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Providing Optimal Nutrition in Critical Care

Jo Anne Foley
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Jo Foley

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Review Committee
Dr. Joan Moon, Committee Chairperson, Health Services Faculty
Dr. Susan Hayden, Committee Member, Health Services Faculty
Dr. Tracy Wright, University Reviewer, Health Services Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2016

Abstract

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MS, University of Massachusetts, 1998

BS, University of Massachusetts, 1990

Project Submitted in Fulfillment

of the Requirements for the Degree of

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Abstract

Malnutrition among hospitalized patients is prevalent and associated with adverse outcomes. At the health care facility for which this quality improvement (QI) initiative was developed, patients were not consistently fed within the nationally recommended 48 hours. The purpose of this project was to facilitate the early initiation of enteral feedings to prevent malnutrition in a vulnerable patient group by development of an evidence-based enteral feeding policy, algorithm, and nursing education module. The find, organize, clarify, understand, select, plan, do, check, and act model provided a systematic approach for development of the project. Validation of the QI initiative was through the use of Likert scale which was completed by 2 nurses and a head dietician. The content validity index average was 1.0 for the QI initiative products (policy, algorithm, educational module). Ten team members completed a summative evaluation of the educational module and presentation using a 7 item, Likert scale. Basic descriptive analyses were employed to analyze the data, revealing broad support for the module and the DNP student's leadership. A recommendation was made to conduct an audit using a formal software program to quantify the number of patients who were not being fed within the time frame of 48 hours. Implementing an evidence-based enteral feeding protocol can be a significant intervention that produces better patient outcomes. The implications for social change in this project relates to improvements within the critical care environment.

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Dedication

To all those who dream… If you can dream it, you can do it. Always remember that this whole thing was started with a dream and a mouse. Walt E. Disney.

Acknowledgments

Thank you to Dr. Moon, God truly puts certain people in your life for reasons. To Dr. Hayden, I cannot thank you enough for all your help with my project. To my family, my husband Paul, and my daughters Isabel and Anabella (Anie), my greatest joys in life, for your sacrifices, and never-ending love and support you have given me throughout this journey. Words cannot express my gratitude. To my mom and dad, - I know you have been with me every step of the way. To my brothers and sisters who have also given me love and encouragement throughout all my educational endeavors, thank you. I have been blessed to have some great mentors, Dr. Joan Moon, Dr. Christine Salvucci and Dr. Virginia Mason, Thank you for all support, assistance and encouragement along the way. As I feel I have given my heart and soul to the profession of nursing over the last years, I have gotten so much more in return.

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Section 1: Overview of the Evidence- Based Project

Introduction

The practice problem that was addressed in this study was malnutrition in the critically ill population. Developing a quality improvement (QI) enteral feeding initiative can address the significant problem of malnutrition. The QI initiative included an updated enteral feeding policy, development and revision of an algorithm to assist with early administration of enteral feedings, and an educational strategy for nurses in the intensive care unit (ICU). Malnutrition remains costly to the patient and health care system and continues to be associated with prolonged hospital stays and mortality rates (Stewart, 2014a). Racco (2012) endorsed early initiation of enteral feedings and reaching nutritional goals in a timely manner resulting in favorable outcomes for patients. Critically ill patients are at higher risk for malnutrition due to changes in energy metabolism as a response to trauma, surgery, burns, and sepsis (Stewart, 2014a). Finocchiaro and Hook (2015) acknowledged that many critical illnesses endured by patients in the ICU are sepsis, pneumonia, liver disease, and heart failure, which can lead to cachexia. *Cachexia* is defined as severe body weight loss, including fat and muscle loss from protein catabolism. Ros, McNeil, and Bennett (2009) indicated that the use of evidence-based enteral feeding protocol can improve the nutritional status of hospitalized patients and can prevent malnutrition.

Critically ill patients should receive enteral feedings within 24 to 48 hours following admission, based on evidence- based guidelines for nutritional support therapy (McClave et al., 2009). At the health care facility where the project took place, patients

were not fed in a span of 48 hours, and the health care facility did not have an updated policy or protocol on enteral feedings. An informal audit with the head dietician was performed showed that enteral feeding practices varied among all three ICU and were not evidence- based. Data revealed no initiation of enteral feedings within 48 hours, lack of documentation as to why enteral feedings were stopped, practices for holding enteral feedings for residuals varied with holding enteral feedings if patients did not have present bowel sounds, and flow rates of enteral feeding were not consistent with physician's orders. The data collected from the informal audit reflected the literature in demonstrating that nursing practices vary and contribute to under-feeding (Kim et al., 2012). The data from the audit revealed that practices were not consistent with the health care facility's previous policy on enteral feedings. The previous policy included increasing the tube feeding by 10 ml every 4 hours until the goal rate was reached or holding enteral feedings if residuals were greater than 250 ml.

Nurses working at the bedside can no longer rely on only their clinical experience to provide quality care; the nurse must evaluate patient care processes and the outcomes of care and ask the question whether the best and most current practices are being used (White & Dudley-Brown, 2012, p. 4). Evidence- based practice has gained momentum due to the quality and safety movement, growth of new knowledge, the delay of incorporating new evidence into clinical practice, and consumer pressure (White & Dudley Brown, 2012).

Social change was fostered by developing an evidence- based enteral feeding initiative that addressed the issue of malnutrition. Key to the Doctoral Nursing Practice

(DNP) program was to apply relevant findings to develop practice guidelines and improve practice (American Association of Colleges of Nursing, [AACN], 2006). In Essential III, Clinical Scholarship and Analytical Methods for Evidence -Based Practice, the scholar applied knowledge to solve a problem through scholarship of application. Evidence was generated to guide improvement in practice and outcomes of care through evaluating care delivery approaches that met existing and future needs of patient populations based on scientific findings. Relevant findings were applied to develop guidelines and improve practice (AACN, 2006).

The QI initiative included appraising the literature and applying the findings to revise the current policy on enteral feedings, developing an algorithm to assist with the early administration of enteral feedings, and developing an educational program for ICU nurses that the health care facility could employ. Lewin's theory of planned change will serve as the theoretical framework to guide the change process. The find, organize, clarify, understand, select, plan, do, check and act (FOCUS-PDCA) model for QI will assist with testing the planned change (enteral feeding initiative) and determining what modifications may be necessary (Nkayamata et al., 2010).

Background

A vast amount of literature addresses malnutrition, nursing practices, and enteral feeding protocols. Previous discussions in the literature occurred in late 1990 to 2000. By 2014, a resurgence of literature emerged regarding these topics. Nutritional care "once seen as a supportive therapy" has come to the forefront as a therapeutic strategy for improving outcomes for critically ill patients (Marshall et al., 2012, p. 191). According to

Stewart (2014a), enteral feeding practices varied and interruptions of enteral feedings contributed to underfeeding. Protocols are frameworks that focus on one aspect of care and typically incorporate algorithms to assist in rapid decision making (Reeves et al., 2012).The use of an enteral feeding protocol improved nutritional practices which decreased time patients spent without nutrition (Compton, et al., 2014). The development of an enteral feeding protocol that incorporates an algorithm continues to be a strategy that can reduce the quality gap, or the difference between health care processes or outcomes observed in practice and those based on current evidence- based knowledge for a group of patients (Agency for Health care Research and Quality, 2004). Existing literature has indicated that malnutrition is a serious problem in which critical care nurses are well positioned to influence practice by implementing evidence- based nutritional practices (Marshall et al., 2012). Milte, Ratcliffe, Miller, and Crotty (2013) explained that up to 55% of hospitalized patients were malnourished. Enteral feedings are preferred over parenteral methods of feeding because of the lower risk of infection (Stewart, 2014a).

Health care has been focused on providing high quality, affordable care. The prevention and treatment of malnutrition provides a tremendous opportunity to optimize patient care, improve clinical outcomes, and reduce the overall health care cost (Tappenden et al., 2013). Hamilton and Boyce (2013) added that delivering enteral nutrition decreased disease severity, diminished complications, reduced the length of stay in the ICU and favorably affected patient outcomes. Amaral (as cited in Stewart, 2014a) recognized that treating a patient with a disease related malnutrition costs 20% more compared with treating a patient without malnutrition. Many nursing practices

contributed to hypocaloric feeding resulting in malnutrition (Elphern, Stutz, Peterson, Urka, & Skipper, 2004; Gupta et al., 2012; Marshall et al., 2012). The use of an evidence-based enteral feeding protocol could be useful in optimizing nutritional support in the critically ill patient and could guide nurses in addressing common issues with enteral feedings (Stewart, 2014a).

Problem Statement

The practice problem addressed in this project was malnutrition in the critically ill population in the intensive care unit. Malnutrition is associated with poor patient outcomes higher mortality, prolonged hospitalizations, and increased health cost (Stewart, 2014a). Nursing practices contributed to underfeeding of critically ill patients intensifying the problem of malnutrition (Gupta et al., 2012). Literature supports the use of an evidence- based enteral feeding protocol as an effective strategy to improve nutritional intake for critically ill patients (Ros et al., 2009). The informal audit (data) in the health care facility where the project will be implemented has shown a significant issue with the initiation and maintenance of enteral feedings leading to underfeeding of patients. Nursing practices were also not consistent with the health care facility's own policy on enteral feedings. Nursing enteral feeding practices in all three intensive care units varied and were not evidence -based. The gap between the evidence- based literature and the care of patients in the health care facility was addressed in this project.

Purpose

The purpose of this QI initiative was to provide optimal nutrition for patients receiving enteral feedings in the hospital. Researchers have identified malnutrition as a

significant health problem (Stewart, 2014a). First, nutritional care is now being viewed as an important strategy to prevent complications to the patient and overall cost to the health care system (Marshall et al., 2012). Second, variations in nursing practices contributed to the underfeeding of patients and the use of an enteral feeding protocol could solidify nursing practices and prevent malnutrition (Heyland et al., 2010; Marshall et al., 2012). Third, nurse- driven enteral feeding protocols could engage and empower nurses to be effective agents of change while delivering optimal nutrition to critically ill patients (Marshall et al., 2012). Based on the literature, this QI initiative would address gaps in this health care facility's enteral feeding procedures.

Project Goals and Outcomes

The goal of this QI initiative was to facilitate the early initiation of enteral feedings to prevent malnutrition in a vulnerable patient group. For this QI initiative the operational definition of *malnutrition* is consistent with the Academy of Nutrition and Dietetics and the American Society for Parenteral and Enteral Nutrition, that a minimum of two of the six characteristics (energy intake, weight loss, physical findings, body fat, muscle mass, fluid accumulation, and reduced grip strength) must be present for the diagnosis of malnutrition (Tappenden et al., 2013). By the completion of this project:

1. The current policy on enteral feedings will be revised and based on clinical practice guidelines.
2. An evidence- based enteral feeding algorithm will be developed using current clinical practice guidelines.

3. Summative evaluation of leadership regarding the enteral feeding initiative will be completed by key stakeholders at the end of the project.
4. A pilot study will be conducted after my graduation from Walden University

Framework

Lewin's theory of planned change will guide the implementation of the enteral feeding initiative to facilitate the change in practice. Lewin's theory of planned change includes field theory, group dynamics, action research, and the three -step model of change (McGarry, et al., 2012). Key to this QI initiative are three steps required to achieve change: unfreezing, moving, and refreezing (Lewin, as cited in McGarry, et al., 2012).

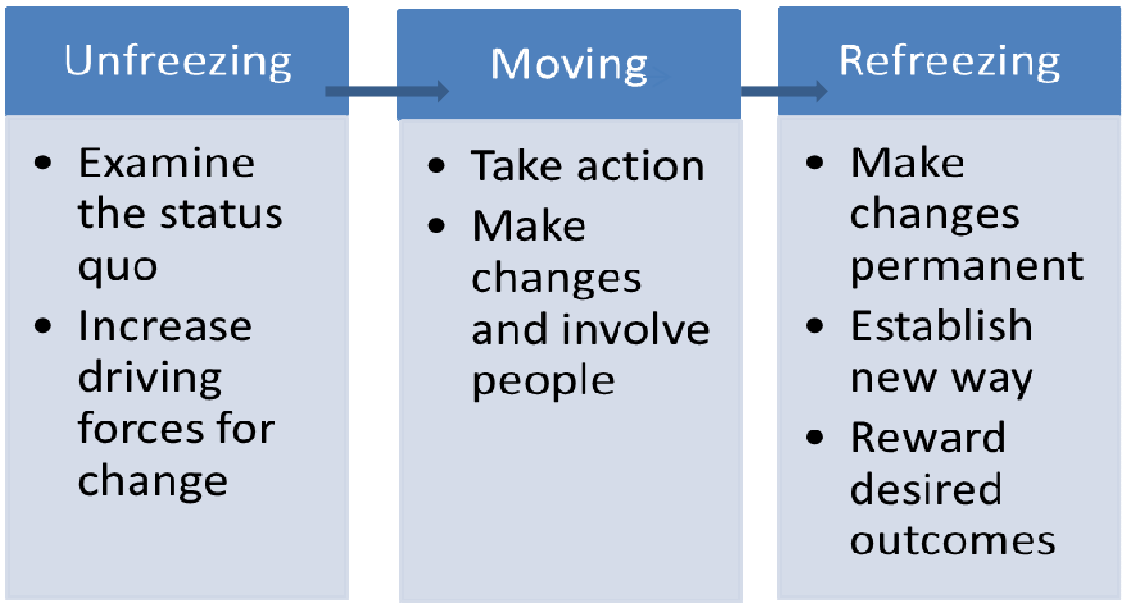

Figure 1. Lewin's Change Model

Mitchell (2013), adapted with permission.

