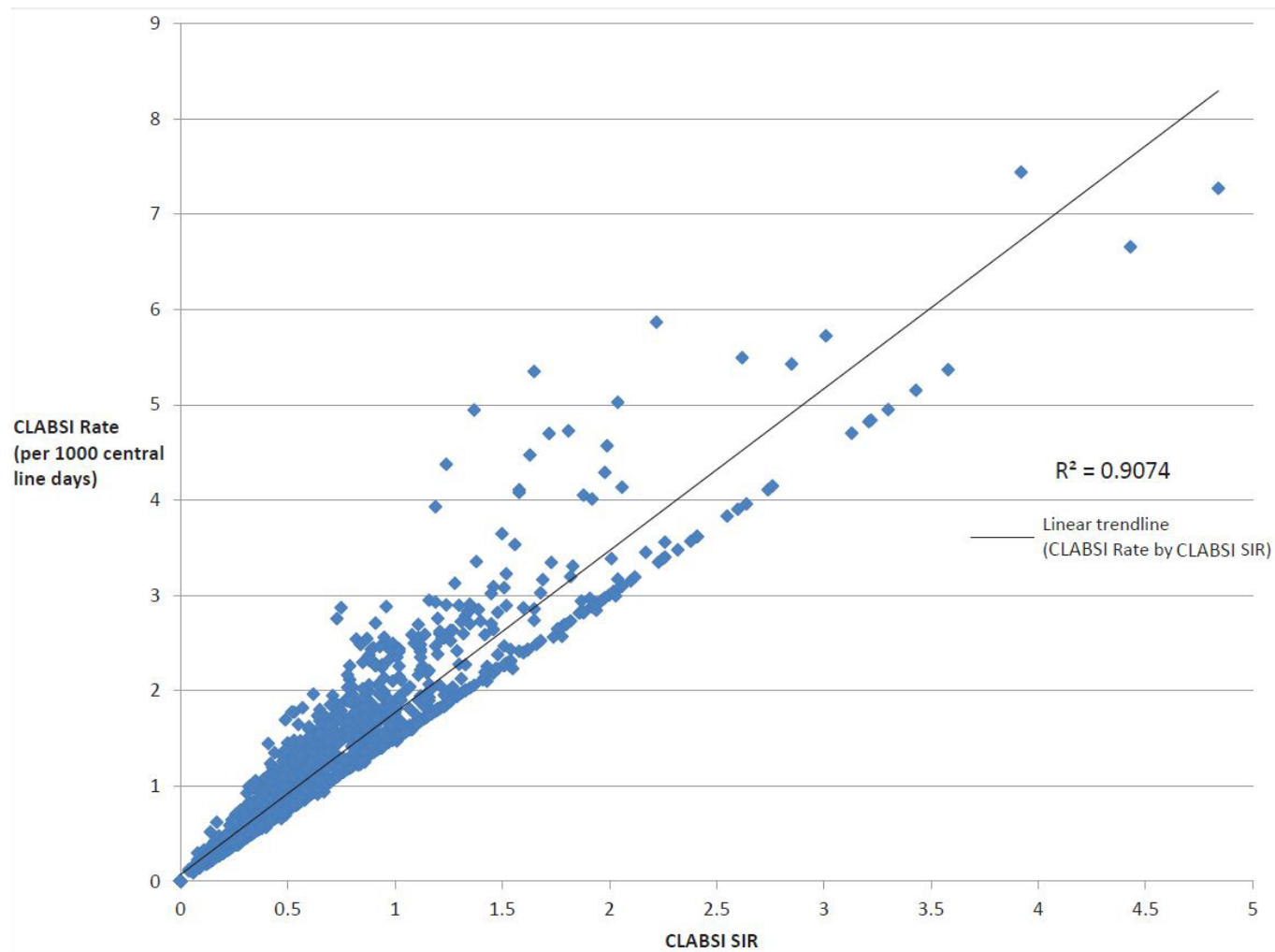
For Medical ICUs in Major Teaching Hospitals, more than 1 in 5 CLABSI are mathematically eliminated.

DO WE NEED RISK ADJUSTMENT

- There is a strong relationship between the CLABSI Rate and SIR, Along with questionable SIR Adjustments for Facility Size and Teaching Institutions, one must ask the question:
- Do we need to risk adjust ? Or can we just rate adjust ?

Saman DM, Kavanagh KT. Assessing the Necessity of the Standardized Infection Ratio for Reporting Central Line Associated Bloodstream Infections. Accepted, Plos One. October 3, 2013.

DO WE NEED RISK ADJUSTMENT



DO WE NEED RISK ADJUSTMENT

- ◉ There are a large number of facilities able to achieve and maintain an SIR approaching zero, one must ask the question:
- ◉ Do we need to rate adjust ? Or can we just report raw data.

Saman DM, Kavanagh KT. Assessing the Necessity of the Standardized Infection Ratio for Reporting Central Line Associated Bloodstream Infections. Accepted, Plos One. October 3, 2013.

