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A Comparrison of Two Emergency Departments

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A COMPARISON OF TWO EMERGENCY DEPARTMENTS:

DOOR- TO- URINE TIME

By

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Abstract

Urosepsis accounts for approximately 25% of all cases of sepsis in the developed world. The mortality from urosepsis is high and the financial burden is exorbitant. Research has established that a patient's survivability from sepsis is inversely proportional to time to antibiotic administration. The initial care of patients with urosepsis often occurs in the chaotic setting of the Emergency Department and obtaining a urine specimen is a key element of patient care. The purpose of the project was to compare two emergency departments door-to-urine time with a focus on urine procurement technique. Urine procurement may occur by straight catheterization, Quik ®catheterization, indwelling urinary catheterization, or mid stream clean catch collection. One department has access to Quik ®catheterization technology that is unavailable to the other department. Exclusion criteria are patients already diagnosed with UTI and patients taking antibiotics on arrival to the emergency room. A retrospective chart review was conducted on 60 records. Data collected included gender, age, chief concern, method of urine procurement, door-to-urine collection time, door-to antibiotic administration time and urinalysis results. Results showed that catheterization was not always faster than mid stream clean catch collection. There were an insufficient number of Quik ®catheterizations performed during the time frame of the study to establish a link between the technology and expedited urine collection or antibiotic administration. The study does suggest that greater awareness and more research is needed concerning care of the uroseptic patient in the ED.

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A Comparison of Two Emergency Departments Door- to- Urine Time

Background and Significance

Sepsis is a common deadly disease and affects 20 million people world- wide every year. Sepsis knows no boundaries and takes lives without regard to age or economics (Reinhart et al., 2013). In the developed world, sepsis is increasing at an annual rate of 8-13% and claims more lives every year than prostate cancer, breast cancer and HIV/AIDS combined (Gaieski et al., 2008). Urosepsis accounts for approximately 25% of patients with sepsis (Wagenlehner, Pilatz, Naber, & Weidner, 2008).

Infection is the driving element in all sepsis. Urosepsis begins with an infection of the urogenital tract. The insulting microorganism replicates and releases endotoxins and inflammatory cytokines (Kumar, 2010). The result is tissue dysfunction and eventually organ dysfunction, which we know as septic shock. Shock is poorly tolerated by the body and will eventually lead to death. However, early intervention with appropriate antibiotics saves lives (Gaeiski, et al, 2010). Ideally, the clinician seeks to reduce the infectious load before the onset of hypotension.

The treatment of urosepsis involves initial resuscitation, rapid diagnosis, timely administration of appropriate antibiotics, source identification and meticulous patient management (Gaieski et al., 2010). Early- goal directed therapy (EGDT) is an algorithm for resuscitation which measures and provides direction for correction of central venous pressure, mean arterial pressure, and mixed venous saturation of oxygen at the very beginning of a patients care. EGDT has been shown to decrease mortality (Sweet, Marsden, Ho, Krause, & Russell, 2012). Specifically, a patient’s chance of survival improves when antibiotics are administered within the first hour of recognition of sepsis (Kumar, 2010). The challenge for the healthcare team is to properly procure a urine specimen, obtain labwork, identify the infectious source and begin appropriate antibiotics in a timely manner. Busy emergency departments (EDs) are faced with the challenge of complying with EGDT protocols (Sweet et al., 2012). Emergency rooms in urban areas are experiencing longer and longer wait times. It has been predicted that as the population ages and patient care becomes more complex, wait time will increase beyond the current average of four hours (Rice, 2011).

For patients with urosepsis, a delay in being seen or obtaining urine collection could mean a delay in life- saving care. The problem is not as simple as it sounds. Urine procurement techniques have changed in the last 50 years. Prior to 1958, straight catheterization was used as the primary means of obtaining urine specimen collection for culture. However, in the last 40 years patients have been encouraged to perform mid-stream clean catch (MSCC) specimen collection to avoid catheterization. A proper MSCC specimen is highly dependent on a patient's understanding of the instructions and mobility to correctly execute the procedure. Technique is easily compromised. Improper specimen collection results in specimen contamination and misdiagnosis (Unlu, Sardan, & Ulker, 2007).

The purpose of this project is to compare two emergency departments' door- to-urine time and door- to- antibiotic time as it relates to patients with urosepsis, with a focus on urine procurement technique. One emergency department, Rhode Island Hospital (RIH), utilizes mid- stream clean catch urine (MSCC) collection as their standard of care; the other emergency department, The Miriam Hospital (TMH) allows nurse discretion to obtain urine by Quik ®cathertization. Quik ®cathetertization is special type of straight catheterization that uses an 8 French catheter attached to a sterile collection vessel. It is the hypothesis of this researcher that the department that allows nurses to Quik catheterize patients has a decreased door- to -urine time, thus expediting care of the uroseptic patient.

Literature Review

A literature review was completed of English language research published between 2000-2014 on sepsis, urosepsis and urinary tract infection. Research databases included the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed. Keywords searched and combined included *urosepsis, urine collection, time factors, nursing, and emergency department*. Key literature will be summarized and discussed.

Sepsis

Sepsis is a complication of infection. The infection is caused by bacteria that have overgrown in an organ or area of the body. Sepsis is caused by whole body immune reaction to the infection. Sepsis patients have a high mortality rate of 28-50% and thus a bleak prognosis once their bodies begin the downward spiral of inflammatory signaling, organ failure and rapid death (Kumar, 2010). The septic patients' illness progresses quickly due to the positive feedback loops that propagate the disease. Death from sepsis can be reduced through early recognition and standardization of therapy (Reinhart et al 2013).

In a study, Kumar et al. (2006) evaluated 2,731 septic shock patient records in a retrospective chart review. The patients were hospitalized in the intensive care units (ICU's) of ten different hospitals. Researchers found an average decrease in survival of 7.6 % for every hour that patients' antibiotic therapy was delayed within the first 6 hours of care. The study showed a strong correlation, at a confidence interval of 95% ($p<0.0001$), between delay in effective antimicrobial therapy and mortality after the onset of recurrent hypotension.

Kumar et al. (2006) was the first study of its kind to relate a delay in delivery of care to survivability of sepsis. The data strongly suggest a "golden hour" for septic shock similar to that described with other forms of shock (e.g. hypovolemic or traumatic) during which effective therapy can optimize patient outcome.

In another noteworthy study, Gaieski et al. (2010) looked at time from triage to administration of appropriate antibiotics as indicated by the initiation of EGDT in the emergency department (ED). The study was conducted in an academic medical center. Two hundred sixty one patients were selected that had EGDT started in the ED. All patients in the study received antibiotics while in the ED. The average time from triage to appropriate antibiotics was 127 minutes. The researchers concluded that the time from triage to beginning antibiotic therapy was significantly associated with a reduced mortality at the 1 hour cut off ($p<0.03$). Results from the two studies suggest that the management of sepsis truly begins in the emergency department during the early course of treatment.

Pathophysiology of Sepsis

It is helpful to review the pathophysiology of sepsis in order to understand the complexity of the disease. From a microbiology perspective, a nidus of infection begins sepsis. The invading organism begins to replicate and the bacterial load increases over time. The bacteria release endotoxins and exotoxins. The toxins stimulate inflammatory cytokines and eicosanoids. Tissue begins to deteriorate, leading to organ dysfunction and shock. Shock is a condition in which the body is not getting enough blood flow and can only be tolerated for a short time (Kumar, 2010). Elimination of the causative agent should stop the septic shock pathway. Immuno-compromised patients have greater risk for irreversible injury and death. Once hypotension ensues, the rate of recovery is less than 20%. The impact of antibiotic timing has more to do with preventing the physiologic spiral toward multi system organ failure that occurs as a result of the infection and less to do with the infection itself (Kumar, 2010). By administering antibiotic medication, thus decreasing the concentration of the offending agent, the body may be able to halt progression to multi system organ failure.

