

# Preventing catheter associated urinary tract infections



**ASSIGN  
BUSTER**

In today's economy, healthcare is a major concern to the public. Healthcare has changed due to government spending and support. Now days, the goal is to spend the least amount of money as possible while making the most amount of money. In the hospital setting, patients are much sicker due to patients waiting longer to come to the hospital and more frequent impaired immunity. Some patients do not have the education to determine when it is appropriate to come to the hospital due to lack of understanding of their disease process. Patients also hesitate to seek healthcare due to the financial burden. Insurance companies have strict rules on how much they will pay and guidelines for hospital stay. Patient stays are a lot shorter in the hospital settings due to insurance and government coverage. Hospitals are learning ways to make the stays more efficient with fewer complications so the patient can leave sooner. One of the major complications in the hospital setting is catheter acquired urinary tract infection (CAUTI).

Nosocomial infections are new onset infections that patients acquire while in the hospital setting. Generally it is defined as an infection that is identified within 2-3 days of admission, so preexisting infections that are not clinically present are excluded (Nicollet, 2002). Insurance companies are starting to not pay for infections and expenses related to the hospital acquired infections. Hospitals have to cover costs of nosocomial infections from their budget. This has become a huge financial burden for hospitals across the country. One of the most frequent types of nosocomial infection is urinary tract infections due to catheter insertion in hospitalized patients. According to the Center of Disease Control and Prevention (CDC) (2009), " an estimated 17% to 69% of CAUTI may be preventable with recommended

infection control measures, which means that up to 380, 000 infections and 9000 deaths related to CAUTI per year could be prevented” (p. 23).

Indwelling urinary catheters can be appropriately used in patients with acute urinary retention or bladder outlet obstruction, critically ill patients with a need for accurate measurement of urinary output, prolonged immobile patients with medical or surgical indications, incontinent patients with open sacral or perineal wounds, and specific surgical candidates requiring urinary output measurement (CDC, 2009). Urinary retention is most commonly caused by an enlarged prostate in male patients. If the prostate is enlarged enough, it will press on the urethra and cause an obstruction in urine flow. An indwelling urinary catheter is inserted to relieve the pressure on the urethra and allow the urine to flow normally. The indwelling urinary catheter will remain in place until the patient undergoes a transurethral resection of the prostate (TURP) procedure for treatment of the enlarged prostate. Kidney stones can also cause obstruction of the urine flow and warrant insertion of an indwelling urinary catheter until the kidney stones can be removed. Catheters that are used for temporary conditions such as childbirth should be removed as soon as patient's condition permits removal of the indwelling catheter.

Indwelling urinary catheters can be inappropriately used in a number of circumstances. Indwelling catheters should not be used as a substitute for nursing care of incontinent patients, as a means of obtaining urine for culture or other diagnostic tests when the patient can voluntarily void, or for prolonged postoperative duration without appropriate indications (CDC, 2009). Catheters are not to be placed or remain in place for nurse or patient  
<https://assignbuster.com/preventing-catheter-associated-urinary-tract-infections/>

convince while on diuretic therapy. Another reason some patients want to keep catheters in place is because they are obese or immobile. These are all unacceptable reasons to leave indwelling catheters in place. The catheter is doing more harm than good at that time and should be removed (CDC, 2009).

An indwelling urinary catheter is a small tube that is inserted through the urinary meatus until there is urine return. The urine drains through the small tube and empties into a collection bag. The collection bag allows the nurse to monitor a patient's urine output. Indwelling urinary catheters allow physicians and nurses to maintain an adequate record of patient's urinary output. Urinary output tells nurses how the kidneys are functioning and allows for the assessment of a patient's hydration status. Nurses are also able to assess the patient's urine for the presence of foul odors or sediments which could provide critical information to the patient's caregivers. The collection bag is transparent and has measuring units on the collection bag to allow for accurate measurement of a patient's urine output. Nurses can gain a lot of valuable information by just looking at the urine's color, appearance, odor, and amount.

Prevention is the best way to decrease urinary tract infections either by avoiding the insertion of indwelling urinary catheters or using aseptic technique for unavoidable situations. Some patients are more at risk or prone to getting urinary tract infections (Parker et al., 2009). The use of indwelling urinary catheters should be avoided if possible in diabetic, immunocompromised, and geriatric patients. Females are also at a greater risk for development of urinary tract infections because of their body

<https://assignbuster.com/preventing-catheter-associated-urinary-tract-infections/>

structure (Parker et al., 2009). Creating and maintaining a protocol regarding catheter removal is the most ideal way of making sure that indwelling urinary catheters are removed as soon as possible (Sanford, 2010).

