

Kimberly Burnett
5116 Storey Mill Road
Hephzibah, Ga. 30815
(706) 592-7751
University Hospital-Emergency Services
1350 Walton Way
Augusta, GA 30901
(706) 774-5060
Kimberly93@comcast.net

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Annie Kelly
Managing Editor
Journal of Emergency Nursing
anniebkelly@comcast.net

Dear Ms. Kelly,

My manuscript entitled Strategies to Prevent Urinary Tract Infection from Urinary Catheter Insertion in the Emergency Department is a 2,079 word article regarding an education project implemented in the emergency department at University Hospital in Augusta Georgia. The article is targeted at emergency departments, emergency nurses, and other emergency health care providers.

One of the complications that can occur from indwelling urinary catheter placement is a urinary tract infection. Proper technique insertion is a recommendation strategy for preventing catheter-associated urinary tract infection (CAUTI). Indwelling catheters are commonly placed in the emergency department and emergency nurses need reeducation on proper insertion technique and management of the urinary catheter. The project that was implemented provided emergency nurses with reeducation, practice demonstration, and the implementation of new practice technique to assist in the prevention of CAUTI. It was designed to enhance emergency nurses' comprehension to prevent CAUTI and to promote quality care and safety for patients.

I am a staff nurse in the emergency department at the organization mentioned above. Emergency nursing is my interest and I am pursuing opportunities to become a Nurse Educator. My experience includes nursing in the emergency department and telemetry services. My education includes a Bachelor of Science in Nursing and a Master of Science in Nursing with a specialization in education. Over the past year I have been assisting in educational activities for the staff in the emergency department and the organization as a whole. I am an active member of the Emergency Nurses Association Southwest Georgia Chapter Number 088.

I have attached a copy of the manuscript for your review. Thanks for your time and consideration.

Sincerely,
Kimberly Burnett, RN, MSN

"The undersigned author(s) transfer all copyright ownership of the manuscript entitled Strategies to Prevent Urinary Tract Infection from Urinary Catheter Insertion in the Emergency Department to the Emergency Nurses Association in the event the work is published. The undersigned author(s) warrant that the article is original, does not infringe upon any copyright or other proprietary right of any third party, is not under and will not be under consideration by another journal, in part or whole, and has not been previously published." Several of the columns below state that online submission is required. Authors of manuscripts for those columns will be requested to sign an author release form upon acceptance of their article by *JEN*.

Kimberly Burnett, RN, MSN

Strategies to Prevent Urinary Tract Infection from Urinary Catheter Insertion in the

Emergency Department

Kimberly Parnell Burnett, RN, MSN

Emergency Department Staff Nurse

ENA Southwest Georgia Chapter Number 088

Contributors and Supporters to project:

University Health Care System

Members of University Health Care System:

Deborah Erickson, Clinical Nurse Specialist of Critical Care/Med-Surg. Services
and UTI team member

Lynn Beaulieu, Interim Director of Emergency Services and UTI team member

Peggy Bobo, Nurse Manager of Emergency Services and UTI team member

Ann Hunt, Clinical Nurse Specialist Med-Surg. Services and UTI team member

1 Strategies to Prevent Urinary Tract Infection from Urinary Catheter Insertion in the 2 Emergency Department

3 Urinary catheters are commonly placed in the emergency department (ED) to manage
4 urine output, provide bladder drainage, and to facilitate the care of patients with unstable
5 hemodynamics. Many of these patients are admitted to the hospital for treatment and the catheter
6 may remain in place for days or during the entire time of hospitalization. There are risks
7 associated with the use of urinary catheters (Lo, et al., 2008). They can cause complications such
8 as urethritis, urethral strictures, hematuria, and mechanical trauma (Lo, et al., 2008). Bladder
9 perforation and encrustation of the catheter leading to blockage of the urine flow are other
10 potential problems (Lockwood, et. al., 2004). One of the most common complications is a
11 urinary tract infection (UTI) (Lo, et al., 2008). UTI accounts for 32% of all healthcare associated
12 infections (CDC, 2005). The use of an indwelling catheter is attributable to 80% of these
13 infections (Lo, et al., 2008). There are best practices in technique that emergency nurses can
14 utilize to help prevent urinary tract infection occurrences from urinary catheter insertions in the
15 emergency department. The Centers for Disease Control (CDC) guidelines for prevention of
16 catheter-associated urinary tract infections (CAUTI) recommends that hospital personnel and
17 others who take care of catheters should be given periodic in-service training stressing the
18 correct technique and potential complications of urinary catheterization (CDC, 2005).