The FOCUS-PDCA model was used to guide the QI project (Saxena, et al., 2004; Zimnicki, 2015). The FOCUS-PDCA model has been an effective performance strategy used by many disciplines. The acronym describes finding the process to improve, organizing a team, clarifying the current situation, understanding causes of variation, and starting the PDCA cycle that includes a continuous improvement process. The PDCA component includes four steps: planning and doing the improvements, checking the results, and acting to maintain the gains (Saxena, et al., 2004). The health care facility has used the PDCA model for other QI practices in the past. The FOCUS- PDCA model is similar to the PDSA model and frequently interchanged in the literature. The difference was the S in the PDSA model stands for study or determining what modifications were needed for the plan change (Nakayama et al., 2010). For the purpose of this QI initiative, the FOCUS- PDCA model will be used (Appendix A).

Nature of the Project

The nature of this project was to examine the literature and develop an evidence-based enteral feeding initiative that the health care facility could use. In the beginning of the QI development, the plan was to develop an enteral feeding algorithm; however, the project evolved into an enteral feeding initiative that included updating the current policy on enteral feedings and adding an educational in-service with a pretest/posttest design for the ICU nurse. Education is the most important intervention added to a protocol that can increase protocol adherence (McCall et al., 2014, p. 510). The literature review examined the strength of the evidence and carefully considered all aspects of the study (Grove,

Burns, & Gray, 2013). The approach used first identified a team to work on the QI initiative and consisted of searching the literature for evidence- based information. The initial team consisted of the DNP student, head dietician, a clinical educator, and the director of the ICU who will guide the development of the initiative. An implementation plan and evaluation plan was developed and will be conducted after I graduate from Walden University. During team meetings, process evaluations will occur and feedback on the policy update, algorithm, and educational component (PowerPoint, pretest/posttest) will be occurring.

Definitions

The following terms were used for this project:

1. *Algorithms*. Algorithms are tools that can assist with rapid decision making on a broad array of information and incorporated into policies and protocols (Reeves et al., 2012).
2. *Malnutrition*. Malnutrition is the presence of two or more of the following characteristics: insufficient energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, localized or fluid accumulation, decreased functional status, or grip of strength (White et al., 2012).
3. *Policy*. Black (2014) described policy as those principles that govern actions towards a given end; they may result in laws, regulations, or guidelines that govern the behavior in the public or private arena. Policies are clear, simple statements reflective of the organization's services; they assist with the decision-making and typically accompany procedures (Black, 2014).

4. *Protocol*. Hargreaves (2014) defined protocol as an agreed upon framework outlining the care that will be provided in a designated area of practice. Protocols define the why, where, when, and by whom the care is given. The primary advantage of using a protocol is formalization of agreed practices and improved patient care (Hargreaves, 2014).

Assumptions

Assumptions are statements that are considered right, even though they were not scientifically tested (Silva, as cited in Groves, et al., 2013). The assumptions for this project were:

1. Nurses want to provide optimal care to patients.
2. The use of a nutritional support initiative would improve the nutritional status in all patients.
3. Nurses working in the ICU want more knowledge pertaining to malnutrition and enteral feedings.

Scope and Delimitations

The project was chosen based on the need for change in practice. Internal data revealed that nursing practices varied widely in three intensive care units at one large Level 1 trauma center. The population for this project will include critically ill patients who require enteral feedings and critical care nurses in three ICU at a large level one trauma center.

Limitations

Limitations or restrictions in a study decrease generalization of the findings and are theoretical or methodological in nature (Grove, et al., 2013). The limitations of this project were:

1. Using an enteral feeding initiative will increase the nurse's workload and responsibility.
2. Cultures of health care facilities and ICU's vary and may affect the implementation and evaluation plans.
3. A sense of urgency might not be present as the enteral feeding initiative may be one of many evidence- based projects underway at this health care facility in 2015 –2016. To address this issue leadership needs to encourage and build the sense of urgency for successful programs.
4. As I will lead the enteral feeding initiative this may create an inherent bias.

Significance

Malone (2014) identified that Americans should be able to count on receiving care that meets their needs which is based on scientific knowledge that includes the delineation of practice guidelines. Hospitals are penalized for practices that lead to poor patient outcomes and rewarded for practices that improve the quality of care (Hamilton & Boyce, 2013). This QI initiative has the potential for several significant contributions to practice. The use of evidence -based enteral feeding initiative that addresses malnutrition can improve patient outcomes and contain hospital costs. Contributions to practice are increased awareness and prevention of malnutrition in the critically ill.

Summary

Section 1 of this paper presented a brief overview of the significant problem of malnutrition in the critically ill population and how the development of an enteral feeding initiative could address the problem. An evidence- based enteral feeding initiative can solidify nursing practices within one health care facility. In the process, nurses along with other health care professionals can gain more in depth knowledge of how an enteral feeding initiative can prevent malnutrition. Section 2 of this paper presents the literature and theoretical framework that supports the use of enteral feeding initiative for the prevention of malnutrition.

Section 2: Review of Scholarly Literature

Introduction

Malnutrition is a serious health problem associated with poor patient outcomes. The practice problem addressed in this project was malnutrition in the critically ill ICU population. The purpose of this QI initiative was to provide optimal nutrition for patients receiving enteral feedings in the hospital through the revision of a policy on enteral feedings, development of an evidence -based algorithm, and educational in-service for ICU nurses at the health care facility. Malnutrition remains a significant health problem, with nursing practices significantly contributing to the problem (Stewart, 2014a).

Existing literature has supported enteral feeding protocols and algorithms to address the problem of underfeeding (Kenny & Goodman, 2010). Enteral feedings were the preferred method of feeding critically ill patients because of the lower risk of infection, compared with parenteral nutrition (Stewart, 2014a). Stewart (2014a) showed that interruptions of enteral feedings were the result of multiple factors that include head of bed position and intolerance to enteral feedings, such as large gastric residual volume (GRV). Kim et al. (2012) noted that enteral feeding practices of critical care nurses varied resulting in underfeeding of ICU patients. The once low priority of nutritional care is now recognized as a high priority and an important therapy for improving patient outcomes (Marshall et al., 2012). Using an evidence-based initiative related to enteral feedings may standardize care resulting in improved patient outcomes. This section examines the literature Lewin's change theory, the FOCUS PDCA model, malnutrition, clinical practice guidelines, policy and algorithm development, and nursing practices.

Literature Search Strategy

The extensive search for literature was conducted using several databases that included; CINHAL, Medline, and Cochrane Library. The following keywords were searched*: Lewin's change theory, FOCUS PDCA model/PDSA, malnutrition, clinical practice guidelines, policy, algorithms,* and *nursing's role in malnutrition prevention*. The years searched were from 1950 to 2015, primarily due to the early works of Lewin that date back to the 1950s. Several studies were obtained by using the Boolean *"and"* between keywords. The types of literature and sources included foundational and current peer-reviewed work and included the early works of Lewin, through present day.

Theories and Framework

Kurt Lewin's Change Theory

Lewin's change theory will be the dominant theory to guide this QI initiative. McGarry, et al., (2012) endorsed the theory as research well suited to nursing application that bridged practice, theory, and research. Lewin's theory focused on influencing people to change and the three stages needed to make change successful (Doolin, Quinn, Bryant, Lyons & Kleinpell, 2011).

Specific to Lewin's operational framework for change theory is the force field analysis (FFA) model. Shirley (2013) specified that the FFA identifies and examines the factors or forces influencing a situation and can assist with guiding action. In the FFA model two opposing forces can influence the change process. The driving forces move and encourage change and the static forces maintain the status quo (Bozak, 2003). The first stage of Lewin's planned change theory is the element of unfreezing which involves

getting ready for the change. In this stage a change agent identifies a problem to change and mobilizes others to see the need for change (McGarry, et al., 2013). The unfreezing phase focuses on creating a sense of urgency, selecting a possible solution, and preparing to move away from a current situation. At this phase the FFA identifies factors that are for (driving forces) and against (restraining forces) change (Shirley, 2013). In order for the change process to be successful, strengthening the driving forces and weakening the restraining forces must occur (Shirley, 2013). The second stage of Lewin's theory is the moving or transitioning stage. The inner movement makes individuals react to the change and requires unfreezing, and remains the most difficult step for individuals as there is a sense of uncertainty (McGarry, et al., 2013). Shirley (2013) specified that the third stage, or the refreezing phase of the theory, is where the change becomes stabilized or embedded into the system.

Change will be necessary at the health care facility as enteral feeding practices varied and contributed to under feeding of patients which can lead to malnutrition (Stewart, 2014a). A driving force for a change in practice is supported by an evidence-based protocol for enteral feedings (Hamilton & Boyce, 2013). By adding an educational component to the enteral feeding algorithm, adherence to the algorithm is more likely (Mc Call et al., 2014). Other driving forces included an increase in skills, professional accountability, autonomy, decrease in frustration, and improved patient outcomes (Christensen & Christensen, 2007). Reductions in restraining forces can increase driving forces and can assist in transitioning to the next phase. The moving phase will be when the change becomes recognized and accepted by staff (Bozak, 2003). The last step, or the

refreezing stage, will occur after the enteral feeding initiative is implemented and a period of stability and the ongoing evaluation sill occurs as the change becomes embedded into the health care facility's culture and becomes evident in policy and practice (McGarry, et al., 2012).

Application of Theory

Lewin's theory of planned change has been a model chosen for a variety of projects from QI projects to significant changes in large organizations not limited to health care industry (Bozak, 2003). Lewin's work has been the foundation of other models of planned change that include Lippitts, Post, and Rogers (Healy et al., 2008). Mitchell (2013) specified as there were many ways of implementing change, planned changed was purposeful and resulted in a collaborative effort. Various forces in health care that included rising cost of treatments, workforce shortages, advances in science, an aging population, and a culture of patient and staff safety were driving forces for change and managers must identify appropriate models of planned change.

When examining the literature regarding Lewin's theory and nursing, Lewin's theory has been applied to a vast of projects that include policy and practice changes. Lewin's theory has been used to introduce changes in nursing practices such as the application of guidelines to enhance the care of patients with a Sengstaken-Blakemore tube (Christensen & Christensen, 2007). Lewin's theory has also been applied to organizational changes within nursing faculty and college administration. Several recent studies that utilized Lewin's theory as applied to changes in nursing practice will be discussed.

Tinkler, Hoy, and Martin (2014) stated Lewin's theory assisted with employing a new protocol for bandaging, a treatment for venous ulcers. During Stage1, or, the unfreezing stage, nursing colleagues were given direction on the need for change in practice and to apply current guidelines. Gaps in education and training were addressed. The moving stage included the discussion of research and articles on EBP protocols and specialty training leading to an increase in confidence of care. The refreezing stage incorporated the time to master the new skill of advanced bandaging. Auditing current practice was a necessary component to the refreezing stage. By using Lewin's theory, the change in practice led to a decrease in the nurse's workload, decrease use of resources and improved wound healing.

Doolin, et al. (2011) used the best evidence that favored allowing families at the bedside during cardiopulmonary resuscitation (CPR). In this study, the application of Lewin's three stages and the focus on influencing the people side of change assisted in the success of a policy change which allows family members to be present during CPR. Lewin's unfreezing stage began with the multidisciplinary team examining the pros and cons of the policy change, the pros needed to outweigh the cons with upper management needing to support the new protocol. During Stage 2, or, the transition stage, formal education was given to all staff members and resistance or barriers to change in practice were addressed. The last step, or, refreezing, ensured that the change in practice continued and that staff experienced positive outcomes and new policy was reinforced.

An example of applying Lewin's theory to organizational change in nursing was illustrated in Schriner et al.'s (2010) article that applied Lewin's theory to the

restructuring of a nursing college. The authors acknowledged that for a change to be effective, a collaborative process must occur and involve key stakeholders. Change must be seen as a necessary element during the first or unfreezing stage. During the unfreezing stage the nursing college formed a task force that developed a questionnaire that could identify the strengths and weaknesses of the current school structure administrative duties and gathered suggestions for restructuring. During the movement stage the plan was developed to restructure and distribute the workload. Addressing resistance to the new restructuring was critical. The refreezing stage included the implementation and integrating the change. Evaluations were ongoing and included recommendations for nursing administrators. The organizational restructuring of the school of nursing led to a more efficient use of resources.

