

“Urine” Control: Interdisciplinary Collaboration for Catheter Associated Urinary Tract Infection Reduction at an Inpatient Rehabilitation Institute

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Introduction

- Acute inpatient rehabilitation (IPR) patients have underlying conditions and comorbidities that require prolonged indwelling urinary catheters (IUC) which increases the risk of catheter associated urinary tract infections (CAUTI).
- Process measures including IUC utilization, IUC maintenance, and urine culture diagnostic and culture stewardship impact the rate of identifying a CAUTI.
- A multidisciplinary team including infection prevention (IP), clinical staff, and leadership was formed to address an increase in CAUTI across IPR in April of 2022.
- Setting: UPMC Mercy Rehabilitation Institute with beds specializing in stroke (6F), spinal cord injury (7E), and brain injury (6E).

Methods

Unit Rounding

- Sustained daily rounding with IP, clinical staff, and IPR leadership for IUC necessity and device maintenance

Education

- Consistent education on IUC maintenance, necessity, and diagnostic stewardship provided to the medical, nursing, and therapy teams

Unit Champions

- Unit-based staff champions completed monthly surveillance of IUC maintenance with peer coaching
- Unit staff identified and escalated unnecessary IUC for removal

Intervention

- Unit-led process to exchange or remove chronic IUC on admission to IPR started in late April 2022
- Increase clean intermittent catheter (CIC) practices

Methods

Infection Prevention

- Connect with clinical staff daily about their patients with IUCs
- Provide education on IUC maintenance best-practices and urine culture stewardship

IPR Leadership

- Initiate intervention of removing and/or exchanging IUC on admission to IPR
- Build sustainable unit CIC routines
- Promote IP messaging & education

Clinical Staff

- Initiate removal and/or exchange of IUCs on new patient admissions
- Maintain necessary catheters according to evidence-based best practice

Results

The pre-intervention and pre-education timeframe includes average data from January 2021-April 2022 and post-intervention and post-education data includes average data from May 2022-March 2024.

