2018

Use of Simulation for Tracheostomy Care, a Low Volume, High Risk Nursing Procedure

Vijaya Ramakrishnan
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Vijaya Ramakrishnan

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Barbara Niedz, Committee Chairperson, Nursing Faculty
Dr. Barbara Gross, Committee Member, Nursing Faculty
Dr. Edna Hull, University Reviewer, Nursing Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2018

Abstract

Use of Simulation for Tracheostomy Care, a Low Volume, High Risk Nursing Procedure

by

Vijaya Ramakrishnan

MS Nursing, Towson University, 2010

BS Nursing, Rajkumari Amrit Kaur College of Nursing, 1982

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

March 2018

Abstract

Often, education regarding low volume and high-risk procedures, like tracheostomy, are ignored. Lack of experience, skills, and human resources can lead to decreases in confidence levels, diminished quality of care, and potentially an adverse event. The purpose of this DNP project was to prepare simulation-based education on the tracheostomy procedure and provide hands-on education to bedside nurses. The project answered the question: To what extent will a simulation-based teaching method adequately prepare staff nurses in a post-acute surgical unit to perform this high risk low volume procedure? The Johns Hopkins evidence-based model method was used to assist in translation of the practice change process. The International Nursing Association for Clinical Simulation and Learning standards were used to design simulation scenarios. Surgical acute care nurses (n = 35) including day and night shift nurses, new graduates, and experienced nurses participated. Groups of five to eight nurses participated in a two-hour simulation session at hospital simulation center. Pre- and post-surveys on confidence level data, and National League of Nursing evaluation tool data on educational practices and simulation designs were collected from all participants. Paired *t*-test statistics showed a significant increase in confidence level from pre to post education ($p < .001$). Because of the significant impact on patient care due to preventing complications and by improving nursing staff's level of confidence, the project may contribute to positive social change.

Use of Simulation for Tracheostomy Care, a Low Volume, High Risk Nursing Procedure

by

Vijaya Ramakrishnan

MS Nursing, Towson University, 2010

BS Nursing, Rajkumari Amrit College of Nursing, 1982

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

March 2018

Dedication

I dedicated my project to all the unit nurses who work conscientiously at the bedside to provide safety to patients. I appreciate the willingness to accept changes and adapt it for better patient outcomes. Your tireless, dedicated commitment to service never will be forgotten. I also dedicate this project to my family who has supported me throughout the process. My daughter Kirthika and my son Kumaran have never left my side.

Acknowledgments

I would like to thank Dr. Barbara Niedz for her guidance, encouragement, and support. Your encouraging words and push always inspired me to fulfill my dream. Your prompt reply, positive comments, and motivation helped me to develop my technical skills.

My family, friends, and colleagues have been providing tremendous support. They have done so much for me. My special thanks to my beloved husband, Ramakrishnan, who is the sole cause of this achievement. His support in looking after children, household work, encouraging words, and patience allowed me to complete this project.

Table of Contents

List of Tables

Section 1: Tracheostomy Care Competency

Introduction

Nurses deal directly with the lives of human beings. This means that they are expected to perform procedures competently. Nursing schools teach their students to perform the necessary skills and test those skills with competency assessments. Some organizations like the American Association of Critical Care Nurses (AACN) and the Joint Commission (TJC) require health care organizations to be responsible for maintaining clinical competency for all their staffs. These organizations have to devise strategies to assess, develop, provide, maintain, and track the competency levels of the staff members. The focus of this evidence-based project is to assess the nurses' competency need for specific low-volume high-risk procedures like tracheostomy care. This Evidence-Based Project (EBP) will be undertaken in an acute care teaching hospital on the Eastern Coast of the United States. The nurse educator plays a very central role in system change, providing education to future generations (Bartels, 2005). Clinical competency maintenance is a vital requirement not only for nurses but also for unit managers and healthcare organizations. This is particularly important for nurses who care for patients with tracheotomies, due to the consequences of ineffective or poorly managed tracheotomy care. In addition, agencies such as the AACN and TJC , require each healthcare organization to be responsible for maintaining skill competencies (Herringer, 2002). Most healthcare organizations already provide annual competency reviews regarding high volume practice skills. Staff members in acute care are more likely to retain knowledge of these skills if they are subject to frequent practice (Olin,

2011). Often, education on low-volume procedures like tracheostomy care is given only when a near miss or adverse event occurs; such as airway obstruction related to improper suctioning techniques by the staff. Routine tracheostomy care such as suctioning, cleaning skin around the stoma site, changing the inner cannula every shift or day would prevent the episodes of hypoxemia, skin breakdown, and infection (Das et al.), 2012). Additionally, limited human resources are available to assist with skills involved in tracheostomy care, especially during the night shift. Lack of experience with tracheostomy care can lead to diminished quality of care and potentially an adverse event. Therefore, there is a need for a teaching method that facilitates knowledge retention as applicable to high-risk low-volume procedures. Simulation technology has proven to be effective, especially regarding competency with high-risk procedures, allowing staff to practice the skill set involved in tracheostomy care without harming a patient (Galloway, 2009). a significant contribution to social change such as changing the method of competency of nursing procedure to simulation method not only at local level but also at international level

. The next section will explain the problem, purpose, nature of the doctoral project, significance, and summary.

Problem Statement

The problem addressed in this proposal is high potential for patient injury, if tracheostomy is not cared properly by acute care nurses. Because nurses working on the surgical units rarely encounter this procedure, there is a pressing need for them to be assured that they are ready to care for this type of patient. Tracheostomy care

competency for bedside nurses and the challenges of integrating proper methods of education and availability of resources such as policy and procedure that will help to address this significant problem. The adverse events of airway problems may be few in number, but may lead to significant patient compromise. According to the Department of Health and Human Services (DHHS) (2011), out of 11 cases of airway issues, eight (73%) resulted in death and three (27%) in permanent loss of function. Tracheostomy obstruction with thickened secretions leads to hypoxemia, permanent brain damage, and death. About 18% of the cases cited occurred in the medical-surgical area (Mayhew, 2011). The incidence of risk for pneumonia is high and the strategies to reduce the infection are to incorporate guidelines, and education (Zolfaghari & Wyncoll, 2011).

Practice Problem

A hospital and teaching facility on the Eastern Coast of the United States has multiple disciplines that not only attract staff but also patients nationally and internationally in every field of healthcare. Year-round hospital and inpatient orientation programs are on schedule to maintain procedural competency. The nurse residency program (NRP) for new graduate nurses teaches some core competencies related to general hospital safety and quality issues including coding, use of IV pump, computer documentation, fall assessment, hand hygiene, and general management of the medical and surgical patients.

In the surgical acute care unit, which was the setting for the DNP project that is the subject of this proposal, an annual competency marathon is conducted. During that time, competency-related educational programs and activities were focused on care of the

patient with abdominal surgeries, nasogastric tube care, drain care, and surgical site infections. However, there was no planned education for low volume high risk procedures like tracheostomy care. Lack of education and the low volume of patients with tracheostomy can lead to loss of staff confidence in performing assessments and suctioning of tracheostomies. The fear of a serious adverse event in a patient with a tracheostomy is real for the nurses in the surgical acute care unit. Therefore, there was a need for a method of education that helps in retaining knowledge and increases confidence (Cummings, & Connelly, 2016). The simulation and competency assessment will be planned every two years or when significant changes in practice occur .

There was no unit based policy or procedure protocol for tracheostomy care available to the nurses who are working in the surgical acute care unit. It is necessary to provide information to provide safe and quality tracheostomy care. A workforce prepared with the necessary knowledge, skills, and attitudes is crucial to providing safe patient care (Boykins, 2014). The hospital that was the subject of this DNP project proposal followed the current Lippincott manual that can be accessed through the organization's intranet. However, the hospital equipment was different than in the Lippincott manual, and there was no updated video presentation on how to perform suctioning available for nursing staff members who would like a refresher.

Purpose

The purpose of this DNP project was to educate the surgical acute care nurses on tracheostomy care. The high-fidelity manikin was used to let the nurses to practice

tracheostomy care in safe environment. Participating in simulation education increased the confidence level of taking care of a patient with tracheostomy.

Gap in Practice

Tracheostomy care is considered a high risk procedure. Currently, tracheostomy patients are seen in acute care settings more often. In many hospitals, patients with tracheostomies were only cared for in the ICUs. As patients with tracheostomies are now being cared for in the general/non ICU units, nurse's the lack of knowledge and skill regarding the care of a patient with a tracheostomy in these general units represents a significant gap in practice for these nurses. Airway obstruction, impaired oxygenation, and risk for infection are some of the lethal complications that are associated with tracheostomy care. Only skilled, competent, and confident nurses can prevent complications (Nance-Floyd, 2011). Lack of knowledge, policy, and resources are primary reasons for poor tracheostomy care. Changing the policy and procedure according to the current EBP is essential to achieve positive outcomes (Nance-Floyd, 2011). Smith-Miller (2006) suggested to include tracheostomy skills (high-risk, low-incidence) in nurse residence programs (NRP) irrespective of the comfort level of new graduates. An annual competency exam on tracheostomy care using a simulation method at the hospital simulation center will be recommended for all registered nurses (RN), both new graduates and experienced nurses. Scenario templates were prepared on suctioning, changing of inner cannula, and how to manage the situation when the tracheostomy tube is accidentally removed. RNs demonstrated these skills by using high fidelity manikins. Policy and procedure were updated on standard of tracheostomy care in acute care setting

as per evidence-based requirements. In addition to annual simulation education, a video on types of tracheotomy tubes, how to suction, and how to manage accidental removal of tracheostomy tubes was prepared and can be accessed easily on the organization's website at any time by all staff members. This video will serve as a resource for new RNs who did not attend the annual simulation education to refresh knowledge of their simulation experience.

Practice-Focused Questions

It is important to test whether or not the use of the simulation method for tracheostomy procedure actually increases RNs' confidence and reduces adverse events. The purpose of this EBP project was to prepare simulation-based education on the tracheostomy care procedure. Providing hands-on education to bedside nurses would increase their confidence level and decrease adverse events.

Nurses lack of competency at the bedside is a problem that was addressed with the PICO method developed by Elkins' (2010) . The PICO methodincludes analyzing the patient or population, anticipating the intervention, using a comparison group or current standard, and outcome desired . The PICO problem statement is as follows:

P- Bedside nurses in acute care surgical unit

I- Use of simulation for tracheostomy competency annually

C- Lack of available education and training 24/7

O- Increase confidence level of RNs, and zero sentinel(or adverse events) or near miss events related to inadequate tracheostomy care.

How the Project Addresses the Gap in Practice

The goal of this DNP project was to develop and provide an educational toolkit for tracheostomy care and close knowledge and skill gaps in practice for general nursing unit acute care nurses. Using the simulation method to assess bedside nurses' competency in completing tracheostomy care and managing potential problems associated with that care, I anticipated that the confidence level of RNs performing tracheostomy care would increase and the incidence of adverse and near miss events in the future will decrease. At the conclusion of this DNP project the following objectives were met:

- There was an increase in the confidence level of RNs in providing safe quality care of a patient with tracheostomy.
- There was an increase in the competency level of general unit RNs as demonstrated using the simulation manikins with electronic sensing and various troubleshooting scenarios programmed in the simulation lab.
- A revised policy and procedure using tracheostomy related care standards and video on how to suction the tracheostomy tube was developed and stored on the organization's intranet.

In summary, this DNP project focused on the question: Will the simulation method of teaching for tracheostomy increase the confidence level of the surgical acute care unit?

Nature of the Tracheostomy Competency Project

Sources of Evidence

The review included a search of all available literature from 2011 to 2016, and sources of evidence were collected from literature searches using databases such as

Cumulative Index to Nursing and Allied Health Literature (CINAHL), Ovid, EBSCO, and PubMed. Key search words included *teaching methods*, *simulation*, *tracheostomy*, *adverse events*, *tracheostomy care standards*, *simulation standards*, and *competency check list*, and *self-confidence*. The current policy and procedure for tracheostomy care, methods of assessing nursing competency, and how often the competency assessments are done were reviewed from the surgical acute care unit and hospital. The RNs expressed the need for a tracheostomy care competency review. Ten questions were prepared regarding the confidence level of RNs on taking care of a patient with a tracheostomy.

Approach and Framework

A multidisciplinary task force was formed under the leadership of the DNP student. The bedside nurse, manager of the unit, nurse practitioner, education specialist, and risk management were included in this task force team. The task force team was responsible for giving feedback on content, simulation scenarios, unit policy and procedures, and developing the video.

The DNP project took place in an academic teaching hospital located on the eastern coast of the United States. The medical center admits approximately 36,000 patients annually, and of these, 3,600 are typically admitted to the surgical unit which is the subject of this DNP project. There were 35 RNs who completed the tracheostomy care training using simulation and the pre-test and post-test questionnaires on confidence levels and completed surveys on simulation scenarios.

Significance

Conducting annual competency exams is common and done in many hospitals. It ensures competency skill achievement regarding some general skills such as fall and skin assessment, computer documentation, and prevention of central line infection and urinary tract infection prevention. Now it is time to focus on unit-based education on low-volume high-risk procedures and incorporate new educational methods such as the use of simulation with high fidelity manikins. In order to provide efficient, safe, and quality care, the organization that employs acute care nurses must ensures that the staff demonstrates competency at regular intervals. This must be done even for procedures that are not used frequently but pose high risk of complications.

Implications for Social Change

Nurses practicing in surgical acute care face challenges like maintaining competency in tracheostomy care for this low volume high risk procedure. Doctoral level knowledge and skills are essential in organizational leadership to implement system-wide changes for better patient outcomes. Advanced practice registered nurses (APRNs) work in many areas including in-patient, out-patient, critical and acute care to make the healthcare system safe, effective, and healthier (Walden University, 2012).

The success of this project depends on the following persons: The individual nurses, professional organizations, nursing educators, credentialing and certifying, regulatory agencies, and employers. The RN is accountable and responsible for maintaining competencies. Employers must provide a conducive environment to fulfill requirements for completing competencies throughout the healthcare system, thereby

abiding by regulatory agencies. It is nursing educators' responsibility to develop, maintain, and evaluate outcome assessment skills that potentiate nurses to deliver safe quality care. The delivery of safe and quality care increases staff and patient satisfaction. Professional organizations offer evidence-based standards of care related to various procedures such as drain care, airway emergencies and chest tube drainage care. Easy access to standards of practice decrease adverse events and increase patient safety (Krischke, 2013).