Wells, Manuel, and Cunning (2011) used Lewin's theory as the framework that examined nurses' perceptions of job satisfaction, empowerment, and care effectiveness following a change from team to a modified total patient care delivery model. Nurses were asked to identify components of a more appropriate model of care. Infrastructure changes were made during the movement phase to facilitate the new patient care delivery model. An educational program was offered that highlighted the gaps in the current care delivery model as opposed to the new proposed model. Consistent with change theory, the involvement of key stakeholders from the very beginning was engaged. This mixed method longitudinal design examined the impact of change on nurses' perception of job satisfaction, empowerment, and the effectiveness of the new model of patient care delivery. Job satisfaction in this study remained stable and nurses were dissatisfied with

the goals and processes of the organizations. The authors acknowledged that this was not a surprising result as the change process often results in varying degrees of emotional response.

Nurses are often resistant to technology, as technology becomes more prevalent, Lewin's planned change theory can be utilized to implement changes in technology (Borzak, 2003). Sutherland (2013) used Lewin's theory as a framework to introduce barcoding of medication at a large psychiatric facility. Lewin's theory assisted with reducing stakeholder's resistance and fears regarding the significant change in practice.

In two older studies, Lee (2005) used Lewin's theory to explore nurses' perceptions of adopting an information system using handheld computers and Healy et al. (2008) updated perioperative documentation using Lewin's change theory. Kurt Lewin's theory of planned change will continue to be used where many change processes occur and are not limited to the health care arena.

FOCUS-PDCA Model

The FOCUS-PDCA model can be used to guide QI projects and is comprised of two components. The first component, FOCUS is a mnemonic for finding a process to improve, organizing a team, clarifying current practice or knowledge, understanding the sources of variation, and selecting the process of improvement. The FOCUS component serves as the theory base for guiding the selection of change to be tested and predicts the effect of the change process (Fehery, Allen, & Bey, 2003). The second component of the model, or, the PDCA, represents the well-known Shewart cycle which consists of four

steps, planning, doing, checking, and acting (Kelly, 2011). Zimnicki (2015) summarized the steps in the FOCUS-PDCA model in the following way:

- Step 1. Find a process to improve. In this step, an organization's mission and vision will be reviewed. Improvement opportunities will be identified and prioritized. The process improvement effort will be described in detail.
- Step 2. Organize a team. Appropriate representation from all stakeholders and the identification of resources should be acknowledged. The formulation of a plan and how to engage stakeholders, along with identifying ways to keep stakeholders informed will be determined.
- Step 3. Clarify current knowledge of the process. Clear and complete understanding of how the process currently operates is discussed.
- Step 4. Understand the sources of variation in the process. This step involves identifying, gathering, and analyzing the data on factors that have influenced the process outcomes.
- Step 5. Select the process improvement. Examine the alternative process variable changes and define what criteria will be used to choose among them. State the clear, simple description of the proposed process improvement.
- Step 6. Plan the pilot. This step involves how to introduce the change and measure its effect.
- Step 7. Do the improvement, data collection, and analysis. Actions involved in this step include preparing the workers and work environment for the process

change, implementation of the change, observing, and documenting the effects of the change.

- Step 8. Check and study the results. In this step comparing the results to see if the change has produced improvement.
- Step 9. Act to hold the gain, and continue to improve the process. Moving to continue to make improvements, adopting change, and possibly abandoning the change takes place at this step.

The FOCUS-PDCA model provides a systematic approach to QI and reduces variations in the way improvements are addressed in an organization. The steps of the FOCUS encourages building knowledge around the customers, process performances, and variations. The PDCA steps reflect a learning cycle: a plan was developed for the change, the effect of the change was observed, the plan was executed, and observations were interpreted (Cunning, 2014; Zimnicki, 2015).

The PDCA cycle for QI is considered to be the scientific method used for action-oriented learning and enhanced the effects of educational strategies for process improvement and health outcomes (Sheldon, Seoane-Vazques, Szeinbach, & Tubbs, 2009). The PDCA model has been recommended by the Joint Commission and Institute of Medicine (IOM) (2001) for effective QI projects that involve a complex interplay of multiple systems such as projects to improve care in critical care units (Nakayama et al., 2010). The FOCUS-PDCA model will support the enteral feeding protocol in practice and determine what modifications in the enteral feeding protocol will be needed (Nakayama et al., 2010).

Variations of the FOCUS-PDCA model have been used in a variety of QI projects in many nursing specialties. Several examples of hospital QI projects were as follows. Stikes and Barbier (2013) applied the plan-do–study-act model to increase the use of kangaroo care in the newborn nursery and found that kangaroo care rose by 31%. Using the model Saxena, et al., (2004) showed improvement in blood administration practice at one hospital. The FOCUS-PDCA model enhanced education as evident with the development of an order set and protocol for care of catheter occlusions (Fehery, Allen, & Bey, 2004).

Malnutrition

Malnutrition refers to any nutritional imbalance where there is a decline in lean body mass with the potential for functional impairment at several levels that include molecular, physiologic, and gross motor (White et al., 2012). Critically ill patients are at risk for malnutrition because of alterations in energy metabolism as a response to trauma, surgery, and sepsis (Stewart, 2014a). Malnutrition is defined by the presence of two or more of the following characteristics (a) energy intake, (b) weight loss, (c) body fat, (d) muscle mass, (d) fluid accumulation, and (e) reduced grip strength (Cox & Rasmussen, 2014). There is no ideal laboratory test for diagnosing malnutrition; former ways included albumin and anthropometric measures, however, due to the inflammatory response these markers were not considered accurate (Cox & Rosmussen, 2014). Critical illness results in a severe state of an inflammatory response that leads to more complications of infection, multi-organ dysfunction, and mortality (McClave, 2009).

Malnutrition is considered to be a common health problem however the prevalence is hard to determine. There is no single universally accepted approach to the diagnosis of malnutrition (White et al., 2012). One- third of patients arrived at the hospital malnourished, and if untreated many of these patients continued to decline, which adversely affected their recovery (Tappenden et al., 2013). Prins (2010) added that up to 70% of patients admitted to the hospital were never diagnosed with malnutrition and the diagnosis of malnutrition never appeared on patient's discharge paperwork.

Prins (2010) stated that the elderly population is predisposed to malnutrition and over half of elderly hospitalized patients are malnourished on admission. Finocchiaro and Hook (2015) added that older adults are more likely to have problems with poor wound healing and pressure ulcers due to protein deficiency, infections, post-operative complications, as well as being deconditioned. This situation becomes a growing concern as the elderly population continues to grow. According to the United States Department of Health and Human Services (n.d.) by 2030 there will be about 72.1 million older persons, more than twice the number in the year 2000, and the number is expected to grow by 19%.

Many adverse outcomes due to malnutrition are preventable (Tappenden et al. 2013). In 2011, the Health Grades Patient Safety in American Hospitals study cited pressure ulcers as the second most common adverse patient safety event in hospitalized patients, with a higher rate in the critical care areas. Optimizing nutrition was essential to the prevention and healing of pressure ulcers (Cox & Rassumssen, 2014). Patients with preexisting malnutrition have a two to three fold increased risk of developing Clostridium

Difficile Enterocolitis, surgical site infection, or post-operative pneumonia and a greater than five times risk of catheter- associated urinary tract infection (Fye, Pine, Jones, & Meimban (as cited in Tappenden et al., 2013).

Malnutrition continues to be costly to the patient and health care system (Stewart, 2014a). The cost of treating a patient with malnutrition was 20% higher than treating a patient without malnutrition (Stewart, 2014a). As the population continues to age and patients go undiagnosed the problem of malnutrition becomes ever more significant.

Clinical Practice Guidelines

Clinical practice guidelines (CPG) are systematically developed statements that provide direction in regards to patient care decisions (Coroneos et al., 2014; Politi, Wolin, & Legare, 2013). In 2011, the IOM redefined CPG that included recommendations optimizing patient care and based on systematic review of the evidence (Pyon, 2013). CPG are not absolute, they should include the judgment of health care professionals based on individual circumstances of the patient (McClave et al., 2009).

Concerns with CPG

Pyon (2013) stated issues regarding CPG included conflict of interest among guideline writing panels, methodological rigor in the literature review, and the strength of evidence upon which recommendations were based. The development of CPG should involve systematic reviews. CPG can lack transparency or rigor in analysis methods and recommendations can be based on varying quality of evidence. Conflict of interest can lead to biases from stakeholders who had other concerns (Pyron, 2013).

Improving CPG

CPG are tools that support evidence- based medicine (EBM).Two ways that improve CPG are discussed in this section. The first way included the application of research findings to clinical decisions including clinical expertise and patient preferences (Pyon, 2013). The second way was in 2011, the Institute of Medicine (IOM), through the Medicare Improvements for Patient and Providers Act of 2008, released two reports that mandated the compliance with eight standards for the development of trustworthy CPG. Included in these standards were transparency, management of conflict of interest, guideline composition, CPG review, establishing evidence foundations and rating the strength of recommendations, external review, and updating (Pyron, 2013). The 2009 guidelines serve as the basic recommendations for enteral feeding which is supported by evidence and includes expert opinion and practicality (McClave et al., 2009). Clearly stated on the CPG for nutritional support therapy is a disclaimer that all treatment and techniques of access should be tailored to the individual patient (McClave et al., 2009).

Specific CPG for Nutrition Support in Critically Ill Patient

In 2009, the CPG for nutrition support therapy in the adult critically ill patient was published. Two major organizations assisted in the development of this CPG; they were the Society of Critical Care Medicine (SSCCM) and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.; McCLave et al., 2009). The methodology for the recommendations was developed by the A.S.P.E.N. and SSCCM using prospective randomized controlled trials with each study being assigned a level of evidence (McClave et al., 2009). The final CPG was approved by the governing board.

Interpretation of the literature was resolved by consensus and external reviewers (McClave et al., 2009). Important aspects of CPG for nutritional support therapy included the following: The CPG does not use former traditional nutrition assessment tools such as albumin levels as they are no longer considered valid. Enteral feeding should be initiated in the critically ill population within 24 to 48 hours. In hemodynamically compromised patients, enteral feedings should be withheld until the patient is resuscitated and or stable. The presence of bowel sounds is not required for the initiation of enteral feedings (McClave et al., 2009). CPG are the primary recommendations that lead to policy and protocol development (Flynn & Sinclair, 2005). Revised current guidelines will be published in 2016.

Policy and Protocol Development

Policies

Black (2014) described policies as those principles that govern actions directed towards a given end, and they may result in laws, regulations, or guidelines that govern the behavior in the public or private arena. Policies are clear, simple statements reflective of the organization's services; they assist with decision- making and typically accompany procedures (Black, 2014).

Protocols

Flynn and Sinclair (2005) stated protocols are stepwise application tools used at the bedside; they are quick references focused on one aspect of care. Protocols ensure the standard of care did not fall below a defined minimum standard and aided the nurse to improve the speed in treatment (Flynn & Sinclair, 2005). In many protocols the use of

algorithms are used to assist with rapid decisions on the basis of a vast and disparate array of information (Reeves et al., 2012). Reeves et al. (2012) presented a multicenter observational study that explored the acceptance of algorithms to determine if energy intake and protein intake were achieved and comparable internationally. The study found that greater than 80% of estimated nutritional targets were obtained and enteral feedings were initiated within eight hours. This study supported the use of algorithms to facilitate nutritional therapy for patients.

Enteral Feeding Protocols

Heyland et al. (2010) examined the effects of enteral feeding protocols in 269 intensive care units in 28 countries and found that sites that used a feeding protocol were associated with a significant improvement in nutrition practices. Ros, et al. (2009), in a systematic review that examined opportunities for nutritional practice development in the critical care area, found that a multi-disciplinary approach and implementation of an evidenced- based enteral feeding protocol supported the prevention of malnutrition. Stewart (2014b) in a recent systematic review, found the use of a nutrition protocol, increased the efficacy of enteral nutrition delivery. Compton, et al. (2014), in evaluating the influence of a nutrition support protocol, found that using the protocol shortened the time in which patients reached their feeding goals. Even with enteral feeding protocols, variations in nursing practices had an impact on patients' nutritional statuses.

Nursing's Practice

Elphern et al. (2004) found underfeeding of patients was primarily due to interruptions of infusion, typically feedings were stopped as a precautionary measure

based on judgment. Williams and Leslie's (2004) systematic review highlighted that many of the nursing guidelines to facilitate the care of patients with enteral feedings have not been based on current research but ritual and opinion. Marshall and West (2005) used a descriptive survey to explore enteral feeding practices and found that nursing practices of critical care nurses varied and included practices that contributed to under feeding. Ros, et al.'s (2009) systematic review examined opportunities that resulted in the underfeeding of patients. These interruptions of enteral feedings included fasting for procedures and poor management of gastric residual volumes (GRV). In an earlier qualitative study Flynn and Sinclair (2005) stated nurses' professional judgment emerged as an overwhelming finding in relation to using protocols, policies, and guidelines. Nurses would adapt clinical protocols as they saw fit and not based on evidence- based practice. Gupta et al.'s (2012) study found that nursing practices were not consistent with current evidenced based guidelines. Marshall et al. (2012) discussed variations in nutritional practices that were due to lack of guidelines, conflicting evidence- based recommendations, barriers nurses face when feeding patients, and lack of interdisciplinary team collaboration. McCall et al. (2014) evaluated educational strategies used to implement enteral feeding protocols and found that multiple teaching formats including long and short PowerPoint and a self- paced teaching module met the learning needs of most ICU nurses.

