



# Reduction of Catheter-associated Urinary Tract Infections by using a multimodal intervention

**Single-center interventional study** of a rural tertiary care facility supported by the **Marshfield Medical Center, Marshfield US**

## WHAT WAS INVESTIGATED?

- Incidence of catheter-associated urinary tract infections (CAUTI) before and after the implementation of a multimodal intervention approach consisting of
  - staff education
  - establishment of best practices
  - daily reminder for patient assessment regarding the clinical necessity for catheter use
  - implementation of standardized technical protocols, including aseptic techniques for catheter use

## WHAT WAS THE RESULT?

66.6% reduction of CAUTI event rate – from 27 infections in 2015 to 9 infections in 2017.

60.2% reduction of the standardized infection rate – from 1.524 in 2015 to 0.607 in 2017.

17.6% reduction in urinary catheter days from 16,195 in 2015 to 13,348 in 2017.

Incidence of catheter-associated urinary tract infections (CAUTI) can be significantly reduced up to 60% through implementation of a multimodal intervention focussing on education, standardized protocols and best practices.





## BACKGROUND

Catheter-associated urinary tract infections (CAUTIs) are among the most common hospital-acquired infections and affect patient morbidity and mortality. Implementing infection prevention practices was shown to significantly reduce this healthcare associated infection.

## GOAL

The main aim of the study was to improve CAUTI rates by implementing a multimodal intervention and comparing the incidence of CAUTIs before and after intervention. In this way, both patient safety and quality improvement of care should be ensured.

## DESIGN AND METHODS

This quality improvement project was conducted in a rural 504-bed community academic hospital in the Midwest. Designed as a before-after study, standardized infection rates (SIR) were analyzed prior and post to a multimodal intervention in 2016. SIR represent the ratio of observed infections to predicted infections. Other outcome measures were the number of urinary catheter days in inpatients as well as the CAUTI rates.

The multimodal intervention consisted of:

- education of physicians and nurses
- modification of progress note templates and daily provider reminders for the clinical necessity of catheters
- implementation of established best practices for eliminating CAUTIs (e.g. limited catheter use and urine cultures)
- support for alternative toileting options
- promotion of aseptic techniques for insertion and removal of catheters.

Before and after implementation of the multimodal intervention in 2015 and 2017, SIR, CAUTI and the number of urinary catheter days were recorded.

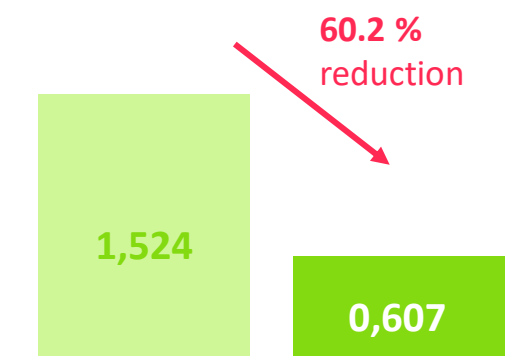
## RESULTS

After one year of intervention, primary and secondary outcome measures decreased in most units with the greatest reductions seen in the medical and surgical intensive care units.

Overall, SIR was reduced from 1.524 to 0.607 – a difference of 60.2% between 2015 and 2017. The number of CAUTIs reduced from 27 before to 9 after the intervention period. This corresponds to a significant reduction of 66.6%. The reduction in urinary catheter days was 17.6% – from 16,195 in 2015 to 13,348 in 2017.

All reductions were statistically significant with ( $p < 0.05$ ).

**Significant reduction of the standardized infection rates for CAUTI**



## CONCLUSION

A multimodal intervention composed of education, establishment of best practice for catheter use, and implementation of standardized technical protocols is an effective instrument to improve and sustain CAUTI rates in the hospital setting.