Nurses today are responsible for managing patient care, but also have a role in changing health care delivery models to bring about social change by changing the nursing practice and providing clear guidance on protocols. (Tiffin, 2013). Social change is a structural transformation of administrative, social, and financial systems in any society or organization to lead to a fair and just environment for all. In this study a DNP graduate is a leader in healthcare who leads a multidisciplinary team to develop institutional changes, close gaps, implement policies, and use expertise in interfacing policy between practice and research to improve nursing care. As an APRN and healthcare leader, assessing the policies, procedures, and protocols in order to meet the needs of specific patient populations such as tracheotomy is essential to provide better care for the patients(AACN, 2006). With healthcare reform, Medicare and Medicaid service regulations, and budget management, cost effectiveness and doing more for less have become requirements for every organization. Developing a standardized teaching method for competency of high risk low volume procedures like tracheostomy care will assist in creating a workforce that is prepared to deliver health care safely, efficiently, and

cost effectively by evaluating nurses' baseline competency and developing educational strategies.

Summary

This section presented a brief overview of the problem that bedside nurses are not assessed for their tracheostomy competency and there is a lack of available resources to assess tracheostomy care related procedures, as well as the significance of reduction of an adverse event. Developing simulation scenarios on tracheostomy care will be instrumental in assessing and evaluating bedside nurses' knowledge retention. Educating the nurses in tracheostomy care competency and supporting them with resources will enhance them to keep their patients safe and provide quality care.

Section 2: Background and Context

Introduction

The care of the tracheostomy patient is vital. Lack of education and confidence will lead to airway obstruction and death. Nurses develop confidence if there is an opportunity to practice the procedure in a constant manner. When there is a gap in practice, their knowledge and confidence level decreases. There is a need for instructional methods that will help the nurse retain the knowledge that is essential for high risk low volume procedures such as tracheostomy care in an acute care setting. This section will cover concepts, models, and theories that will be used for this DNP project regarding tracheostomy care.

Concepts, Models, and Theories

Use of theory and models help planners to understand and be able to select a target group and plan and implement with appropriate strategies. Selection of a theory depends on the target group and purpose of the intervention (Hodges & Videto, 2011). The DNP project leader selected the prevention of complication as a critical concept, the Johns Hopkins nursing evidence-based practice (JHNEBP) model, the NLN/Jefferies simulation method, and Miller's framework for clinical assessment model as evaluation theory.

Complications Associated with Tracheostomy

A key concept of tracheostomy care management is to prevent complications and thereby ensure the patent airway of the patients (The Royal Children's Hospital Melbourne, n.d.). A tracheostomy is performed for a patient who has problems with

upper airway obstruction. When a tracheostomy is done, the patient is dependent on a tracheostomy tube as the primary airway. Complications related to tracheostomy care may lead to a life-threatening situation. Obstruction in the tracheostomy tube due to thickened secretion and mucous plugs are the most common situations expected due to improper management of patients with tracheostomy.

Das et al. (2012), primarily by sending survey questionnaire, reported that 478 respondents provided data on the most serious events related to tracheostomy care included tracheostomy occlusion, loss of airway, and bleeding at the tube site. The concept of preventing complications related to tracheostomy care is vital. The majority of events occurred more than one week following the tracheostomy procedure, and that is the time the patient would be transferred to the acute care setting. (Das et al., 2012). This descriptive study provided quantitative data on the classification of events (location and time of the event, specific event leading to catastrophe, outcome of the event, and associated contributing factors) and qualitative data on by recording free responses by the respondents. Out of 464 study participants, 315 respondents cared for adult tracheostomies with 171 complication events reported to have happened in inpatient areas primarily after the first week of surgery. Accidental decannulation, tube occlusion/mucus plugging, and airway obstruction are some of the specific events reported as leading to patient catastrophe. These factors related to tracheostomy care were the main contributing factors for adverse events. In this study analysis, 88 events occurred while nurses were changing the tracheostomy tube and repositioning the patient (Das, et al., 2012). These adverse events related to tracheostomy care can be prevented by amending improvement

strategies. Das et al. (2012), concluded it is essential that all nurses be aware of recommended practices and education and training related to tracheostomy care. This study further suggests incorporating clinical guidelines based on empirical evidence that provokes clinical judgment of nurses (Das et al., 2012).

Use of Simulation Techniques to address Barriers

There is an increased number of tracheostomy patients discharged from ICUs to acute care units and better patient outcomes can be achieved through a team approach that showed reduction in length of stay and an increase in staff knowledge and confidence (Parker, et al, 2010). But there are inconsistencies such as variations in providing support in acute care units and still there is an increase in morbidity and mortality associated tracheostomy patient population (Parker, et al., 2010). Parker et al. (2007) identified the nurse's need for interdisciplinary team support for care of the patient with tracheostomy. The team supports enhanced reduction in length of stay not only in the ICU but also in the hospital. The authors focused on developing an interdisciplinary team and measuring length of stay, number of adverse events, and knowledge and confidence of nurses. The group collected pre- and post-data from medical record reviews of 41 patients. This study also measured staffs' knowledge (minimal to maximum knowledge) and confidence (confident with support to independently confident) by sending a pre and post survey questionnaire. Pre and post survey questionnaire findings showed a 4% to 12% increase in the number of respondents who reported extensive knowledge and as the independently confident rate increased from 33% to 42% (Parker et al., 2010).

Identifying best teaching methods is necessary for delivering education to staff members who are assigned tracheostomy patients on an infrequent basis (Parker et al., 2010).

The care of a patient with a tracheostomy is one of the most challenging and stressful situations for nurses as it relates to airway complications. Adult learning theory will be used. Knowles' four principles, involving staff members in planning, use of experiences, need-based education, and use of problem-centered education will be applied (Pappas, 2013). Nursing schools are using simulation scenarios for students and it is well documented in many studies that simulation is an effective teaching strategy for practicing high risk low frequency procedures (Barkhouse-MacKeen et al., 2009).

Use of simulation prepares new graduate or seasoned nurses to manage patients in a safe, confident, and competent manner (Hommes, 2014). Hommes (2014) measured competence and confidence levels of new orientee nurses after implementing simulation scenarios. There were nine new graduate nurses who participated in the study. A pre and post survey tool was developed which had evidence of validity, but reliability was not tested due to the small sample size. The instrument, the orientation and simulation pre/post confidence and competence Survey (OSPPCCS) was developed by Hommes and used in their study. It includes six items on confidence and six items on competence. Each item is measured on a four-point forced choice Likert type scale. Item scores are summed and higher scores indicate higher confidence or perceived competence. Results showed a statistically significant increase in overall competence (p value = .001; t = 5.31, df = *8)*) and confidence (p = .005 t=-3.8; df = 8) (Hommes, 2014).

Although tracheostomy care education improves quality of care and safety, staff resistance and lack of simulation trainers are noted as barriers to implement in large hospitals (Waterval et al., 2012). Waterval et al. (2012) evaluated 15 clinical skills in a competency fair that included new graduates and experienced nurses for the purpose of evaluating their knowledge and skills. Tracheostomy care was one of the 15 skills evaluated. Educators developed scenarios, a skills checklist, and a competency assessment process. The fair-style approach (i.e., practice stations were set up in a classroom and staffed by a clinical educator) using low fidelity simulation manikins was used instead of a bedside competency assessment due to the fact that nurses are sometimes not exposed to the procedure. The use of low fidelity simulation manikins allowed for processing a large volume of nurses in a short time, sharing of equipment, maintaining quality and standardization of skills, and using multidisciplinary input and participants' satisfaction. The participants (n = 942) evaluated the skill stations as very good at 90%, and 93% of educators evaluated them as (Waterval et al., 2012). Waterval et al. (2012), identified difficulty byfinding skilled evaluators and lack of simulation and medical equipment as limitations to the approach.

Nurses' Confidence Levels and Lack of Knowledge Impact on Adverse Events

Lack of education of nurses on care of a tracheostomy is identified as an important contributing factor for the adverse event (Day, Farnell, Haynes, Wainwright, Wilson-Barnett, 2002). Day et al. (2002) demonstrated that there is a lack of knowledge on many aspects of tracheostomy care including suctioning and lack of current practice. Day, et al. (2002), observed 28 nurses to assess knowledge and skill in performing

tracheostomy suctioning. The aim of the study was to evaluate acute care unit nurses' theoretical knowledge and competence on performing tracheostomy suctioning. This was a mixed methods study where the researchers collected data by observing nurse participants performing tracheostomy suctioning. In addition, the researchers interviewed the nurses to inquire as to the reason for their action. Finally, the participating nurses were asked to complete a knowledge-based questionnaire. The subjects were assessed on 20 different categories (auscultating, pre-oxygenating, selecting catheter size) for knowledge and skill. There were no statistically significant relationships between knowledge and practice (Day, et al, 2002).

For example, 67% of nurses had knowledge on assessing patients before suctioning, but only 7% during practice auscultated the lungs prior to suctioning. The conclusion of the above study recommended the need for clinical guidelines, and practice focused education (Day, et al, 2002).

Padma et al (2016) showed that out of 15 staff nurses only 8 had moderate knowledge on assessment of tracheostomy care. This was a descriptive cross-sectional study that compared the level of knowledge of tracheostomy care between staff nurses and nursing students. The level of knowledge was measured by 30 multiple choice structured questions on tracheostomy care. The data analysis was done using chi-square and concluded that the majority of both staff and nursing students had moderately adequate knowledge on tracheostomy care. A limitation of this study was a small sample size of only 30 participants. Only 15 staff nurses and 15 student nurses participated in the study. This study did not measure the effectiveness of tracheostomy care after

implementing the education, nor was there a competency demonstration of the skill. The authors recommended that future studies be carried out with a larger sample size, and the effectiveness of tracheostomy care be evaluated in various settings. (Padma, et al., 2016).

Reviewing, and providing evidence-based practice guideline on timely basis is one of the important strategies for gaining confidence among nurses. The study by Smith-Miller (2006) emphasized that irrespective of comfort level, hands-on skills had to be included especially for high-risk, low-incidence nursing skills such as tracheostomy care. The study was done with new graduates who were hired to work on a variety of medical-surgical units of a university trauma center in the southeast United States. This study examined 104 new graduate nurses' comfort level before and after an in-service education session and hands on training and pre-assessed basic knowledge on tracheostomy care. The author also included 31 experienced nurses and did pre-assessment knowledge and comfort level, but did not conduct an educational session or hands on training. The study used a 10 point Likert scale self-assessment tool that assessed basic knowledge of tracheostomy care. The assessment tool included eight questions on basic knowledge, specific knowledge and patient safety. The new graduates and experienced nurses were of different levels of education, with background experience varied from one year to 34 years. Pearson's correlation coefficient and paired t test were done. Data analysis showed no significant difference in baseline comfort level of Associate Degree Nurses (ADNs) (6.83%) and Baccalaureate Nurses (BSNs) (5.75%). The post educational comfort level significantly reduced in both groups of nurses ADNs [4.12%] and BSNs [4.28]). The author related that reduction of comfort level of new

graduates to participant's overestimation of their knowledge. The assessment score on baseline knowledge of tracheostomy of new graduate (53%) and experienced nurses (55%) showed no significant difference (Smith-Miller, 2006). Hence, the nurses need hands on training irrespective of their experience or educational level.

NLN/Jeffries Framework

The National League for Nursing (NLN) promoted simulation as a teaching method in nursing education. Simulation provides an opportunity for nurses to obtain rich learning experience. Simulation is considered an evidence-based strategy to aid clinical judgment skills. The NLN/Jeffries Simulation Framework is the result of a simulation study by NLN. For the current DNP project, care of patient with a tracheostomy case study will be developed using the NLN/Jeffries framework and will follow the International Nursing Association for Clinical Simulation and Learning (INACSL) standards. The INACSL standards will guide the program objectives, facilitation, debriefing assessment of participants and summative evaluation (NLN, 2015).

The national group organized by the NLN in collaboration with the Laerdal Corporation, developed a framework that can be applied to students (nursing or medical) and to all type of simulations (high or low fidelity) (Jeffries, 2005). The simulation design is one of the characteristics of the framework. Stating clear objectives, use of the type of fidelity manikins, complexity of the scenarios and debriefing are vital while developing scenarios (Jeffries, 2005). Please refer to Appendix C and D for developed scenarios on tracheostomy suctioning and de-cannulation management.

The Johns Hopkins Nursing Evidence Based Practice Model

The Johns Hopkins Nursing Evidence-Based Practice Model (JHNEBP) guided the question, a selection process to find the evidence, both research and non-research, and translate the evidence into practice. The rationale for using this model is that it addresses three main components: practice, education and research (Schaffer, Sandau, & Diedrick, 2012). The above three components are important to bring about changes in practice of tracheostomy care. Searching for evidence on educational method and practice of tracheostomy care will form base for clinical decision making. This model also considers external and internal factors that are important to bring about change including those related to culture, environment, supplies, staffing, standards and licensing. The model does not stop at finding evidence, but also guides in translating the practice implementation.

The Johns Hopkins Nurses Evidence Practice Model (JHNEBP) was used as the framework of this project. This model will assist in developing a step-by -step process such as creating a PICO question, conducting a literature review on research and non-research, grading the strength of evidence and most importantly on transition to practice. This model also focuses on creation of an action plan (Schaffer, Sandau, & Diedrick, 2012).

Practice Question - This phase involves five steps; recruiting inter-professional team, developing and refining the EBP question, defining the scope of the EBP question and identifying stakeholders, determining responsibility for project leadership, and scheduling team meetings.

Evidence - This phase involves steps six to ten; conducting an internal and external search for evidence, appraising the level and quality of each piece of evidence, summarizing the individual evidence, synthesizing the overall stringy and quality of evidence, and developing recommendations for change based on a synthesis of the evidence.