19 Significance & Literature Review

20 CAUTI can also cause bacteremia and sepsis (Lo, et al., 2008). If the infection is
21 complicated by bacteremia, it could increase the cost of care more than \$2800 (Fakih, et al.,
22 2008). The mean length of hospital stay can be prolonged by 2.4 to 4.5 days and are related to
23 increased in-hospital mortality (Lockwood, et. al., 2004). The significance and risks of CAUTI

24 necessitates a demand for interventions to help prevent complications. Interventions have
25 focused on preventing intra-luminal or extra-luminal entry of organisms into the urinary drainage
26 system and the transmission of organisms upon insertion of the catheter (Lockwood et al., 2004).
27 In a systematic review of research published by the Joanna Briggs Institute, CAUTI prevention
28 strategies and interventions such as catheter insertion technique, meatal care regimens, specially
29 coated catheters, the use of flush solutions, maintenance of a closed catheter system, educational
30 programs, and changes in care delivery practices were explored (Lockwood, et.al., 2004).

31 Methods to prevent CAUTI in adults with short-term urethral catheters should be based
32 on clinical judgment due to the absence of clear research findings (Lockwood, et. al., 2004). The
33 CDC guidelines for prevention of CAUTI reports that not all CAUTI can be prevented, but it is
34 believed that a large number could be avoided by the proper management of the indwelling
35 catheter (CDC, 2005). Best practice recommendations for prevention and monitoring of CAUTI
36 in all acute care hospitals consist of having an appropriate infrastructure for preventing CAUTI,
37 monitoring surveillance of CAUTI, providing education and training for staff, following
38 appropriate technique for catheter insertion and management of the catheter, and accountability
39 for ensuring that an infection prevention and control program is in place (Lo, et al., 2008).

40 *Education Project*

41 The purpose of this article is to describe a project implemented in the emergency
42 department focused on strategies to prevent CAUTI. The goal of the project was to disseminate
43 knowledge to emergency nurses regarding the incidence of CAUTI and the integration of best
44 practices in their insertion technique to aid in decreasing the incidence of CAUTI. The project
45 included the concepts of correct insertion technique to include instruction, proper hand washing,
46 set-up, perineal cleansing prior to insertion, foley management, and documentation. The

47 information utilized to prepare content of the program was developed based on the CDC
48 guidelines, the organization's policy and protocol, Perry & Potter's Clinical Nursing Skills and
49 Techniques (2006), and information obtained from the literature review. Content and teaching
50 strategies were reviewed and revised by one of the organization's Clinical Nurse Specialists that
51 is very active in implementing evidence-based practices. The project was approved by the UTI
52 team and the Director and Nurse Manager of the emergency department.

53 The project included development and implementation of a PowerPoint presentation
54 outlining the content discussed above. A poster presentation was developed that included visual
55 displays of a trial product the hospital has been utilizing called Theraworx (Theraworx in
56 Asheville, NC) to use for perineal cleansing prior to insertions. It also presented the specific
57 hospital methods and devices for obtaining urine specimens from the foley catheter, as well as
58 the correct use of anchoring devices, and screenshots of appropriate documentation regarding
59 foley insertions. Demonstration and return demonstrations were included through the use of
60 mannequins. Teaching sessions lasted approximately 30-45 minutes each and were provided
61 during work hours for night shift and day shift on four different days. The sessions were
62 mandatory for all health care staff employed in the emergency department.

63 The need for this project was identified based on the Centers for Medicare and Medicaid
64 Services (CMS) guidelines effective October 2008 that outlines particular hospital acquired
65 conditions that will no longer be reimbursed. CAUTI is one of the conditions that Medicare has
66 selected to be reasonably preventable by following evidence-based guidelines and that are either
67 costly or common (CMS, 2008). Review of CAUTI with infection prevention was also
68 performed at the beginning of this project and the ED had a total of 29 insertions resulting in
69 CAUTI between January and July of 2008. This warranted the need for reeducating staff.

70 Additional indications for the need of this project were based on clinical observations where staff
71 were not performing perineal cleansing prior to insertions other than with the betadine provided
72 in the foley catheter kits.

73 The UTI team developed a multiple choice questionnaire survey on foley catheter
74 practices that was completed in all departments prior to the development of this project. There
75 were a total of 27 participants from the emergency department. Staff findings significant to the
76 CAUTI project indicated a need for education. Staff reported not performing perineal cleansing
77 prior to insertions, improper technique during insertions, breaks in aseptic technique, and reuse
78 of the same catheter after unsuccessful insertion attempts. These findings contributed to
79 determining the content to be included in the project to enhance the emergency nurses'
80 knowledge of best practices during catheter insertions.

