

**Catheter-Acquired Urinary Tract Infections: Quality Improvement**

Benjamin Ruettiger

Lakeview College of Nursing

N434: Evidence-Based Practice

Travis Whisman

July 1, 2025

## **Catheter-Acquired Urinary Tract Infections: Quality Improvement**

Catheter-associated urinary tract infections (CAUTIs) are among the most prevalent hospital-acquired infections and pose a significant threat to patient safety and clinical outcomes (Gupta et al., 2023). These infections are associated with increased morbidity, prolonged hospital stays, and in severe cases, mortality. Furthermore, the occurrence of CAUTIs can have financial implications, as reimbursement from Medicare and Medicaid may be reduced for hospitals when these infections are acquired during inpatient stays (Gupta et al., 2023). Given the clinical and financial impact of CAUTIs, there is a critical need for evidence-based quality improvement initiatives within healthcare systems. Quality improvement can be defined as a systematic, data-driven effort that enhances patient outcomes by refining processes and reducing errors (QSEN, 2021). In this context, the Quality and Safety Education for Nurses (QSEN) competency of Quality Improvement is particularly relevant. QSEN emphasizes the nurse's ability to utilize data and monitor care processes to enhance the quality and safety of patient care (AlRatrouf et al., 2025). Applying quality control and QSEN for CAUTI prevention efforts enables nurses to develop and implement targeted strategies that improve knowledge, skills, and attitudes related to infection control and patient safety. By aligning nursing practices with QSEN principles, healthcare teams can promote safer, more effective care and reduce the incidence of preventable hospital-acquired infections such as CAUTIs and improve patient outcomes (QSEN, 2021).

### **Article Summary**

This article, conducted by Gupta et al. (2023), employed a qualitative, comprehensive, multidisciplinary approach to reduce catheter-associated urinary tract infection (CAUTI) rates within a cardiac intensive care unit (CICU). This quality improvement initiative serves as a

valuable model for enhancing the safe use of indwelling urinary catheters and highlights the critical role of nursing staff empowerment in eliminating CAUTI occurrences. The primary objective of the project was to achieve a minimum of 100 consecutive CAUTI-free days in the adult CICU by June 2022. To accomplish this goal, the researchers implemented the Institute for Healthcare Improvement's Model for Improvement, incorporating evidence-based insertion and maintenance bundles, alongside daily nurse-led catheter audits (Gupta et al., 2023). As a result of these interventions, the CAUTI rate decreased significantly from 7.6 to 0 per 1,000 catheter days, culminating in a sustained 280-day CAUTI-free period (Gupta et al., 2023).

## **Introduction**

This article is a qualitative study done to reduce the occurrence of CAUTIs in a cardiac intensive care unit to improve patient outcomes and reduce mortality and morbidity associated with CAUTIs (Gupta et al., 2023). The researchers used an approach to analyze and implement stops in the chain of urinary tract infections, and encourage the empowerment of nursing staff to ensure compliance to catheter insertion and maintenance orders (Gupta et al., 2023). In regard to quality improvement, this article offers a comprehensive analysis of issues related to CAUTIs and provides several strategies to lessen the occurrence of CAUTIs in the ICU.

## **Overview**

Gupta et al. (2023) examine quality improvement strategies implemented in a cardiac intensive care unit to reduce catheter-associated urinary tract infections (CAUTIs). The study emphasizes the critical role of registered nurses in the insertion, maintenance, assessment, and timely removal of indwelling catheters. Many errors can occur while caring for patients with indwelling catheters. Improper cleaning, improper assessments, and untimely removal of

indwelling catheters can lead to a CAUTI (Gupta et al., 2023). Gaps in compliance were evident while using their qualitative methods of analysis, which led to the formation of a multidisciplinary team that provided care bundles to improve quality control in the cardiac ICU concerning CAUTI prevention (Gupta et al., 2023). Evidence-based practices, care bundles, and nurse empowerment are highlighted as key factors in improving patient outcomes and preventing CAUTIs, which fall in line with QSEN's standards of care for improving safety and outcomes for patients (QSEN, 2021).

### **Quality Improvement**

The research provided in the article by Gupta et al. (2023) focuses on improving measures of CAUTI prevention in the cardiac ICU. However, these measures can be implemented in all areas where indwelling catheter care occurs. This study's implemented bundles and protocols caused a statistically significant reduction in CAUTIs in the cardiac ICU (Gupta et al., 2023). There would be beneficial outcomes if these research findings were implemented across all specialties and care areas within a healthcare system or organization. Implementing new protocols to reduce the rate of CAUTIs across care settings requires resources, time, and compliance. During the pre-implementation stage, support must be obtained from all system levels, proper evidence-based guidelines must be followed, equipment and documentation must be reviewed, and compliance standards must be established. During the intra-implementation stage, training sessions, monitoring tools, adequate supplies, and coaching must be available. The post-implementation stage requires ongoing data collection, sustainability plans, recognition programs, and quality improvement team support to evaluate the effectiveness and continually improve the plan (Gupta et al., 2023).

In terms of impacting the institution, implementing a quality improvement plan similar to this study would require financial resources from the hospital system. There will be a cost burden during the beginning stages. However, given the financial toll CAUTIs cause, implementing these quality improvement practices can save the organization money while simultaneously improving patient outcomes and satisfaction. Nursing safety and license protection will also be improved due to fewer adverse patient events. This not only aids the nursing profession in quality control and patient outcomes, but it can also help reduce stress and legal implications of CAUTI occurrences (Gupta et al., 2023).