Translation - This phase involves steps 11 to 18; determining fit feasibility, and appropriateness of recommendations for translation path, creating an action plan, securing support and resources to implement the action plan, implementing action plan, evaluating outcomes, reporting outcomes to stakeholders, identifying next steps, and disseminating findings.

Individual nurses, employers, educational institutions, government, nursing organizations, and accrediting agencies are responsible for promoting continuing professional development of nurses. Staff resistance is not uncommon where staff members have to spend extra time for practice and it is well documented for technology education almost half of the respondents still report staff resistance (Technology, 2013). Although tracheostomy care education improves quality of care, and safety, staff resistance and lack of simulation trainers are noted as barriers to implement in large hospital (Waterval et al., 2012).

Nurses in acute care settings are expected to provide competent care of a patient with tracheostomy. Lack of education and confidence regarding tracheostomy care can lead to life threatening events or even death. Staff confidence on providing tracheostomy care plays an important role in patient safety and quality of care. Simulation experience

offers a real world setting. The simulation education technique integration has shown success in increasing the learning curve of skills, knowledge, and attitude (Jeffries, 2005). End user satisfaction and confidence in caring for patients with tracheotomy will depend on the knowledge, skills, current practice information, and readiness to teach (Day, et al., 2002). Hence assessing the confidence and knowledge of tracheostomy care is crucial. The success of an educational program depends on need-based education.

Framework for Clinical Assessment

The competency skills regarding tracheostomy suctioning, was assessed by using Miller's framework for clinical assessment (Miller, 1990). It has four elements placed in a triangle; at the base is knowledge, top most is action and in between are competence and performance. When assessing skill, the knowledge is important at the same time knowing how, (competence), showing how (performance), and doing (action) are also critical. Just having knowledge and competence does not mean one can perform and do skills competently. Evaluation procedures should focus on how nurses performed the skills (Miller, 1990). The pre-test and post- test will assess and evaluate knowledge of tracheostomy suctioning. Hands-on return demonstration will be used to evaluate skill achievement in tracheostomy tube suctioning. A competency skill checklist will be used to evaluate tracheostomy suctioning by the staff nurses. See Appendix E for competency skill checklist.

Relevance to Nursing Practice

Competency assessment is essential for nursing staff members especially for new graduates, transferring from one unit or hospital to another, or when there is a change in

practice. New graduates receive orientation by preceptors and preceptors assess skills by using check list while performing skills at bedside (O'Connell, 2015). Nurses in acute care face challenges when performing high-risk, low-volume procedures such as tracheostomy care. The study by O'Connell (2015) recommended the use of appropriate simulation scenarios addressing the required procedures. This was a pilot study on the feasibility of simulation in orienting critical care nurses using high fidelity simulation. This study used the Jeffries Nursing Education Simulation Framework to develop, implement and evaluate the scenarios. Only seven participants were selected from a military treatment facility and three independent raters evaluated the participants. Interrater reliability measures for the evaluation tool was considered as excellent with a Cronbach's alpha score of 0.95 (O'Connell, 2015). The conclusion of the study was that simulation scenarios are feasible for new critical care nurses in military treatment facilities (O'Connell, 2015).

Local Background and Context

Relevance of the Practice Problem

A recent trend identified by the unit clinical practice committee was that over the past two years, a more frequent occurrence of patients with a tracheostomy have been transferred to the acute care unit on an infrequent basis. Providing safe tracheostomy care is risky due to lack of skills, knowledge and confidence of staff members in acute care (Paul, 2010). Tracheostomy tube suctioning skill is one of the essential components of nursing management of maintaining a patent airway. The knowledge and skill of doing tracheostomy suctioning among nurses are imperative (Day et.al, 2002).

Institutional context

The setting for this DNP project was a healthcare setting located in the mid-Atlantic region of the United States. It is a non-profit organization with 750 hospital beds providing tertiary and quaternary care. It has internationally recognized programs in trauma, cancer care, cardiac care, and neurological care, women's and children's health and organ and tissue transplantation. It is affiliated with a teaching institution and holds the status of Magnet designation. This organization has partnership with many health professional schools (school of nursing, medicine, pharmacy) and is committed to deliver superior health care, train the next generation of health professionals and discover innovative ways to advance medicine worldwide. Training nurses on tracheostomy care using a simulation method to provide superior care perfectly fits the organizational mission and vision statement.

Definitions

Tracheostomy – Tracheostomy is a surgically created opening in the trachea (Perry, Potter, Ostendorf, 2017).

Tracheostomy tube – A tracheostomy tube is placed in the incision to secure an airway and to prevent it from closing (Perry, Potter, Ostendorf, 2017).

Tracheostomy care – Tracheostomy care involve suctioning, cleaning around the incision, as well as replacing the inner cannula of the tracheostomy tube (Perry, Potter, Ostendorf, 2017).

Accidental decannulation – Unplanned decannulation is defined as any patient in whom a tracheostomy is removed accidentally (Perry, Potter, Ostendorf, 2017).

Competency – Competency defined as the ability to do something successfully or efficiently (Jeffries, 2005).

NLN/Jeffries Simulation Framework – "A Framework for designing, implementing, and evaluating simulations used as teaching strategies in nursing" (Jeffries, 2005).

Simulation – Simulation is a strategy to mirror, anticipate, or amplify real situation with guided experiences in a fully interactive way (Jeffries, 2005).

High-Fidelity Simulation – High-Fidelity Simulation is defined as a replicated clinical experience using a computer-driven, full-bodied simulator with physiologic responses to interventions (Jeffries, 2005).

Federal Context

Maintaining airway is the priority issue during emergency or routine care of a patient. If a patient is on tracheostomy, the chances of risk of life threatening complications increase. Mark, et al., (2015), identified current tracheostomy as one of the predisposing patient factors of difficult airway. The authors developed Difficult-Airway-Response Team (DART) to standardize the emergency response process. Such a process is followed not only by our organization but also by international hospital organizations (USA, UK, Australia, and Qatar). The Global Tracheostomy Collaborative conducts conventions, and provides education to healthcare providers and patient and family members (The Global Tracheostomy Collaborative, 2016). There is an increased number of tracheostomy patients discharged from intensive care units to acute care units and

better patient outcomes can be achieved through education that increases staff knowledge and confidence (Parker, et al., 2010).

Role of DNP Student

Professional Context and Role

The benefit of the DNP program as stated by the American Association of Colleges of Nursing (AACN) position statement (2004, p.4), "development of needed advanced competencies for increasingly complex practice, and enhanced knowledge to improve nursing practice and patient outcomes" is the basis for this DNP project's goals and objectives. DNP nurses are called upon for transformational changes not only in education but also in nursing practice. My role at the site is dual: I am the project leader for this DNP project, and in my capacity as Education Specialist at the project site, I have a vested interest in assuring that the nurses on the surgical unit have a high level of competency for this low volume, high risk procedure. In this complex health care system, reassessing nursing practice is crucial. Doing this project provided the DNP project leader with the opportunity to identify the problem related to tracheostomy care management, find the evidence on need for change in practice methods, and recommend a change in practice for assessment and management of tracheostomy care using a simulation method.

Potential Biases and Steps

As a DNP student, I have a role in nursing education by enhancing the creditability of educating nurses which will improve nursing practice. This also provided me an opportunity to participate in interdisciplinary collaboration while working with

respiratory therapists and staff from the Simulation Center. The varied background of interdisciplinary teams can cause clashes within a team (Nancarrow et al., 2013). Disorganization, miscommunication and lack of participation are some of the barriers while working with a team (Nancarrow et al., 2013). To address the barriers, I followed the followings:

- Effective organization techniques
- Following good communication techniques
- Participating in team work
- Identifying individual strengths, and anticipating problems and solving them.

Summary

Choosing effective methods of teaching is essential to retain knowledge. It is said that nurses learn by doing and the simulation method will boost their confidence (Blum, Borglund, & Pareclls, 2010). Applying NLN/Jeffries scenario aided in active learning with real world situations. Utilizing the knowledge and experience from team members enhanced inter-professional collaboration.

Section 3: Collection and Analysis of Evidence

Introduction

Competencies regarding nursing skills are vital, especially for high risk low volume procedures. Lack of confidence and availability of resources will lead to unsafe practices. The selection of the education method is crucial. Adults tend to learn and remember when they actually preform the procedure. This simulation method will not only let nurses perform skills such as suctioning, and accidental decannulation, but also let them use critical thinking skills according to the situation and in a safe environment (Galloway, 2009). In Section 2, the concept of prevention of tracheostomy-related complications, the JHNEBP model, use of NLN/ Jeffries framework for preparing simulation scenarios, and Miller's framework for clinical assessment were discussed. In Section 3, development of the practice-focused question and sources of evidence will be presented as well as the overall plan for the project.

Practice-Focused Question

The purpose of this DNP project was to educate surgical acute care nurses on tracheostomy care using simulation, thereby increasing confidence levels of nurses. The core nursing competency evaluation is done during the annual competency marathon where bedside nurses are provided with new information or demonstrate their techniques in performing selected procedures. Unit-based education is done for nursing procedures that are specific to unit practice but simulation is not a common method used in this education. Presently, there is no formal way of addressing high-risk low volume procedures. In addition, the absence of a unit policy and protocol and lack of the

availability of resources on how to do the procedure leads to lack of confidence in the nursing staff in managing the care of a patient with a tracheostomy.

The practice focused question of this DNP project was would the use of simulation as a hands-on method to evaluate tracheostomy suctioning competency improve patient care and build nurses' self-confidence in doing the procedure? The DNP project leader partnered with the simulation center at the hospital to prepare scenarios, develop an instructional video, assemble the educational toolkit, use high fidelity manikins, provide hands on techniques for doing tracheostomy suctioning. In addition, developed and conducted a pre and post survey on self-confidence of nurses, and conducted the debriefing with participating nurses.

Sources of Evidence

The sources of evidence were collected from the literature search using databases such as CINAHL, Ovid, EBSCO, and PubMed. Key search words for the project included *tracheostomy*, *adverse events*, *tracheostomy care standards*, *simulation*, *competency check list*, and *self-confidence*. Collecting evidence on tracheostomy care standards helped in providing up to date policy and protocol information. Use of simulation as the method of teaching increased self-confidence of nurses.

Published Outcomes and Research

The Joanna Briggs Institute, the Lippincott manual, and nursing procedure books were also referenced. The review included a search of all available literature from 2011 to 2016. Resources were readily available for a tracheostomy suctioning procedure. The

combination of search terms, such as tracheostomy and simulation, did not yield any data. While simulation and self-confidence as search terms provided data on using simulation.

Evidence Generated for the Doctoral Project

Participants

The participants were the nurses who worked in a surgical acute care setting. These nurses had expressed their lack of confidence in tracheostomy care management at the unit clinical practice committee meetings. Nurses (n = 35) including day and night shift nurses, new graduates, and experienced nurses participated. Groups of five to eight nurses participated in a two-hour simulation session with five simulation sessions. The manager ensured that all nurses attended a session with time compensated as educational training.

Procedures

A pre-assessment questionnaire (see Appendix A) was prepared to assess the confidence level of nurses in managing the care of patients with a tracheostomy. A five-point Likert scale was used to evaluate overall questionnaire responses: 1- no confidence, 2- little confidence, 3- some confidence, 4- mostly confident, and 5- very confident. This tool is used by the hospital for procedures such as moderate sedation and cardiopulmonary resuscitation. The tool's content was modified as it related to aspects of tracheostomy care and reviewed by the clinical and professional department staff and respiratory therapy staff. Pre-assessment of confidence level is essential to compare to the end of course evaluations. The post-assessment tool on the simulation experience was used at the end of each simulation and completed by the participants (See Appendix A).

This tool evaluated the educator and topic using a 5-point Likert scale and also includes some open-ended questions. The content validity of pre- and post-assessment tool were established by sending the tool to respiratory therapists and the clinical and professional staff individually. These experts approved the content of the assessment tool.

The DNP project leader partnered with the simulation center and used the template of NLN/Jeffries for simulation scenarios The Simulation center had one scenario on obstruction of a tracheostomy tube (See Appendix B) and an additional scenario was developed as part of this DNP project on the accidental removal of a tracheostomy tube (See Appendix C). The competency check list for tracheostomy suctioning and the checklist for accidental removal of a tracheostomy tube were adapted from Perry's, Potter's and Ostendorf's skill set manual (See Appendix D). The participants also evaluated the presenter and the process of simulation experience that was adapted from the NLN. The educational practices questionnaire (see Appendix E), simulation design scale (see Appendix F), and student satisfaction and self-confidence in learning tool (See Appendix G) were developed by the NLN. The simulation design scale not only evaluates the specific features presence such as objectives, support, problem solving, but also the importance of it. It is a 20-item instrument using a five-point scale. Ten content experts established the content validity. Internal consistency reliability was established with a sample of 110 student nurses by using Cronbach's alpha (0.92) for presence of feature and 0.96 for the importance of features. The educational practices questionnaire is a 16-item instrument that uses a five-point scale and measures educational practices. The Cronbach's alpha measures internal consistency and the value

above 0.7 or higher is the acceptance level. The reliability of presence of specific practices (0.86) and the importance of specific practices (0.91) are measured using Cronbach's alpha. The student satisfaction and self-confidence in learning tool is a 13-item instrument that measures student satisfaction (five items) and student self-confidence in learning (eight items) and both use a five-point scale. The reliability for internal consistency of the evaluation tool was tested using Cronbach's alpha (student satisfaction-0.94 and self-satisfaction-0.87). Permission to use the NLN tools was obtained and attached (see Appendix H).

Protections

This DNP project was done as a part of a competency evaluation of a tracheostomy procedure that is essential as part of safe patient care. Pre and post surveys were kept anonymously. No identification data of participants were required in either the pre or post survey, with some demographic information such as age, gender, and years of experience included. Participants were informed that data generated from the DNP project will be deidentified. Survey results will be disseminated through future poster and manuscript publications. Oral informed consent was obtained for photos taken during the simulation session. The participants were informed regarding the recording of simulation session for learning purposes only and the video will be deleted at the end of the session. The DNP graduate applied for exemption from IRB approval at the institution and at Walden University using the proper processes and received approval from both institutions.