Current literature has presented nursing's key role in the prevention of malnutrition. Stewart (2014a) acknowledged nurses can ensure the adequacy of delivered enteral nutrition by questioning the unnecessary interruptions in feeding and timely

resumption of enteral feedings. Cox and Rasmussen (2014) discussed the need for daily volume nutrition goals instead of hourly feeding rates, liberalization of GRV threshold, and standardized nursing protocols that would include titration schedules to reach the infusion goal. Nursing protocols should include a defined list of clinical situations that would result in interruptions of enteral feedings and provide information on the best way to handle the interruptions of the enteral feedings (Cox & Rasmussen, 2014).

Summary

Malnutrition has been and withstands to be a significant health problem in the hospital setting. The development and implementation of an enteral feeding initiative including an algorithm can optimize nutrition in critically ill patients as supported by the literature. Section 3 of this paper discusses the approach and methods that will be used in the QI initiative to address malnutrition in the critically ill. Included in this section is the multidisciplinary team, review of the evidence, ethical considerations, and development of the enteral feeding initiative, implementation, and evaluation plan.

Section 3: Approach

Introduction

Section 3 of this paper will discuss the approach used to undertake the QI initiative. The purpose of this QI initiative was to provide optimal nutrition for patients receiving enteral feedings at the health care facility. The development of the enteral feeding initiative addresses issues presented in the literature that contributed to the underfeeding of critically ill patients. Strategies to prevent underfeeding included head of bed positioning, use of prokinetic medications, and tolerance of higher gastric residual volumes (Stewart, 2014a). The decision to use a QI approach was based on the literature that stated QI and the PDCA cycle routinely analyze and disseminate best practice information to patients, families, and staff and use scientific problem solving methods to improve process performance and achieve stated goals (Quality Improvement Organization, 2013). QI projects apply known solutions to a problem, although considered being less rigorous; the design speaks to the problem (Arndt & Netsch, 2012).

The quality process begins with the planning phase. My role in this QI initiative was that of lead facilitator. I organized others to show the need for change; form the team, and develop the enteral feeding algorithm, the implementation plan, and the evaluation plan. I will also conduct the pilot study. I have worked for the health care facility for 30 years and am a leader in the critical care area. Information from the planning phase identified the possible changes to be implemented. The process was also studied and analyzed to identify further improvement. These phases are meant to be repeated in a continuous improvement cycle (Quality Improvement Organizations, 2013).

One of the roles of leadership is to embrace the principles of QI and support the change process (Quality Improvement Organizations, 2013). This section will outline the development of the enteral feeding initiative and the implementation and evaluation plan. The steps were:

1. Formation of an interdisciplinary QI team of stakeholders from the health care facility.
2. Review of the evidence from the literature.
3. Development of an enteral feeding initiative for piloting.
4. Validation of the enteral feeding initiative from experts.
5. Development of an implementation plan for the enteral feeding initiative in one ICU (Pilot).
6. Evaluation and revision of the enteral feeding initiative.
7. Development of a summative evaluation tool for stakeholders to complete at the end of the project development.
8. Expansion of the enteral feeding initiative to all intensive care units.

Interdisciplinary Project Team

Kelly (2011) indicated that effective teams are thoughtfully and purposefully designed. The initial plan was to invite team member to participate in the QI initiative and they would be chosen for their knowledge, expertise, and vested interest in the project. The members for this QI initiative included:

- Team leader: functioned as facilitator of the project. Guise et al. (2013) added that facilitators should be useful in ensuring stakeholder. Team

leaders may be useful in facilitating interdisciplinary collaboration (Bender, Connell, & Brown, 2013).

- Clinical educator: expert and resource provided educational needs for staff.
- Physician director of the ICU: primary role to communicate information to new staff.
- Clinical Nurse Manager of the ICU: primary role to assist with communication of information to staff.
- Critical care nurse from each ICU: end users play a vital role in providing feedback about needs, and involvement results in improved compliance and satisfaction (Gillespie, Finigan, Kerr, Lonie, & Chaboyer, 2013).

One major development for this quality initiative was that the health care facility insisted that the pre-established Nutrition Committee could serve as the interdisciplinary teams as many of the members were already on the committee. The pre-established interdisciplinary Nutrition Committee will be discussed further in Section 4.

The pilot study will not occur until I graduate from the university, participants will include critical care nurses from the ICU and all patients requiring enteral feedings. Developing working relationships with critical care nurses (end users) and also key stakeholders (interdisciplinary team) will be a crucial component of the QI initiative. Therefore, strategies for recruiting and developing working relationships will be a necessary endeavor. Summary of key components of the working relationship include:

- Good working relationships will result in more enjoyable work and people will be more open to changes (Mindtools, n.d).
- Characteristics that will add to good working relationships include trust, mutual respect, mindfulness, welcoming diversity, and open communication (Manion, 2011; Mindtools, n.d.).
- Developing working relationships cannot be achieved through a single event; working relationships must be fostered throughout the entire process (Hoffman, et al., 2010).

Review of Evidence

This QI initiative aligned with the health care facility's mission to provide excellent health services while being mindful of the needs of vulnerable populations. The interdisciplinary team has become more aware of the latest research related to malnutrition and enteral feeding protocols. A summary of the literature and theoretical framework was provided to all team members. Potential restraining forces and how to strengthen driving forces was identified early in the stakeholders' meeting. Mitchell (2013) stated that restraining forces cannot be removed; they can only be countered by increasing the driving forces (Figure 2).

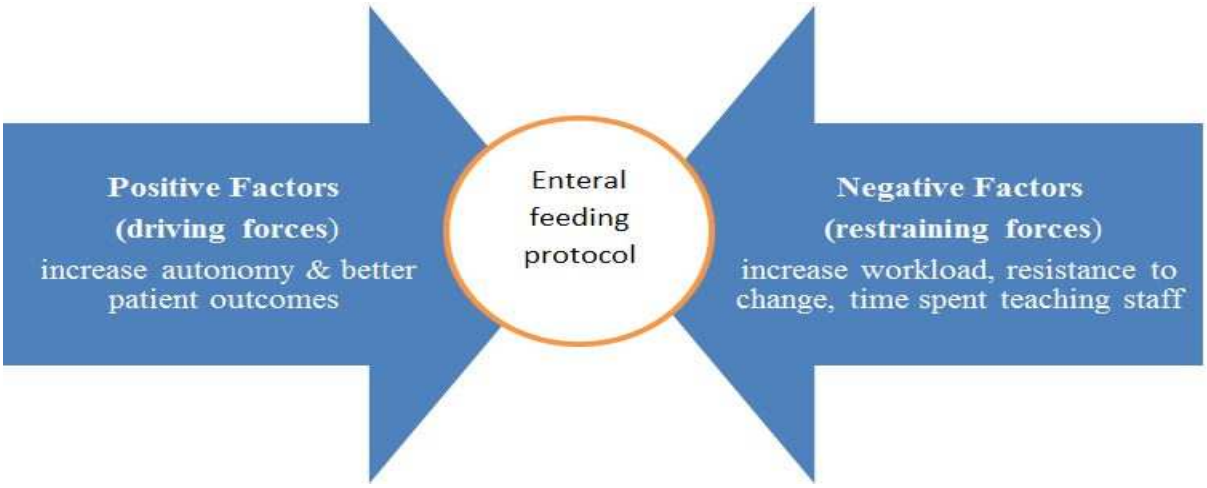

Figure 2. Force Field Analysis.

Mitchell (2013), adapted with permission.

The plan at the initial stakeholders' meeting was to provide a detailed plan for the implementation of the enteral feeding protocol. The final step or, the refreezing phase will occur when the enteral feeding initiative becomes instituted throughout the health care facility. The interdisciplinary team will converged at the Level 1 (482 bed) - trauma center located in the city of Boston. The health care facility has five ICUs. The site for the QI pilot will be in the larger 12- bed medical ICU.

The FOCUS-PDCA model will serve as the framework for the project design (Appendix A). The model was based on the Shewart cycle, a well-tested process to achieve lasting improvements (Moen & Norman, 2006). Fehery, Allen, and Bey (2003) declared the acronym FOCUS PDCA was defined as follows:

- **Find** the process to improve: The process to improve was the enteral feeding process of critically ill patients.

- **Organize** to improve the process: The plan was to develop and implement a nurse - driven enteral feeding protocol.
- **Clarify** knowledge of the process: Nursing practices varied, leading to underfeeding and practices not consistent with the health care facility's policy on enteral feedings
- **Understand** sources of process variation: (what caused the variation): Knowledge gap was identified as nursing was unaware of the significance of malnutrition.
- **Select** the process improvement: (how should the process be changed): A nurse- driven enteral feeding algorithm with educational strategy to increase adherence to the initiative.
- **Plan:** - Plan the improvement, define the plan.
- **Do:** -Do the improvement, collect the data.
- **Check:** - Check the results, define what was learned.
- **Act:** - Act to hold the gain and continue to improve.

Ethical Considerations

Ethical considerations for this project included "do no harm" which entails physical and/or psychological, and could be in the form of pain, stress, anxiety, diminishing self-esteem, or an invasion of privacy (My-Peer Toolkit, n.d.). Other ethical considerations will include maintaining confidentiality and ensuring that any identifying information will not made available (My-Peer Toolkit, n.d.). Walden University IRB approval was obtained (Appendix B).

Develop Enteral Feeding Initiative

The proposed intervention is an enteral feeding initiative to address the issue of malnutrition in critically ill patients in the ICU. The enteral feeding initiative was developed based on the literature and health care facility's needed policy update (Appendix C). The three step enteral feeding algorithm (Appendix D), pretest and posttest (Appendix E), PowerPoint presentation (Appendix F), audit tool (Appendix G) and nursing questionnaire for the enteral feeding initiative (Appendix H) were validated by three experts, two clinical educators and the head dietician. The first clinical educator's credentials include: a member of the nutrition committee, a doctoral degree in nursing, and experience with QI projects. The second clinical educator has a master's degree in nursing and a background in critical care. The head dietician is an expert in enteral feedings and enteral feeding protocols.

Develop Implementation Plan

After graduating from the University, IRB approval from the health care facility will be obtained, and the enteral feeding initiative will be piloted in one ICU. The implementation plan will be as follows:

The team will implement the project / pilot project

- All interdisciplinary members caring for ICU patients will receive education.
- ICU nurses' knowledge will be measured using a pretest- posttest design.
- The enteral feeding initiative will be implemented in one ICU (pilot).

- Data will be collected: measuring will include compliance with enteral feeding algorithm and initiation of enteral feeding (< 48 hours).
- The team will evaluate enteral feeding goals.
- The team will evaluate data with the use of an audit tool. The audit tool was developed by myself, clinical educator, and head dietician. The audit tool will be implemented during the pilot phase of the project. The pilot project will occur after I graduate from the University. The audit tool will be used for all patients receiving enteral feedings.
- Nurses will complete nursing questionnaire for the enteral feeding initiative during the pilot study and after completing the online and live in-service.
- Results will be examined; revisions will be discussed and implemented.
- Implementation of the initiative in all ICUs.

Evaluation Plan

Hodges and Videto (2011) endorsed an evaluation plan that guides one through each step of the evaluation and clarifies what information the stakeholders need. Questions that are typically answered are:

1. Was the program implemented as planned?
2. Did the program meet its short- term goals and objectives?

The enteral feeding initiative had several goals:

1. The health care facility will use the enteral feeding initiative (updated policy, algorithm, Power Point presentation, and pretest/posttest).

2. ICU nurse's knowledge of evidence -based interventions for patients with enteral feeding will increase. Enteral feedings will be initiated within 48 hours for all patients requiring enteral feedings.
3. ICU nurses 'compliance with the enteral feeding protocol will increase.
4. At the end of the program's implementation enteral feedings will be initiated within 48 hours for all patients requiring enteral feedings.

In order to meet the first and the second goal all stakeholders will receive education on the enteral feeding initiative. Process evaluations will occur after team meetings to evaluate the enteral feeding initiative products that include the updated enteral feeding policy, enteral feeding algorithm, the PowerPoint presentation, and the pretest/ posttest.

McCall et al. (2014) expressed that education was the most important intervention added to a protocol that increased protocol adherence. The first goal will be met when the health care facility moves from the pilot of one ICU to implementing the initiative in all the ICUs. The second goal of increasing the staff nurses' knowledge will be measured using a pretest-posttest design. To meet the third goal an audit tool was developed to assess if enteral feedings were initiated within 48 hours, if interruptions of enteral feedings occurred and for how long, and did nurses follow the facility's policy. The audit tool will measure compliance with the enteral feeding algorithm. Future economic evaluations should include cost-benefit, cost- consequences, cost –effectiveness, and cost-utility examination.

Budget

Upon implementation of the QI initiative there will minimal additional cost to the health care facility and will include the price of developing and laminating the enteral feeding algorithm. The education for the initiative will be performed during employees' regular work hours. Nurses using the enteral feeding initiative will spend more time utilizing the algorithm and this cost will be part of their regular salary. The exact amount of time required by the algorithm may vary. The QI initiative will increase the work load for the team members initially, but overall will decrease because of improved patient outcomes.

