

Avoiding Potential Harm by Improving Appropriateness of Urinary Catheter Use in 18 Emergency Departments

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Study objective: Urinary catheters are often placed in the emergency department (ED) and are associated with an increased safety risk for hospitalized patients. We evaluate the effect of an intervention to reduce unnecessary placement of urinary catheters in the ED.

Methods: Eighteen EDs from 1 health system underwent the intervention and established institutional guidelines for urinary catheter placement, provided education, and identified physician and nurse champions to lead the work. The project included baseline (7 days), implementation (14 days), and postimplementation (6 months, data sampled 1 day per month). Changes in urinary catheter use, indications for use, and presence of physician order were evaluated, comparing the 3 periods.

Results: Sampled patients (13,215) admitted through the ED were evaluated, with 891 (6.7%; 95% confidence interval [CI] 6.3% to 7.2%) having a catheter placed. Newly placed catheters decreased from 309 of 3,381 (9.1%) baseline compared with 424 of 6,896 (6.1%) implementation (Δ 3.0%; 95% CI 1.9% to 4.1%), and 158 of 2,938 (5.4%) postimplementation periods (Δ 3.8%; 95% CI 2.5% to 5.0%). The appropriateness of newly placed urinary catheters improved from baseline (228/308; 74%) compared with implementation (385/421; 91.4%; Δ 17.4%; 95% CI 11.9% to 23.1%) and postimplementation periods (145/158; 91.8%; Δ 23.9%; 95% CI 18% to 29.3%). Physician order documentation in the presence of the urinary catheter was 785 of 889 (88.3%), with no visible change over time. Improvements were noted for different-size hospitals and were more pronounced for hospitals with higher urinary catheter placement baseline.

Conclusion: The implementation of institutional guidelines for urinary catheter placement in the ED, coupled with the support of clearly identified physician and nurse champions, is associated with a reduction in unnecessary urinary catheter placement. The effort has a substantial potential of reducing patient harm hospital-wide. [Ann Emerg Med. 2014;63:761-768.]

Please see page 762 for the Editor's Capsule Summary of this article.

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INTRODUCTION

Background and Importance

Catheter-associated urinary tract infections account for a large proportion of device infections in the hospital setting.¹ Close to half of hospitalized patients are admitted from the emergency department (ED),² where decisions to place urinary catheters are often made. The decision to place the catheter depends not only on whether the patient's condition requires the device³ but also on the current practice in the ED.⁴⁻⁶ Many urinary catheters are placed without documentation of need or based on subjective evaluations of the patient (eg, frail, elderly, needs the catheter for acute illness) instead of objective criteria for use.⁷⁻¹⁰ Moreover, the predominant focus has been in the inpatient setting, with efforts aimed primarily at removing

catheters that are no longer necessary.^{11,12} The optimal prevention is to not place the urinary catheter at all, unless indicated. Avoiding placement of unnecessary urinary catheters in the ED may substantially affect use and risk of harm during hospitalization. Avoiding inappropriate urinary catheter use in the ED is not only essential to reduce the risk of developing catheter-associated urinary tract infections but also noninfectious complications.^{13,14} It is important that the ED be viewed as the "point of entry" where efforts to reduce unnecessary urinary catheter use should be directed.

Goals of This Investigation

From previous work, we have shown that sustained reductions in urinary catheter use hospital-wide are possible when the ED is

Editor's Capsule Summary

What is already known on this topic

Unnecessarily placed urinary catheters increase patients' risk of urinary tract infections and other complications. Emergency departments (EDs) are often the site of new catheter placement for hospitalized patients.

What question this study addressed

This 13,000-patient, time-series design compared the use and appropriateness of new catheter insertions in a sample of patients admitted from 18 EDs from a single health system, before and after the EDs participated in a quality improvement project.

What this study adds to our knowledge

This project was associated with a decreased use and increased appropriateness of catheter placement.

How this is relevant to clinical practice

This study suggests that a quality improvement intervention can increase ED compliance with Centers for Disease Control and Prevention guidelines about appropriate placement of urinary catheters.

included in a multifaceted intervention.¹⁵ Ascension Health, a Catholic nonprofit health system, is one of 26 hospital engagement networks working with the Centers for Medicare & Medicaid Services Partnership for Patients to reduce hospital-acquired conditions.¹⁶ In accordance with a previous pilot study,⁴ and through the Ascension Health hospital engagement network structure, we implemented an effort to reduce inappropriate urinary catheter placement in the EDs of 18 hospitals. The initiative included engaging both physicians and nurses through champions and establishing clear indications for use, with a goal to reduce unnecessary urinary catheter placement.

MATERIALS AND METHODS

Study Design and Setting

We analyzed the results of a quality improvement effort to reduce unnecessary urinary catheter use in 18 EDs. The effort was initiated under the Partnership for Patients initiative and had a pre- and postdesign, with 4 distinct periods (baseline, preimplementation, implementation, and postimplementation). During the study, Ascension Health had 71 acute care hospitals representing 16,015 beds in 16 states and the District of Columbia. Eighteen EDs with interest in improving urinary

catheter use were recruited. This quality improvement project was deemed exempt by the institutional review board.

Before starting the effort, we asked chief nursing officers from the different hospitals to help with enrollment. In addition, all Ascension Health hospitals were invited to attend a recruitment Webinar on May 10, 2012, describing the effort. The target audience included chief nursing officers, chief medical officers, and quality leaders. Representatives from interested hospitals were asked to provide the names of emergency physician and nurse champions as a prerequisite to join the effort. Participation in the effort was voluntary. Representatives from recruited hospitals attended a 3-hour Webinar on May 21, 2012, that incorporated reasons for improving urinary catheter placement in the ED, implementing the improvements, engaging emergency physicians and nurses, tools to facilitate the work, and data collection and submission. Attendees of the Webinar included physician and nurse champions, infection preventionists, and other quality professionals. In addition, a detailed toolkit that describes how to implement the improvements (Appendix E1, available online at <http://www.annemergmed.com>) was shared with all the participating hospitals. The toolkit also included a description of the project, the different periods, the appropriate indications, the proper insertion techniques, and educational tools (posters, pocket cards, lectures). Finally, an additional 1-hour Webinar on June 5, 2012, featured an emergency physician and nurse who presented their successful experience in reducing unnecessary catheter use.

Interventions

The periods of the project included baseline, preimplementation, implementation, and postimplementation (Table 1). During baseline (7 days, June 4 through 10), data were collected on newly inserted urinary catheters in patients admitted to the hospital, and the reason for placement (data collected all 7 days). A preimplementation period (7 days, June 11 through 17) served to prepare for implementation by sharing of the institutional guidelines and educational materials with the staff, without any data collection. During implementation (14 days, June 18 through July 1), the emergency physician and nurse champions were responsible for educating their peers on the appropriate indications, based on the Centers for Disease Control and Prevention (CDC) Healthcare Infection Control Practices Advisory Committee guidelines in 2009 (data collected all 14 days).³ The indications were further described to the teams and examples provided (Table 2). The champions were advised to obtain support from peers to make the process successful. For example, the physician champion engaged staff physicians, residents, and midlevel providers, whereas the nurse champion engaged nurses, technicians, and assistants. Champions were also advised to provide their peers with practical solutions to avoid the catheter (eg, bladder scanner use, use of urinals, and frequent toileting). ED champions were also encouraged to engage their peers from the different hospital units to inform them of the effort. The postimplementation period (July to December 2012) included a reduction in the number of audits submitted

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