Analysis and Synthesis

Data analysis was done using Statistical Packages for the Social Sciences (SPSS) version. Pre and post survey questionnaires on confidence level data were entered and data analysis was done looking for evidence of increased level of nurses' self confidence in performing tracheostomy care using paired t test analytical method. The pre and post survey questionnaires on confidence level were assessed for an increase or a decrease in knowledge. The above survey questionnaires were administered by paper and pencil (Hodges, & Videto, 2011). The skill of performing tracheostomy suctioning and the management of accidental removal of a tracheostomy tube was assessed by the observer (content and skill expert). When skills were not preformed to an acceptable level, nurses were given extra time to review and practice skills. Continuous monitoring for any adverse events related to tracheostomy care will be tracked to determine the impact of the competency training. As this competency is intended as an annual competency and as adverse events are tracked continuously, these data will validate the ongoing usefulness of the competency well beyond the scope of this DNP project.

Summary

End user satisfaction and confidence in taking care of a patient with a tracheostomy are vital to improve the quality of care, patient safety, prevent adverse events and reduce healthcare costs. Assessing nurses' competency on a high-risk, low volume procedure is important to provide simulation as a method of education that is conducive to retain knowledge. This section of the proposal addressed the process of

developing scenarios, evaluating competency, project timeline, content review and evaluation.

Section 4: Findings and Recommendations

Introduction

Providing safe quality care is one of the essential elements of nursing. Any DNP graduate has a vital role in attaining high quality care through EBP. Low confidence levels on performing nursing practices can lead to adverse outcomes for a patient, especially regarding low volume high risk procedures. Nurses' confidence level will be increased by providing adequate resources and using an appropriate educational method. As used in this project, the simulation method allowed the nurses to practice skills in a nonthreatening environment. Using simulation, the purpose of this project was to increase nurses' confidence level regarding care of patients with a tracheostomy. This section will summarize the sources of evidence, analysis, findings, implications, and recommendations.

Findings and Implications

Findings for this project include demographic data, pre and post-test confidence levels, and results of the simulation design scale. Demographic findings were summarized using tables. Pre- and post- confidence levels during each step of tracheostomy care were analyzed using a paired *t*-test. Content validity was achieved by sending the content of pre- and post-survey questions to respiratory therapists and clinical educational specialists and asking for their expertise. Reliability and internal consistency for all tools was achieved through Cronbach's alpha. The paired t-test was the appropriate test to infer whether or not nurses' confidence significantly improved in terms of their tracheostomy care skill set. All pre- and post-test data on confidence level were analyzed

by using SPSS version 25.The sample consisted of 35 RNs in the surgical acute care unit. All nurses completed the pre- and post-survey questionnaires; however, one nurse failed to complete the pre-survey. Since each item measures confidence regarding a particular aspect of tracheostomy care skills, the paired *t*-test was performed across the entire sample for each individual item.

The paired *t*-test was used to compare pre- and post-confidence levels of the total nurses before and after using simulation method. There were 10 items on the assessment survey, which represented the steps in providing tracheostomy care (See Appendix A) and nurses scored each item using a 5-point Likert scale. All participants had a statistically significant increase in perceived confidence between pre-survey and post-survey scores. All mean values from pre-score to post-score were higher. The mean value of pre-score on question 8 (managing emergency situation on accidental decannulation) was lowest of all other pre-score means (2.88) and the post-score for this item was 4.43. This shows that nurses had low confidence levels regarding managing decannulation and the simulation and instruction aided them in increasing their confidence levels. For question number 5 (performing suctioning) and question number 3 (determining suctioning), the nurses' pre-score means were 4.11 and 4.15, reflectively; these were the highest of the mean pre-scores compared with other questions. The mean post score increased after instruction and simulation education (4.63 and 4.74) and this shows that the simulation method of teaching increased confidence levels in all aspects of tracheostomy care (see Table 1).

Table 1

Paired t Tests: Individual Items on Tracheostomy Skills

Paired Samples Statistics

		Mean	N	Std. Deviation	Sig. (2-tailed
Q 1. Ensuring contact emergency airway kit at patient bedside at all times	Ques1Pre	4.09	35	1.011	.000
	Ques1Post	4.77	35	.490	
Q 2. Differentiating between cuffed and non-cuffed tracheostomy tubes	Ques2Pre	3.40	35	1.143	.000
	Ques2Posrt	4.63	35	.547	
Q 3. Determining appropriateness of suctioning	Ques3Pre	4.14	35	.912	.001
	Ques3Psot	4.63	35	.547	
Q 4. Selecting appropriate size of the catheter for suctioning	Ques4Pre	3.51	35	1.067	.000
	Ques4Post	4.51	35	.562	
Q 5. Performing suctioning	Ques5Pre	4.11	35	.867	.000
	Ques5Post	4.74	35	.443	
Q. 6. Determining appropriateness of changing inner cannula	Ques6Pre	3.89	35	.993	.000
	Ques6Post	4.66	35	.539	
Q 7. Know how to change trache collar	Ques7Pre	3.86	35	1.004	.000
	Ques7Post	4.57	35	.608	
Q 8. Managing emergency situation on accidental decannulation	Ques8Pre	2.89	35	1.105	.000
	Ques8Post	4.43	35	.698	
Q 9. Know how to initiate airway emergency	Ques9Pre	3.06	35	1.187	.000
	Ques9Post	4.43	35	.739	
Q 10. Know how and where to document trache care	Ques10Pre	3.89	35	1.105	.000
	Ques10Post	4.71	35	.519	

81% of nurse participants reported having a baccalaureate degree in nursing, and 64% had 1-5 years of experience on the acute surgical unit. Most of the nurses had 1-5 years of experience, which correlates with the fast turnover rate of nurses in acute care settings (Newhouse, Hoffman, Suflita, & Hairston, 2007). The BSN nurses (n = 29) showed a statistically significant increase from pre to post confidence level ($p < 0.001$) in all tracheostomy care steps, which are represented as the 10 items on the pre and post simulation surveyThe BSN nurses (n = 29) showed a statistically significant increase from pre to post confidence level ($p < 0.001$) in all tracheostomy care steps, which are represented as the 10 items on the pre and post simulation survey. The associate degree nurses (ADNs, n = 4) showed significant increase in confidence level on items 2, 8, and 9. However, there was no significance for items #3, #4, #6, or #10. This result could be related to the low number of ADNs from the acute surgical unit who participated in the

simulation. The associate degree nurses (ADNs, $n = 4$) showed significant increase in confidence level on items 2, 8, and 9. However, there was no significance for items #3, #4, #6, or #10. This result could be related to the low number of ADNs from the acute surgical unit who participated in the simulation.

The associate degree nurses (ADNs, $n = 4$) showed significant increase in confidence level on items 2, 8, and 9. However, there was no significance for items #3, #4, #6, or #10. This result could be related to the low number of ADNs from the acute surgical unit who participated in the simulation.

When data was analyzed for 1-5 years of experience and 6 years and above groups,nurses with 5 years or less experience showed a statistically significant increase in confidence levels in all items. Nurses who had 6 or more years of experience showed a significant increase in confidence levels for five items and a slight decrease in confidence level for the other five items. The items that showed a slight decrease in confidence level in experienced nurses include appropriateness of suctioning ($p = 0.10$), performing suctioning ($p = 0.166$), changing inner cannula ($p = 0.275$), changing trach-collar ($p = 0.104$), and documentation ($p = 0.053$). It may be the case that experienced nurses gained important insight through the use of simulation, and realized that they thought they knew the techniques and concepts, but after the training realized that they learned some new information about caring for the tracheostomy patient. Thus, perceptions of confidence

before the training and simulation might have been increased and more accurate having had the experience.

The NLN evaluation tool contained three evaluation components: a) nurse confidence in performing each required step in tracheostomy care, b) simulation design scale (SDS) and c) educational practice. Nurses completed these evaluation tools after the simulation session. The Student Satisfaction and Self-Confidence in learning tool is a 13-item instrument (See Appendix G) that measures satisfaction (five items) and self-confidence in learning (eight items) and both use a five-point scale. Except for number 13 (it is the instructor's responsibility to tell me what I need to learn of the simulation activity content during the class time), all other 12 items were marked as strongly agree or agree. All ADNS marked statement number 13 as strongly agree or agree while some BSN nurses marked as strongly disagree or disagree. This implies that BSN nurses would like to take responsibility for learning content. The reliability for the Student Satisfaction and Self-Confidence learning tool's internal consistency (Table 9) was tested using Cronbach's alpha (0.86).

The participants used the SDS (see Appendix F), a 20-item questionnaire to grade both the presence and the importance of specific features of the simulation design using a five-point scale. The five design features were objectives/information, support, problem solving, feedback, and fidelity. Each feature was measured regarding its presence , and its importance . For presence of the feature, the five-point scale consisted of 1= strongly disagree, 2= Disagree, 3= undecided, 4= agree, 5= strongly agree and for importance, the five point scale consisted of 1= not important, 2= somewhat important, 3= neutral, 4=

important, 5= very important. The SDS is a 20-item instrument that measures the implementation of simulation designs. Objectives and information were evaluated in five statements. Four statements were used to measure support.. Problem solving had five statements on the SDS, while feedback had four statements and realism had two.

In this project, none of the items were rated at 'strongly disagree' by any of the 35 participants, indicating 100% agreement that each required feature was present in the tracheostomy simulation. More than 90% of the participants rated all statements as 'strongly agree' or 'agree'. Similarly, all nurses perceived the importance of all statements of simulation design scale. None of the statements were marked as 'strongly disagree' or 'disagree'. Internal consistency reliability was established with this sample of 35 nurses by using Cronbach's alpha (0.924) for the SDS in presence of features and 0.924 for the SDS in importance of features.

The Educational Practices Questionnaire is a 16-item instrument that used a five-point scale and also measures educational practice features that includes: active learning, collaboration, diverse ways of learning and high expectations and the importance of each feature (Appendix F). The features included: active learning (10 statements), collaboration (2 statements), diverse ways of learning (2 statements), and high expectations (2 statements). All features were rated strongly agree. The statements numbered 11 and 12 under collaboration, number 14 under diverse ways of learning, and number 6 under active learning were rated as 'disagree' by one nurse. All nurses realized the importance of educational practice statements and rated 'strongly agree and 'agree' on all of them. The internal consistency reliability using Cronbach's alpha for the

presence of specific practices was 0.925 and the importance of specific practices was 0.972.

Every nurse had an opportunity to participate in the simulation. They were required to perform suctioning and to manage the situation of decannulation. There were four to eight nurses in each group. It took approximately one hour to run each scenario. During the pre-conference, the nurses were introduced to the simulation room. During the pre-conference, we explained the expectations, the objectives, and roles. The DNP student observed each participating nurse perform the tracheostomy care skill. A competency checklist (appendix E) was used to document skill completion. Completed forms were submitted to the unit manager for filing.

After performing the skill, debriefing was held. Nurses had an opportunity to reflect on their strengths and weaknesses, provided feedback, and asked questions. The DNP student led the post-conference, answered the questions and emphasized important points. Nursing feedback was positive, with interest in more simulation sessions on a yearly basis. The nurses explained that the simulation setting allowed them to learn in a harm-free environment. Finally, they verbalized what was also found in the quantitative analyses, that as the result of the simulation experience, they have increased confidence in taking care of a tracheostomy patient in a real situation.

Implications

Safe and quality care of a patient is crucial. To provide safety and quality care nurses have to be equipped with knowledge and resources. This project aimed to improve surgical acute care nurses' confidence level in taking care of a patient with a

tracheostomy after using simulation as the method of teaching. Following instruction and simulation, nurses' confidence level increased. The use of the simulation method not only increases confidence level but also increases critical thinking skills, and team effort (Hommes, 2014). A patient with a tracheostomy can deteriorate quickly due to either an occlusion of thick sputum or accidental removal of the inner cannula. Both conditions lead to immediate death or permanent irreversible complications. Nurses have to think faster and act faster. This could be accomplished by giving nurses an opportunity to perform hands-on tracheostomy care using simulation as an instructional method.

Social Change

DNP graduates play an essential role in transforming healthcare systems to achieve better patient outcomes. To create social change and implement system wide changes, more evidence-based projects are necessary. Doctorate prepared nurses possess adequate knowledge and skills to create such positive social change. Nurses will learn not only how to do the skill, but also how to apply critical thinking skills by using real scenarios. Some hospitals have their own simulation centers that can be used to their full extent to educate the nurses: both new orientees and experienced nurses. Presenting and publishing the DNP student's project will bring about change in improving the competency of nurses to perform procedures by changing from the traditional method, which consisted of a poster board presentation and instruction, to using the simulation method of education in the hospital.

Recommendations

The simulation method of education is more prevalent in the academic setting and is shown to increase knowledge and skills of students. Such a method is also essential in hospital settings. The nurses had to be given real life scenarios and practice to better handle the situation to enhance safe and quality patient outcomes. More projects may be implemented using simulation in various settings and procedures to improve the performance of nurses. Additionally, simulation can be introduced during nursing orientation as a strategy to enhance skill proficiency. Creating a policy in a practice setting is vital. Nurses need to have guidelines and policies to practice in an evidence-based setting. Lack of policies will lead to inconsistencies in practice. A policy on care of tracheostomy patients for various settings is necessary. I developed a policy on care of a tracheostomy patient for the acute care setting. It has been recommended for adoption at the site and is presently being evaluated (Appendix J).

Strength and Limitations

Organizational forces such as readiness of the manager and staff of the surgical acute care unit, and leadership support from the Clinical Education and Professional Development Department were all important strengths contributing to the success of this project. There was an enormous interest in learning hands-on training, as well as incorporating tracheostomy care standards and policies in an acute care setting. The unit manager made the training mandatory and paid overtime for all participants. All unit nurses attended the education sessions very enthusiastically. The simulation center was located inside the hospital campus and simulation center staff helped with the logistics.

This project was limited to nurses only in the surgical acute care unit and had only 35 nurses participating Although the outcome evaluation for this project identified an increase in confidence level of surgical acute care nurses, there is a need for continuous evaluation to ensure a reduction of adverse events related to tracheostomy; this follow-up is beyond the scope of the current project. As per nurses' comments and suggestions, the use of the simulation method for managing codes, and drains/ostomy is recommended.