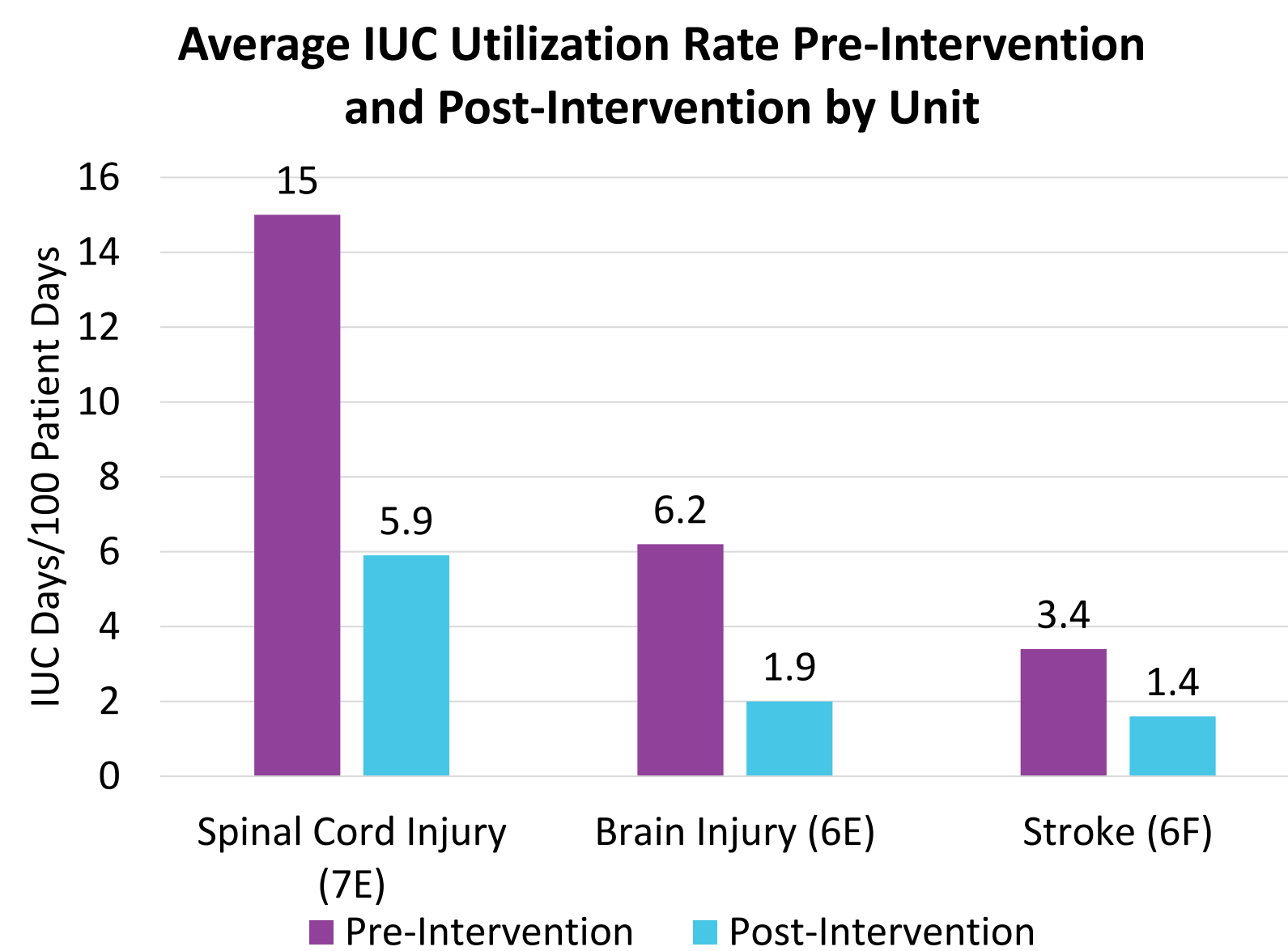


Figure 1. 7E had a 60% reduction in average IUC utilization rate. 6E had a 69% reduction in average IUC utilization rate. 6F had a 58% reduction in average IUC utilization rate.