Urosepsis

Urosepsis accounts for approximately 25% of sepsis cases (Wagenlehner, Pilatz, Naber, & Weidner, 2008). An underlying urinary tract infection (UTI) is almost exclusively the cause. The severity of sepsis depends upon host response. Because of their short length uretheras, women are more likely affected than men. Patients with comorbidities such as advanced age, diabetes, decreased immunity, cancer or HIV have a greater risk of sepsis. Provider examination yields important information and should include a thorough genitourinary history. Patients should be asked if they have urinary frequency, urinary urgency, dysuria, urge incontinence, suprapubic pain, gross hematuria, costovertebral angle tenderness, pain on micturition, urinary retention, prostate or scrotal pain, flank pain, fever or malaise (Wagenleher et al., 2008). Urinalysis with urine culture must be included in the first round of testing. The bacterial spectrum in urosepsis may consist of Gram-negative organisms such as E. coli (50%), Proteus, (15%), Enterobacter and Klebsiella (15%) and P. auruginosa (5%) (Kalra, 2009). Gram- positive organisms (Enterococcus faecalis and Streptococcus agalactiae) are found only when the host is impaired. Viruses in the urine are rare. Antibiotic guidelines for urosepsis suggest administration of a third generation cephalosporin and a *B*- lactamase inhibitor. If the microbial source is unknown, guidelines recommend adding an aminoglycoside or a carbapenem (Francis, Rich, Williamson & Peterson, 2010).

In 1913 Paul Ehrlich addressed the International Congress of Medicine regarding serious infections and said “Frapper fort et frapper vite” or hit hard and hit fast with treatment (Ehrlich, 1913). Today his message is still appropriate. However, another facet in sepsis care is the appropriateness of antimicrobial therapy. Since the discovery of penicillin in the 1940’s fatality rates from sepsis have remarkably improved. As antibiotics have saved lives, bacteria have evolved under selective pressure. The choice of antibiotic relies on the provider knowing the anatomical site of infection, the patients’ immune status, risk factors, and the local flora and resistance patterns (Kumar, 2010). Failure to select the appropriate antibiotic against the causative agent is detrimental to patient outcomes (Francis et al 2010).

Time Factors

The Surviving Sepsis Campaign recommends that patients receive antibiotics within the first hour of sepsis treatment (Dellinger et al., 2012). The Surviving Sepsis Campaign is a joint collaborative committed to reducing mortality from sepsis worldwide. The campaign has created bundles or elements of care derived from evidenced based practice that when implemented together positively affect patient outcomes. The campaign grouped the bundles into 3 hour and 6 hour sets. The 3 hour bundle includes measurement of lactate, blood cultures, broad spectrum antibiotic administration, and administration of crystalloids at 30 mL/ kg for hypotension or a lactate level greater than 4 mmol/L (Wagenlehner, et al., 2013). ED’s around the world have adapted their own protocols for (EGDT) with the common themes of time to antibiotic administration and appropriateness of therapy.

Health care providers are challenged to initiate the entire sepsis protocol within an hour of patient presentation (Sweet et al., 2012). Amidst an often chaotic setting, variables must be considered that may impact the lab work and testing used to select the antibiotics needed. Factors contributing to a delay in care include staffing ratios, wait time to triage, time to see a provider, census, availability of antibiotic, atypical patient presentation, time of day, education of staff regarding importance of antibiotic administration, nurse work load, and delays from other departments for diagnostic testing (van Tuijn, Luitse et al., 2010). However, the evidence for making dramatic improvements in the outcomes of septic patients is compelling.

Geriatric considerations

Older adults are a large and growing demographic of patients in EDs. As the population ages, EDs will find unique needs in this subset of the population and attention should be given to accommodate them. Urinary tract infections (UTI) are a major cause of ED visits and are the 4th most common diagnosis of women age 65 and older (Tanabe, et al., 2004). UTIs are one of the most common infections in the older population, occurring in the community and long- term care settings (Beveridge, Davey, Phillips, and McMurdo, 2011).

Older adults are more prone to UTIs for several reasons. Bacteriauria is common in adults with urinary and fecal incontinence. Neurological conditions such as cerebrovascular accident, Parkinson's disease, and Alzheimer's disease are more prevalent with age and associated with delayed bladder emptying. Female elders have postmenopausal estrogen deficiency, causing atrophy in the genital tissue, making them more susceptible to UTIs (Beveridge, Davey, Phillips, and McMurdo, 2011).

As the population of older adults' increases, a greater percentage of emergency department visits will be made up of adults over 65. Older patients tend to be more complex than younger patients and may have multiple chronic illnesses. As the wait times for emergency rooms increase to an average of 6 hours, elders will lay on stretchers longer, be increasingly uncomfortable, and need help with basic care and toileting (Robinson & Mercer, 2007).

Frail older adults usually have declining energy, decreased strength and mobility, and vision loss (Robinson & Mercer, 2007) making MSCC specimen even more challenging. Older adults are less likely to use the emergency department unless they are seriously ill, making their care more time consuming once they arrive. An area of weakness in ED nurses in the care of the older adult is coping with incontinence and the appropriate use of indwelling catheters. Indwelling catheters are the single highest source of nosocomial infection. A timely urinalysis is required for a patient with suspected sepsis. The nurse may instruct the patient to collect a MSCC specimen. This is time consuming and difficult for elders to execute properly. The nurse could alternatively straight catheterize the patient. Patients with bacteria in their urinalysis will need a separate specimen for culture and repeat catheterizations increase urethral irritation allowing bacteria to proliferate (Shrestha, Gyawali, Gurung, Amatya, and Bhattacharya, 2013).

Urine Procurement

Midstream Clean Catch Specimen.

UTI's are the most common bacterial infection (Unlu, Centinkaya, & Ulke, 2007) and occur more frequently in women than in men. Before 1958 urethral catheterization was a routine technique for urine procurement. However in 1958 the clean catch mid-stream urine collection technique was developed and has been the standard for the last 40 years. Mid- stream clean catch urine collection (MSCC) requires washing the perineum with either saline or a bactericidal wash, spreading the labia and discarding the first urine, before collecting urine mid-stream into a sterile container. MSCC specimens have high rates of contamination. Contamination may result from failure to follow the proper steps, incorrect collection at the beginning of the stream, inappropriate handling of the container, and contacting the container with the perineum (Unlu et al., 2007).

The MSCC urine collection technique is time consuming to explain, frequently not preformed correctly, costly for supplies, embarrassing for patients and of unproven benefit. A study driven by nurses Lifshitz & Kramer (2000) asserted there was no statistical difference in urine contamination rates between clean catch and no cleansing urine collection. A total of 242 patients were divided into four groups: no cleansing, first urine collection, MSCC, and MSCC with a vaginal tampon. The contamination rates for all three groups were nearly identical, $p=0.65$. The rates of contamination were 29%, 32% and 31%, respectively. These results put the value of MSCC collection in question. The purpose of clean catch specimen collection is to avoid bacteria from the urethra and perineal area getting into the sample. If there is no statistical difference between the groups, time and money can be saved. Educating patients about proper MSCC specimen collection is a time consuming, often complicated encounter belabored by communication barriers (language and hearing) and lack of comprehension (Lifshitz & Kramer, 2000).

Urethral Catheterization.

Urethral (or straight) catheterization is one of the most common procedures performed in hospital emergency departments. The purpose of a straight catheterization is to collect a sterile urine specimen with minimal contamination when a patient is unable to provide a reliable MSCC. Catheterization is a sterile procedure performed by a nurse and the initial urine (first void) should be discarded (Dolan & Cornish, 2013). Standard urethreal straight catheterizations are performed with 14 French catheters. Every one French unit is equivalent to three millimeters. Urine collection by Quik ®catheterization differs from a standard straight catheterization in that a Quik ®cath collects the first 10 mL of urine that is obtained. A sterile collection vessel is pre-attached by the manufacturer to the 8 French catheter or straw. The Quik ®cath method may collect bacteria from the urethra but is considered a superior specimen to a mid- stream clean catch specimen (Dolan & Cornish, 2013).