Summary

Nurses in acute care settings are often faced with more challenged low-volume, high-risk nursing procedures such as tracheostomy care. Nurses' confidence level plays an important role in providing safe care. Application of the simulation method of teaching can enhance the nurses' confidence level irrespective of educational level or years of experience. Enhanced confidence can in-turn improve the quality and safety of nursing care of a patient with a tracheostomy.

Section 5: Dissemination Plan

The purpose of this EBP project was to provide education on tracheostomy care using simulation and increase the confidence levels of nurses in providing tracheostomy care. The overall goal was to increase the confidence levels of nurses' in providing high risk low volume procedures such as tracheostomy care using simulation as an instructional method. The purpose of this section is to describe the dissemination process and the results of this DNP project at the organizational and international level and reflect on self-analysis.

Sharing findings from this evidence-based project is vital. I discussed the project results with the unit staff and have a plan to discuss it at the manager meeting. The poster with an oral presentation will be prepared for nurses' day conventions. This will be a great opportunity to disseminate the result of my project findings. In order to share on an international level, I am going to submit the abstract to the 2018 Academy of Medical-Surgical Nurses (AMSN) convention that will be held from September 13-16, 2018 in Florida. I would like to send an abstract for a podium presentation to the 2018 International Nursing Association for Clinical Simulation and Learning (INACL) conference.

Analysis of Self

Providing safe quality care is one of the essential elements of nursing. Any DNP graduates has a vital role in attaining high quality care through EBP. It is no enough to just conduct a project but also to analyze oneself and the project process. The self-analysis is an opportunity to reflect on how well the student did this project and assess

strong and weak points. The purpose of this section of the paper is to reflect on the DNP student's self-analysis.

As Scholar

DNP-prepared nurses have multiple roles to play. According to Glassick (2000), discovery, integration, application, and teaching are the four areas of scholarship that are important because it provides a better preparation for DNP nurses. As a scholar, although I was involved in all four areas of scholarship, I focused on the integration and application areas of scholarship. The need for evidence-based nursing practice necessitates an increase in the number of doctoral-prepared nurses (Institute of Medicine [IOM], 2010). I introduced the use of EBP and integrated the application of simulation using high fidelity manikins to gain confidence in performing tracheostomy care.

As Educator

Nurse educators play a pivotal role in strengthening nursing practice not only in academic settings but also clinical practice. As an educator, I designed, implemented, and evaluated the project on use of simulation for high risk low volume procedures. Findings from this project indicated an increase in nursing confidence levels in providing tracheostomy care. This result will aid in revising the process of validating competency of nursing practices annually by using the simulation instructional method. By completing this project, I gained knowledge and enriched my skill to collaborate by working closely with respiratory therapists, simulation lab personnel, and nurses.

As Project Manager

As a project manager, the DNP student, played a crucial role in building an enthusiastic, energetic, and effective team. Key leaders are responsible for attaining optimum patient outcomes and transformational leadership will yield this result (Hutchinson & Jackson, 2013). The DNP student used transformational leadership skills in sharing my vision, inspired others by sending positive emails, involved others to act, and encouraged others to participate on time. Facilitating the team began by establishing trust. The DNP student met with the manager of the unit and explained the need for this project using evidence. The manager made the simulation education mandatory and paid overtime for nurses. Team members communicated with me on time and every member participated to their level of expectation. The DNP student created standards and a policy on tracheostomy care for acute care nurses with help from this team. The DNP student gained confidence in conducting the project, collecting evidence, managing the team, preparing scenarios, conducting the simulation scenarios, selecting evaluation methods, analyzing data, interpreting data, and reporting results.

Summary

Nurses are expected to show their proficiency in unit specific skills. Annual competency days are held to maintain skill competencies. Nurses are confident in performing skills that are done frequently. But when there is a gap in opportunity to use skills, nurses lose their confidence and this can result in poor outcomes. Nurse educators or managers play an important role in identifying and providing education using appropriate instructional methods. The organization that empoys nurses had to formulate

strategies to develop and provide competency education, especially for low volume high risk procedures. My project shows significant increases in confidence levels of nurses in performing skills such as tracheostomy suctioning and accidental decannulation using simulation. This may be the first step in introducing simulation in the hospital for competency assessment.

References

American Association of Colleges of Nursing (2006). *Essentials of doctoral education for advanced nursing practice.* Washington, DC: Retrieved from http://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

Banks, C. M., Gilmartin, H., & Fink, R. M. (2010). Education methods for maintain nursing competency in low-volume, high-risk procedures in the rural setting: Bridging the theory to practice gap. *Journal for Nurses in Staff Development 26*(3), E1-7. doi:10.1097/NND.0b013e3181aa2f54

Barkhouse-MacKeen, C., Hebert, K., Maclsaac, B., Houk, S., Bethune, B.,& Kiberd, C. (2009). Implementing a teaching strategy for advanced nursing procedures for undergraduate nursing students. *International Nursing Association for Clinical Simulation and Learning, 5*(3), e131. doi: 10.1016/j.ecns.2009.04.008

Bartels, J. (2005). Your career as nurse educator. Retrieved from https://pdfs.semanticscholar.org/edfb/8198def5f9198fb74c4c41d9d6257848aef5.pdf

Blum, C., Bouglund, S., & Pareclls, D. (2010). High-fidelity nursing simulation: Impact on student self-confidence and clinical competence. *International Journal of Nursing Education Scholarship 7(1),* doi:[doi number not underined]

Boykins. A. D. (2014). Core communication competencies in patient-centered care. *Correct Name of Journal Only, 25(2),* 40-45.

Buchko, B., & Robinson, L. (2012). An evidence-based approach to decrease early post-operative urinary retention following urogynecologic surgery. *Urologic Nursing*

32(5), 260-264. Retrieved from http://www.medscape.com/viewarticle/773058_6

Cummings, C., & Connelly, L. (2016). Can nursing students' confidence levels increase with repeated simulation activities? *Nurse Education Today, 36,* 419-421. doi: 10.1016/j.nedt.2015.11.004

Das, P., Zhu, H., Shah, R., Roberson, D., Berry, J., & Skinner, M. (2012). Tracheotomy-related catastrophic events: Results of a national survey. *Laryngoscope, 122*(1), 30-37. doi:10.1002/lary.22453

Day, T., Farnell, S., Haynes, S., Wainwright, S., & Wilson-Barnett, J. (2002). Tracheal suctioning: An exploration of nurses' knowledge and competence in acute and high dependency ward areas. *Journal of Advanced Nursing 39*(1), 35-45.

Elkins, M.Y. (2010). Using PICO and the brief report to answer clinical questions. *Nursing, 40*(4), 59-60. doi:10.1097/01NURSE.0000369871.07714.3

Galloway, S. J. (2009). Simulation techniques to bridge the gap between novice and competent healthcare professionals. *OJIN: The Online Journal of Issues in Nursing, 14*(2), p. ##-##. doi:10.39/OJIN.vol14No02Man03

Glassick, C. E. (2000). Boyer's expanded definitions of scholarship, the standards for assessing scholarship, and the elusiveness of the scholarship of teaching. *Journal of the Association of American Medical Colleges, 75*(9), 877-880.

Herringer, J. (2002). Once isn't enough when measuring staff competence. *Nurse Manager, 33*(2), 22.

Hodges, B. C., & Videto, D. M. (2011). *Assessment and planning in health programs* (2nd ed.). Sudbury, MA: Jones & Bartlett Learning.

Hommes, T. (2014). Implementation of simulation to improve staff nurse education. *Journal for Nurses in Professional Development 30*(2), 66-69.

Hutchinson, M., & Jackson, D. (2013). Transformational leadership in nursing: Towards a more critical interpretation. *Nursing Inquiry, 20* (1), 11-22 doi:10.1111/nin.12006.

Institute of Medicine (IOM). (2010). *The future of nursing: Leading change, advancing health.* Washington, DC: National Academics Press.

Jeffries, P. (2005). A framework for designing, implementing, and evaluating simulations used as teaching strategies in nursing. *Nursing Education Perspectives 26*(2), 96-103

Krischke, M. (2013). *How employers benefit from nurses' continuing education*. Retrieved from http://www.amnhealthcare.com/

Lengetti, E., Monachino, A.am., & Scholtz, A. (2011). *Journal of Nurses Staff Development, 27*(6): 290-3. doi:10.1097/NND.0b013e318237117c.

Mark, L.J., et al. (2015). Difficult airway response team: a novel quality improvement program for managing hospital wide airway emergencies. *Anasthesia and Analgesia 121*(1), 127-39. doi:10.1213/ANE 000000000000691

Miller, G. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine 65*(9). Retrieved from http://winbev.pbworks.com/f/Assessment.pdf

Nancarrow, S., et al. (2013). Ten principles of good interdisciplinary team work. *Human Resources for Health 11*(19). doi:10.1186/1478-4491-11-19

Nance-Floyd, B. (2011). Tracheostomy care: An evidence-based guide to suctioning and

dressing changes. *American Nurse Today 6*(7),

National League for Nurses (NLN) (2015). *A vision for teaching with simulation- A living document from the National League for Nursing NLN Board of Governors, April 20, 2015.* Retrieved from http://www.nln.org/docs/default-source/about/nln-vision-series-(position-statements)/vision-statement-a-vision-for-teaching-with-simulation.pdf?sfvrsn=2M

National League of Nursing. (n.d.). *Descriptions of available instruments*. Retrieved from http://www.nln.org/professional-development-programs/research/tools-and-instruments/descriptions-of-available-instruments.

Newhouse, R, Hoffman, J. Suflita, J, & Hairston, D. (2007). Evaluating an innovative program to improve new nurse graduate socialization into the acute healthcare setting. *Nursing Administration Quarterly 31*(1). 50-60. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/17198120

O'Connell, K. (2015). Feasibility of simulation in orientation: A pilot study (43rd Biennial Convention). *Sigma Theta Tau International.* Retrieved from https://stti.confex.com/stti/bc43/webprogram/Paper73821.html

Olin, J. (2011). Get itWright with competency testing. *RN Central*. Retrieved from http://www.rncentral.com/blog/2011/ get –it-wright-with-competency-testing

Padma, K., et al. (2016). Tracheostomy care and management in general wards and community settings: Literature review. *Nursing in Critical Care 15*(2), 76-85. doi:10.111/j.1478-5153.2010.00386.x

Parker, V., et al. (2010). Tracheostomy management in acute care facilities-a matter of

teamwork. *Professional Staff Development, 19,* 1275-1283. doi:10.111/j.1365-2702.2009.03155.x

Pappas, C. (2013). *The adult learning theory-Andragogy - of Malcolm Knowles*. Retrieved from https://elearningindustry.com/the-adult-learning-theory-andragogy-of-malcolm-knowles

Paul, F. (2010). Tracheostomy care and management in general wards and community settings: Literature review. *Nursing in Critical Care 15*(2), 76-85. doi:10.1111/j.1478.5153.2010.00386.x

Perry, A. G., Potter, P. A., & Ostendorf, W. (2017). *Clinical Nursing Skills and Techniques* (9th ed.). St.Louis, Missouri: Elsevier.

Schaffer, M., Sandau, K., & Diedrick, L. (2013). Evidence-based practice models for organizational change: Overview and practical applications. *Journal of Advanced Nursing*, *69*(5), 1197-1206. doi:10.1111/j.1365-2648.2012.06122.x

Smith-Miller, C. (2006). Graduate nurses' comfort and knowledge level regarding tracheostomy care. *Journal for Nurses in Staff Development, 22*(5), 222-229. doi:00124645-200609000-00003

Technology (2013) Technology. *Long-Term Living: For the Continuing Care Professional*, *92*(6), 48-63.

The Global Tracheostomy Collaborative. (2016). *Our vision*. Retrieved from http://globaltrach.org/

The Royal Children's Hospital Melbourne, (n.d.). *Tracheostomy management*, Retrieved from

http://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Tracheostomy_Management_Guidelines/

University of Maryland Medical Center. (n.d.). *Mission and vision*. Retrieved from http://www.umm.edu/about/mission-and-vision

Walden University (2012). *Student publications: Vision, mission, and goals*. Retrieved from http://catalog.waldenu.edu/content.php?catoid=71&navoid=12999

Walerval, E., Stephan, K., Peczinka, D., Shaw, A. (2012). Designing a process for simulation-based annual nurse competency assessment. *Journal for Nurses in Staff Development*, *28*(6), 274-278. doi:10.1097/NND.0b013e31827258f8

Zolfaghari, P., & Wyncoll, D. (2011). The tracheal tube: Gateway to ventilator-associated pneumonia. *Critical Care*, *15*(5), 310. doi:101186/cc10352

Appendix A: Pre- and Post-Assessment Survey Instrument

Course Name: Tracheostomy suctioning
Course Date: _____
Identification Number: _____ (This number in no way identifies your personal information to anyone)
Educational Background:
Diploma Program
Associate Degree
BSN
MSN
Years of Experience:
1-5 6-10 10-15 16 and above
Confidence is defined as "Having belief in one's own abilities to successfully perform a behavior: (Brannan & Bezanson, 2008). For the questions below, please circle the number that best describes your confidence level in completing the tasks.
1 = no confidence, 2 = little confidence, 3 = some confidence, 4 = mostly confident, 5 = very confident

1	Ensuring correct emergency airway kit at patient beside at all times	1	2	3	4	5
2	Differentiating between cuffed and non-cuffed tracheostomy tubes					
3	Determining appropriateness of suctioning					
4	Selecting appropriate size of the catheter for suctioning					
5	Performing suctioning					
6	Determining appropriateness of changing inner cannula					
7	Know how to change trache-collar					
8	Managing emergency situation on accidental decannuation					
9	Know how to initiate airway emergency					
10	Know how and where to document trache care					

Appendix B: Tracheal Secretion Scenario

CPPD Critical Thinking: Tracheal Secretions Course

Learner Objectives:

By end of simulation and debrief learner will be able to:

1. recognize patient is having difficulty breathing;
2. determine appropriateness of suctioning;
3. determine appropriateness of changing inner cannula;
4. validate airway has been assessed for patency (assessed by ENT or RT);
5. identify deteriorating vital signs and patient status; and
6. ensure correct emergency airway kit at patient bedside at all times

Content:

Learners will receive a brief pre-brief to scenario below. Then will be given a report of pending case. Learners (groups 4-5) will begin simulation scenario working through process for care, diagnostics, and treatment. Once scenario is halted the learners will proceed into conference room for group debrief and peer review.