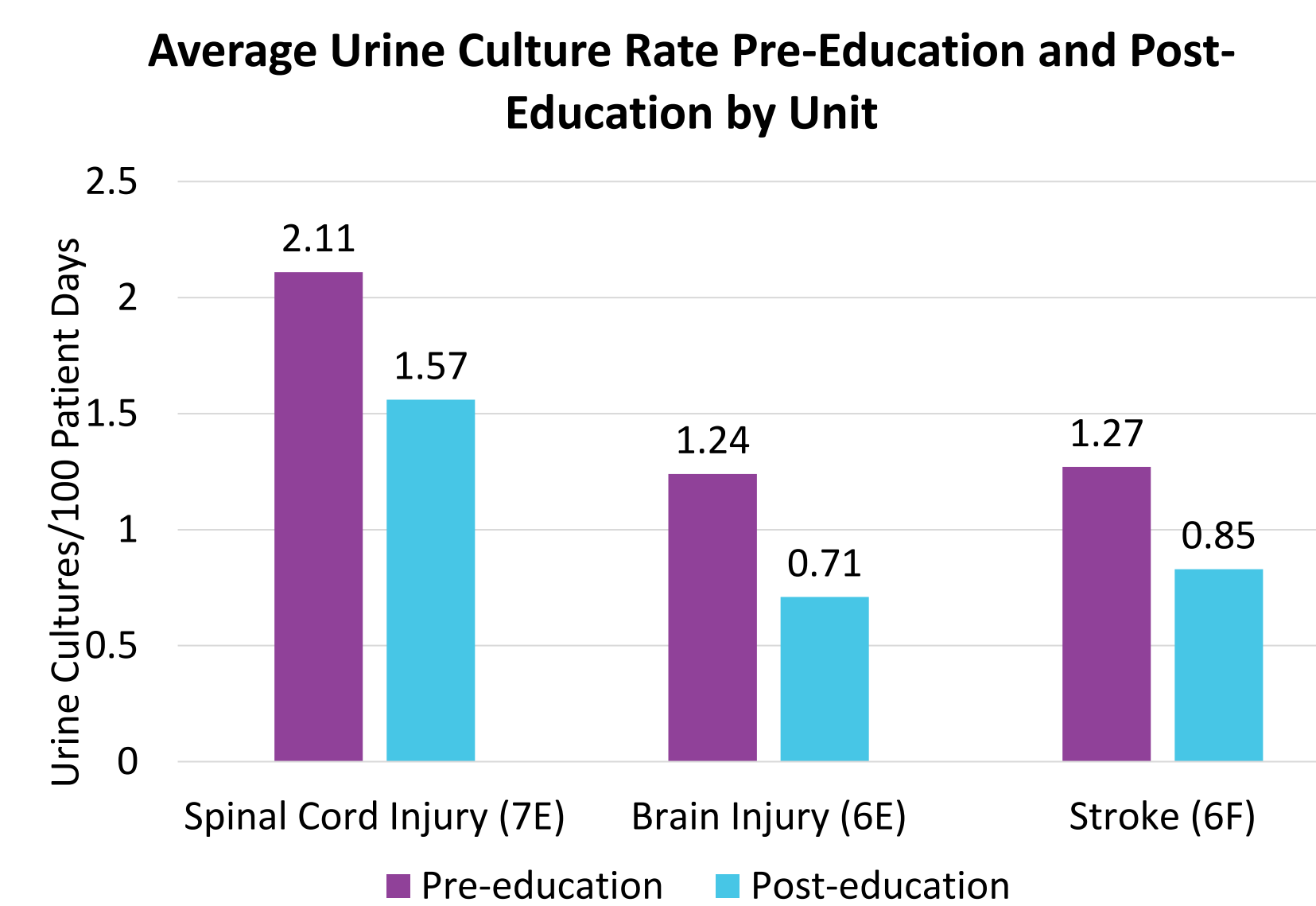


Figure 2. 7E had a 25% reduction in average urine culture rate. 6E had a 42% reduction in average urine culture rate. 6F had a 33% reduction in average urine culture rate.