DO WE NEED RISK ADJUSTMENT

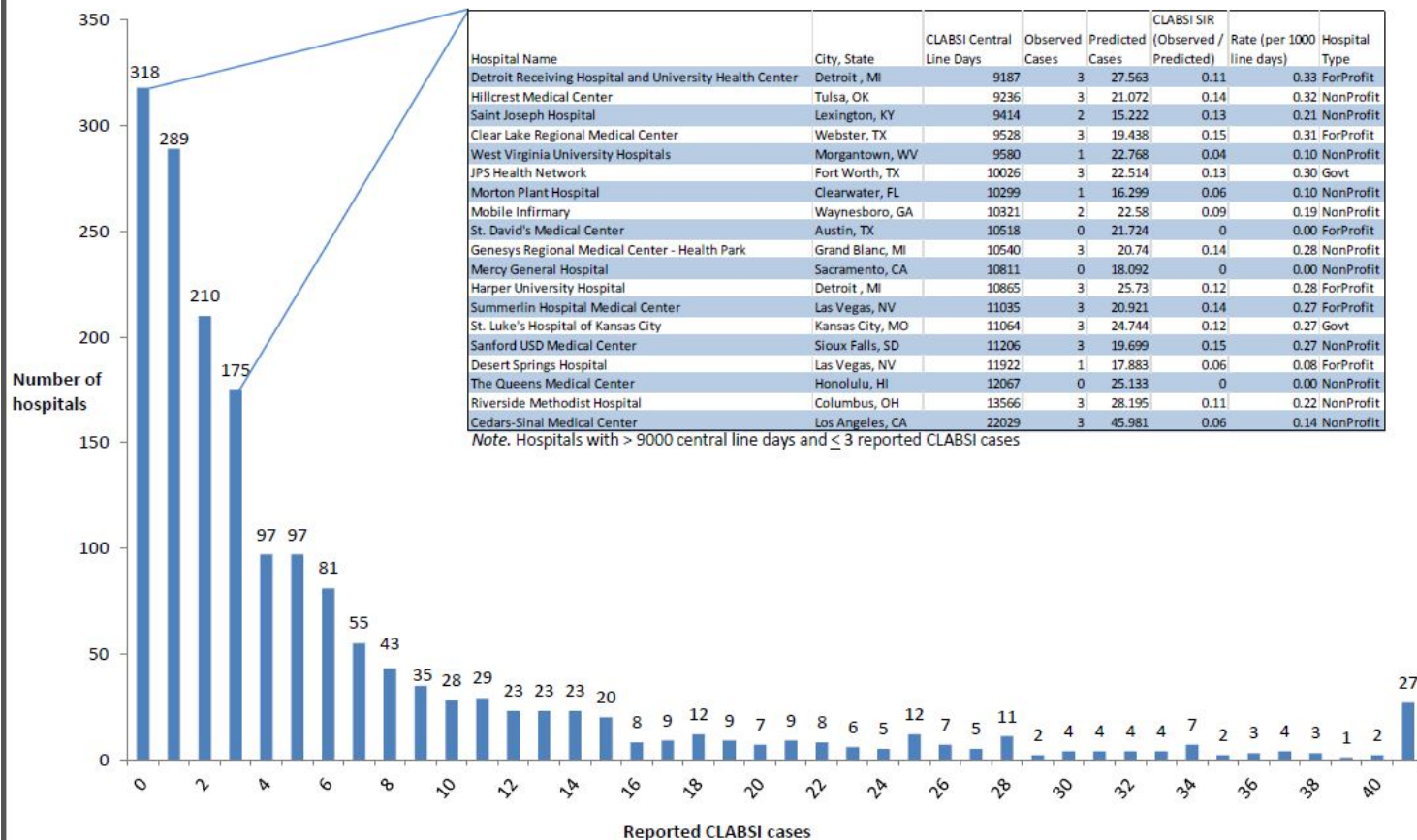


Figure. Histogram of observed CLABSI cases by hospitals with an ICU with at least 1000 reported central line days, 2011

CAN WE IMPROVE MORE ?

Table 1: Estimation of the Number of Preventable Cases in Hospital ICUs out of the 10799 CLABSI observed in ICUs between 7/1/2011 to 6/30/2012

Source of SIR	SIR	Preventable Cases
National Benchmark Data – (2006 to 2008) ¹	1.000	990 (9.2%)
Average SIR 2011 Data - (7/1/11 to 6/30/2012)	0.594	1128 (10.4%)
Peak of the Curve SIR - Data (1/1/11 to 12/1/2011) ⁴	0.350	5240 (48.5%)

The total number of Preventable Cases (PC) was then calculated from the number of Observed Cases (OC) in all facilities whose SIR was above that of the Obtainable SIR, using the following equation:

$$PC = OC - [(Obtainable\ SIR / Facility's\ SIR) * OC]$$

HOW DO WE IMPROVE ?

- ◉ We analyzed the following variables to see if they are related to the CLABSI SIR.
 - Room Cleanliness.
 - Communication Between Staff and Patients.
 - Staff Responsiveness.

Saman DM, Kavanagh KT, Johnson B, Lutfiyya MN. Can Inpatient Hospital Experiences Predict Central Line-associated Bloodstream Infections? Plos One. April. 5, 2013. PMID: 23577195

Saman DM, Kavanagh KT. Response to Patient Satisfaction as a Possible Indicator of Quality Surgical Care. JAMA Surgery JAMA Surgery. Accepted May 24, 2013.

HOW DO WE IMPROVE ?

- ⦿ All were highly related with a $p < .0001$
- ⦿ However, the metric for Staff Responsiveness had the highest relationship not room cleanliness. The least was room cleanliness.

HOW DO WE IMPROVE ?

- ◉ We feel this reflects the importance of an overall “Culture of Safety” .
- ◉ If a facility is doing poorly in implementing a known protocol to prevent an adverse event, then it is at risk for other problems throughout the facility.

HOW DO WE IMPROVE

- Important- A Culture of Safety

“ .. hospitals with lower staff responsiveness, perhaps because of an understaffing of nurse and supportive personnel, are at an increased risk for CLABSI.”