Content: Case Scenario:

Tracheal Secretions Scenario

NAME: Jones, Brent (nameband Brian Jones)
DOB: 3/17/47

Patient becoming hypoxic due to excess secretions at trach site.

Equipment:

Basic Setup:

- Kit for pts with surgically altered airway-emergency kit (comes from central materials processing)
  - obturator for current trach
  - 10ml syringe
  - Disposable inner cannula
  - 10 french suction catheter (3 of them)
  - replacement trach tubes: sizes __4__ and _6___
    - (one same size and one a size smaller)
- HOB signage; Emergency Care Algorithm; Special Airway wristband
- arm band (use wrong armband for learning purposes)
- Extra size-appropriate inner cannula (8) and obturator (for emergency use) at head of bed
- 2 pairs of sterile gloves

- ambu bag w/ oxygen source
- new trach ties
- new trach collar
- trach dressing
- name band (has name Brian Jones, DOB 3/17/47)
- Suctioning supplies:
    - mask
    - eye protection
    - suction kit (including catheter)
    - suction on wall in reach and set up
    - bottle of sterile saline
    - obturator
- Supplies for changing inner cannula
    - clean gloves
    - new inner cannula

Roles: Primary RN, Orientee, Second RN

Set-up:

- name band on pt (wrong name band)
- Mucous present at trach site
- Pt is on O2 4L humidified trach collar
- Pt laying down in bed (HOB not elevated)
- Altered airway kit near HOB
- Suction supplies available
- Chart at bedside (including documentation of last trach care/inner cannula change, note by RT or ENT stating pt's airway type, order for suctioning)
- Suction setup

Situation: Patient with specialized airway (tracheostomy) on a med/surg unit has just pushed the call bell

Report:
Mr. Jones is admitted to get chemotherapy for his head and neck cancer. He has a cuffed tracheostomy size 6, receiving 4L of humidified 02 via trach collar, the trach was placed 2 months ago. He just pushed the call bell, but didn't say what he needs. NKDA

Time	Scenario Flow	Expected Interventions
0-2 mins	Pt in bed. No monitor connected. High pitched noise heard at trach. (Pt unable to	RN should communicate with pt verbally. RN introduces self to pt.

	communicate well verbally due to trach needing to be suctioned/cleaned.) VS: BP 120/90 HR 72 SpO2 92% Temp 37.2 Manikin's voice needs to be course, with gurgle sounds to simulate thick, copious mucus, and difficulty breathing/speaking.	RN checks armband. Pt will reply in raspy voice that name is Brent Jones DOB 3/17/47. *RN Identifies that the nameband is incorrect*. RN checks that special airway emergency supplies are at bedside: -trach kit personalized to that pt (obturator for current trach, 10ml syringe, disposable inner cannula-size of current trach, suction catheter, 2 replacement trach tubes—one same size and one a size smaller(4) than current trach (6)) -ambu bag and mask -oxygen setup -suction set up RN verifies that Respiratory/ENT has defined pt's type of surgically altered airway (located as a progress note in chart).
2-4 minutes	Slowly give the following clues that pt's oxygenation is compromised until RN suctions and oxygenates pt. -High pitched sound from trach continues. -Breathing becomes difficult. Pt coughing. -Pt attempts to talk in raspy voice saying he is having trouble breathing. If pulse ox placed on pt, SpO2: 92%. SpO2 should continue to drop until suctioning occurs. Charge RN enters room if paged. Guides RNs to assess trach site and act upon secretions noticed(suction/oxygenate). Respiratory Therapist enters room if paged. Guides RNs to assess trach site and act upon	RN will elevate HOB to 30-45 degrees RN will assess need for suctioning and assess trach site. RN will look for orders for suctioning/trach care. RN will gather supplies for suctioning and trach care. Assess breath sounds

	secretions noticed (suction/oxygenate). Breath sounds coarse/rhonchi. If no suctioing done, lips start to turn blue when SpO2<85%).	
3-6 minutes	When suctioning occurs, thick frothy drainage should appear in suction catheter. -SpO2 Prior to suctioning: 91% -if O2 applied 92% -if suction 95% -if suction AND O2 98% SpO2 during suctioning: drops from 100-95%	RN will suction: -hand hygiene -wall suction to 100-120mmHg -apply face mask/shield -attach to pulse ox -apply sterile gloves -hyperventilate pt with 100% oxygen for 30-60 seconds (take off humidification) -suctioning should last for <15 seconds -hyperoxygenate for 60 seconds -assess SpO2 *-sterile technique used* *-encourage pt to cough deep and breath between suctions* RN should talk through procedure to pt and teach pt as tasks are done.
6-8 minutes	Secretions remain visible at trach site and in inner cannula. Coughing persists. If still monitoring SpO2, it should gradually drop (no lower than 75%) until inner cannula changed. If suction and O2 no changes, SpO2 remains 75%. GOAL: is to have RN change inner cannula.	RN replaces disposable inner cannula -put on clean gloves -remove inner cannula and dispose -place new inner cannula into trach (touching only the outside portion) and lock it into place -change gloves RN should talk through procedure to teach pt how to do self-care at home *If RN asks Charge Nurse for supplies to clean trach, have Charge RN state that he/she will go to get supplies. Don't bring supplies during scenario because scenario will stop once pt is suctioned and inner cannula changed.
8-9 minutes	High pitched noise no longer heard	Rn proceeds to clean outer stoma SCENARIO WILL END BEFORE

	If still monitoring SpO2, it should be 98% Pt states (in raspy voice) that he feels like he can breathe easier	OUTER STOMA IS COMPLETELY CLEANED

Evaluation Plan:
Debrief :
Address Critical Actions:

- Why elevate the bed? To decrease abdominal pressure on the diaphragm, promote lung expansion, and reduce risk of aspiration.
- Don't suction while inserting catheter because it increases risk of trauma to airway mucosa
- Secretions that collect under dressings can encourage skin excoriation and infection. Hardened mucus or a slipped cuff can occlude the cannula opening and obstruct the airway.

Appendix C: Tracheostomy Accidental Decannulation

Learner Objectives:

By end of simulation and debrief learner will be able to:

7. recognize patient is having difficulty breathing;
8. identify deteriorating vital signs and patient status determine appropriateness of suctioning;
9. ensure correct emergency airway kit at patient bedside at all times
10. Call for respiratory therapist/airway emergency
11. determine appropriateness of providing oxygen via the mask or tracheostomy stoma

Content:

Learners will receive a brief pre-brief to scenario below. Then will be given a report of pending case. Learners (groups 4-5) will begin simulation scenario working through process for care, diagnostics, and treatment. Once scenario is halted the learners will proceed into conference room for group debrief and peer review.

Content: Case Scenario:

Tracheal Accidental Decannulation Scenario

NAME: Jones, Brent (nameband Brian Jones)
DOB: 3/17/47

Patient's family member pressed call bell and stated patient pulled out the tracheostomy tube.

Equipment:

Basic Setup:

- Kit for pts with surgically altered airway-emergency kit (comes from central materials processing)
  - obturator for current trach
  - 10ml syringe
  - Disposable inner cannula
  - 10 french suction catheter (3 of them)
  - replacement trach tubes: sizes __4__ and _6___
    - (one same size and one a size smaller)
- HOB signage; Emergency Care Algorithm; Special Airway wristband
- arm band (use wrong armband for learning purposes)
- Extra size-appropriate inner cannula (8) and obturator (for emergency use) at head of bed

- 2 pairs of sterile gloves
- ambu bag w/ oxygen source
- new trach ties
- new trach collar
- trach dressing
- name band (has name Brian Jones, DOB 3/17/47)
- Suctioning supplies:
    - mask
    - eye protection
    - suction kit (including catheter)
    - suction on wall in reach and set up
    - bottle of sterile saline
    - obturator
- Supplies for changing inner cannula
    - clean gloves
    - new inner cannula

Roles: Primary RN, Orientee, Second RN, family member

Set-up:

- name band on pt (wrong name band)
- pt has tracheostomy tube in hands
- Pt is on O2 4L humidified trach collar
- Pt laying down in bed (HOB not elevated)
- Altered airway kit near HOB
- Suction supplies available
- Chart at bedside (including documentation of last trach care/inner cannula change, note by RT or ENT stating pt's airway type, order for suctioning)
- Suction setup

Situation: Patient with specialized airway (tracheostomy) on a med/surg unit and family member has just pushed the call bell

Report:
Mr. Jones is admitted to get chemotherapy for his head and neck cancer. He has a cuffed tracheostomy size 6, receiving 4L of humidified 02 via trach collar, the trach was placed 2 months ago. Family member just pushed the call bell, states patient pulled out tracheostomy tube. NKDA

Time	Scenario Flow	Expected Interventions

0-2 mins	Pt in bed. No monitor connected. High pitched noise heard at trach. (Pt unable to communicate well verbally restless and tracheostomy tube at hand.) VS: BP 120/90 HR 72 SpO2 92% Temp 37.2 Pt has difficulty breathing/speaking.	RN should communicate with pt verbally. RN introduces self to pt. RN checks armband with medical records RN checks that special airway emergency supplies are at bedside: -trach kit personalized to that pt (obturator for current trach, 10ml syringe, disposable inner cannula-size of current trach, suction catheter, 2 replacement trach tubes—one same size and one a size smaller(4) than current trach (6)) -ambu bag and mask -oxygen setup -suction set up RN verifies that Respiratory/ENT has defined pt's type of surgically altered airway (located as a progress note in chart).
2-4 minutes	Slowly give the following clues that pt's oxygenation is compromised until RN oxygenates pt. -restless. -Breathing becomes difficult. Pt coughing. -Pt attempts to talk in raspy voice saying he is having trouble breathing. If pulse ox placed on pt, SpO2: 92%. SpO2 should continue to drop until suctioning occurs. Charge RN enters room if	RN will elevate HOB to 30-45 degrees Call for help RN identifies appropriateness of covering tracheostomy opening with sterile gauze and providing breathing through face mask/ambu bag (if no upper airway obstruction) Assess breath sounds Connects to monitor, assess for SpO2, Ask CN to page for respiratory therapist/ airway emergency

	paged. Guides RNs to assess trach site and act upon secretions noticed(suction/oxygenate). Respiratory Therapist enters room if paged. Guides RNs to assess trach site and act upon secretions noticed (suction/oxygenate). Breath sounds coarse/rhonchi. If no suctioing done, lips start to turn blue when SpO2<85%).	Respiratory Therapist inserts tracheostomy tube and assess the site Secure the tracheostomy tube with tracheostomy tie Do the suctioning as appropriately
3-6 minutes	Prepares appropriate size of tracheostomy tube for insertion -SpO2 Prior to inserting tube: 88% -after inserting if O2 applied 91% -	RN will help the respiratory therapist: -provide appropriate size of tracheostomy tube insertion -after the tube is replaced by RT check tube position by auscultating the chest. -attach to pulse ox
6-8 minutes	RN iif suction 95% -if suction AND O2 98%	Suction if necessary -apply sterile gloves -hyperventilate pt with 100% oxygen for 30-60 seconds (take off humidification) -suctioning should last for <15 seconds -hyperoxygenate for 60 seconds -assess SpO2 *-sterile technique used* *-encourage pt to cough deep and breath between suctions* RN should talk through procedure to pt and teach pt as tasks are done.

8-9 minutes	High pitched noise no longer heard If still monitoring SpO2, it should be 98% Pt states (in raspy voice) that he feels like he can breathe easier	Rn proceeds to clean outer stoma SCENARIO WILL END BEFORE OUTER STOMA IS COMPLETELY CLEANED

Evaluation Plan:

Debrief :

Address Critical Actions:

- Why elevate the bed? To decrease abdominal pressure on the diaphragm, promote lung expansion, and reduce risk of aspiration.
- Do not reinsert the tracheostomy tube yourself. Trained person is needed. (do not reinsert the tube if less than 7 days since initial insertion, if the tube has been in situ for more than 7 days, re-cannulate if you are trained in this procedure)
- Assess if the tracheostomy tube is placed for upper airway obstruction or not. If a patient does not have a patent upper airway above the level of their tracheostomy, he/she will only be able to breathe via the tracheosotomy stoma until the tube is reinserted.
- Don’t suction while inserting catheter because it increases risk of trauma to airway mucosa
- Secretions that collect under dressings can encourage skin excoriation and infection. Hardened mucus or a slipped cuff can occlude the cannula opening and obstruct the airway.