Decreasing the duration of time the catheter remains in place is the best method to decrease the incidence of infection. According to the Center of Disease Control and Prevention (2009), an indwelling catheter should be removed within 24 hours of after surgery unless there is a need for it to stay longer.

It must be ensured that only properly trained staff who understand and are qualified to perform the skill is allowed to insert a catheter and maintain the maintenance of the catheter (Sanford, 2010). When choosing an internal catheter, it is most appropriate to choose the smallest size tube and balloon as possible (Parker et al., 2009). When placing an internal catheter the health care professional must use aseptic technique when placing the catheter and maintain a sterile field the entire time. Prior to insertion of the indwelling urinary catheter, the patient must be adequately cleaned and then again during aseptic technique. Another important step is for the nurses to wash their hands before and after the procedure. Nurses should perform catheter care every shift, while the catheter is in place (CDC, 2009). During routine hygiene, begin cleansing at the urethral meatus and continue wiping distal to tip of the indwelling catheter in one continuous motion using a different cloth or area of the cloth each time. Antiseptics should not be used for cleaning the periurethral area to prevent CAUTI while the catheter is in place (CDC, 2009). When cleaning an incontinent patient that has had a bowel movement wipe from the front to back and discard dirty linen. It is

best to try to avoid getting feces on the catheter if possible. It is also important to secure the catheter to the patient's leg so that the catheter is not pulled on causing trauma to the urethra. If trauma does occur, the catheter may be needed for a longer duration of time which would increase a patient's risk for infection. The catheter drainage bag should always be maintained as a closed system to prevent microorganisms from entering the system. Urine is sterile until it flows into the drainage bag. The drainage bag should always keep at a level below the bladder to prevent the backflow of the urine (CDC, 2009).

The diagnosis of a urinary tract infection is a urine culture with  $> 10$  units of bacteria found in the urine and an elevated white blood cell count (CDC, 2009). The source of microorganisms causing the infection is unknown but could be from health care workers, equipment, or vaginal/rectal colonization. The organisms can enter the urinary tract either by the extraluminal route, via migration along the outside of the catheter in the periurethral mucous sheath, or by the intraluminal route, via movement along the internal lumen of the catheter from a contaminated collection bag or catheter-drainage tube junction. Researchers have not been able to pin pointed the exact mechanism in which organisms are entering the body and causing urinary tract infections. The most frequent organism causing infections are multidrug resistant bacteria. According to the CDC (2009), *Escherichia coli* and *Candida* spp were the most frequent pathogens, followed by *Enterococcus* spp, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Enterobacter* spp. Antimicrobial resistance among urinary pathogens is an ever increasing problem. The CDC (2009) reports that

<https://assignbuster.com/preventing-catheter-associated-urinary-tract-infections/>

about a quarter of *E. coli* isolates and one third of *P. aeruginosa* isolates from CAUTI cases were fluoroquinolone-resistant. Resistance of gram-negative pathogens to other agents, including third-generation cephalosporins and carbapenems, was also substantial. The proportion of organisms that were multidrug resistant, defined by non-susceptibility to all agents in 4 classes, was 4% of *P. aeruginosa*, 9% of *K. pneumoniae*, and 21% of *Acinetobacter baumannii* (p. 24).

In these cases of the CAUTI, the infections are harder to treat and some only respond to intravenous antibiotics. The treatment of multiresistant microorganisms may require a longer hospital stay for antibiotic treatment. Intravenous antibiotic therapy is more costly which can further the financial burden for some patients (CDC, 2009). Due to the increasing cost of hospital stays, insurance companies are trying to make hospitals responsible for added costs related to nosocomial infections. Hospitals are now trying to come up ways to decrease CAUTI to prevent to them from losing money.

There are different alternatives that can be used in certain situations other than the use of indwelling urinary catheters (Parker et al., 2009). External catheters can be used for male patients that are incontinent or need a urinalysis. An external catheter is catheter that looks like a condom that is placed over the penis and has a tube on the end of it allowing the urine to flow through the tube into a collection bag. Another option is intermittent catheterization of patients that have urinary retention or a problem with emptying their bladder completely. Intermittent catheter is the insertion of an internal catheter to empty the bladder and then it is immediately removed. Intermittent catheterization could be done on a schedule or when <https://assignbuster.com/preventing-catheter-associated-urinary-tract-infections/>

a patient has symptoms of urinary retention such as bladder distention, fullness feeling, or cramping (Parker et al., 2009). There has not been enough research on these alternative approaches to say if they would decrease the incidence of CAUTI.