Summary

Section 3 of this paper discussed the approach needed to implement a successful QI program, including how the initiative was developed and how data will be collected for the evaluation process. Section 4 of this paper will discuss the evaluation process, findings, and future recommendations on the QI initiative. Included in this section is the expert review and content validation related to the enteral feeding initiative. The QI initiative's applicability and implications to practice will be discussed and supported by literature. My self-analysis in respect to scholarship, practitioner, and project manager will be presented in Section 4.

Section 4: Development of QI Initiative

Introduction

The purpose of the QI initiative was to provide optimal nutrition for patients receiving enteral feedings in the health care facility through the development of evidence-based initiative. The main goal of this QI initiative was to address malnutrition. The use of an evidence- based enteral feeding initiative will allow the bedside ICU nurses to be change agents and to expedite meeting the nutritional needs of critically ill patients. The following objectives were addressed in this QI initiative:

1. The current policy on enteral feedings at the health care facility was revised and reflects current practice guidelines.
2. An evidence -based enteral feeding algorithm was developed.
3. Summative evaluation of the DNP student as a leader was completed by key stakeholders.
4. A pilot study (PowerPoint, pretest/posttest design) will be conducted after I graduate from Walden University.

The products evaluated in this QI initiative included the revision of the health care facility's policy on an enteral feedings (Appendix C), the development of an enteral feeding algorithm (Appendix D), an educational strategy, the pretest/posttest (Appendix E), the PowerPoint (Appendix F), the nursing questionnaire for the enteral feeding initiative (Appendix G), and the audit tool (Appendix H). Nutritional and educational experts using a 5 –point Likert scale validated the educational content and found the content relevant.

This purpose of this section is to discuss the evaluation of the enteral feeding initiative, including the summative evaluation of myself as a leader and the formative evaluations. Included in the formative evaluation are the Nutrition Committee meetings (qualitative) and the QI initiative products that were reviewed for content validity (quantitative). One major obstacle to be discussed in Section 4 is how the lack of team development affected the QI initiative. The final implementation and evaluation of the pilot study will not occur until I graduate from Walden University.

Evaluation/Findings and Discussion

Evaluation is a process that examines activities, characteristics, and outcomes of a program that can ultimately lead to judgements about the program (Hodges & Videto, 2011). Bartholomew Parcel, Kok, and Gottlieb (as cited in Hodges & Videto, 2011) indicated that formative evaluations can acquire information to be used to improve a program. During program planning formative evaluations test program plans, procedures, materials before they are implemented to verify the feasibility, appropriateness, and acceptability of their use in the program with target populations (p.207). The why and how of a QI initiative is just as important to document as the project success (Miake-Lye, et al., 2011). The program evaluation will maintain quality, identify challenges, facilitate program improvement and provide data for governing boards (Gard, Flannigan & Cluskey, 2004). As formative evaluations examine and test the processes involved in a project, the summative evaluations focus on whether the program worked as intended.

The summative evaluation for the QI initiative included: evaluation of myself as a leader was completed by key stakeholders (quantitative) (Appendix I).

The summative evaluation for the QI initiative included: evaluation of myself as a leader was completed by key stakeholders (quantitative) (Appendix, I).

The formative evaluations for this QI initiative include:

- Algorithm, policy and educational components (PowerPoint, pretest, posttest), nursing questionnaire for enteral feeding initiative, and audit tool evaluated by three experts using a Likert scale (quantitative).
- Nutrition Committee meetings (qualitative).

The major difficulty that occurred during this QI initiative was with the team development and included the following issues, which will be discussed later.

- Pre-established Nutrition Committee- enteral feeding team never truly developed,
- Personal agendas,
- Turnover of key stakeholders.

Objectives Met

Several key objectives were met including revision of the health care facility's policy on enteral feedings (Appendix C), development of the enteral feeding algorithm (Appendix D), development of the educational strategy, pretest/posttest (Appendix E); PowerPoint (Appendix F), enteral feeding audit tool (Appendix G) and nursing questionnaire for the enteral feeding initiative (Appendix H). These products were evaluated by three experts, two in the field of nursing and one in the field of nutrition, and found to be applicable to the target audience. Content validity of the products was validated by three experts and will be discussed later in this paper.

The framework used to facilitate the acceptance of the QI initiative was Lewin's theory of planned change. The first stage, or " unfreezing" of Lewin's theory consists of preparing for the change, where the problem is acknowledge and the leader mobilizes others to see the need for change (McGarry et al., 2013). This stage was met when the nutrition team members acknowledged the need for change. Members of the nutrition committee found the problem of malnutrition to be a significant problem as evident in the summative evaluation. During Stage 1 of Lewin's theory, "strengthening driving forces" was necessary as this ultimately weakens the restraining forces. Strengthening the driving forces was demonstrated when members of the nutrition team approved the algorithm on enteral feedings and the health care facility's policy revision on enteral feedings. As the entire initiative will not be implemented until I graduate from Walden University, the second and third stages of Lewin's theory cannot be achieved. The second stage, "moving or transitioning", is the most difficult step and will require individuals to change practice, and the third stage is where the change becomes embedded into the system (Shirley, 2013).

The FOCUS-PDCA model guided the QI initiative. When applying the model to the enteral feeding initiative, the FOCUS has been accomplished and included, finding the process to improve, organizing the team, clarifying the process of improvement, and selecting the process improvement. The PDCA part of the model (planning the pilot, doing the improvement, checking the results, and acting to hold the gains) will occur in the future. The implementation plan will consist of a pilot study previously outlined includes the pretest, PowerPoint presentation, one-on- one nursing education and posttest,

and a nursing questionnaire on the enteral feeding initiative. Lewin's theory of planned change will continue to be engaged to increase driving forces, involve others to make the change, and to take action. This is known as the second stage or "moving stage" of Lewin's theory (Mitchell, 2013). The FOCUS PDCA model will guide the QI initiative, with the emphasis on the PDCA part of the model. This part of the model focuses on the plan (pilot), prepares staff and the environment for change, compares the results prior and after the pilot, and continues to improve the process. The final evaluation plan will include measuring critical care nurses' knowledge, confidence, and compliance, with the enteral feeding algorithm/protocol.

Although malnutrition has been presented in the literature for over two decades, addressing malnutrition with an enteral feeding initiative is now being seen as an important strategy to address the growing health problem of malnutrition and the associated poor patient outcomes (Stewart, 2014a).The literature supports implementing enteral feeding initiatives such as algorithms with an educational component for nurses to facilitate adherence to protocols (McCall et al., 2014). Enteral feeding algorithms can ultimately improve nutritional practices that improve patient outcomes (Compton, et al., 2014). Major organizations such as the Joint Commission and the IOM are insisting that the nutritional needs of patients be met sooner (Patterson, n.d).

Expert Review and Content Validation

Project Outcome 1

To develop an evidenced based enteral feeding initiative (policy revision, algorithm) that the bedside ICU nurses could utilize to prevent malnutrition in critically

ill patients. The initiative was developed due to a need to change practice, as an informal audit that I conducted along with the head dietician revealed that patients were not being fed in a timely manner and nursing practices were not evidence- based. Literature supports the use of enteral feeding protocols, such as algorithms, to combat malnutrition (Compton, et al., 2014). The algorithm can be initiated as soon as a patient is admitted to the ICU, meeting the current recommendation of initiating enteral feedings within 48 hours of admission. Schulman (2008) stated that clinical practice guidelines are one of the most effective tools for changing practice. Provost (2010) added that to change practice, evidence must be summarized concisely into several key interventions; the enteral feeding algorithm is concise and reflects evidence- based guidelines. The enteral feeding initiative will also foster autonomy in nursing's practice. The algorithm in this QI initiative was simplified from six steps to three key steps for clarity and ease of use (Appendix D, Appendix J).

Project Outcome 2

The second project outcome was to develop an educational strategy that would facilitate using the enteral feeding algorithm. The educational strategy would enrich the ICU nurses' knowledge and confidence in addressing malnutrition. Education is necessary component to foster protocol adherence (McCall, et al., 2014).

The pilot study will not be conducted until I graduate from Walden University. However, as a leader, the vision must be clearly communicated. My vision includes the following highlights. The enteral feeding initiative will be piloted in the 12 bed medical ICU. All nurses working in the pilot ICU site will receive protocol education. The

education will be done in two ways. First, nurses will be assigned an online learning module in Power Point format discussing malnutrition and potential complications of malnutrition, enteral feeding protocol, and the nurse's roles. Nurses working in the ICU will receive a live in-service conducted by the nurse educator and DNP facilitator. All information (policy, algorithm, PowerPoint) will be reviewed with each nurse. Several nurse champions will be recruited to assist in the project.

During the implementation and evaluation phases, critical care nurses' knowledge and confidence will be measured using a pretest/ posttest design. Nurses will complete a pretest before the implementation of the educational component that will measure basic knowledge regarding malnutrition and enteral feedings. Nurses will also complete a posttest after the education intervention. A questionnaire for nurses using a Likert scale will assess the ease of implementing the enteral feeding algorithm in practice, confidence in addressing the nutritional needs of patients, and knowledge after the educational intervention will be performed (Appendix H). This data will be collected after three months.

Summative Evaluation: DNP as a Leader

A summative evaluation was completed by ten team members to evaluate my presentation and leadership regarding the QI enteral feeding initiative. The members answered seven questions using a 5 – point Likert scale, with 5 being "strongly agree." The questionnaire was passed out to the Nutrition Committee members and included guest members to the committee (medical students, and nutrition students). The response rate was 10 (N=10) reflecting 100 % return rate. Six of the items had a mean of 5.The

seventh item, which addressed the DNP student's leadership had a mean of 4.9.The questions were:

- Was the problem of malnutrition presented? 100% (*N*=10)
- Were the results of an earlier informal audit conducted in three ICU on one campus presented? 100% (*N*=10)
- Did the DNP student synthesize the literature, including the proposed framework of Lewin & the Focus PDCA model? 100% (*N*= 10)
- Update the current policy on enteral feedings- 100% (*N*= 10)
- Development of algorithm to facilitate the initiation of enteral feedings- 100% (*N*= 10)
- Educational component (Power Point/pretest-posttest) 100% (*N*= 10)
- Was the DNP student's leadership effective during the meeting? 100% (*N*=10)

Recommendations consisted of one member of the Nutrition Committee commenting that another more formal audit should be conducted to quantify the percentage of patients not being fed in a timely manner and having the information put into a formal software program.

Content Validation

The enteral feeding policy, algorithm, Power Point presentation, pretest-posttest, nursing questionnaire, and audit tool were all reviewed by three experts. Two clinical experts were in the field of nursing education, one who currently has a doctorate in

nursing and the other who has a master's in nursing. The third expert, a lead dietician, served as an expert with the enteral feeding algorithm and protocol.

Content validity is the degree to which an instrument has the appropriate sample of items to reflect the construct being measured. The content validity requires the use of an expert panel (1 –3 experts) to judge whether the scale contains content that reflects the concepts being evaluated. The content validity index is a value that quantifies the degree in which the experts agree or disagree about an item on the scale (Polit, Beck, & Owen, 2007). Likert scales are designed to determine the opinion or attitude on a subject using declarative statements with a scale after each statement (Burns & Grove, 2009). The content validity index (CVI) is a quality indicator for the evaluation of content validity for each item as well as the whole scale (Yang, Smith, & Liu, 2013). Using a CVI of .80 or higher is acceptable (Polit, & Beck, 2006). All three experts were in agreement and found the information on the instruments to be relevant reflecting content validity (Appendix K). Thirty- two items were identified on the scale and pertained to the key areas of the initiatives (policy, PowerPoint, algorithm, pretest/posttest, evaluation tool, and audit tool). The three experts rated all 32 items as relevant, or a CVI of 1.00. All experts must agree that an item is content valid if there are five or fewer experts (Polit, et al., 2007).

Nutrition Committee Meetings

The qualitative data comes from minutes and field notes from the Nutrition Committee Meetings over a period of three months. Mulhall (2003) stated observations can assist with determining whether or not project information is being delivered as

planned. Field notes can allow the researcher to gain more understanding of the culture. One emergent theme from the Nutrition Committee meetings included lack of engagement as evident by many members coming late to the meeting and members frequently used their smart phones during the meeting. One key stakeholder sat separately from the group and never commented on any projects that were presented. Membership was not consistent and varied within three months as many nutrition students and medical students dropped into the meeting.

Three key Nutrition Committee meeting are discussed. The nutrition meetings occurred the first Thursday of the month at the health care facility and membership consisted of regular members (surgical ICU attending, three nutritionists, nutrition director, endocrine attending, and surgical ICU nurse educator) and many transient members such as nutrition students and medical students. The meeting conveyed monthly at 12:00 p.m. to 1:00 p.m., and the meeting begins with approving the previous month's minutes.

