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Patient Care

AUA White Paper on Catheter Associated Urinary Tract Infections: Definitions and Significance in the Urological Patient

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Abstract

Introduction: Catheter associated urinary tract infections are widely recognized as the most common health care associated infection in the acute care hospital setting.

Methods: Experts have reviewed the literature on catheter associated urinary tract infections in urological patients. Where the literature was lacking, expert opinion was used to build recommendations which may be useful to the urological community.

Results: In this white paper we address limitations surrounding how and when current definitions can be used to detect a catheter associated urinary tract infection in a urological patient, and propose alternative methods for diagnosing catheter associated urinary tract infection in specific populations, including geriatric, neurogenic bladder and lower urinary tract reconstruction. Techniques to avoid catheter associated urinary tract infections through proper urethral catheterization and alternatives to indwelling catheters for urological patients are also discussed.

Conclusions: Patients with urological disorders have specific concerns relating to catheter associated urinary tract infections. A review of the available literature as well as common clinical practice provides directives for the treatment of these patients in a specific and distinctive fashion to reduce the risk of infection. By understanding the needs and technical modifications necessary in these patients, hospital systems and practitioners can limit patient exposure to catheter associated urinary tract infections.

Key Words: urinary tract infections, catheters, catheter-related infections

Abbreviations and Acronyms

CAUTI = catheter associated urinary tract infection

CDC = Centers for Disease Control and Prevention

CIC = clean intermittent catheterization

IDSA = Infectious Diseases Society of America

IUC = indwelling urinary catheter

MEC = male external catheter

NHSN = National Healthcare Safety Network

NSQIP = National Surgical Quality Improvement Program

SPT = suprapubic catheter

UTI = urinary tract infection

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Catheter associated urinary tract infections are widely recognized as the most common health care associated infection in the acute care hospital setting. Microbial colonization occurs within 5 to 7 days of catheter placement and is frequently associated with the development of a bacterial biofilm, presumably the source of the CAUTI. As a result the focus of CAUTI prevention programs has been on the inappropriate use of the indwelling urinary catheter, which may not apply to many urological patients.

It is important for health care practitioners to be familiar with existing CAUTI guidelines (HICPAC [Healthcare Infection Control Practices Advisory Committee], IDSA, Centers for Disease Control and Prevention/National Healthcare Safety Network and the European Association of Urology). It is particularly important for practitioners to understand CAUTI definitions used by their hospital system. However, urology patients represent a unique group with regard to catheter use. As a result, broad CAUTI definitions can be challenging to apply to specific urological clinical presentations.

In this white paper we address limitations surrounding how and when current definitions can be used to detect a CAUTI in a urological patient, and propose alternative methods for the diagnosis of CAUTI in specific populations, including geriatric, neurogenic bladder and lower urinary tract reconstruction. Additionally, techniques will be described on how CAUTI can be avoided through proper urethral catheterization, and alternatives to indwelling catheters for urological patients will be highlighted. Where the literature was lacking, expert opinion was used to build recommendations, which may be useful to the urological community.

Background

Changes in definitions and CAUTI criteria with time and differences among organizations make understanding the true prevalence of CAUTI a challenge. Thus, urologists should be familiar with the definitions of urinary tract infection. A multicenter, 10-year study was conducted from 1991 to 2001 that ultimately led to the development of the National Surgical Quality Improvement Program.[1] Since that time the NSQIP has become the largest national program in surgery, and is used to predict outcomes and identify at risk populations.[2] The NSQIP has specific criteria to define a postoperative UTI, although it does not specify from where urine is collected (Appendix 1). The CDC and the NHSN have also published guidelines on health care associated infections including UTIs.[3] While similar to the NSQIP classification, there are several important differences. The CDC/NHSN guidelines specifically state that there must be "no other recognized cause" of UTI symptoms, including fever.[3]

Outside of the NSQIP and CDC, UTI criteria vary by organization, medical specialty and even within hospitals. In every hospital several different criteria may be used by various reporting services (eg the surgery department may use the NSQIP definition while the infectious disease department and hospital laboratories use the IDSA criteria), which further compounds the problem with reporting and determining accurate incidence.

Epidemiology

Definitions that differ among organizations make true diagnosis (or over diagnosis) challenging, leading to the application of principles and guidelines that may not accurately identify the cause of the problem or result in meaningful changes in perceived outcomes. Although CAUTI is commonly reported by the NHSN and CDC as the number of symptomatic UTIs per 1,000 urinary catheter days, studies have used different definitions or compared to data with definitions that have since changed, thus making accurate comparisons of reported rates difficult. All organizations agree that the impact of CAUTI is on the rise in health care and that prevention is important.

Numerous studies have examined the epidemiology of CAUTI in various clinical settings. In 1 such study national data from a 10-year period (2001 to 2010) showed that a CAUTI developed in 3.8 million of 70.4 million catheterized adults.[4] Incidence rates have decreased with time from 9.4 cases per 100 catheterizations in 2001 to 5.3 cases per 100 catheterizations in 2010. Mortality from CAUTI also decreased from 5.4% in 2001 to 3.7% in 2010. Morbidity from CAUTI can be significant, with data suggesting that a CAUTI can increase a hospital stay by 2 to 4 days and lead to unnecessary antibiotic use. The CDC has listed some common, evidence-based risk factors for CAUTI, including symptomatic UTI, bacteriuria, prolonged catheterization, disconnection of drainage system, female gender, lower professional training of inserter, older age, placement of catheter outside of the operating room and impaired immunity.[5]

CAUTI Nonpayment Policy

As the reporting of UTIs became more prevalent through programs such as the NSQIP, HICPAC began to more intensely evaluate CAUTI incidence and prevention. Naturally the increasing use of antibiotics and IUCs brought the issue of CAUTI to the forefront, leading to widespread attempts to reduce the incidence of CAUTI. This need to reduce the incidence was underscored in October 2008, when the Centers for Medicare and Medicaid Services announced that it would no longer provide reimbursement