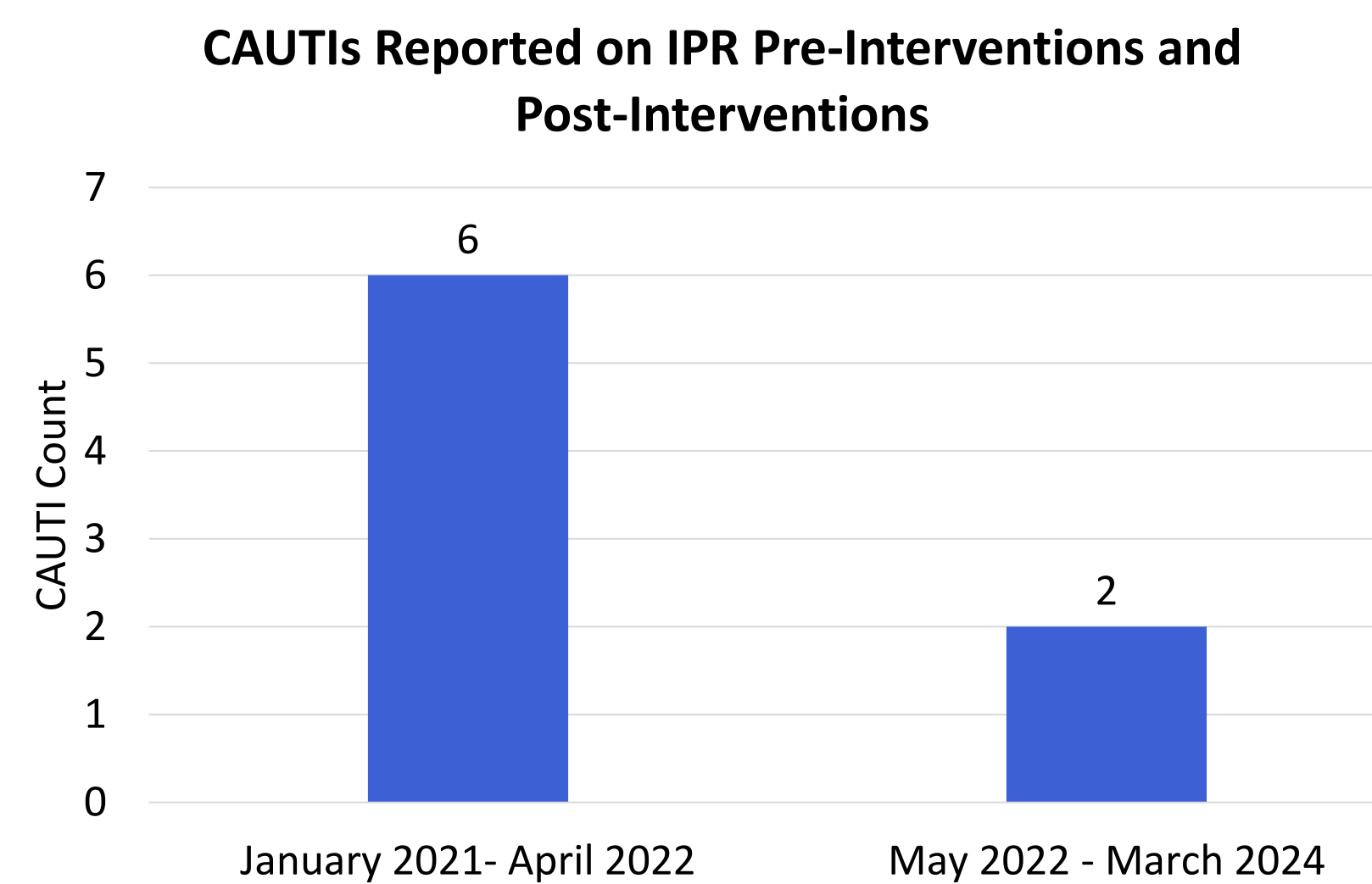


Figure 3. The number of CAUTIs reported pre-intervention and education compared to post-intervention and education with a 66% reduction in CAUTI observed at the IPR Institute.