The normal female urethra is 3.9 centimeters (cm) in length. In comparison, the normal length of a male urethra is 20 cm, the first 6 cm of which may be contaminated with bacteria. A patient's age and sexual maturity change the variety of bacteria in the host. Quik ®cath is not typically used on males due to the structure of the anatomy. A regular straight catheterization is performed on male patients if they are unable to void.

Urethral catheterization has been rated by patients to be the fourth most painful procedure performed in emergency departments. Local anesthetic is infrequently administered. In a nursing driven study, the use of lidocaine jelly instead of plain lubricant was evaluated. The study found in an overall sample size of 100 women that there was no statistical difference between pain scores of individuals with a topical anesthetic and those without, at a 95% confidence interval, $p<0.006$ (Tanabe et al., 2004). However, the researchers did notice a difference in pain scores between younger women and older women. Females under age 65 rated the discomfort of catheterization higher than females over 65. The authors attributed the difference to higher muscle tone in younger women. Pain decreased significantly with each additional decade of life (Tanabe et al., 2004). The study supported the clinicians' perception that urethral catheterization is not very painful. The research supports the use of urethral catheterization as a minimally invasive procedure.

According to the Institute of Medicine's (IOM) report "*To Err is Human: Building a Safer Healthcare System*", hospitals were hazardous places to be due to the increased risk of nosocomial infection (IOM, 2000). The IOM report found that hospitals were not following evidenced based practices and some were as many as 17 years behind the research. The IOM has also challenged the health care system to ensure safe care for all patients. The Center for Medicare and Medicaid Services (CMMS) supported the IOM's claims by linking health care reimbursements to quality improvements in patient care (Gould et al., 2009). The CMMS began pay for performance initiatives by decreasing the reimbursement for catheter associated urinary tract infections (CAUTI). The legislation raised the awareness of CAUTI and increased the hesitation in clinicians ordering indwelling catheters (Mori, 2014). The presence of a catheter in the urinary tract disrupts the body's ability to eliminate unwanted bacteria from the lower portion of the tract. Pathogens may enter the urethra through the catheter insertion itself or take advantage of the irritated mucosal lining once the catheter is indwelling (Donnenberg, 2013). Since 2008 there have been hospital wide initiatives to decrease catheter use and return to other methods of urine containment and collection.

Specimen Management.

Specimen management in microbiology laboratories includes selection, collection, transportation, storage and analysis. Errors at any point in the process may adversely affect the treatment of the patient. Urine specimen transport time is significant because bacteria in urine can double in as little as 20 minutes. If urine sent for culture sits in a sterile cup on a desktop for 2 hours before culture is ordered, the bacterial count may be artificially inflated. The recommendation for safe handling is refrigeration if the urine specimen sits for greater than 20 minutes before testing (Hood, Allman, Burgess, Farmer, & Xu, 1998). Clinicians treating a potentially septic patient rely on accurate test results. A urine culture that contains more than once organism is considered a contaminated specimen. *E coli* are the typical dominant pathogen in UTI's. Urine specimen collected by straight catheterization yield a higher true positive than those collected by clean catch (Gordon, Waxman, Ragsdale, & Mermel, 2013.) However, focused consideration should determine if the benefit outweighs the nursing burden, discomfort to patient, and risk of nosocomial infection.

Emergency department nurses have been educated to provide fast-paced, lifesaving care to patients in critical situations. Treatment of sepsis requires keen recognition of sepsis criteria and quick action to obtain necessary diagnostic testing. The fastest most accurate means of obtaining a high quality urine specimen is debatable and may rely on the nurse's situational awareness. Obtaining lab work, urine specimen and chest x-ray are among the priorities in initial testing. In the case of urosepsis, obtaining a quality urine specimen becomes paramount to patient care. Additionally, the competency of the nurse caring for the patient with potential urosepsis impacts patient outcomes. The patient's needs and nursing competencies will be discussed in the next section in the context of a theoretical framework.

Theoretical Framework

The theoretical framework selected for this study is the Synergy Model for patient care. The Synergy Model was developed by the American Association of Critical Care Nurses (AACN) to describe how patients' characteristics drive nurse competencies. The Synergy Model is a middle range theory and was developed to guide nursing research and practice among multiple clinical populations. Synergy, or the optimal possible outcome, is created when the needs of a patient are matched with nurse abilities. Patients with greater needs require skilled nursing in multiple dimensions (AACN, 2014). The characteristics of each patient that concern nurses are the "patient characteristics'" of the model. "Patient characteristics" are resiliency, vulnerability, stability, complexity, resource availability, participation in care, participation in decision-making, and predictability. The "nurse competencies" are based on knowledge, skills, and experience of the nurse. There are 8 concept categories: clinical judgment, advocacy, caring practices, collaboration, systems thinking, response to diversity, clinical inquiry, and facilitation of learning (Hardin & Kaplow, 2005).

Each patient has a unique profile which may vacillate throughout their healthcare experience. For example, the Synergy model accounts for changes in patient condition. A patient may change from stable to unstable if they have a sudden drop in blood pressure. Despite the instability, the same patient may be following a "predictable" path and require intravenuous drips and invasive blood pressure monitoring. A patient with poor blood pressure control is lacking" resiliency" and is "vulnerable" to secondary effects of hypotension such as multisystem organ failure. Any patient who is unable to express their needs cannot participate in "decision making" concerning their care. The nurse caring for the patient with suspected urosepsis could expedite patient care by preparing for straight catheterization before the patient decompensates (Curley, 1998).

Nurse competencies exist on a continuum from competent to expert with substantial variety in the diverse acuity of the emergency department setting (Robinson & Mercer, 2007). Nurses may be more experienced within any one category but usually develop a gestalt for the patient overall. For example, if a patient had dysuria with a stable blood pressure and was eager to participate in their own care, perhaps they could be expected to follow the MSCC protocol and produce a clinically intact specimen. The nurse has used clinical judgment to evaluate the entire patient profile and advocated for a patient that is inclined to help themselves. The nurse employs systems thinking and realizes their responsibility to minimize the risk of a CAUTI in this patient (Hardin & Kaplow, 2005).

There are five assumptions of the Synergy Model for Patient Care. First, patients are biological, social, spiritual entities that present at a particular developmental stage. The whole patient must be considered. Secondly, the patient, family and community all contribute to providing a context for the nurse- patient relationship. Third, patients can be described by a variety of characteristics, which are interconnected. Fourth, nurses can be described by a number of dimensions and the interrelatedness of those dimensions is what creates the profile of the nurse. Finally, the goal of nursing is to restore optimal level of wellness, as defined by the patient. Death can be an acceptable outcome, in which the nurse's goal is to move the patient toward a peaceful death (Hardin & Kaplow, 2005). The prior assumptions underlay the framework and establish the context of the Synergy Model.

The purpose of this study is to compare two emergency departments' door- to-urine time and door- to- antibiotic time as it relates to patients with urosepsis, with a focus on urine procurement technique. The Synergy model focuses on the mutual benefit of patients' needs and nursing competency. The Synergy model is the ideal model for the study which examines a time dependent nursing contribution (facilitating urine specimen collection) that can influence the outcome of a uroseptic patient. Allowing nursing discretion of urine procurement technique could decrease the rate of CAUTI, decrease patient complications, expedite quality urinalysis results and improve the septic patient's mortality by intervening with the appropriate antibiotics before the onset of hypotension.

Methodology

Purpose

The purpose of the project was to compare two academic, urban emergency departments' door- to- urine time as it relates to patients admitted with urosepsis, with a focus on urine procurement technique. It was hypothesized that patients seen at TMH had decreased door- to- urine time because nurses are allowed to preform Quik ®catheterizations as needed.

Research Question

The following research question was asked in order to provide data for this study: Does the Emergency Department that allows nurse discretion for Quik ®catheterization of patients for urine specimen collection have decreased door- to- urine time?