- First Nutrition Committee Meeting: After review of the last month's minutes, team members accepted the minutes with minor revisions. On the agenda this month was the discussion of using Clinimix for adult patients, current guidelines for diagnosing malnutrition in the hospital using a criteria list, data on tracking how soon babies less than 1500 grams regain birthweight, and revisions to the health care facility's current policy on enteral feedings. I brought forth the latest evidence- based information regarding enteral feedings that could be applied to current policy on

enteral feedings. Recommendations entailed no longer checking residuals every four hours, no longer checking for bowl sounds prior to the administration of enteral feedings, obtaining an order to clear occluded feeding tubes with pancrelipase or sodium bicarbonate and changing enteral feeding bags every 24 hours. The recommendations of no longer checking for residuals, no longer checking for bowel sounds prior to the administration of enteral feedings was added to the current policy. Another recommendation from this meeting consisted of updating the enteral feeding policy again in the future as new practice guidelines for enteral feedings will be published in 2016.

- Second Nutrition Meeting: The second meeting began with accepting minutes from the previous month's meeting. On the agenda this month was Joint Commission Readiness and the enteral feeding algorithm. The enteral feeding algorithm was presented to three experts in the field of nursing and nutrition prior to the second Nutrition Committee Meeting. The recommendation was to simplify the complex algorithm (Appendix J) into three key steps (Appendix D) for clarity and ease of use. I presented the revised enteral feeding algorithm during the second Nutrition Committee meeting. Due to time constraints and an anticipated QI initiative program presentation that I would be presenting at the next Nutrition Meeting, the algorithm was tabled for discussion until the following month's meeting.

- Third Nutrition Meeting: The meeting began with approval of the previous month's minutes. On the agenda this month was previously tabled discussion of the enteral feeding algorithm, and the QI initiative presentation. The enteral feeding QI initiative was presented at the third meeting of the Nutrition Committee in August of 2015. The QI initiative, titled "Providing Optimal Nutrition in the Critical Care Units" incorporates a policy update, an enteral feeding algorithm after providing an educational intervention to the ICU nurse, with the plan to pilot the initiative in the large Medical ICU after I graduate from Walden University. I began by showing six recent journal articles to the committee members that highlighted works pertaining to nutrition and enteral feedings supporting the relevance of early administration of enteral feedings. I presented an internal audit that I conducted in September of 2015 that showed nursing practices vary substantially in all ICUs which identifies a significant gap in evidence- based practice and is consistent with the literature (McCall, et al., 2014). To assist with the QI initiative works of Lewin and the FOCUS PDCA model was presented. The enteral feeding algorithm was overwhelmingly approved. The discussion whether to implement the algorithm right away into practice without the educational component of the QI program followed. The meeting concluded with planning to implement the algorithm into practice. As a leader, I advocated for the educational component of the QI initiative,

primarily to increase the adherence to the protocol as supported by the literature. The lack of evidence- based practice will ultimately lead to poor patient outcomes (Melnyk, et al., 2010). The nursing department has the autonomy to implement educational programs they feel are warranted and ultimately in the best interest of the patient and the nurses at the health care facility. Although the Nutrition Committee is advocating implementing the algorithm into practice sooner, the nursing department can ultimately ensure that nurses receive the necessary education related to the algorithm.

As the entire QI initiative may not be implemented right away, focusing on team building and recruiting champions is a necessity. Schulman (2008) added the involvement of key stakeholders throughout the entire process is a key strategy for a successful evidence- based program. Barriers and facilitators of evidence -based practice must occur at the individual and institutional level (Solomons, & Spross, 2011). Driving forces will need to be increased by creating and maintaining the sense of urgency in the following ways:

- Continue to exhaust literature regarding malnutrition and enteral feedings.
- Continue to make the commitment to change, and nurture positive expectations about change outcomes (Portoghese et al., 2012).
- Provide relevant articles on the Nursing Bulletin Education Board in the ICU.

- To ultimately change practice, health care leaders need to engage, educate, execute, and evaluate (Provost, 2010). As team building and stakeholder involvement was attempted along with increasing driving forces to create the sense of urgency several challenges occurred and will be discussed in the next section.

Enteral Feeding Initiative Challenges

Many projects have challenges that must be addressed to ensure success of a program. Team development was the major challenge for this QI initiative. This author believes because so many issues occurred at the team level, the QI initiative still remains in jeopardy. The intended plan was to form an interdisciplinary team of key stakeholders for the enteral feeding initiative; however hospital leadership thought that using the established Nutrition Committee would be a better alternative. In retrospect, this was not the best idea. The Nutrition Committee had other personal agendas that became apparent and included Joint Commission readiness, pediatric age cut off for parenteral nutrition orders, changing vendors for nutritional support to save money, and instituting an enteral feeding algorithm as soon as possible into practice.

Teams must go through stages of development that include, forming, storming, and norming, performing and adjourning to be successful. Through these stages members get to know one another and learn about roles and expectations. Effective teams share a sense of purpose, define goals, and elicit open communication (Kumar, Desmukh & Ashish, 2014). Turnover also affected the team; two major stakeholders for the QI initiative including the lead dietician and lead nurse educator have left the health care

facility over the last 6 months. These two individuals were identified as key players in the enteral feeding initiative.

Follow-Up

The QI enteral feeding algorithm (Appendix D) will be part of the revision of the enteral feeding policy (Appendix C) and applied to practice, per the Nutrition Committee. There is concern that there will be poor adherence to the algorithm without the educational component (PowerPoint). I highlighted this concern at the Nutrition Committee Meeting and supported the concern with literature. The Nutrition Committee meetings will continue to occur monthly, however stakeholder membership is constantly changing at the health care facility. The critical care nursing department plans to proceed with the entire enteral feeding initiative education in the future. This situation will provide an opportunity for me to increase driving forces and continue to work on the enteral feeding initiative.

The health care facility currently has many evidence- based projects underway. A factor that affects the health care facility that may affect the enteral feeding initiative is that of change fatigue. Change fatigue has become more prevalent, as health care feels the need to change many practices quickly to achieve improved outcomes. Change fatigue can be defined as mounting pressures that ultimately can lead to poor outcomes (Vestal, 2013). As I have worked for 30 years at the health care facility, and have spent one year doing clinical practicums, change fatigue was highly visible. This author has identified ways to combat change fatigue at the health care facility which include mapping out and limiting the number of changes using a calendar (Vestal, 2013).

At a nursing leadership meeting, the topic of why do so many projects fail after time at the health care facility arose. The lack of maintaining the gain of a project is a major factor. According to the PDCA model, a project must continually be monitored to make improvement (Zimnicki, 2015). Failure to monitor a project and make the necessary improvement was evident with the recent projects at the health care facility that includes the progressive mobility project and IPASS project for improving communication. Barriers to implementing a QI initiative is multifactorial and can include issues with organizational culture and problems with QI team development (Solomons & Spross, 2011).

Applicability to Health Care

Using an enteral feeding initiative can impact nursing, patients, and ultimately the economics of health care organization. According to critical care nurses' standards, nurses caring for acutely and critically ill patients will prescribe interventions that include strategies for promotion and prevention of illness, injury and disease, and also reflect the best current evidence (AACN, 2008). Critical care nurses' standard of professional performance seeks to improve the quality and effectiveness of nursing practice through participating in QI activities. Critical care nurses will continue to develop, implement, and update policies and guidelines to improve the quality and effectiveness of nursing practice (American Association of Critical Care Nurses, 2008). Using an enteral feeding initiative will allow critical care nurses to be autonomous in practice and to play a vital role in improving the nutritional status of vulnerable patients (Marshall et al., 2012).

This enteral feeding initiative will promote better patient outcomes as measured by lower morbidity, mortality, and length of stay in the ICU (Stewart, 2014a). Health care has become more focused on cost effective and QI thereby improving the efficiency of hospital care. Patient malnutrition remains a significant obstacle to overcome to provide cost effective care (Tappenden et al., 2013).

Implications

A nurse driven enteral feeding initiative has important implications to the area of policy, practice, and research. The purpose of this section is to discuss these areas.

Policy

The goals of disease prevention are to delay disability and death and maximize being illness free for years. The United States spent only three percent of 2.5 trillion dollars on illness prevention (Bodenheimer & Grumbach, 2012). Primary prevention uses measures that are cost effective and employing an enteral feeding protocol can be one such measure (Bodenheimer & Grumbach, 2012).

The Joint Commission advocates that hospitals must perform nutritional assessments and institute support mechanisms to fight malnutrition (Muller, Compher, & Druyan, 2011). In a landmark paper from the IOM (2000) “To Err is Human” a strategy for the improvement in the health care system entails establishing a national focus to create leadership, research, tools and protocols to enhance the knowledge base about safety. Raising performance standards and expectations for improvement through oversight organizations and professional groups is also another strategy to building a safer health system (IOM, 2000). For example, current clinical guidelines for nutritional

screenings include mandatory screening of patients within 24 hours of admission to an acute care center as mandated by the Joint Commission. The nutritional assessment would identify specific nutritional risk or existence of malnutrition and may lead to recommendations for improving the nutritional status of the individual (Mueller, et al., 2011).

Practice

The employment of an enteral feeding initiative can change practice and address the issue of malnutrition in a vulnerable group of patients. A nurse driven enteral feeding initiative can allow the bedside nurse to apply evidence- based interventions, while allowing them to be more autonomous in practice and fostering positive patient outcomes. According to the AACN scope and standards for acute and critical care nursing practice (2008), standard one, reflects quality practice, as the critical care nurse will systematically evaluate and seek to improve the quality and effectiveness of nursing practice. Further standard seven, the critical care nurse will use clinical inquiry and integrate research findings into practice (AACN, 2008). This QI initiative is an example of how some simple changes (awareness of malnutrition, policy update, and employment of an algorithm) can have far much greater impact on the critically ill. As I have been working on my project for the last year, several of my colleagues have advocated and initiated enteral feedings on their patients earlier due to the ongoing discussion of malnutrition because of my DNP project.

The IOM (2010) adds that with the nursing profession being the largest segment of the nation's health care workforce, nurses working on the frontlines of patient care

must be prepared to meet diverse needs of patients. Nurses must deliver quality patient centered care that reflects advance science and initiatives that improve patient outcomes.

Research

Essential III of Doctoral Education for Advanced Nursing Practice (2006) states that scholarship and research are the hallmarks of doctoral education. The DNP must apply knowledge to solve a problem via scholarship of application. Enteral feeding initiatives are evidence -based. Evidence- based initiatives result in higher quality care, improved patient outcomes, reduced health cost, and greater nurse satisfaction (Melnyk, Fineout-Overhold, Stillwell, & Williamson, 2010, p. 51).

A QI initiative sets standards that can be generalized to other health care institutions; this QI initiative was developed to address a practice issue that impacts a vulnerable patient group. There is a general misconception that large, well known health care facilities are implementing evidence- based practices correctly all the time. This is not always true and there is room for improvement in all health care facilities large or small. Not only implementing a QI strategy is viewed as an important step, but maintaining the improvement is just as important.

Future enteral feeding initiatives may use increased hourly rates on feeding pumps to compensate for predicted losses in feeding volumes (Stewart, 2014a). This QI initiative discusses protocol adherence and compliance as being imperative and how educational in-services can increase adherence. In a recent article by Marino et al., (2015) when a delirium protocol was implemented, two out of three ICUs demonstrated poor compliance with the delirium protocol check list even after educational interventions. For

this reason, this author believes more research surrounding protocol adherence would be beneficial. Impact evaluations that involve collecting data on energy and protein intake achieved as a percentage of estimated targets could also be conducted (Reeves et al. 2012). Further studies examining the cost effectiveness, cost analysis, cost benefit, cost – consequences, and cost utility of enteral feeding initiatives should be ascertained. In the recent edition of enteral feeding guidelines, bundle care and institution specific strategies are highly endorsed, thus future studies should also focus on these areas (McClave et al., 2016).

Social Change

The enteral feeding initiative can address the more significant problem of malnutrition. Proactive nutritional interventions such as a nurse driven enteral feeding algorithm could reduce morbidity, mortality, length of stay, and promote quality of life for patients (Stewart, 2014a). The potential exists that the Centers of Medicare and Medicaid will no longer pay reimbursement to health care facilities if patient's nutritional needs are not met. Health care institutions should employ evidence- based strategies to address malnutrition, and in the future this may be mandated from state and government agencies (Patterson, n.d).

Strengths and Limitations

Strengths

An enteral feeding initiative can address the problem of malnutrition. The enteral feeding initiative can be an easily applied intervention that can produce improved patient

outcomes. Evidence- based enteral feeding initiatives can solidify nursing practice and promote autonomy in practice.

Limitations

There were several limitations associated with this project. Previously mentioned is the limitation of the team never fully developing. Another project limitation can be change fatigue, as the health care facility has so many projects being implemented; also the enteral feeding initiative may not be considered a priority for the health care facility. Smith and Donze (2010) stated that 50% of organizational change efforts fail because organizational leaders do not establish sufficient organizational readiness for change.

Analysis of Self

As Scholar

Through this QI initiative I have demonstrated evidence of scholarship. Boyer (as cited in Glassick, 2000) stated that scholarship is seen through the nurse's scholarly practice, effective patient care, and with the application of theory and research which will ultimately improve nursing practice. Scholarly practices include identifying clinical problems and their solutions that reflect current evidence that leads to innovative practice changes that produce positive patient outcomes (Limoges, Acorn, & Osborne, 2015).This QI initiative was developed to address a clinical practice issue that was observed in practice, patients not being fed within 48 hours and practices that were not evidence-based.

