

A single centre point prevalence survey to determine prevalence of indwelling urinary catheter use and nurse-sensitive indicators for the prevention of infection

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Abstract. *Background:* Catheter-associated urinary tract infection (CAUTI) is the most common hospital-acquired infection. Key factors influencing the development of CAUTI are indwelling urinary catheter (IUC) insertion duration and nursing management for the prevention of this complication. There is very little evidence describing practice patterns associated with IUC management. The aim of this study was to determine the prevalence of IUC use within a major metropolitan tertiary-referral teaching hospital and to explore nurse-sensitive indicators for the prevention of CAUTI in this context.

Methods: We conducted a point prevalence survey of IUC use by reviewing every inpatient bed ($n = 696$) across two sites over a 2-day period in January 2013. Site 1 comprised ($n = 520$, 74.7%) acute inpatient beds and Site 2 ($n = 176$, 25.3%) aged care and rehabilitation beds within a single organisation.

Results: At the time of the survey 555 (79.7%) beds were occupied. Few patients ($n = 69$, 12.4%) had an IUC *in situ* and a standard Foley's catheter was used for the majority of patients (62, 92.5%). IUC insertion was more prevalent in women over 70 (20, 71.4%) when compared with men (18, 46.2%; χ^2 4.24, $P = 0.04$). Fourteen nurse-sensitive indicators were assessed and although all indicators were not present for any single patient, drainage system management appeared to be in accordance with recommended guidelines. Of the patients with an IUC 12 (17.4%) had a urine sample sent in the 24 h preceding the survey and 5 (41.6%) of these samples were positive for bacterial colonisation.

Conclusion: The prevalence of IUC use in this tertiary teaching hospital was less than that in other centres despite a comparatively older inpatient population in the context of acute care needs. Nurses appear to be proficient in the management of IUC and associated drainage equipment and there is room for interdisciplinary improvement in documentation practices. Future research should test interventions to target appropriate insertion, ongoing need and timely removal of IUC.

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Introduction

The problem of catheter-associated urinary tract infection (CAUTI) is well established. Catheter-associated urinary

tract infection is the most common hospital-acquired infection and accounts for between 34%¹ and 40%² of healthcare-associated infections. More than 1 million

Implications

- This study provides data describing the prevalence of indwelling urinary catheters in the Australian context.
- Multidisciplinary documentation of IUC management is imperative for safe quality care and the prevention of device-associated infection.
- Key documentation components for continuity of care should be standardised.

infections in hospitals in the USA each year are directly attributed to CAUTI. Costs associated with this complication are estimated to be between US\$424 and US\$451 million annually.³ International reports suggest the proportion of patients who will have an indwelling urinary catheter (IUC) inserted following hospitalisation ranges from 10.7%⁴ to 21.2%.⁵ There is a dearth of literature describing the prevalence of IUC use and associated rates of CAUTI in the Australian clinical context.

Multiple reviews^{6–11} confirm that two key factors influence the development of CAUTI: IUC insertion duration and nursing management for the prevention of this complication. Nurse-sensitive indicators for the prevention of CAUTI include ensuring the IUC is appropriately secured as this decreases the potential for irritation of the bladder wall and lining, reduces urethral trauma, improves patient comfort and helps to maintain or improve urinary drainage.¹² The IUC should be secured to the inner thigh for women and upper thigh or lower abdomen for men.¹¹ Research has also shown that urinary drainage bags should be kept at a level lower than the patient's bladder and off the floor to avoid the backflow of urine and to prevent potential contamination from surrounding environment surfaces.¹³ Guidelines from literature suggest catheters and the collecting tube should be kept free from kinks to maintain an unobstructed flow of urine and avoid reflux that is associated with infection. Collection bags should be regularly emptied to avoid pressure-related tissue damage around the urethral meatus or suprapubic stoma.⁶ Documentation underpins best practice by ensuring continuity of care and should be emphasised in catheter management to prevent complications.¹⁴ Complications are easily identified, treatment optimised and outcome-driven early improvement possible when there is evidence of documentation in relation to the insertion and ongoing management of IUC.¹⁵ There are, however, few studies that have systematically reviewed practice patterns associated with nurse-sensitive indicators. Evidence to substantiate practice patterns is necessary to provide baseline information to test practice improvement interventions and contribute to the body of knowledge concerned with benchmarking best practice for the prevention of infection.

The primary aim of this point prevalence survey was to determine the prevalence of IUC use within our organisation at a single point in time. Secondary aims were to identify which nurse-sensitive indicators for the prevention of

CAUTI were being implemented, the frequency with which they were implemented, which assessable indicators of CAUTI were present in patients and the incidence of diagnosed CAUTI in this cohort at the time of the survey.

Methods

The setting for this study was a major metropolitan tertiary teaching facility in Melbourne, Victoria. There were two sites involved: a large acute inpatient facility ($n = 520$, 74.7% beds) and second site for sub-acute aged care and rehabilitation services ($n = 176$, 25.3% beds) with 28 areas of service specialisation. The sample comprised every inpatient within this organisation at the time the point prevalence survey was conducted. There were no specified inclusion or exclusion criteria and every patient was assessed at the time of the survey to determine whether or not an IUC was inserted.

National Safety and Quality Health Service Standards from the Australian Commission on Safety and Quality in Health Care (ACSQHC) have been developed to protect the public from harm and assist healthcare organisations to deliver safe and effective care in Australia.¹⁶ These standards provide a quality assurance mechanism to test whether relevant systems are in place to ensure minimum standards of safety and quality are met, and a quality improvement mechanism that allows health services to realise aspirational or developmental goals within a governance framework. Standard 3 is specifically designed to address the prevention and control of healthcare-associated infections. The intent of this standard is to prevent patients from acquiring preventable healthcare-associated infections and effectively manage infections when they occur by using evidence-based strategies. In order to meet the requirements of this standard, the ACSQHC recommend undertaking surveillance of healthcare-associated infections (Action 3.2) with a view to developing and implementing systems and processes for reporting, investigating and analysing healthcare-associated infections (Action 3.3). This standard provided the premise for this study that was designed to achieve Action 3.2 and provide the baseline data necessary to develop systems of measurement, audit and reporting for Action 3.3.

A survey instrument was developed by a process of consensus following a review of the literature. The aim of the survey was to capture baseline descriptive data regarding IUC prevalence and associated practice patterns related to IUC management within the organisation. The survey instrument had four sections: demographic data, evidence-based nurse-sensitive indicators for the prevention of infection, indicators of infection and diagnostic data. Infection Prevention and Surveillance Service clinicians reviewed items in the survey instrument to ensure feasibility and face validity. A pilot audit was conducted to test inter-rater reliability between six data collectors including surveillance clinicians. Data collectors worked in pairs with one person conducting patient and device assessment and the second serving as a scribe for findings. Assessments were repeated within and between

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