Design

The research study was a retrospective, two- group comparison chart review. Key variables include: gender, age, presenting chief concern of patient, door- to- urine specimen collection time, method of urine procurement (MSCC, straight catheterization, insertion of in- dwelling catheter), door- to- antibiotic time, and urinalysis results.

Sample

The study selected patient charts from January 1, 2013 to June 1, 2014. The inclusion criteria were: admitting diagnosis of urosepsis and over 18 years of age with no upper age limit. A maximum of 200 charts was requested to be reviewed with a goal of thirty charts from each ED during the 18 month time period. Exclusion criteria were patients already diagnosed with UTIs and patients taking antibiotics upon arrival to the emergency room.

Site

The ED's selected for the study were sister affiliates, located in Providence, RI. Both hospitals are urban, academic hospitals affiliated with the Warren Alpert School of Medicine at Brown University. RIH Emergency Department sees an average of 150,000 patients per year and has 719 licensed beds. TMH Emergency Department sees an average of 58,000 patients per year and has 248 licensed beds. TMH had access to nurse driven protocols and Quik ®cath equipment during the study. RIH does not utilize nurse driven protocols and does not stock Quik ®cath equipment.

The study was conducted in two steps. Step one took place in the Informational Technology Department at Rhode Island Hospital. Patient charts were selected from the Medhost database using the keyword "urosepsis". Patient medical record numbers were used to identify potential study candidates. The medical record numbers were temporarily saved on a Lifespan approved encrypted thumb drive. Patient medical record numbers were used only to identify potential study candidates in step one. The thumb drive was stored in the women's locker room of the ED inside a combination locker, accessible only to the researcher.

Step two of the study was conducted in the RI Hospital Emergency Department private charting area. In step two of data collection, the researcher used Medhost to access emergency department medical records identified in step 1 of the study. Patient charts were accessed in a private designated charting area of the RIH Emergency Department during the researchers' personal time. The variables of interest were transferred into the data collection tool (Appendix A) and saved on a different encrypted thumb drive. No medical record numbers or account numbers were used in the data collection tool. Each patient was identified by a new random number for the purpose of the study. Confidentiality of all information was maintained. No personal health information was electronically linked to the patient. No paper records were created.

Procedure

Verbal permission for the project was obtained from the managers of the Emergency Departments at both facilities before December 15, 2014. Written permission was obtained from the Director of Nursing at Rhode Island Hospital prior to the submission of the Lifespan Institutional Review Board (IRB). IRB approval was obtained from Lifespan Corporation and reviewed by Rhode Island College. The researcher scheduled time to work with the IT personnel to obtain the medical record numbers from prospective patient charts.

In step 2 of the data collection, the researcher accessed medical records using Medhost in the designated private charting area of the RIH Emergency Department during personal time. De-identified information pertinent to the study was transferred into the Data Collection Tool (Appendix A). Patient information in the Data Collection Tool was saved on an encrypted thumb drive until the completion of the study then deleted. No paper records were kept. No medical record numbers or account numbers were used in the Data Collection Tool. Confidentiality of all information was maintained. No personal health information was electronically linked to the patient.

Measurement

The chart review was conducted by using the keyword “urosepsis” in a Medhost database search. The variables of interest were obtained from the patient record. A data collection tool was designed by the student researcher based on the literature and clinical experience (Appendix A). After IRB approval, the tool was piloted by 2 nurses to assure completeness and reliability. The data collected was gender, age, presenting chief concern of patient, door- to- urine specimen collection time, method of urine procurement (MSCC, straight catheterization, or insertion of in- dwelling catheter), door- to- antibiotic time, and urinalysis results. The researcher used basic quantitative statistics to calculate the time difference in obtaining the urine specimen between the patients who performed MSCC specimen collection and those who were straight or Quik ®catheterized. For the purposes of the research, the "Quik ®cath" was considered a straight catheterization. Descriptive statistics including range, mean, percentile, and standard deviation were used to analyze data.

Time frame

Application to the IRB was submitted before January 15, 2015. When approved, the researcher called the directors of the two emergency departments (ED) to remind them of the study. Data analysis took place between March 15, 2015 and March 31, 2015. Results of the project were documented on April 6, 2015 in a written paper and in fulfillment on April 15, 2015. The completed project will be presented to the Advanced Practice Registered Nurse (APRN) students and Rhode Island College Faculty (RIC) faculty at the Masters Symposium on May 5, 2015. Results will be disseminated to the employees of both emergency departments at the June Practice Council meeting 2015.

Organizational/ Systems Barriers

The academic medical center and emergency departments support research and are committed to evidenced- based best practice. Methods of urine procurement have been recently discussed and are a potential barrier to providing high quality, appropriate patient focused care. Barriers to the study included late approval of the Lifespan IRB, departmental director delay in approval, and difficulty scheduling time for data acquisition due to the IT personnel schedules.

Other factors that may have impacted the retrospective review are missing patients based on a custom admitting diagnosis, quality of ED charting related to documentation of urine procurement, and the status of availability of antibiotics in treatment area. Another area of concern was patients' challenges with communication. Patients may have altered mental status or require an interpreter and thus have difficulty participating in an exam, both of which could have delayed care.

Charts may not reveal what factors a physician used to determine urosepsis. The method of urine procurement, especially related to Quik ®cath use is completely dependent on nursing documentation. There is no Medhost prompt/ button for Quik ®catheter versus straight catheter, so for the purposes of this study all 12F straight catheterization is considered Quik ®catheterization.

Desired Outcomes

The desired outcome of the study was to determine if there was a difference in the door- to- urine time of the two EDs studied based on method of urine procurement. Basic descriptive statistics were used to interpret data from 60 patient charts, 30 from each ED.

Ethical Concerns

Ethical considerations included the privacy of patient records and personal health information. Patient identification was kept anonymous and confidential. All data was deleted after the completion of the study. Individual clinicians were not identified by name, educational background, or patient care profile. There was no recourse to prescribing clinicians or treating nurses regardless of patients' final outcome. The researcher works as a staff nurse in the RIH emergency department and has no influence over the practice of other staff or clinicians.

Results

A total of 200 Medhost electronic medical records were reviewed in order to select 60 ED charts. Data were collected according to the previously identified protocol. Thirty charts were selected from RIH and thirty charts were selected from TMH ED. All patients were seen between Jan 1, 2013 and June 1, 2014. The records were reviewed in chronological order. Exclusion criteria were patients who were previously diagnosed with UTI or those currently taking antibiotics. De-identified data were taken from the electronic medical record and entered in the data collection tool that was saved on an encrypted thumb drive. Patients were assigned a study specific number for the purposes of the research. Variables of interest collected from each chart were gender, age, presenting chief concern, method of urine procurement, door- to- urine time, door- to-antibiotic time and urinalysis results.

Gender

Gender data were collected due to gender differences in rates of urinary tract infection. Gender also influences the method of urine procurement. There were more females in the RIH sample and equal numbers of males and females in TMH sample. See Figure 1 for a graphical representation of patients by gender.

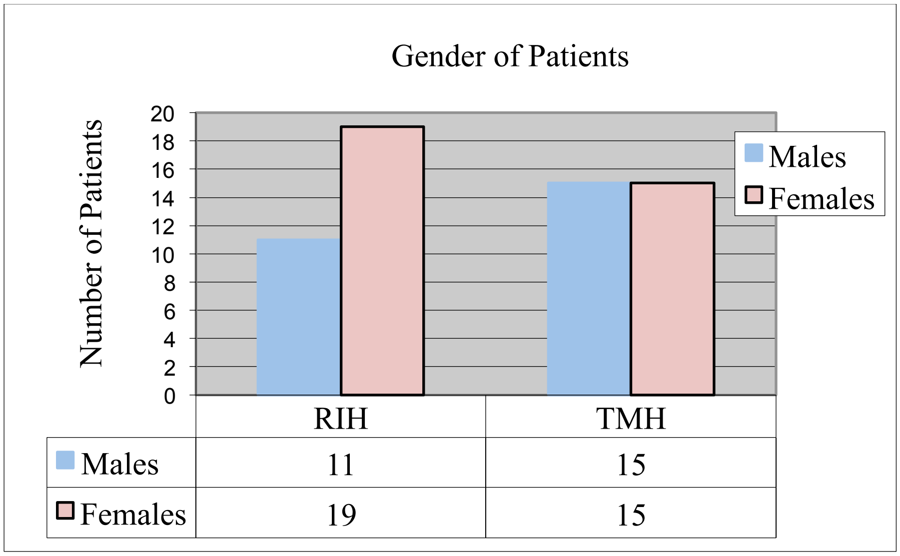


Figure 1. Patient gender by institution.