Appendix D: Competency Checklist

Tracheostomy Suctioning

Name _____ Date _____

School _____

Instructor _____

Course _____

Tracheostomy Suctioning	**Able to Perform**	**Able to Perform with Assistance**	**Unable to Perform**	**Initials and Date**
Safety				
1. Be gentle in all aspects of care.	☐	☐	☐	
2. Be prepared to maintain airway and initiate resuscitation measures should child exhibit progressive signs of respiratory or cardiac distress.	☐	☐	☐	
3. Initiate "Code Blue" and provide resuscitation if child experiences respiratory or cardiac failure.	☐	☐	☐	
NOTE: Suction only after careful assessment indicates the need to do so. Coordinate suctioning with other pulmonary hygiene interventions, e.g., inhaled bronchodilators, chest physiotherapy. Provide adequate hydration to minimize mucosal drying and promote ciliary action.				
Procedure				
1. Gather equipment. *Comments:*	☐	☐	☐	
2. Assemble suction canister and connecting tubing to suction source. Set suction levels as follows: 80–100 mm Hg for infants and children under 10–12 years, 100–120 mm Hg for older children. Ensure appropriate resuscitation equipment (mask, valve, bag) is at bedside. *Comments:*	☐	☐	☐	
3. Turn on oxygen source attached to the resuscitation bag to inflate the reservoir bag. *Comments:*	☐	☐	☐	
4. Wash hands.	☐	☐	☐	

Tracheostomy Suctioning	**Able to Perform**	**Able to Perform with Assistance**	**Unable to Perform**	**Initials and Date**
Comments:				
5. Perform baseline respiratory assessment. *Comments:*	☐	☐	☐	
6. Open and prepare suction pack and normal saline container, maintaining clean technique. *Comments:*	☐	☐	☐	
7. Don mask, gloves, goggles, and gown (as needed). Observe standard and droplet precautions according to policy. *Comments:*	☐	☐	☐	
8. Using dominant hand, remove protective covering, pick up suction catheter, and connect it to the suction tubing with nondominant hand. Check suction pressures once catheter is connected. Place distal end of catheter in a cup of sterile saline to test the suction. *Comments:*	☐	☐	☐	
9. With nondominant hand, remove humidity source from the tracheostomy tube. Oxygenate the child before suctioning, using resuscitation bag in your nondominant hand. Give several breaths. *Comments:*	☐	☐	☐	
10. Remove the resuscitation bag. Using dominant hand, place the suction catheter into the tube, making sure no suction is applied. Advance the catheter no farther than 1/4 to 1/2 inch below the edge of the tracheostomy tube. NOTE: To assist in judging how far to insert the catheter, place an appropriately sized catheter into an extra artificial airway of the same size. Verify appropriate depth for suctioning and mark suction catheter to the appropriate depth with tape. *Comments:*	☐	☐	☐	

Tracheostomy Suctioning	**Able to Perform**	**Able to Perform with Assistance**	**Unable to Perform**	**Initials and Date**
11. Apply intermittent suctioning by covering the suction control hole with thumb. Gently rotate the catheter while withdrawing the catheter. Comments:	☐	☐	☐	
12. Remove the catheter and flush with sterile saline. *Comments:*	☐	☐	☐	
13. Oxygenate the patient. If necessary, repeat steps 13–15, being sure to oxygenate (or hyperoxygenate) between suctioning. Allow 20–30 second intervals between each episode of suctioning. Limit suctioning to a total of 3 times *Comments:*	☐	☐	☐	
14. Assess respiratory status, including respiratory rate, color, and effort. Auscultate breath sounds. *Comments:*	☐	☐	☐	
15. Comfort the patient *Comments:*	☐	☐	☐	

Appendix E: Educational Practice Questionnaire

Educational Practices Questionnaire (Student Version)

In order to measure if the best practices are being used in your simulation, please complete the survey below as you perceive it. There are no right or wrong answers, only your perceived amount of agreement or disagreement. Please use the following code to answer the questions.

Use the following rating system when assessing the educational practices:

1 - Strongly Disagree with the statement
2 - Disagree with the statement
3 - Undecided - you neither agree or disagree with the statement
4 - Agree with the statement
5 - Strongly Agree with the statement
NA - Not Applicable; the statement does not pertain to the simulation activity performed.

Rate each item based upon how important that item is **to you.**

1 - Not Important
2 - Somewhat Important
3 - Neutral
4 - Important
5 - Very Important

Item	1	2	3	4	5	NA	1	2	3	4	5
Active learning											
1. I had the opportunity during the simulation activity to discuss the ideas and concepts taught in the course with the teacher and other students.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
2. I actively participated in the debriefing session after the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
3. I had the opportunity to put more thought into my comments during the debriefing session.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
4. There were enough opportunities in the simulation to find out if I clearly understand the material.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
5. I learned from the comments made by the teacher before, during, or after the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
6. I received cues during the simulation in a timely manner.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
7. I had the chance to discuss the simulation objectives with my teacher.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
8. I had the opportunity to discuss ideas and concepts taught in the simulation with my instructor.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
9. The instructor was able to respond to the individual needs of learners during the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
10. Using simulation activities made my learning time more productive.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5

Revised December 22, 2004

Educational Practices Questionnaire (Student Version)

Use the following rating system when assessing the educational practices:

1 - Strongly Disagree with the statement
2 - Disagree with the statement
3 - Undecided - you neither agree or disagree with the statement
4 - Agree with the statement
5 - Strongly Agree with the statement
NA - Not Applicable; the statement does not pertain to the simulation activity performed.

Rate each item based upon how important that item is **to you.**

1 - Not Important
2 - Somewhat Important
3 - Neutral
4 - Important
5 - Very Important

Item	1	2	3	4	5	NA	1	2	3	4	5
Collaboration											
11. I had the chance to work with my peers during the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
12. During the simulation, my peers and I had to work on the clinical situation together.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
Diverse Ways of Learning :											
13. The simulation offered a variety of ways in which to learn the material.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
14. This simulation offered a variety ways of assessing my learning.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
High Expectations											
15. The objectives for the simulation experience were clear and easy to understand.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
16. My instructor communicated the goals and expectations to accomplish during the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5

Revised December 22, 2004

Appendix F: Simulation Design Scale

Simulation Design Scale (Student Version)

In order to measure if the best simulation design elements were implemented in your simulation , please complete the survey below as you perceive it. There are no right or wrong answers, only your perceived amount of agreement or disagreement. Please use the following code to answer the questions.

Use the following rating system when assessing the simulation design elements:

1 - Strongly Disagree with the statement
2 - Disagree with the statement
3 - Undecided - you neither agree or disagree with the statement
4 - Agree with the statement
5 - Strongly Agree with the statement
NA - Not Applicable; the statement does not pertain to the simulation activity performed.

Rate each item based upon how important that item is **to you.**

1 - Not Important
2 - Somewhat Important
3 - Neutral
4 - Important
5 - Very Important

Item	1	2	3	4	5	NA	1	2	3	4	5
Objectives and Information											
1. There was enough information provided at the begining of the simulation to provide direction and encouragement.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
2. I clearly understood the purpose and objectives of the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
3. The simulation provided enough information in a clear matter for me to problem-solve the situation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
4. There was enough information provided to me during the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
5. The cues were appropriate and geared to promote my understanding.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
Support											
6. Support was offered in a timely manner.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
7. My need for help was recognized.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
8. I felt supported by the teacher's assistance during the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
9. I was supported in the learning process.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5

Revised December 22, 2004

Simulation Design Scale (Student Version)

Use the following rating system when assessing the simulation design elements:

1 - Strongly Disagree with the statement
2 - Disagree with the statement
3 - Undecided - you neither agree or disagree with the statement
4 - Agree with the statement
5 - Strongly Agree with the statement
NA - Not Applicable; the statement does not pertain to the simulation activity performed.

Rate each item based upon how important that item is **to you.**

1 - Not Important
2 - Somewhat Important
3 - Neutral
4 - Important
5 - Very Important

Item	1	2	3	4	5	NA	1	2	3	4	5
Problem Solving											
10. Independent problem-solving was facilitated.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
11. I was encouraged to explore all possibilities of the simulation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
12. The simulation was designed for my specific level of knowledge and skills.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
13. The simulation allowed me the opportunity to prioritize nursing assessments and care.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
14. The simulation provided me an opportunity to goal set for my patient.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
Feedback/Guided Reflection											
15. Feedback provided was constructive.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
16. Feedback was provided in a timely manner.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
17. The simulation allowed me to analyze my own behavior and actions.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
18. There was an opportunity after the simulation to obtain guidance/feedback from the teacher in order to build knowledge to another level.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
Fidelity (Realism)											
19. The scenario resembled a real-life situation.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5
20. Real life factors, situations, and variables were built into the simulation scenario.	O 1	O 2	O 3	O 4	O 5	O NA	O 1	O 2	O 3	O 4	O 5

Revised December 22, 2004

Appendix G: Student Satisfaction and Self-Confidence in Learning

Student Satisfaction and Self-Confidence in Learning

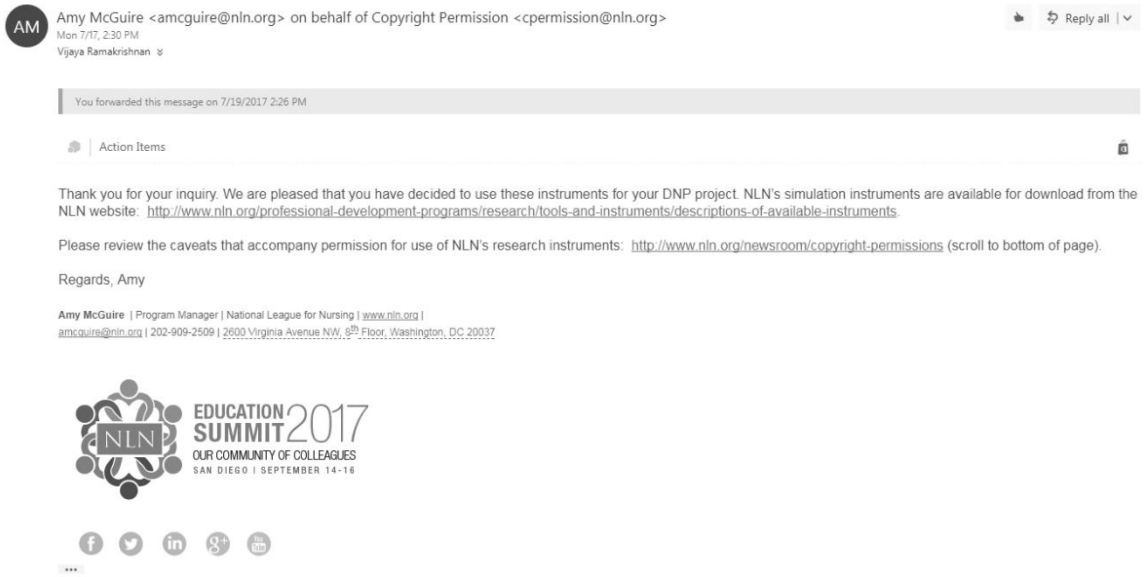
Instructions: This questionnaire is a series of statements about your personal attitudes about the instruction you receive during your simulation activity. Each item represents a statement about your attitude toward your satisfaction with learning and self-confidence in obtaining the instruction you need. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking the numbers that best describe your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be. This is anonymous with the results being compiled as a group, not individually.

Mark:
1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED - you neither agree or disagree with the statement
4 = AGREE with the statement
5 = STRONGLY AGREE with the statement

Satisfaction with Current Learning	**SD**	**D**	**UN**	**A**	**SA**
1. The teaching methods used in this simulation were helpful and effective.	○ 1	○ 2	○ 3	○ 4	○ 5
2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	○ 1	○ 2	○ 3	○ 4	○ 5
3. I enjoyed how my instructor taught the simulation.	○ 1	○ 2	○ 3	○ 4	○ 5
4. The teaching materials used in this simulation were motivating and helped me to learn.	○ 1	○ 2	○ 3	○ 4	○ 5
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	○ 1	○ 2	○ 3	○ 4	○ 5
Self-confidence in Learning	**SD**	**D**	**UN**	**A**	**SA**
6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	○ 1	○ 2	○ 3	○ 4	○ 5
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	○ 1	○ 2	○ 3	○ 4	○ 5
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting	○ 1	○ 2	○ 3	○ 4	○ 5
9. My instructors used helpful resources to teach the simulation.	○ 1	○ 2	○ 3	○ 4	○ 5
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	○ 1	○ 2	○ 3	○ 4	○ 5
11. I know how to get help when I do not understand the concepts covered in the simulation.	○ 1	○ 2	○ 3	○ 4	○ 5
12. I know how to use simulation activities to learn critical aspects of these skills.	○ 1	○ 2	○ 3	○ 4	○ 5
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time..	○ 1	○ 2	○ 3	○ 4	○ 5

 Revised December 22, 2004

Appendix H: Permission NLN Tools



AM

Amy McGuire <amcguire@nln.org> on behalf of Copyright Permission <cpermission@nln.org>

Mon 7/17, 2:30 PM

Vijaya Ramakrishnan

Reply all

You forwarded this message on 7/19/2017 2:26 PM

Action Items

Thank you for your inquiry. We are pleased that you have decided to use these instruments for your DNP project. NLN's simulation instruments are available for download from the NLN website: http://www.nln.org/professional-development-programs/research/tools-and-instruments/descriptions-of-available-instruments.

Please review the caveats that accompany permission for use of NLN's research instruments: http://www.nln.org/newsroom/copyright-permissions (scroll to bottom of page).

Regards, Amy

Amy McGuire | Program Manager | National League for Nursing | www.nln.org |
amcguire@nln.org | 202-909-2509 | 2600 Virginia Avenue NW, 8th Floor, Washington, DC 20037

NLN EDUCATION SUMMIT 2017
OUR COMMUNITY OF COLLEAGUES
SAN DIEGO | SEPTEMBER 14-16

Appendix I: Comments/Suggestions

Comments:
Great job VJ, thank you for taking the time to do this
It was excellent! VJ is fabulous. I learned a lot
Very well organized and a good re-learning experience
This class of trach care was very important and I acquired knowledge and skills and I can now confidently and comfortably attend a trach patient
The simulation activity was very helpful and very informative in doing trach care
The simulation was very helpful, it has increased my confident and knowledge of tracheostomy care. If I did not take part in this simulation I don't believe it would be prepared for an emergency situation.
Scenarios were matching realistic situations
Thanks to the coordinator, thanks to the manager for given us the opportunity
Thanks to the manager and VJ for this chance you gave us to learn more about taking care of patient with tracheostomy
Thank you for this learning opportunity. It was a great way to solidify my skills and practice in a non life threatening environment
I like the simman, we should use it for code scenarios
The mannequin and simulation had realistic elements, communication was a little difficult between the patient and nurses.
Good job and good sim
Good and timely simulation. I am glad I attended
Very educational
Teaching process was step by step and very understandable. Instructor make sure we understood
This class was very informative, classes like this would make real life situations less stressful
Nowhere to plug ambu-bag to wall O2
Suggestions:
May be more scenarios, randomize assign scenario roles
I wish we could do this more! Explain that we are basically doing a shift/change for the beginning
Need more classes like of this kind
I suggest that this education should be done yearly to refresh the nurses
We should have continued simulation
More hands on experiences
Repeat very often for new staff, simulation for code and ostomy care, and more simulation scenarios
More simulations, scenarios learning in the future
More simulation learning opportunities
We can/should use this simman and masteri-center more often
More simulation
Wish we had time to do a few more simulation

Appendix J: Policy and Procedure (proposed)

Title: Tracheostomy care- Adult Acute surgical care unit

Definitions:

Fresh Tracheostomy Stoma – Stoma that has not yet had initial tracheostomy tube change.