### **Application to Nursing**

The quality improvement initiative detailed in the article by Gupta et al. (2023) uses a multidisciplinary approach to implement evidence-based practices to reduce the occurrence of CAUTIs in a cardiac ICU. Nurse-driven protocols, compliant catheter assessment techniques, standardized care, and patient safety are encompassed in the article. In regard to nursing, following these quality improvement measures while caring for patients with indwelling catheters can increase autonomy and promote empowerment.

### **Practice**

Effective nursing practices for reducing catheter-associated urinary tract infections (CAUTIs) include thorough patient assessments, accurate documentation, multidisciplinary collaboration, and proper catheter insertion and maintenance by trained staff. Key infection prevention measures involve practicing hand hygiene, using sterile gloves and aseptic technique, securing the drainage bag appropriately, performing daily meatal care, and ensuring unobstructed urine flow (Gupta et al., 2023). Practicing compliance with these measures greatly reduces the

risk of developing a UTI from an indwelling catheter, and is found to be statistically significant in the article. Gupta et al. (2023) highlight that their quality improvement initiative empowered nurses to discontinue catheter use when no clinical indication was present. The ability to recognize, interpret, and respond to clinical cues supports patient safety and infection prevention strategies' overall success, and helps nursing staff provide the best quality of care in their nursing practice.

### **Education**

This article highlights the importance of regular, structured catheter assessments, skill validation, and targeted training programs to ensure the best nursing practice and patient outcomes. Direct observation of catheter insertion site care, regular monitoring of bundle compliance, identifying and addressing training opportunities for the insertion and maintenance bundles, and the empowerment of nurses to remove the catheter if the indication is not documented are all educational guidelines that proved this study to be a success (Gupta et al., 2023). Educating the nursing staff on proper indications and contraindications for the insertion, maintenance, and removal of an indwelling catheter will reduce the likelihood of an infection and promote high-quality nursing practice and improved judgment. According to Gupta et al. (2023), the empowerment of nurses to remove the catheter if the indication is not documented and automatic removal orders within 72 hours of catheter insertion were vital factors influencing the success of this initiative.

### **Research**

Gupta et al. (2023) identify the primary limitation of their study as the inability to determine which specific component of the bundled intervention had the most significant impact

on reducing CAUTI incidence. Because multiple strategies were implemented simultaneously, it was not possible to attribute outcomes to any single intervention. From a clinical standpoint, applying these strategies in settings with larger patient populations and more extensive use of indwelling catheters may provide greater insight into the effectiveness of individual interventions (Gupta et al., 2023). Additionally, incorporating a control group in future studies could help evaluate the distinct contributions of each bundle element (Gupta et al., 2023). Further research using standardized approaches is essential to enhance patient outcomes and work toward preventing avoidable CAUTIs across healthcare settings.

### **Conclusion**

The purpose of Quality Improvement (QI), as outlined by the QSEN (Quality and Safety Education for Nurses) competencies, is to use evidence-based information to assess patient outcomes and to design, test, and implement changes that promote the continuous enhancement of healthcare delivery (QSEN, 2020). The methods presented in the Gupta et al. (2023) article align with QSEN's QI principles by fostering a culture of engagement, accountability, and shared responsibility among nurses caring for patients with indwelling catheters.

Recognizing QI as a core component of nursing practice, nurses can uphold QSEN standards by utilizing tools to analyze care quality, actively participating in care delivery improvements, and consistently applying evidence-based practices.

The growing body of research on this issue underscores the importance of reducing catheter-associated urinary tract infections (CAUTIs). CAUTIs can significantly impact patient outcomes by delaying recovery and, in severe cases, leading to life-threatening complications. Ensuring patient safety remains a top priority for healthcare professionals and organizations. Therefore, adhering to QI guidelines is critical when managing patients with indwelling

catheters. Implementing these strategies reduces the incidence of CAUTIs and improves overall patient outcomes, safety, and satisfaction. Since nurses are primarily responsible for inserting, maintaining, and monitoring indwelling catheters, they play a significant role in prevention efforts.

## References

- AlRatrouf, S., Abu Khader, I., AlBashtawy, M., Asia, M., Alkhawaldeh, A., & Bani Hani, S. (2025). The impact of the quality and safety education (QSEN) program on the knowledge, skills, and attitudes of junior nurses. *PLOS ONE*, 20(1), e0317448. <https://doi.org/10.1371/journal.pone.0317448>
- Gupta, P., Thomas, M., Mathews, L., Zacharia, N., Fayiz Ibrahim, A., Garcia, M. L., Simbulan, C., Attia Mohamed, F., & El Hassan, M. (2023). Reducing catheter-associated urinary tract infections in the cardiac intensive care unit with a coordinated strategy and nursing staff empowerment. *BMJ Open Quality*, 12(2), e002214. <https://doi.org/10.1136/bmjopen-2022-002214>
- Quality and Safety Education for Nurses. (2021). *QSEN institute competencies*. [https://qsen.org/competencies/pre-licensure-ksas/#quality\\_improvement](https://qsen.org/competencies/pre-licensure-ksas/#quality_improvement)