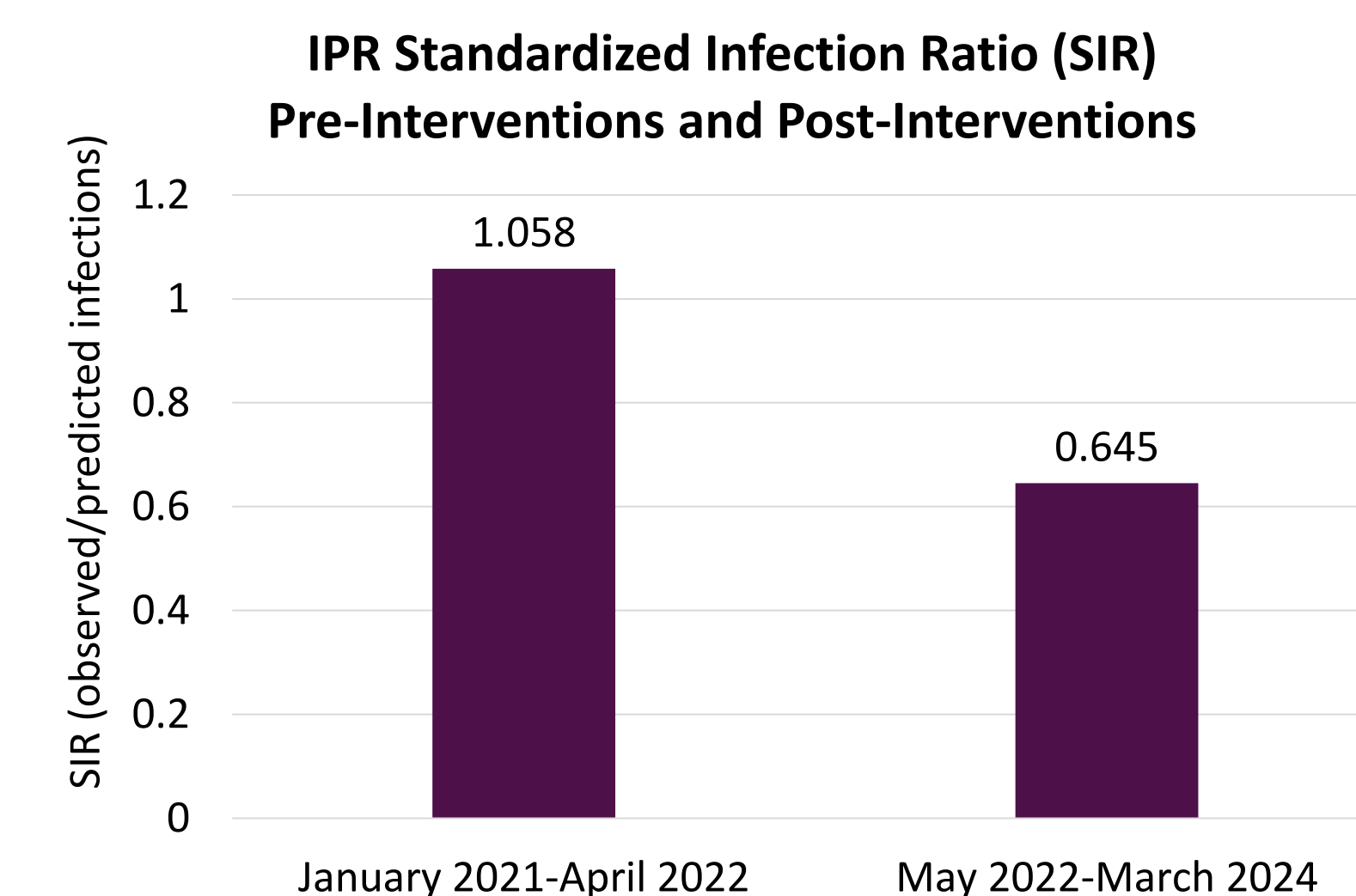


Figure 4. The number of observed CAUTI infections decreased from the number of nationally predicted infections as calculated by the CDC when the SIR is <1. The combined IPR Institute SIR decreased by 39%.

Discussion

- Quality improvement activities were evaluated with a monthly dashboard including compliance with process measures for IUC maintenance, urine culture rate, and CAUTI rate.
- Recognition programs such as a “CAUTI-Catch” certification and unit milestone celebrations encouraged sustainable ongoing best practice and program participation.

Conclusions

- Consistent engagement of stakeholders in this collaboration provided sustainable interventions to decrease CAUTI rates in IPR patient populations.
- Assessing new admissions for IUC necessity and increasing CIC practices led to a 61% reduction in average IUC utilization for the IPR Institute.
- Urine culture stewardship education in these specialized populations led to an overall 33% reduction in urine culture rates for the IPR Institute.
- The IPR Institute has achieved reporting **zero CAUTIs** for a continuous **20 months** from July 2022-March 2024.

Acknowledgements

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References

- Carr, Harriette. Urinary Tract Infection. In Boston K.M., et al, eds. APIC Text. 2014. Available at <https://text.apic.org/toc/prevention-measures-for-healthcare-associated-infections/urinary-tract-infection>.
- Hooton, T. M., et al. (2010). Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 international clinical practice guidelines from the Infectious Diseases Society of America. *Clinical Infectious Diseases*, 50(5), 625–663. <https://doi.org/10.1086/650482>
- Patel, P., et al. (2023). Strategies to prevent catheter-associated urinary tract infections in acute-care hospitals: 2022 Update. *Infection Control and Hospital Epidemiology*, 44(8), 1209–1231. <https://doi.org/10.1017/ice.2023.137>