As Practitioner

As a health care provider who has continued to work as an ICU nurse for over 31 years, and through my DNP journey, I have evolved and grown as a practitioner. Areas of strength gained in this project include:

- Promoting evidence- based practice to bridge the gap between research and practice (Smith & Doze, 2010).
- Enhancing the work environment, excellent nursing practice, and improved patient outcomes (AACN, 2008).

As Project Manager

In order for a change in practice to be successful, strong leadership is needed. I have learned through being a project manager the following important aspects:

- Major barriers, such as lack of team development, leadership turnover, and lack of knowledge of the principle and process of QI, can greatly affect a project (Adams-Wending, & Lee, 2005).
- 50% of organizational change efforts fail because organizational leaders do not establish sufficient organizational readiness for change and failures also result from organizational culture, organizational infrastructure, and organizational resources (Smith & Donze, 2010).
- In order to change practice one must engage, educate, execute, and evaluate (Provost, 2010).

- For successful change sustainability, organizational factors such as support structures need to be in place along with continuous monitoring of sustainability (Parsons, & Cornett, 2011).
- For successful change sustainability, staff factors include involving and empowering staff from the beginning (Parsons, & Cornett, 2011).
- For successful change sustainability, process factors include the process to improve patient care process and outcomes through streamline operations (Parsons, & Cornett, 2011).
- The better one can communicate a vision, the quicker the team will perform at a higher level. This includes being visible, speaking honestly, communicating changes in person, and addressing issues quickly. These actions build trust and credibility (Filek, 2001).
- Applying Kotter's (2007) eight steps to transforming an organization is a key step to organizational change. Although not the framework used for this project Kotter's principles of transformation can be seen throughout this QI initiative and include creating a sense of urgency, forming a team, creating and sharing the vision, empowering others to be change agents, and focusing on short term wins.
- Timing, having the right project and the right time will ensure success (V. Mason, personal communication, September 10, 2015).

Contribution to My Professional Development

Growth in leadership skills have contributed to my professional development. I have and will continue to use advanced communication skills to lead QI and patient safety initiatives as reflected in the DNP Essential II (AACN, 2006). As a leader, I have examined organizational and systems leadership in practice while focusing on the improvement of health outcomes that ultimately ensures and advocates for patient safety (AACN, 2006).

Summary

The development and implementation of an enteral feeding initiative was an example of an evidence -based practice change that addressed the larger picture of malnutrition. This QI initiative can be a catalyst for a significant change in practice. Passion, commitment, and leadership have been embedded throughout this QI initiative. As this QI initiative had difficulty with a major barrier of establishing and maintaining a team, the success of the QI initiative will remain at risk. Section 5 of this paper will discuss a scholarly product for dissemination on the importance of teamwork and interdisciplinary collaboration to the success of QI projects.

Section 5: Scholarly Product

Introduction

Section 5 is a scholarly product for dissemination. The scholarly product will be a potential article for the journal *American Nurse Today*. The format of the article will follow the instructions from the editors which include specific guidelines for the article that include 1400 to 1600 word limit, use of key resources, and guidance for content of the article will be provided by the editor after acceptance of the article (Appendix L). A query letter was sent to the editor of the journal. Key aspects of the article are discussed in Section 5. The focus of the article outline will be on how important the establishment of the team, collaboration, and leadership are to the success of a quality improvement project. Several other scholarly journals may also be considered if the current article outline is not accepted to *American Nurse Today*. The article outline will be revised for specific content depending on the journal.

Teamwork for a Successful QI Project

Team work is a necessary skill for a QI project to be successful. A QI project is undertaken to reduce variations in a process, to explain how a process is carried out, or, to change practice to improve outcomes (Arndt & Netsch, 2012, p. 2012). QI activities provide the local context for an evidence- based practice (EBP) effort and confirm the EBP practices are being implemented (Solomons & Spross, 2011). Productive team work and collaboration are associated with strong clinical outcomes, and in order for QI projects to be successful strong team development must ensue (Wheeler, & Stroller, 2011).

Nursing makes up the largest segment of the health care workforce and nursing is well positioned to participate in quality initiatives. The Institute of Medicine (2010) called for nurses to be full partners with physicians and other health care professionals in redesigning health care in the United States. The literature supports collaboration and teamwork among health care providers in achieving good clinical patient outcomes (Wheeler, & Stroller, 2011, p. 9). Now greater than ever, nurses at many levels, from bedside nurse, nurse mangers, advanced practice nurses, to doctoral prepared nurses are becoming more involved with QI projects at their health care facilities. For a QI project to be successful, the development of a team is a necessary component. Albert and Priganc (2014) stated that effective teams collaborate and work towards a shared vision and strong leadership which is essential to the team process. The purpose of this article outline is to define the term team, discuss stages of *team* development, and ways to promote team work that will lead to the successful implementation of a QI project.

What Is a Team?

Kumar, et al. (2014) defined *team* as a symbiotic relationship complementing and supporting each other's skills, communicating openly and clearly, while holding themselves accountable. Team members must respect and trust each other and believe that every member brings skills and strengths to the team. Studies have identified teamwork as one of the most important tools that facilitate high quality and safe patient care, and teams that work well together are more effective and produce innovative results (Kumar et al., 2014). Effective example is that of rapid response teams. Effective team members have characteristics that include open communication, commitment to self,

commitment to the project, listening to members when disagreement occurs, and shared leadership. Further, effective teams share a sense of purpose while defining strong goals and maintaining a strong sense of mutual accountability (Wheeler & Stoller, 2011).

Team Development

Kumar et al., (2014) cited Tuckman who initially described four stages of team development which include forming, storming, norming, and performing, later the fifth stage of adjourning/transforming was added. Teams must typically go through the stages but may vary on how fast they move through each stage. Strong team leadership will facilitate the members going through each stage of team development.

- Forming-members are uncertain about their roles and expectations.
- Storming- members tend to be defensive and critical of the leader and each other.
- Norming- members get to know each other.
- Performing- the team works with positive and creative attitudes to achieve the goals.
- Adjourning- after completion of the projects including tasks, a sense of closure and bonding between members occur.

Facilitator to Team Development

The first facilitator to team development is strong leadership. Kouzes and Posner (as cited in Wheeler & Stroller, 2011) identified characteristics of great leadership that include the following:

- Challenging the process- taking risks to change the process that will ultimately foster growth and improvement.
- Inspiring a vision- by appealing to other's values and interests a shared vision can emerge.
- Enabling others to act-defining common goals and building trust.
- Modeling- setting the example and conveying shared values that will achieve small wins that build commitment.
- Encouraging the heart- recognizing individual contributions to the success of the project.

Leadership must motivate team members to keep their "eyes on the prize" to get the desired results. This is an ongoing process and may require additional support from the health care organization. Potential motivators include financial reward or job enrichment.

The second facilitator to team development is setting personal agendas aside. Personal agendas are not in- line with the mission of the group and or health care organization. One strategy is to frequently revisit the mission which should eliminate the occurrence of personal agendas (Messner, 1998). The third facilitator of team development is ensuring that the teams are interdisciplinary. Literature supports interdisciplinary collaboration and team work with exceptional clinical outcomes. Behaviors of interdisciplinary teams must include mutual respect, trust building, conflict resolution, mutual accountability, open concise communication, and routine feedback (Wheeler, & Stroller, 2011).

Summary

For QI projects to be successful interdisciplinary team building with strong leadership is a necessary component that will lead to better patient outcome. As health care has becomes more complex team building becomes more important.

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Appendix A: Focus PDCA Model

Focus PDCA Model

Focus:

1. **F**: Find a process to improve	1. Look at organization's mission 2. Identify improvement opportunity	Serve vulnerable patient group "Exceptional Care without Exception" Enteral feeding algorithm (to feed patients in the ICU with in current guidelines of 48 hours)
2. **O**: Organize a team	1. Appropriate representation from all stakeholders 2. Identify resources & plan	Team members (DNP, lead dietician, champion ICU nurses, medical and nursing director of ICU, nurse educators) Resources: Nutrition committee Plan: Pilot in 12 bed: Medical ICU
3. **C**: Clarify current knowledge of the process	1. Practices vary in each unit. Patients not being fed under current evidence-based guidelines.	Current process: enteral feedings not started until the dietician or medical staff writes an order in patient's EMR
4. **U**: Understand the process of improvement	1. Identifying, gathering, and analyzing factors that have influenced the process	Audit – practices vary in each ICU, not evidence-based, Consistent with the literature
5. **S**: Select the process improvement	1. Evidence- based enteral feeding protocols –can address the issue getting patients fed sooner to prevent malnutrition	Evidence -based enteral feeding initiative 1.policy revision, algorithm development, educational strategy

PDCA:

6. P: Plan the pilot	1. How to introduce change	1. Educational in-service of ICU nurses 2. Develop implementation plan
7. D: Do the improvement, data collection, and analysis	2. Preparing the staff & environment for change	1. Educational in-service 2. Pilot in one ICU
8. C: Check and study the results	1. Comparing the results before the process change with the pilot results	To be done when DNP graduates from Walden
9. A: Act to hold the gain and continue to improve the process	1. Moving to make the improvements, adopting change, and possibly abandoning the change	To be done when DNP graduates from Walden

Plan, Do, Check and Act (Zimnicki, 2015).

Appendix B: IRB Approval Letter

Dear Ms. Foley, July, 23, 2014

This email is to notify you that the Institutional Review Board (IRB) confirms that your study entitled, "Providing optimal nutrition on the critical care unit " meets Walden University's ethical standards. Our records indicate that your project does not include the types of activities that require a traditional IRB review. This Confirmation of Ethical Standards (CES) has an IRB record number of 07-23-15-0382345.

This confirmation is contingent upon your adherence to the exact procedures described in the final version of the IRB materials that have been submitted as of this date. This includes maintaining your current status with the university and this confirmation of ethical standards is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, this is suspended.

If you need to make any changes to your project, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for projects conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with these policies and procedures related to ethical standards in research.

Sincerely,

Jenny Sherer, M.Ed., CIP

Associate Director

Office of Research Ethics and Compliance
Walden University
Email: irb@waldenu.edu

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link: http://academicguides.waldenu.edu/researchcenter/orec

Appendix C: Revised Facility's Policy on Enteral Feedings

Adult ICU Enteral Tube Feeding Policy
Policy number #
Issued:
Reviewed:
Revised:
Section:

Purpose: To ensure safe and proper ordering and administration of Tube Feedings

Clinical Policy Statement:
The Nutrition Committee will develop policies that provide best practice guidelines for administering tube feedings in a safe and appropriate manner. The Nutrition Committee is comprised of a team of physicians, registered dieticians, pharmacists and registered nurses. Nursing staff are responsible for assuring that tube feedings are administered safely.

Application:
This policy applies to patients receiving both gastric and jejunal tube feedings. Differences in procedures between gastric and jejunal tubes are noted where applicable. This policy is to be used in conjunction with the three steps Enteral Feeding Algorithm when applicable.

Exceptions:
Contraindications to naso-gastric tube or naso-jejunal tube placement should be evaluated prior to placement.

Procedure:
1. The physician will write orders in Epic for enteral feeding support with assistance from the dietician in regards to formula selection and goal rate when applicable.
2. An x ray will be performed to verify proper tube placement of non –surgically placed tubes prior to instillation of tube feedings or mediations through the feeding tube.
3. Head of bed should be elevated to at least 30 degrees or in reverse Trendelenburg position as tolerated while tube feeding is infusing to minimize reflux and risk of aspiration, especially for gastrically fed patients. Maintain aspiration precautions.
4. To reduce the risk of occluded tubes, flush with 30-60ml of tap water

5. Infection control procedures should be practiced when administering tube feedings:
    - Use aseptic technique
    - Wash hands and wear clean gloves when handling equipment or enteral feeding formulas
    - The hub of the enterostomy tube should be cleaned with alcohol wipes at each change of tubing connection
    - Feeding bags should be changed every 24 hours
6. Enteral feeding bags should be labeled with the date, time the bag is hung, patient's name, the formula of the enteral feeding and the enteral access site. The label should be compared with the enteral feeding nutrition order for accuracy.
7. Always trace the tubing from the administration container to the patient to avoid any enteral misconnections. When making a reconnection, staff should routinely trace lines back to their origins and to ensure that they are secure.
8. Start continuous tube feedings at full strength at 20 ml and increase by 10ml every 4 hours to goal. Monitor patient for signs of intolerance and may include abdominal distention, elevated gastric residuals and bowel elimination patterns. Monitor fluid and electrolytes and other metabolic parameters as needed based on the patient's clinical signs.
9. Bolus tube feedings should be administered according to ordered volume up to 500 ml at scheduled times
10. For administering protein liquids or powder, fiber powder
    - Put number of packets ordered in 4-8 ounce cup
    - Add enough warm water to dissolve protein or fiber completely. Use minimum amount of water possible.
    - Administer via syringe
11. The Food and Nutrition staff is responsible for delivering tube feeding to the units daily.