There is tons of research being doing related to CAUTI to help find answers and more accurate ways to maintain catheter care. According to Jeong (2010), the second leading nosocomial infection in a hospital setting is a urinary tract infection related to indwelling urinary catheters. This group of researchers did a study on four different types of perineal care agents. The purpose was to see if a certain type of cleansing agent prevented or decreased the occurrence of urinary tract infection with patients with indwelling urinary catheters. The four types of cleaning agents were plain soap and water, skin cleansing foam, 10% povidone-iodine, and normal saline. They selected to do this study only using female patients that meet a certain criteria. This study took place in three different intensive care units (ICU). Urinalysis was performed on each patient prior to being accepted into the study. Patients could not participate if they had a positive urinalysis for an infection on initial urinalysis. Researchers did a urinalysis on the patients in the study at week 1, week 2, and week 4 after the indwelling urinary catheter was placed in the patient and immediately after the removal of the catheter. Each cleansing agent was used following a specific protocol for catheter care. The protocol for perineal cleaning was performed prior to insertion of urinary catheter, daily cleaning, and as needed throughout the day (Jeong et al., 2010).



The results of this study showed there were no significant differences between the types of cleansing agent used for perineal care with indwelling urinary catheters (Jeong et al., 2010). More research needs to be completed to determine the best practice of cleansing agent and protocol for perineal care with indwelling urinary catheters. Urinary catheters are needed in specific patient populations therefore evidence based nursing protocols for prevention of catheter acquired urinary tract infections must be developed. In recent years, this type of research has been on the rise due to hospitals trying to decrease nosocomial infections in general that cause added expense for the hospitals (Jeong et al., 2010).

Research has been also done regarding different protocols for insertion and removal of indwelling urinary catheters such as the protocol that will be discussed from a research article. This research study was performed to investigate the effects of limiting the use of indwelling urinary catheters when they are not benefiting the patient. This study was performed in a twenty-one bed, medical intensive care unit with patients admitted with a variety of illnesses (Elpern et al, 2009). The first part of this experiment was to develop criteria for nurses to ask doctors for orders to discontinue indwelling urinary catheter use. All staff was educated regarding the new criteria for urinary catheter removal. Indwelling urinary catheters can only be removed per physician's order but this criteria aided nurses in their communication to physicians regarding patient's condition and care. Everyday each patient was reassessed using the criteria for the study regarding catheters. The information based on the criteria was then communicated to the physicians and a final decision about the urinary

catheter was made by the physician. Most concerns from nurses were related to the skin integrity of incontinent patients. Incontinence is not a reason to leave an indwelling urinary catheter in place according to this specific protocol (Elpern et al., 2009).

This study was conducted over a six month period (Elpern et al., 2009).

There was a significant decrease in the amount of time indwelling urinary catheters were in place. There were no actual urinary tract infections during the six month research study period. The study showed that removal of catheters as soon as the patient met removal criteria decreased the incidence of urinary tract infections in critically ill patients. In hospitals, there will always be a need for indwelling urinary catheter but limiting the use is the idea behind decreasing the incidence of catheter acquired urinary tract infections (Elpern et al., 2009).

The topic of catheter associated urinary tract infections is an up and coming topic for future concern. In the years to come, there is still a lot of research that still needs to be done to establish useful protocols in the hospital setting. Healthcare workers need more education on the newest evidence based guidelines concerning indwelling urinary catheters to help effectively prevent CAUTI (Sanford, 2010). Refresher courses could also be provided for healthcare workers for demonstration of aseptic technique during the placement of an indwelling catheter. Nosocomial infections in general are impacting hospitals and patients around the country. Hospitals need to have protocols in place for criterion for removal of catheters that doctors must follow. Nurses should also have protocols for insertion techniques of indwelling catheters and maintenance of these catheters. Also hospitals <https://assignbuster.com/preventing-catheter-associated-urinary-tract-infections/>

should do audits of the doctors and nurses to ensure the protocols are being used correctly to provide the best outcomes for the patients. Overall, nurses are going to be ultimately responsible for the prevention of urinary tract infections because insert and maintain the urinary catheters while in place (Sanford, 2010). Urinary tract infections are not completely preventable. Nurses should be using up to date, evidence based guidelines while caring for indwelling urinary catheters to help decrease the incidence of infections.