Table 1 contains a summary of gender and method of urine procurement. For the purposes of the table, urinary catheterizations were considered to be straight, Quik, or indwelling. The MSCC collection method category contained patients who voided into a collection vessel. RIH had a total of 6 males present with tubes previously placed, two suprapubic tubes and four indwelling catheters. None of these patients required catheterization or voided into a collection vessel and were excluded from the table. RIH had two females excluded from the table, one with an indwelling suprapubic tube and one with an indwelling catheter. TMH had two males present with suprapubic tubes, one female with a suprapubic tube, and one female with an indwelling catheter. All patients with previously placed indwelling tubes were excluded from Table 1.

Table 1

Gender and Type of Urine Procurement

	Urinary catheterizations	MSCC
RIH		
Males	4/11	1/11
Females	15/19	3/19
TMH		
Males	8/15	5/15
Females	6/15	6/16

RIH used catheterization on 36% of males and 74% of the females in the study. TMH catheterized 53% of males and 46% of females. MSCC collection was used 9% of the time on males and 16% of the time at RIH for females. MSCC at TMH was used 33% of the time for males and 40% of the time for females. Excluding gender, RIH used a catheterization method 60% of the time and TMH used a catheterization method 50% of the time. Excluding gender, RIH and TMH used MSCC collection 13% and 37% of the time, respectively.

Age

The age range of patients in the RIH sample was from 39 to 97 years of age with a mean age of 72. Patients from TMH ranged from 43 to 103 years of age with a mean age of 75. The average age for patients at each facility admitted with urosepsis was approximately equal. Figure 2 demonstrates a graphical representation of age by institution.

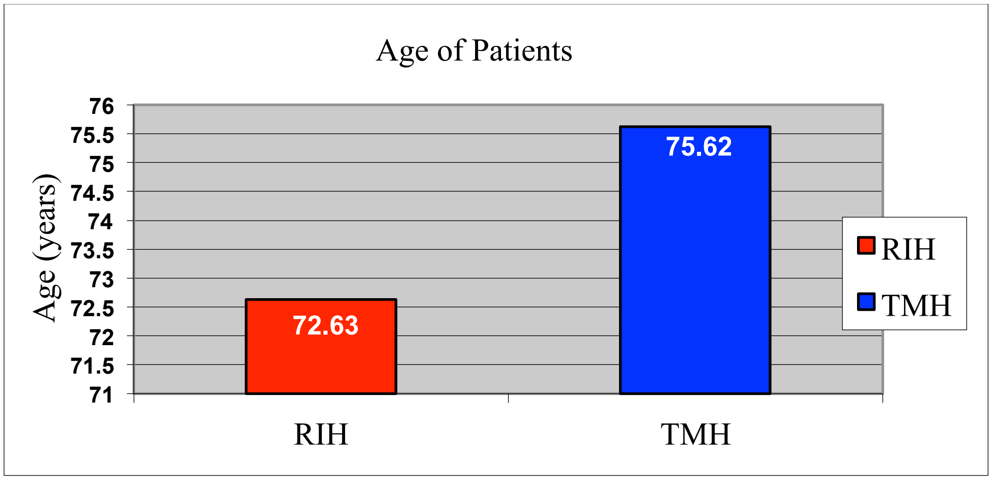


Figure 2. Patient age by institution.

Chief Concern

Patients presented to each ED with a variety of symptoms. Table 2 shows all the patient chief concerns for each ED.

Table 2

Chief Concerns of Patients Seen in Both EDs and Admitted with Urosepsis.

RIH	TMH
Shortness of breath, Difficulty breathing	Fever, Shortness of breath
Altered mental status	High blood sugar, Altered mental status
Fever	Fall, Lethargy
Back pain/ weakness	General weakness
Altered mental status	Altered mental status
Fever/ Lethargy	Unresponsive
High blood sugar	Altered mental status
Urinary retention	Fever, Urinary problem
Abdominal distention	Palpitations
Abdominal pain, Urinary problem	Fever, Urinary problem
Urinary problem	Altered mental status
Shortness of breath, Nausea/ Vomiting	Pain with urination
Dizziness, Headache	Urinary frequency, Pain
Fever, Pain on urination	Slurred speech
Altered mental status	Altered mental status
Altered mental status	Fall, Urinary problem
Fever	Nausea/ Vomiting
Cold symptoms, Vomiting	Syncope/ GI bleed
Back pain	Fever
Possible kidney stone	Fever, Fall
Vomiting	Weakness
Cold symptoms, Chest pain	General weakness
High blood sugar	General weakness
Altered mental status	Fever/ Constipation
Chills	Abdominal pain
Altered mental status	Fever, Altered mental status
Altered mental status	General weakness
Nausea, Vomiting	Altered mental status
Abnormal lab results	Hematuria
Fever	General weakness

For the purposes of categorizing, patient chief concerns were grouped by physiological system. Patients who voiced multiple chief concerns were given credit for each system they reported at triage. The categories were established as follows:

- Neurological (NEUR)- changes in mental status, unresponsiveness, syncope, dizziness, headache
- Respiratory (RESP)- shortness of breath, cold symptoms, cough, difficulty breathing
- Generalized (GEN)- fever, lethargy, generalized weakness
- Genitourinary (GU)- urinary problems, dysuria, painful urination, urinary hesitancy, urinary urgency, decreased urine flow, general urine problem, hematuria, or inability to void
- Gastrointestinal (GI)- abdominal concerns, nausea, vomiting, diarrhea, distention, or pain
- Musculoskeletal (MS)- back pain, mechanical falls
- Endocrine (ENDO)- blood sugar problems, such as high blood sugar, low blood sugar, difficulty regulating blood sugar
- Other- palpitations, abnormal lab results.

RIH patients had a total of 35 different chief concerns throughout 8 categories. TMH patients expressed 41 concerns in 8 categories (Figure 3).