Non-Established Tracheostomy Stoma – Stoma that has had an initial uncomplicated tracheostomy tube change (usually done at 7-10 days post op, but is not yet 14 days old).

Established Tracheostomy Stoma – Stoma that is more than 14 days post- op and that has had 2 uncomplicated tracheostomy tube changes.

Tracheostomy Care – tracheostomy care includes:

- assessment of patency
- changing of inner cannula
- stoma care/dressing change
- changing of tracheostomy tube holders

Qualified Personnel for Tracheostomy Care:

- **For Fresh Tracheostomy Stoma:** Registered Nurse (RN), Registered Nurse (Nurse Practitioner) RN (NP), Registered Respiratory Therapist (RRT), and Paramedics.
- **For Non- Established Stoma:** as above, and RPN/GN, LPN/GPN and Physiotherapist (PT).
- **For Established Stoma:** as above and patients, parents and/or family following education and demonstrated competency in this process, and when patient stability deemed appropriate by Physician and supervision by qualified personnel.

Authorized Practitioner – Physician, Registered Respiratory Therapist (RRT), Registered Nurse (Nurse Practitioner) RN (NP) who has the knowledge and skill in tracheostomies.

1. **PURPOSE**

1.1 To minimize risks of infection and other complications associated with tracheostomy care.

2. **POLICY**

2.1 Nursing staff will notify the Respiratory Therapy department as soon as possible when a patient is admitted or transferred to the unit with a tracheostomy.

Note*: In sectors where an RRT is not available, nursing staff will notify an authorized practitioner.*

2.1.1 In the acute care setting an RRT will assess patients with a tracheostomy at a minimum of once every 24 hours and more often if clinically required.

2.1.2 In sectors where a RRT is not available, the patient with a tracheostomy will be assessed by another authorized practitioner.

2.2 When planning transfers of patients with tracheostomies to rural or long-term care, nursing
staff will alert the receiving site as soon as possible, so appropriate resources and/or staff training can be determined.

2.3 Aseptic technique will be used for care of fresh tracheostomies and for patients that are
immunocompromised or in critical care. Clean technique, using sterile supplies, will be used
for care of non-established and established tracheostomies.

2.4 **Assessment of tracheostomy tube patency** will be performed every 4-6 hours (adults) and p.r.n. by assessment of respiratory status.

2.4.1 Tracheostomy tube patency will be assessed by inspecting the inner cannula for cleanliness and integrity. Tracheostomies without an inner cannula will be assessed for signs of tracheostomy obstruction (ie. increase work of breathing, lower oxygen saturations)

2.4.2 Tracheostomy tubes with inner cannula should have inner cannula changed q24 hours & more frequently if required

2.5 Humidification and hydration are important factors in the care of a patient with a tracheostomy tube. The artificial airway bypasses upper airways, which normally warm, filter,
and humidify inspired air. Ensuring adequate humidification and hydration with oral or IV fluids helps thin secretions and facilitates removal by suctioning.

2.6 **Tracheostomy Stoma Care**

Fresh Tracheostomy Stoma: initial tracheostomy dressings are left for the first 24 hours postoperatively unless otherwise ordered by physician. During this time, dressings may be reinforced as required.

After 24 hours, dressings may then be changed every 6 hours or p.r.n. utilizing aseptic technique and 2 qualified personnel. Use extreme caution to not dislodge or over manipulate the tracheostomy tube. Fresh Tracheostomy Stoma: initial tracheostomy dressings are left for the first
Non-Established & Established Tracheostomy Stoma: stoma care is provided every 6-12 hours and p.r.n. utilizing clean technique by qualified personnel. If patient is immunocompromised or in critical care, sterile technique will be utilized.

2.6.1 Tracheostomy stoma should be cleansed with sterile normal saline.

2.6.2 No creams or ointment should be applied to stoma site without a physician/RN(NP) order. Caution should be utilized to ensure prescribed creams/ointments do not enter the airway. **Powders should not be used around tracheostomy stoma site**.

2.6.3 If a dressing is required, utilize non-fraying materials such as pre-made tracheostomy

sponges. Regular gauze should not be used for tracheostomy stoma dressings as frayed edges may irritate or enter the stoma and airway.

2.6.4 Polyurethane foam dressings with high moisture vapour transmission rates may be utilized on highly exudating stomas to help decrease maceration of the surrounding skin and hypergranulation of the stoma. These foam dressings may be cut to fit.

2.6.5 Dressings are not necessary for long-term or permanent tracheostomies, providing site is healed and exudate is minimal.

2.7 **Securing of Tracheostomy tube**

Fresh Tracheostomy Stoma: A tracheostomy securement device (Velcro tube holder) will be used to secure fresh tracheostomy tubes for the first 24 hours post-operatively and should not be changed or adjusted without physicians order and supervision. After 24 hours, the securement device may be changed by 2 qualified personnel following consultation with authorized practitioner. Extreme caution must be taken not to dislodge the tube or over manipulate the tracheostomy tube.
Non-Established & Established Stomas: Tracheostomy securement devices should be changed once a week (adults) and p.r.n. by qualified personnel and 1 assistant.

2.7.1 Assessment of tracheostomy tube securement device security should be performed every 1-2 hours and p.r.n. Adjustments should be made to ensure the ties are not too tight or not too loose by ensuring one finger is able to be placed under the tracheostomy securement device.

2.8 **Tracheostomy Tube changes**

Note: *During the first 24 hrs post-operatively the stoma is particularly precarious in that it is subject to bleeding caused by accidental removal or manipulation of the tube. Displacement of the tracheostomy tube may result in rapid closure of the stoma, making reinsertion of the tracheostomy tube difficult or impossible. Reinsertion of the tracheostomy tube at this time can result in trauma and creation of a false passage, interstitial emphysema or pneumomediastinum. Inability to reinsert tracheostomy tube could result in loss of a patent airway.*

2.8.1 Tracheostomy tube changes are not done by acute care surgical nurses.
Note*: If the initial tracheostomy tube change is performed by a RRT, a physician specialist must be contacted and be immediately available to assist or problem solve.*
2.8.2 Once the surgeon has deemed that a stoma is established, subsequent scheduled tracheostomy tube changes are done by an authorized practitioner or certified Registered Nurse (RN) on targeted units – refer to nursing policy #1120 Special Nursing Procedure – Appendix A.
2.8.3 Tracheostomy tubes with inner cannula should be changed every thirty (30) days and
p.r.n.

2.8.4 Tracheostomy tubes without inner cannula should be changed weekly to monthly, as
per physician/RN(NP) order and/or patient need; as secretions can build up in tracheostomy tube lumen resulting in increased work of breathing.

2.8.5 Tracheostomy tubes may require reinsertion on an emergent basis due to airway obstruction or unplanned decannulation. Acite care surgical nurses are not allowed to do reinsertion. Call for RRT, rapid response or code team.

2.9 Supplies for tracheostomy care and emergent tracheostomy tube replacement/change
must be available at the bedside or in a readily accessible location at all times, including during patient transport or anytime the patient leaves the unit.

2.9.1 Tracheostomy care equipment and supplies ()
2.9.2 A tracheostomy insertion tray will be available on the unit for the first 14 days postoperatively or until after first tracheostomy tube change, for use in case of accidental
decannulation.

3. PROCEDURE

3.1 Gather supplies that are required at bedside.
.
3.2 Explain procedure to patient/family and how they may assist as appropriate.

3.3 Analgesics may be required before providing tracheostomy care, especially if tracheostomy is fresh.

3.4 Place adult patients in semi-fowlers position, with neck slightly extended (unless contraindicated).

3.5 Perform hand hygiene and apply gloves and face shield or goggles and mask.

3.6 Assess the patient's respiratory status. If necessary, encourage coughing or suction the
patient to remove secretions

3.7 **Assessment of Patency and Changing of Inner Cannula**
Note*: Fresh and non-established tracheostomies require 2 qualified personnel to change the inner cannula.*

Note*: Some adult tracheostomy tubes have no inner cannulas.*

3.7.1 Change the inner cannula q 24 hour and p.r.n.

3.7.2 **Method 1**: Disposable inner cannula

3.7.2.1 Stabilize the neck plate of the tracheostomy tube with one hand. With the other hand, gently squeeze the snap lock and remove the inner cannula in

a downward motion. Some disposable tracheostomies (such as the extended length tracheostomy) have a twist to lock and unlock the inner cannula.

3.7.2.2 Quickly inspect inner cannula for cleanliness and integrity.

3.7.2.3 A clean and intact cannula can be reinserted after rinsing it with sterile 0.9% sodium chloride.

3.7.2.4 A cannula which is encrusted with blood or secretions, or is damaged must be discarded and replaced with a new disposable inner cannula.

3.7.2.5 Lubricate new inner cannula with sterile 0.9% sodium chloride before insertion, ensuring the part of the inner cannula entering the patient remains sterile.

3.7.2.6 Ensure that the inner cannula is securely locked in place.
3.7.3 **Method II**: Non-disposable inner cannula

3.7.3.1 Open Tracheostomy Care tray (where available) using aseptic technique. Fill compartments with sterile 0.9% Sodium Chloride. Use one compartment for cleaning and the second compartment for rinsing.

3.7.3.2 To remove the inner cannula, stabilize the neck plate with one hand and with the other hand, rotate the inner cannula counter-clockwise to unlock it. Gently pull the inner cannula out in a downward motion, following the natural curvature of the tracheostomy tube.

3.7.3.3 To maintain the integrity of the inner cannula, hold it by the top only. Cleanse the inner cannula by scrubbing it gently with a pipe cleaner or brush provided.

3.7.3.4 Rinse the inner cannula with the sterile 0.9% Sodium Chloride solution. Gently drain excess solution.

3.7.3.5 Stabilize neck plate while reinserting the inner cannula; rotate clockwise to lock it in place.
3.8 **Stoma Care**

***Note**: Fresh and non-established tracheostomies require 2 qualified personnel for stoma care. One person stabilizes the tracheostomy tube while the other person removes the dressing.*

3.8.1 If applicable, removed soiled tracheostomy dressing.

3.8.2 Using sterile cotton-tipped applicators, 2x2 gauze and 0.9% sodium chloride clean the
tracheostomy stoma starting at the stoma site under faceplate extending
5-10 cm (adults) in all directions from the stoma. Clean in a

circular motion from stoma site outward. Discard applicator and repeat the action until the stoma and surrounding skin are clean. Clean the exposed outer cannula surfaces and faceplate
3.8.3 Using a dry gauze or dry cotton tipped applicators, pat lightly at skin and exposed outer cannula surfaces.

3.8.4 Apply a new sterile tracheostomy dressing (if required).

3.8.5 Ensure tracheostomy tube holder are not too tight or too loose following dressing application.

3.9 Provide oral care.

3.10 **Changing tracheostomy tube holder**
Note*: Fresh and non-established tracheostomies require 2 qualified personnel to change tube holders.*
Established tracheostomies require 1 qualified personnel and 1 assistant to change trach tube holders.
3.10.1 Stabilize the neck plate of the tracheostomy tube
3.10.1.1 Fresh or non-established tracheostomy: secure new twill tape or tracheostomy securement device prior to removing old tapes/devices.
3.10.1.2 Established tracheostomy: remove the old tracheostomy holder by releasing the Velcro while assistant stabilizes tracheostomy. If tracheostomy is cuffed, be careful not to cut the pilot balloon tubing.
3.10.1.3 Thread the new Velcro through the openings in the neck plate.

Note: *Assistant must maintain stability of the neck plate while tracheostomy tube holder is being exchanged.*

3.10.1.4 Secure the Velcro securement device per package directions,

3.10.2 Check that securement device is not too tight or loose by placing one finger under the tracheostomy tube holder. Adjust as required.

3.10.3 Adjustment of tracheostomy tube holder security should be performed every 1-2 hours and p.r.n. with adjustments made
3.11 **Accidental Decannulation**

Note*: Surgical acute care nurses are not attempt to reinsert new tube.*

3.11.1 In the event of accidental decannulation, call for help.

3.11.2 Make sure new sterile tracheostomy tube of same size and smaller size is available at bed side.
3.11.2.1 If unable to insert tracheostomy of same size, try insertion of next smaller size. If this is not possible, insert end of a sterile suction catheter into stoma to help maintain opening. DO NOT connect catheter to suction.
Note: *A stoma that is less than 48 hours old is not fully formed – if dislodged it will close quickly and reinsertion of tracheostomy tube may require use of the*

stay sutures placed during surgery.

3.11.3, Use a bag-valve-mask (BVM) resuscitation device (or pocket mask) to ventilate the patient by mouth while covering the tracheostomy stoma with a gloved finger. However, if the patient has complete upper airway obstruction, a gaping stoma, or a laryngectomy, mask-to-stoma ventilation must be performed.

3.12 **Documentation and Reporting**

3.12.1 Document of the progress in the computer under flow sheet (daily care or use notes for more detail):

- the time of tracheostomy care
- color, amount and consistency of secretions
- condition of stoma and surrounding skin
- drainage from stoma and dressing change (if applicable)
- changing of disposable inner cannula (if applicable)
- changing of securement device (if applicable)
- patient response
- patient and family teaching

3.12.2 Document on the patient care plan: the frequency of tracheostomy care required

3.12.3 Report any swelling, redness, bleeding, discomfort, drainage, and/or signs of infection related to the tracheostomy to physician and document in progress notes.

3.12.4 Communicate concerns, complications and/or recommendations to the physician or authorized practitioner and RRT (if applicable) and document in progress notes.

4. REFERENCES

Brunner, L.S., Suddarth, D. S. (2014). The Lippincott manual of nursing practice. (10th ed) PA: Wolters Kluwer/Health/Lippincott Williams & Wilkins.