Catheter-Associated Urinary Tract Infection

A Successful Prevention Effort Employing a Multidisciplinary Initiative at an Academic Medical Center

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An interdisciplinary clinical improvement workgroup was formed at this academic medical center with the goal of reducing catheter-associated urinary tract infections (CAUTIs). In 2011, the CAUTI rate was noted to be 4.7 CAUTIs per 1000 catheter days. Rounding by 2 lead clinical nurse specialists revealed deficiencies in current practice, which were addressed with multifaceted strategies, including evidence-based indwelling urinary catheter and bladder management protocols, education of staff, reporting of data, and utilization of an icon in the electronic health record (EHR). After the implementation of these strategies, the CAUTI rate decreased and was noted to be 2.4 in February 2013. In addition to this, there was a downward trend line for catheter days. Key words: catheter-related infections, patient outcome assessment, quality improvement, urinary tract infections...

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CATHETER-ASSOCIATED urinary tract infections (CAUTIs) are the most common health care-associated infection worldwide and are associated with considerable morbidity, costs, and attributable mortality.1,2 In recent years, prevention of CAUTI has become even more important as the Centers for Medicare & Medicaid Services no longer reimburses hospitals for costs related to the...
treatment of CAUTIs on the grounds that they are largely preventable.4

Prevention of CAUTIs centers around the following considerations: insertion of an indwelling urinary catheter only when medically necessary by a trained individual using sterile technique; regular assessment of ongoing need for an indwelling urinary catheter; and removal of an indwelling urinary catheter as soon as possible.56 Studies have demonstrated that indwelling urinary catheters are often inserted for inappropriate indications, that health care workers are frequently unaware of the presence of indwelling urinary catheters in their patients, and that removal of these catheters is often delayed.79 Requiring health care workers to indicate and document the medical justification for an indwelling urinary catheter at the time of insertion and using a nurse-driven protocol for timely removal may reduce the risk and incidence of CAUTIs.10–12

A multifaceted approach was required to reduce CAUTIs and catheter days. This included a 1-month concurrent review on 1 medical and 1 surgical unit, pilot study on the surgical unit, modification to catheter removal and bladder management protocols, creation of icons in the electronic health record (EHR), and education of CAUTI champions.

LOCAL PROBLEM

The hospital-wide CAUTI rate for the first 6 months of calendar year 2011 was 4.7, with 85 CAUTIs reported during those months. The CAUTI rate is determined by the number of CAUTIs per 1000 indwelling catheter days. Nine of 22 inpatient units were underperforming as compared to the National Database of Nursing Quality Indicators (NDNQI) benchmark for similar units for 4 or more quarters as of July 2011.

Intended improvement

The primary goal of this quality improvement project was to reduce the incidence of CAUTIs at this academic medical center through education, clinical practice changes, and the sustained use of evidence-based hospital-wide protocols for indwelling urinary catheters. The aim was to reduce the number and duration of indwelling urinary catheter use on all inpatient units.

An interdisciplinary clinical improvement workgroup was formed to evaluate current practice related to the use of indwelling urinary catheters. This workgroup consisted of administrative support persons, clinical nurse specialists (CNSs), physicians, an infection control practitioner, nursing informatics, and a quality improvement analyst. Along with the NDNQI reports showing CAUTI rates above the benchmarks, verbal reports from nurses during CNS rounding indicated a wide disparity in beliefs about how best to manage indwelling urinary catheters and when they should be discontinued.

METHODS

Two CNSs conducted a 1-month concurrent review of all patients with indwelling urinary catheters on 1 medical unit and 1 surgical unit to evaluate current practice. The CNSs collaborated with an infection control practitioner, who reviewed the EHR of patients with positive urine culture results. The infection control practitioner then determined whether the patient had an indwelling urinary catheter in place at the time that the urine culture was positive or had an indwelling urinary catheter removed within 48 hours before obtaining the urine culture. The infection control practitioner determined whether the patient had a symptomatic or asymptomatic bacteremic CAUTI according to the 2012 National Healthcare Safety Network criteria for CAUTI.

As part of the pilot study, one of the lead CNSs collaborated with the unit-based CNS, surgeons, and nursing staff on the surgical unit to collect and analyze data on urinary retention in the postoperative patients, with the goal being the removal of indwelling urinary catheters by postoperative day 1. These patients included those with and without epidural analgesia in place. Evidence-based