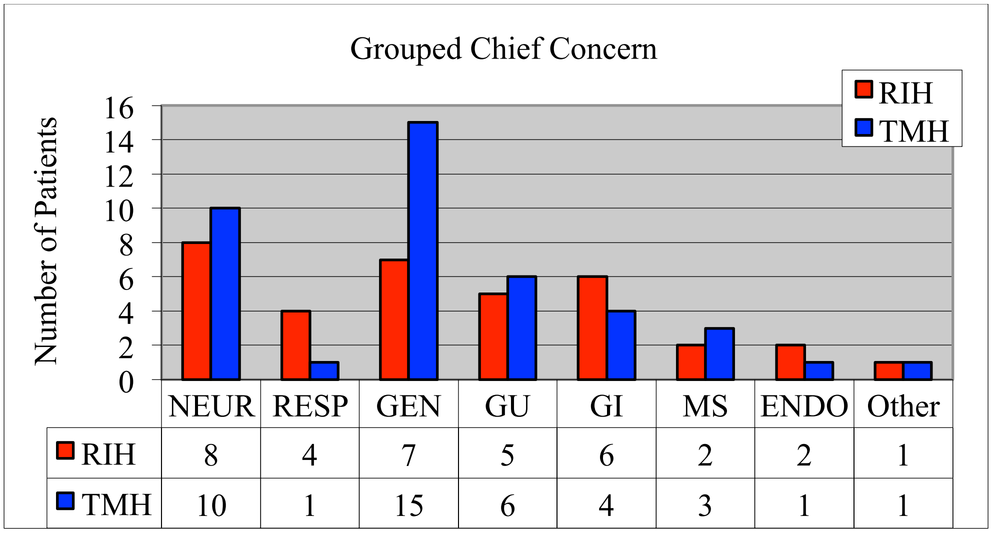
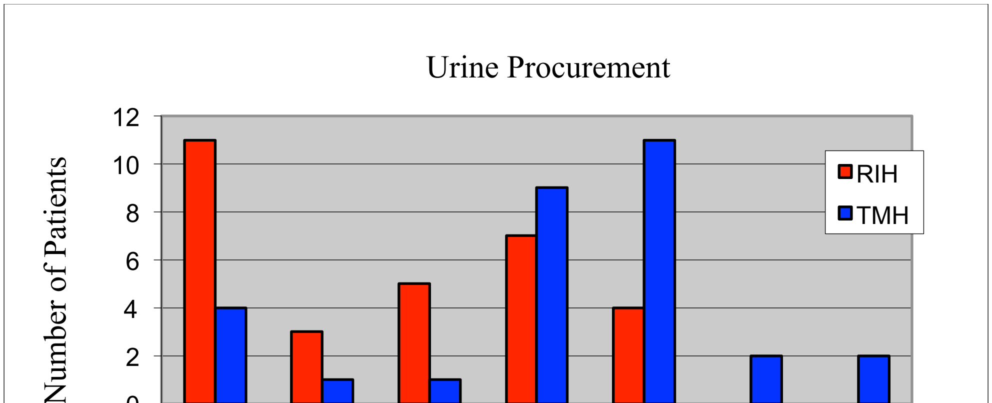


Figure 3. Grouped chief concern by institution.

RIH patients who were uroseptic reported more neurological and generalized concerns (15) than genitourinary urinary (5) concerns. Uroseptic patients from TMH also reported more neurological and generalized concerns (25) than genitourinary concerns (6). At RIH, patients expressed neurological and generalized concerns 50% of the time and urological complaints 17% of the time. TMH patients voiced neurological and generalized concerns 83% of the time and urological concerns 20% of the time.

Urine procurement

Urine specimens were collected on every patient in the study. Methods of urine procurement were straight catheterization (SC), Quik ®catheterization (QC), existing suprapubic tube (SPT), existing indwelling catheter (EF), indwelling catheter placed by ED nurses (F), MSCC (CC), and urostomy tube (U). Figure 4 shows the methods of urine procurement for RIH and TMH.



	SC	SPT	EF	F	CC	QC	U
RIH	11	3	5	7	4	0	0
TMH	4	1	1	9	11	2	2

Figure 4. Method of urine procurement by institution.

RIH had the most straight catheterizations (11) and TMH had the most MSCC (11). TMH nurses preformed 2 Quik ®catheterizations on patients in the study. RIH and TMH nurses placed indwelling urinary catheters on 7 and 9 patients, respectively. In order to organize the data, two groups were created. The “all catheterizations” group included patients that had any form of urinary catheterization (straight, Quik and indwelling) performed by ED nurses. The MSCC group contained patients who voided into a collection vessel. Time means time elapsed from presentation to the ED to the collection of the urine specimen. Time was converted from the 24 hour clock into minutes elapsed. Table 3 shows the differences in elapsed time at each ED based on the method of procurement used. The table illustrates RIH had an average collection time of 129 minutes for urine obtained when any method of catheterization were used. TMH had an average time of urine collection, when any method of catheterization was used of 117 minutes. Conversely, at RIH it took an average of 140 min to obtain MSCC urine specimen for patients admitted with urosepsis. TMH had an average time elapsed for collection of clean catch specimen of 78 minutes.

Table 3
Grouped Methods of Urine Procurement by Institution

	All catheterization techniques	Mid-stream clean catch collection
Average time elapsed RIH	129 min	140 min
Average time elapsed TMH	117 min	78 min

Urine specimen collection time and antibiotic administration time

Figure 5 shows the average door- to- urine specimen collection time and door- to- antibiotic administration time for each hospital. Urine was collected at an average of 1 hour 57 minutes at RIH and 1 hour 39 minutes at TMH. Antibiotics were given at RIH in average time of 2 hours and 28 minutes. Antibiotics (Abx) were given at an average time of 2 hours 31 minutes at TMH. RIH gave antibiotics faster. TMH collected urine faster.

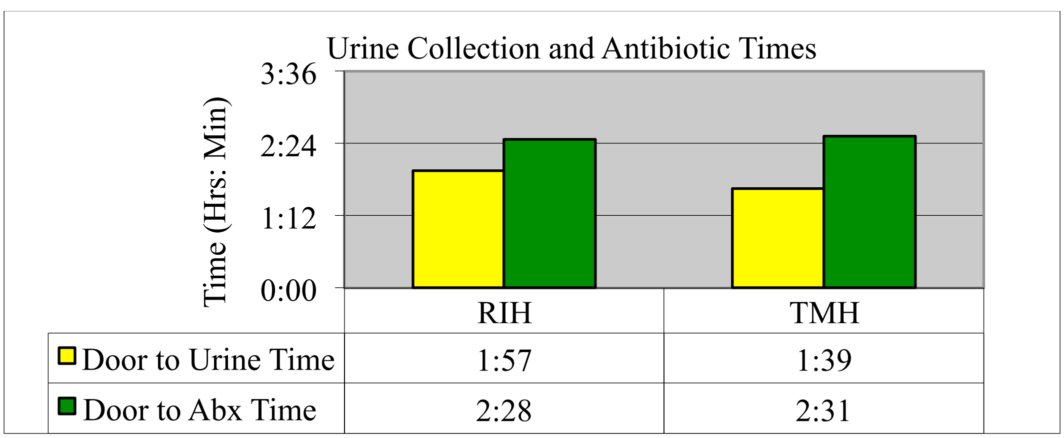
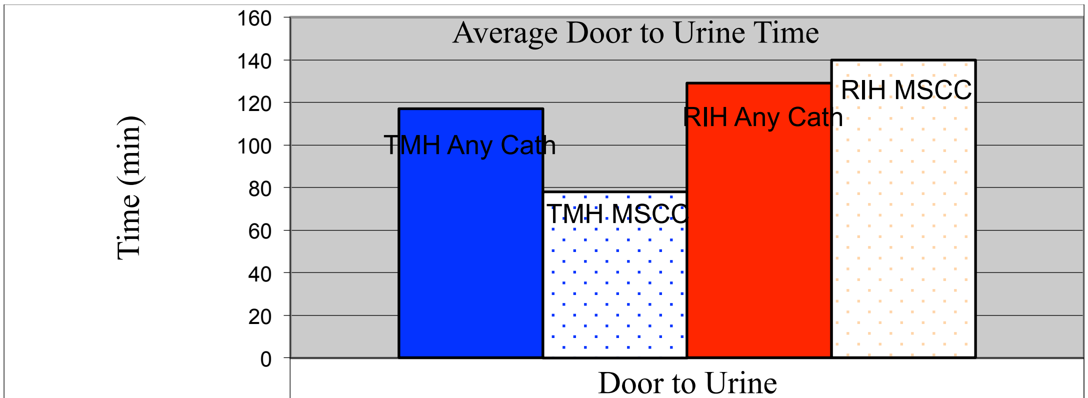


Figure 5. Door- to- urine time and door- to- antibiotic time.

Figure 6 shows the average door- to- urine time for the grouped interventions of each institution in minutes. RIH had the slowest urine collection time by the MSCC method (140 minutes). TMH had the fastest average urine collection time (78 minutes) by the MSCC method. Both hospitals had approximately equal urine collection times when any type of catheterization technique were used (117 min and 129 minutes).



