

5.3.4 Validity Testing Results

Validity Testing:

Among 1,906 acute care hospitals, we identified a weak but significant positive correlation between CDI SIR and MRSA SIR ($\rho = 0.06775$, $p = 0.0031$).

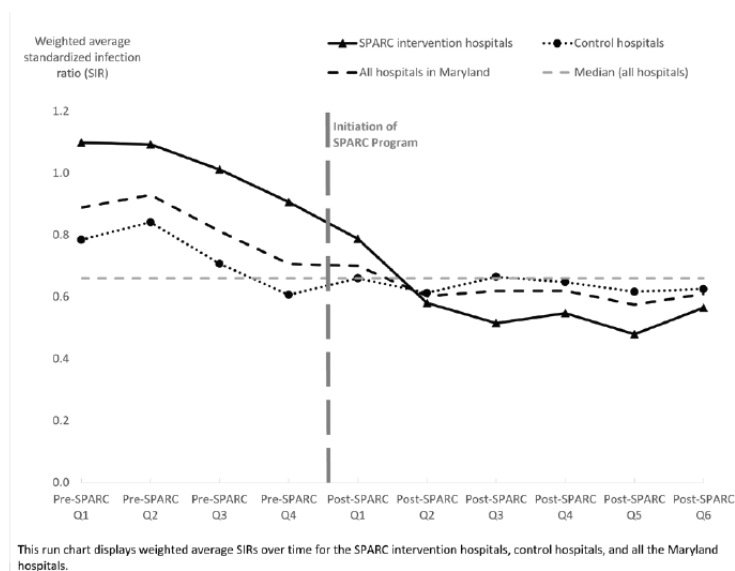
Validation Studies:

- I. Impact of Statewide Prevention and Reduction of *Clostridioides difficile* (SPARC), a Maryland public health-academic collaborative: an evaluation of a quality improvement intervention.

Within the first two quarters of involvement with the collaborative, 12 intervention hospitals had a greater standardized infection ratio (SIR) reduction compared to control hospitals. A SIR > 1.0 represents that more CDI events were observed than predicted, a SIR < 1.0 represents that fewer CDI events were observed than predicted, and a SIR = 1.0 represents the same number of CDI events were observed as predicted. The Maryland state-wide SIR for hospital-onset *C. difficile* decreased from 0.92 in 2017 to 0.8 in 2018 during initiation of the collaborative, and then to 0.61 in 2019 while the collaborative was ongoing.

This study demonstrated that implementation of a state-wide collaborative that focused on prevention activities for *C. diff.* along with ongoing collaborative support led to a significant reduction in the reported NHSN CDI SIRs. These data support the hypothesis that the measure score correctly reflects the quality of care provided and adequately identifies differences in quality.

Rock C, Perlmutter R, Blythe D, et al. Impact of Statewide Prevention and Reduction of *Clostridioides difficile* (SPARC), a Maryland public health-academic collaborative: an evaluation of a quality improvement intervention. *BMJ Quality & Safety*. 2022 Feb;31(2):153-162.



II. Implementation of the Targeted Assessment for Prevention strategy in a healthcare system to reduce *Clostridioides difficile* infection rates.

The hospital system level SIR decreased from 1.0 to 0.87, while the largest hospital in the system, hospital A, decreased its SIR from 1.03 to 0.84. A SIR > 1.0 represents that more CDI events were observed than predicted, a SIR < 1.0 represents that fewer CDI events were observed than predicted, and a SIR= 1.0 represents the same number of CDI events were observed as predicted. This study demonstrated that the implementation of a targeted assessment and infection control practices that focused on *C. diff.* prevention led to a reduction in the reported NHSN CDI SIRs. The study and data support the hypothesis that the measure score correctly reflects the quality of care provided and adequately identifies differences in quality.

Table 2. Targeted Assessment for Prevention (TAP) Report Hospital-Onset *C. difficile* Laboratory-Identified Event (CDI) Data at Healthcare System Level and by Hospital, Healthcare System TAP Strategy Implementation for *Clostridioides difficile* Infection (CDI) Prevention

Setting	Intervention Period (18 mo each)	Hospital- Onset CDI	Predicted No.	No. of Patient Days	Standardized Infection Ratio 'SIR'	P Value ^a
Healthcare system (all 3 hospitals)	Pre	249	249,962	267,827	1.00	.15
	Post	209	239,771	263,940	0.87	
Hospital A	Pre	180	174,496	178,106	1.03	.07
	Post	138	164,069	165,296	0.84	
Hospital B	Pre	37	45,937	57,925	0.81	.91
	Post	43	51,963	65,111	0.83	
Hospital C	Pre	32	29,529	31,796	1.08	.74
	Post	28	23,739	33,533	1.18	

White KA, Soe MM, Osborn A, Walling C, Fike LV, Gould CV, Kuhar DT, Edwards JR, Cochran RL. Implementation of the Targeted Assessment for Prevention Strategy in a healthcare system to reduce *Clostridioides difficile* infection rates. Infect Control Hosp Epidemiol. 2020 Mar;41(3):295-301.

III. Association between statewide adoption of the CDC's Core Elements of Hospital Antimicrobial Stewardship Programs and rates of methicillin-resistant *Staphylococcus aureus* bacteremia and *Clostridioides difficile* infection in the United States.

The study's results supported its hypothesis that compliance with the antibiotic stewardship program core elements was associated with a significant 0.3% decrease ($P < .01$) in CDI SIR in 2016 relative to 2014. A SIR > 1.0 represents that more CDI events were observed than predicted, a SIR < 1.0 represents that fewer CDI events were observed than predicted, and a SIR= 1.0 represents the same number of CDI events were observed as predicted. This study demonstrates that compliance with the CDC's Antimicrobial Stewardship Programs Core Elements led to a significant reduction in CDI LabID event SIRs. Thus, this data supports the hypothesis that the measure score correctly reflects the quality of care provided and adequately identifies differences in quality.

Garcia Reeves AB, Lewis JW, Trogon JG, Stearns SC, Weber DJ, Weinberger M. Association between statewide adoption of the CDC's Core Elements of Hospital Antimicrobial Stewardship Programs and rates of methicillin-resistant *Staphylococcus aureus* bacteremia and *Clostridioides difficile* infection in the United States. Infect Control Hosp Epidemiol. 2020 Apr;41(4):430-437.

IV. Closing the Gap on Infection Prevention Staffing Recommendations: Results from the beta version of the APIC Staffing Calculator

This study showed a significant association between staffing status and higher SIRs for central line-associated bloodstream infections ($p=0.02$), catheter-associated urinary tract infections ($p=0.001$), *Clostridioides difficile* infections ($p=0.003$), and colon surgical site infections ($p=0.0001$).

Bartles R, Reese S, Gumbar A. Closing the gap on infection prevention staffing recommendations: Results from the beta version of the APIC staffing calculator. Am J of Infect Control. 2024; 52(12): 1345-1350.