81 This project is significant to nursing because it enhances the knowledge and competency
82 in emergency nurses and contributes to promoting excellence in patient care. It is significant to
83 the organization because it is based on utilizing best nursing practices to provide quality care that
84 is safe and assists in the prevention of hospital acquired infections, such as that of a CAUTI. The
85 project is significant to the patient by promoting safety and ensuring that measures are
86 implemented to decrease the risk of a CAUTI. It provided reeducation and disseminated
87 knowledge to emergency nurses that will remind them to integrate the appropriate technique
88 during catheter insertions to aid in reducing possible complications for the patient.

89 *Practice Implementation resulting from Project*

90 Through the efforts of this project, new practices were implemented in the emergency
91 department. The ED has implemented the use of Theraworx as a method of perineal cleansing
92 prior to catheter insertions as a prevention strategy to decrease UTI from catheter placement in

93 the emergency department. Approval was obtained from the product committee and the Nurse
94 Manager in the emergency department who is also a member of the UTI team. The rationale for
95 the use of this product is to provide appropriate perineal cleansing in efforts to decrease
96 organisms that can be introduced into the urethral canal during catheter insertion. Additionally,
97 this practice will aid in strategies to decrease CAUTI to reduce the number of hospital acquired
98 infections that the CMS has determined to be non-reimbursable.

99 The Theraworx product implemented is a bathing system based on the Theraworx solution
100 added to non woven fabric in an enclosed resealable package (Theraworx, 2008). It contains
101 Allantoin, Aloe, Beta-Glucan, Vitamin-E, and surfactants that contain antimicrobial properties
102 (Huckfeldt, et. al., 2008). A study performed by St. John's Medical Research Institute that
103 compared the early antimicrobial efficacy of Theraworx found that it has broad spectrum
104 coverage and is >99.9% effective against gram negative and gram positive bacteria (Huckfeldt,
105 et. al., 2008). The studies also show that Theraworx has prolonged activity to beyond 3 hours
106 (Theraworx, 2008).

107 *Project Cost*

108 The cost of the project has been based upon supplies used to provide education and a case of
109 Theraworx for practice implementation. Initial start up costs was estimated to be \$153.00. The
110 cost of rate wages for emergency nurses and other health care staff members have not been
111 calculated because the education took place during normal working hours. Staff attended classes
112 during their assigned shifts. A total of 62 staff members consisting of emergency nurses and
113 other members of the health care staff attended teaching sessions that lasted 30-45 minutes each.

114 *Evaluation*

115 The survey tool used to measure the effectiveness of the project was developed using a
116 Likert-type scale consisting of 10 items with five response categories ranging from strongly
117 agree to strongly disagree. There were a total of 51 surveys returned out of 62 participants who
118 attended the class. A total of 51 respondents agreed to utilize proper insertion technique and 51
119 agreed that they would implement the use of Therawash in their catheter insertion practices. It is
120 also significant to mention that all 51 reported that the project contributed to their knowledge and
121 competency base of catheter insertions and UTI.

122 *Discussion*

123 The training of emergency nurses and health care staff was supported by the findings of
124 the post-survey, but additional research will be required to determine if the project will be
125 appropriate for other departments and patient care areas. The implementation of Theraworx for
126 foley care is a new practice and evaluation over a period of time will be required to monitor its
127 efficiency based on the number of CAUTI rates in the emergency department. Product
128 implementation began in January 2008 and there have been a total of 2 CAUTI as of March 2008
129 that are related to insertions in the emergency department according to infection prevention.
130 Further evaluation and analysis of the CAUTI rates since implementation of the project will need
131 to occur to assess progress and effectiveness.

132 The research performed by the Joanna Briggs Institute regarding the management of
133 urethral catheters found that meatal care strategies to prevent bacteriuria found little or no benefit
134 overall to using anything other than personal care for patients with indwelling catheters
135 (Lockwood, et. al., 2004). There was some benefit indicated in a small amount of female patients
136 that are considered high risk (Lockwood, et. al., 2004). The research compared standard meatal
137 care by washing with soap to using providine-iodine, neomycinpolymixin beta bacitracin

161 implementation of this project will support the organization's goal to provide quality and nursing
162 excellence in our patient care by promoting safety.

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