	Door to Urine
TMH Any Cath	117
TMH MSCC	78
RIH Any Cath	129
RIH MSCC	140

Figure 6. Average door- to- urine collection time for both hospitals.

RIH gave antibiotics the slowest (223 minutes) when any catheterization was used in patient care. TMH gave patient’s antibiotics the fastest (144 minutes) when some type of catheterization was used in patient care. Figure 7 shows the average door- to- antibiotic time for the grouped interventions of each institution in minutes.

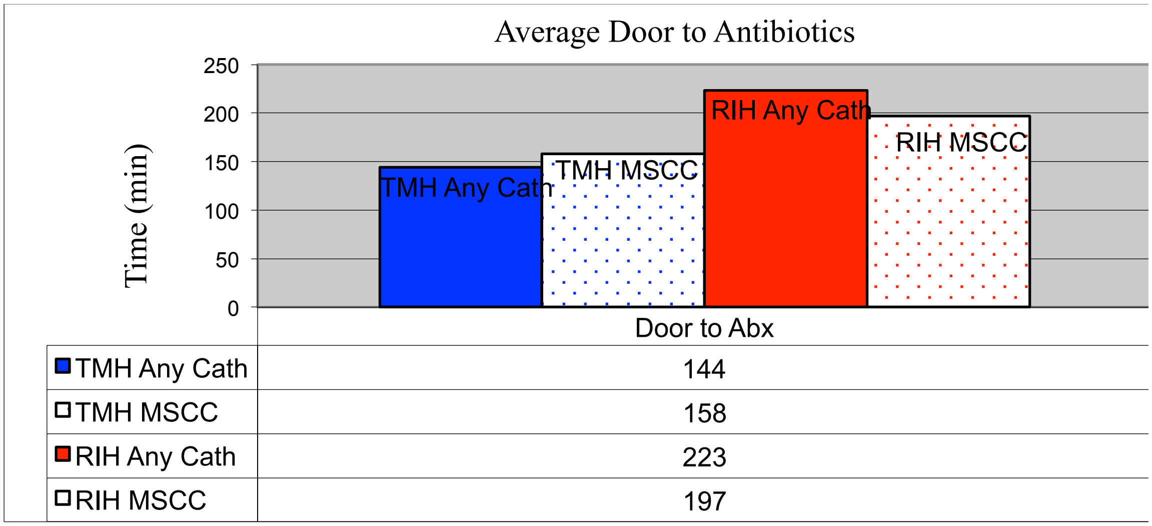


Figure 7. Average door- to- antibiotic time for both institutions.

Discussion

The research question was does the Emergency Department that allows nurse discretion for Quik ®catheterization of patients for urine specimen have a decreased door- to- urine time? The data in this study showed that TMH did collect urine from uroseptic patients faster than RIH. On average, TMH obtained urine in 1 hour 39 minutes compared to RIH average urine specimen collection time of 1 hour 57 minutes. However, the difference is not likely due to the Quik ®cath technology. First, there were only 2 Quik ®catheters used in TMH sample of thirty patients. Secondly, TMH collected urine faster by the MSCC (78 minutes) method than by all types of catheterization combined (129 minutes). RIH collected urine by catheterization (129 minutes) faster than by MSCC (140 minutes) as expected.

The researcher incorrectly anticipated that all types of catheterization would be faster than MSCC at both hospitals. Catheterization is performed by a nurse and requires no patient education or assistance but does require a providers' order at RIH. TMH allows nurse discretion for Quik ®catheterization but requires a provider's order for straight catheterization or indwelling catheters. This study originated based on the principle that catheterization is faster than MSCC.

TMH collected urine from patients by the MSCC method in an impressive 78 minutes after presentation to triage. TMH was faster in MSCC than RIH by 62 minutes. Factors that may contribute to the time difference for each institution to obtain MSCC samples are nurse- patient ratio or the physical layout of the bathroom with respect to the triage desk. There may be more bathrooms accessible to patients. Patient condition and ambulation status impact MSCC collection. RIH sees more patients per day and per year than TMH and has a different range of acuity due to its designation as a Level 1 trauma center. The researcher speculates that staff practice differs in the two institutions even though the formal protocol is the same. The staff may give patients an opportunity to void first and used catheterization as a backup method. Another issue with urine specimen collection is the acuity and census in the ED at the time the patient presented. As both census and acuity increase, staff may have a greater time delay in labeling and sending urine specimens. Some septic patients may not produce any urine while in the ED depending on their comorbidities and hydration status.

The average times of urine collection for both institutions, RIH and TMH, at 1 hour and 57 minutes (117 minutes) and 1 hour and 39 minutes (99 minutes) respectively, were relatively close. The door to antibiotic time was also approximately equal with RIH giving the first dose of antibiotic at an average time of 2 hours and 28 minutes and TMH giving the first dose of antibiotics at 2 hours and 31 minutes after patient presentation to the ED. Possible reasons for a delay in patient receiving antibiotics are; delay in urine specimen collection or movement from the ED to the floor or unit. ED acuity and patient flow can be affected by inpatient hospital patient movement, housekeeping services, or antibiotic availability.

The data demonstrates that both RIH and TMH had faster urine collection time and antibiotic administration time than the recommended national guidelines for treatment of sepsis. Although the sample size was small it was interesting that RIH took longer on average to collect urine but gave antibiotics faster. Conversely, TMH collected urine faster but took longer to administer antibiotics. The researcher has no explanation for these phenomena.

A discrepancy may be present in the actual time the urine was collected. For the purposes of the study, when the laboratory received the sample it was scanned in as received. Both EDs send lab work under *stat priority* and the time the urine was sent by pneumatic tube system closely approximates (within minutes) the time the lab scans the specimen. Systems issues, including if the pneumatic tube system was inoperable, the lab did not scan the specimen right away, or if the computer system was delayed, could cause a discrepancy in the time the urine was marked as received. Another factor is laboratory workflow. Technicians may mark samples received in batches every 15-30 minutes causing the specimen to have been collected and thus sent slightly earlier than the specimen was marked received. Uncontrollable factors could have affected both hospital sites and was not adjusted for in the project.

The method of urine procurement was of major interest to the researcher. The assumption was that nurses at TMH used the Quik catheterization technology more frequently than the study measured. In actuality, TMH used MSCC more than other procurement methods. Another assumption by the researcher was that RIH used MSCC as the primary method of urine procurement. However, RIH used straight catheterizations more than any other methods of procurement. RIH nurses used some type of catheterization 60% of the time and MSCC only 13% of the time. TMH used some type of catheterization 50% of the time and MSCC collection 37% of the time.

Gender can play a significant role in the selection of urine procurement within the ED. Males have less difficulty voiding and Quik catheters are less frequently used on men due to the structure of their anatomy. The study contained a total of 30 males (11 at RIH and 19 at TMH) and 30 females (15 at RIH and 15 at TMH). Catheterizations were performed on 4 out of 11 males at RIH and 7 out of 15 males at TMH. Catheterizations were performed on 15 out of 19 (78%) females at RIH by either a straight catheter or indwelling urinary catheter and 6 out of 15 females (40%) at TMH by either Quik catheter, straight catheter or urinary catheter. At RIH, 1 out of 11 males and 3 out of 19 females provided a MSCC collection. 5 out of 15 males and 6 out of 15 females at TMH provided a MSCC specimen. There is a gender disparity at RIH for catheterization of female patients.

The ages of patients were approximately equal at the two affiliated ED's. The average age patient was 72.6 at RIH and 75.6 at TMH. The equality of age does not relate to the level of comorbidity or complexity of the patient.

Patients presented to both Emergency Departments with a variety of chief concerns. Although practitioners may assume the majority of patients with urosepsis would present with some type of genitourinary complaint, the study did not corroborate that assumption. In a comparison of RIH patients' chief concerns, more patients (50%) presented with neurological symptoms and generalized weakness than with genitourinary symptoms (16%). Likewise at the TMH, more patients (83%) presented with neurological symptoms and generalized weakness than with genitourinary complaints, such as dysuria, hematuria, frequency or urgency (20%). The categories of chief concerns were determined by the patient's statement to the triage nurse. Factors such as cultural background, health literacy and developmental level would influence the patients presenting chief concern. There is also great variety in how precisely the nurse documents the patients chief complaint and how much clarification and interpretation goes into the nurse choice of chief concern. These uncontrollable factors would have influenced charting at both hospitals.

Although it is rationale to assume that the faster urine is collected from a uroseptic patient the faster they will be treated with antibiotics, this is not what the data in this study showed. TMH had the fastest time to antibiotic administration (144 minutes) when patients were catheterized as opposed to when patients provided their own voided specimen (158 minutes). RIH gave antibiotics quicker (197 minutes) to patients who provided their own voided specimen as opposed to when a catheter intervention was used (223 minutes). At RIH there was 57 minute time difference between MSCC collection and antibiotic administration and a 94 minute difference between urine collection by catheterization and antibiotic administration. At TMH there was an 80 minute time difference between MSCC urine collection and antibiotic administration and a 27 minute time difference between catheterized urine collection and antibiotic administration. The inconsistency could be due to many factors, including, but not limited to, the work load of the ordering providers in addressing the infected urine, the timely prescription of antibiotic therapy without a definitive source of infection, the wait time of the patient to get to an exam room after urine is collected at triage, or the comorbidities of the patient that require priority treatment.

Limitations of Study

There were some limitations encountered while conducting the study. The researcher learned that the study design was not optimal. All patients were considered eligible for the study unless they had a preexisting diagnosis of UTI or were taking antibiotics upon admission to the ED. The study should have selected only patients who were Quik ®catheterized, straight catheterized or provided a MSCC for a more robust comparison. Another factor that complicated the research was missing data. For example, if a patient met the established inclusion criteria, the chart was selected even if all the variables of interest were not present. If no antibiotics were given or if the patient had a urine procurement site not previously addressed in the protocol the patient was still included in the study. Two patients did not receive antibiotics at RIH. All patients received antibiotics at TMH. A patient may not receive antibiotics in the ED because they were transported to the intensive care unit before antibiotics could be given. A more stringent set of exclusion criteria would have helped to focus the study on the major question. Patients with existing urinary access tubes including indwelling urinary catheters, suprapubic tubes, urostomy tubes, or on dialysis and not producing urine should not have been included in the study. The researcher could have made a more accurate comparison between persons who voided and persons who required catheterization technology. The researcher did not consider the speed of urine procurement in patients who had existing urinary access tubes. The method of procurement for these ports of access was excluded from all data analysis.

Further limitations of the study include the small sample size. A larger sample size of patients that were straight catheterized and used MSCC, would be necessary to determine if a significant difference was present. Specifically, TMH patients who were Quik catheterized and those that provided MSCC samples would have provided a better comparison related to the technology of interest. Another potential factor influencing the study is the trend toward avoidance of urinary catheters due to catheter associated urinary tract infection prevention. In the past RIH nurses would use indwelling urinary catheters more liberally. Now that the Center for Medicare and Medicaid has raised reimbursement awareness, patients do not receive urinary catheters unless a doctor orders it for strict input and output monitoring. Other hospitals may not reinforce the Center for Medicaid and Medicare Service guidelines as strictly and nurses may have more flexibility in choosing to place catheters.

Other limitations concerned nurse documentation. The researcher was familiar with reading Medhost charts but TMH nurses did not always specify the size of straight catheter making it impossible for the researcher to determine whether it was a traditional 14F straight catheter or an 8F Quik catheter. Unless a size was documented, catheterization was assumed to be a traditional 14F straight catheterization. Some patients at TMH could have been Quik catheterized and erroneously considered straight catheterized. The consolidation of the patients into the “any catheterization” group was done in order to try to establish a link between catheter intervention and patient voiding.

Conclusion

Sepsis remains a worldwide health problem and is associated with a morbidity of 40% (Reinhart et al., 2013). Advances in sepsis treatment, such as use of Systemic Inflammatory Response Syndrome (SIRS) criteria, in the developed world have improved patient outcomes. Time persists as the biggest determinant of patient survivability. The study attempted to isolate a unique catheterization technology that would expedite care of the uroseptic patient in the ED. Although the study did not identify a link between the use of Quik catheter technology and expedited patient care, the researcher was able to verify that both hospitals studied met sepsis treatment guidelines. The researcher was able to call attention to the problem of sepsis and educate the ED staff about the importance of urinary specimen collection in the most expedient and highest quality method possible. ED nurses should feel empowered when giving care to uroseptic patients with the knowledge that their decision-making concerning urine collection can help save lives.

In conclusion, patient survival from sepsis improves with decreased time to antibiotic administration. Collection of urine is pertinent to treatment of the uroseptic patient but not conditional upon the time to antibiotic administration across the institutions studied. Both hospitals adhered to standard measures of treatment and successfully treated many patients with urosepsis. Care of the uroseptic patient is challenging in an ED environment and may need to be adapted according to nurse expertise and patient specific factors.

Recommendations and Implications for Practice

Advanced practice nurses can drive practice and influence policy in healthcare. APRNs currently work in EDs nationwide and oversee care of critically ill uroseptic patients. As the population ages in the developed world, urosepsis will remain prevalent. APRNs can serve as role models to staff nurses and are in an excellent position to educate and demonstrate proper technique in an often chaotic environment. The choice of urine procurement method is heavily influenced by the competency of the nurse and their ability to drive patient care. Although it is not clear what the ideal method of urine procurement is for each patient or even each institution, the APRN can guide staff towards the most appropriate and expedient intervention for the patient.

Future research is needed to establish guidelines that would assist ED providers in selecting the most appropriate method of urine procurement for patients at risk for urosepsis. The researcher proposes a follow up study with a larger sample size of patients who were Quik catheterized, straight catheterized or voided and consequently admitted with urosepsis. Exploration of what additional factors may be contributing to delayed antibiotic administration in uroseptic patients is also recommended.

Advanced Practice Registered Nurses (APRNs) are called upon to lead by example and provide high quality nursing care. Prevention of urinary tract infections and urosepsis is superior to expedited treatment. APRNs in all settings can advocate for proper urogenital hygiene and expedited treatment of urinary tract infections before urosepsis occurs. Good quality care of incontinent patients or those with neurogenic bladder issues is vital to maintaining an optimal state of health. Prolonged exposure of aging tissue to fecal incontinence places patients at higher risk for UTI. The topic of sepsis needs continued attention in advanced nursing practice, education, policy change, and on-going research. The emergency departments studied here deserve praise for meeting national standards. Discussion of the results will take place at the next Practice Council meetings for each institution. Perhaps staff will have recommendations for systems or process improvement relative to the care of patients with urosepsis. It is the hope of the researcher that care continues to improve for patients seen at both institutions.

Plan for Dissemination

Results of the study will be presented to APRN students and the RIC faculty at the Masters Symposium in May 2015. Results of the study will also be shared with the directors of the emergency departments and Practice Councils for each ED. The findings of the study could provide the foundation for a recommendation to the emergency department management to change the current practice and allow nurse discretion regarding straight catheterizations. Results from the study may be used to guide ED management in changing policy to reflect the most effective means of urine procurement.

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Appendix A

Data Collection Tool

Data Collection Tool RIH

Patient Case Number RIH	Gender (M/F)	Age (years)	Chief Concern	Door- to- Urine Time (minutes)	Method of Procurement (MSCC, Straight Catheterization, Indwelling)	Door- to- Antibiotic Time (minutes)	UA Results
1							
2							
3…							

Data Collection Tool TMH

Patient Case Number TMH	Gender (M/F)	Age (years)	Chief Concern	Door- to- Urine Time (minutes)	Method of Procurement (MSCC, Straight Catheterization, Indwelling)	Door- to- Antibiotic Time (minutes)	UA Results
1							
2							
3…							