Treatment of Occluded Feeding Tubes

1. A physician order must be obtained to clear an occluded feeding tube.
2. Patients with contraindications to Pancrelipase (viokace) or Sodium Bicarbonate should be excluded from this treatment.
3. An order for 1 tablet of viokace and 1 tablet of Sodium Bicarbonate (324mg) is placed.
4. Dissolve both medications in 5 ml of water. This may take up to 15 minutes.
5. Slowly inject the solution into the feeding tube and clamp for 15 to 30 minutes.
6. Flush tube with 50 ml of warm water.
7. This may be repeated one more time.
8. Document the procedure and outcome in the patient's chart (EPIC).
9. Notify the physician team of the result.

Best Practice Information:

1. The use of Viokace and Sodium Bicarbonate will open occluded feeding tubes 80% of the time (alkaline).The use of cola or cranberry juice may promote further clogging due to denaturation of protein and should not be used (acidic).
2. Minimize interruptions of enteral feedings (procedures and extubations)
3. If a patient does not tolerate enteral feedings (massive diarrhea) consider pyloric tube placement and or prokinetic agent.
4. The use of Methylene Blue dye is no longer recommended and associated with adverse events.
5. Critically ill patients should receive enteral feedings within 24-48 hours of admission.
6. Critically ill patients are at higher risk for malnutrition due to changes in energy metabolism in response to trauma, surgery, burns and sepsis.
7. The use of an algorithm/protocol can improve the nutritional status of patients as supported in the literature
8. Please refer to Lippincott online resource found on the hospital's intra net page.
9. Consider Parenteral Nutrition if contraindications and if patient unable to reach caloric goals.

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Appendix C: Revised Facility's Policy on Enteral Feedings

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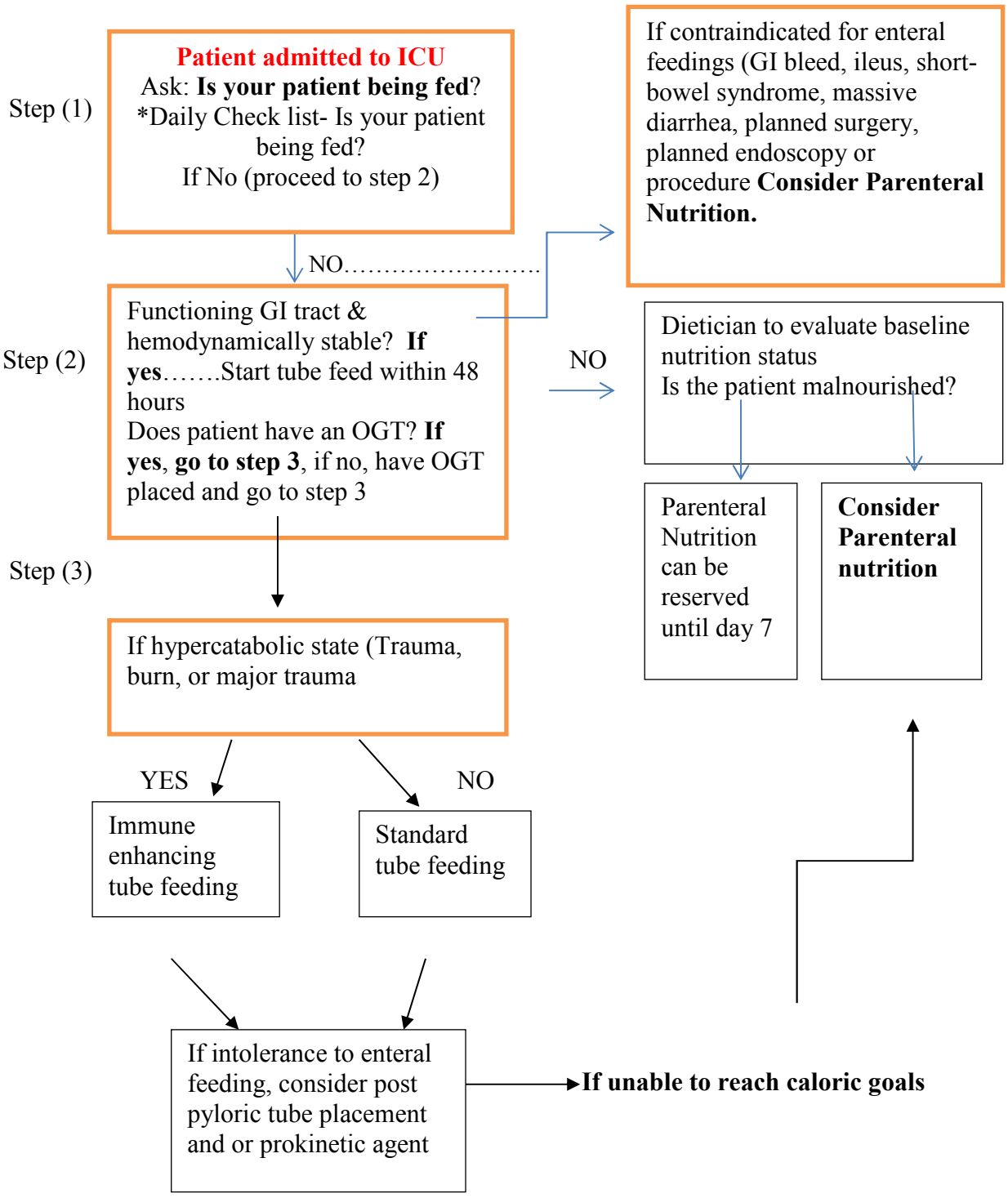
Appendix D: Enteral Feeding Protocol-Revised (3 Steps)

Enteral Feeding Protocol: ICU Feeding Algorithm for Adults



Appendix E: Pretest/Posttest on Malnutrition and Evidence- Based Enteral Feedings

1. Which statement correctly describes malnutrition in critically ill patients?

    a) Patients in the ICU are at higher risk for malnutrition due to alterations in energy metabolism as a response to trauma, surgery, and sepsis
    b) Patients in the ICU are at higher risk for malnutrition due to trauma and sepsis
    c) Patients in the ICU are at higher risk for malnutrition if the patient's albumin level is below normal levels
    d) Patients in the ICU do not have a higher risk for malnutrition

2. The ASPEN guidelines for enteral feedings include all **except** which of the following recommendations for providing nutrition in the critically ill.

    a) The goal is to initiate feedings within 72 hours of admission to the intensive care unit
    b) Patients do not need to have bowel sounds present to initiate enteral feedings
    c) Enteral feedings are the preferred route of feeding over parenteral nutrition for the critically ill patient
    d) Traditional nutrition assessment tools (albumin, pre-albumin, and anthropometry) are not validated in critical care

3. Clinical characteristics of severe malnutrition can be defined by which statement?

    a) Energy intake, weight loss, body fat, muscle mass, fluid accumulation, and reduced grip strength
    b) Energy intake, weight loss, body fat, muscle mass, fluid accumulation, and albumin level
    c) Energy intake, weight loss, body fat, muscle mass, albumin level, and fatigue
    d) Energy intake, weight loss, body fate, muscle mass, fluid accumulation, decrease BMI

4. The benefits of initiating enteral feedings include: **Select all that apply**.

    a) Maintains integrity of the gastrointestinal tract, and is cost effective
    b) Prevents bacterial translocation through continued production of immunoglobulin A
    c) Reduces the risk for cholecystitis, reduces the risk for pneumonia
    d) Reduces the risk for sepsis and intra-abdominal abscess

5. Which statement regarding nutrition and pressure ulcer development is true

    a) The exact causal relationship between nutrition and the development of pressure ulcers is well known
    b) The exact causal relationship between nutrition and the development of pressure ulcers is largely unknown and under studied
    c) The relationship between nutrition and the development of pressure ulcers depends solely on the patient's preadmission condition
    d) The relationship between nutrition and the development of pressure ulcers is based on the patient's albumin and weight distribution

6. Contraindications to enteral feedings include the following: **Select all that apply**

    a) Gastrointestinal bleeding
    b) Diarrhea, not responsive to medical management
    c) Paralytic ileus
    d) Malabsorption syndrome

7. Identify clinical situations that interrupt enteral feedings. **Select all that apply**

    a) Routine care such as positioning
    b) Procedures
    c) Hemodynamic status
    d) Administration of medications

8. In regards to enteral feedings, which statement is correct?

    a) Patients need to have bowel sounds for enteral feedings to begin
    b) Enteral feedings should be discontinued only if the diarrhea is refractory to all other treatment options
    c) Patients should have albumin and pre albumins done daily
    d) Nutritional care is solely the responsibility of the primary nurse

9. Which statement in regards to enteral feeding protocols is **not correct**?

    a) Studies show that enteral feeding protocol have a marked improvement in the delivery of caloric intake
    b) Enteral feeding protocols should include titration schedules to reach infusion rate and protocols for flushing enteral tubes
    c) Enteral protocols are universal and not specific to anyone health care facility
    d) Early initiation of enteral feedings to goal rates resulted in improved energy and protein intake in critical care patients

10. Underfeeding of patients can lead to which adverse clinical outcome? **Except**

    a) Nosocomial infections
    b) Acute kidney injury
    c) Increased risk for delirium
    d) Sepsis

Answer Key

1. a
2. a
3. a
4. a,b,c,d
5. b
6. a,b,c,d
7. a,b,c,d
8. b
9. c
10. c

Appendix F: PowerPoint-Enteral Feeding Initiative

ENTERAL FEEDING INITIATIVE

Providing Optimal Nutrition on the Critical Care Unit

Objective

After this educational PowerPoint session the learner will:

- 1. Be knowledgeable in the implementation of the enteral feeding algorithm in the ICU
- 2. Define the characteristics of malnutrition
- 3. Identify the benefits of enteral feedings

Background

- Malnutrition is costly to the patient & healthcare system (Stewart, 2014)
- Priority concern as the elderly population continues to grow
- Up to 55% of hospitalized patients are malnourished on admission (Milte, Ratcliffe, Miller, & Crotty, 2013)

Background

- Enteral feedings can diminish complications, reduce length of stay in the ICU, and favorably impact patient outcomes (Hamilton & Boyce, 2013)
- Cost 20% more as compared to treating a patient without malnutrition (Amaral as cited in Stewart, 2014)
- Many nursing practices contribute to hypocaloric feedings (Stewart, 2014)

Definition of Malnutrition

- **Defined as:**

- Presence of two or more of the following characteristics:

- Energy intake
- Weight loss
- Body fat
- Muscle mass
- Fluid accumulation
- Reduced grip strength

(Cox & Rasmussen, 2014)

Nursing has a Key Role

- Nursing can be effective agents of change while delivering optimal nutrition to critically ill patients

Underfeeding of patients

- The underfeeding of patients can lead to adverse clinical outcomes:
- Nosocomial infections
- Acute kidney injury (AKI)
- Sepsis

Pressure Ulcers & Nutrition

The exact causal relationship between nutrition and the development of pressure ulcers is largely unknown and under studied

- Suboptimal nutrition can alter the immune function, collagen synthesis, and tensile strength – all essential elements in the wound healing cascade (Cox & Rasmussen, 2014, p. 18.)

Evidence- Based

- Current EB guidelines support the initiation of enteral feedings within 24 - 48 hours of admission (SSCCM & ASPEN, 2009)

- Studies show the use of an evidence-based enteral feeding protocol can optimize patient's nutritional status

Benefits of enteral feedings

- Maintains integrity of the GI tract

- Prevents translocation gut bacteria through continued production of Immunoglobulin A

- Reduces the risk of cholecystitis, & pneumonia

- Reduces the risk for sepsis & intra-abdominal abscess

Protocol's Algorithm Highlights-Step 1

- **Please refer to attached protocol**
- **3 Simple Key Steps**

- Begin with **step 1**

- Ask: **Is your patient being fed**?
- *Daily Check list- Is your patient being fed?

- If no, go to **step 2**

Step 2

- Functioning GI tract & hemodynamically stable?

- **If yes**…….Start tube feed within 48 hours

- Does patient have an OGT?

- **If yes**, **go to step 3**, if no, have OGT placed and proceed to step 3

Step 3

- If hypercatabolic state (trauma, burn, or major trauma)

  If Yes use immune enhanced tube feed

  If No use standard tube feed

Fyi

- If intolerance to enteral feeding, consider post pyloric tube placement and or prokinetic agent
- If unable to reach caloric goals, consider parenteral nutrition

Resources

- If you have any questions, remember you have resources
- Nurse Educators
- Dietician
- * remember the use of an algorithm & protocol does not replace clinical judgement

Future

- Increase hourly rates to compensate for predicted losses volumes (Stewart 2014)
- Nursing will always play a key role in preventing malnutrition in vulnerable patient group.

FYI: Common Misconceptions & Changes in Practice

- Patient's do not need to have bowel sounds to initiate enteral feedings
- No longer need to check for residuals

References

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- Hamilton, C., & Boyce, V. J. (2013). Addressing malnutrition in hospitalized adults. *Journal of Parenteral and Enteral Nutrition,* 1-8. doi: 10.1177/048607113497224
- McClave, S. A., Martindale, R. G., Vanek, V. W., McCarthy, M., Roberts, P., Taylor, B., …Cresci, G. (2009). Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N). *Journal of Parenteral and Enteral Nutrition, 33*(3), 277-316 doi: 10.1177/0148607109335234
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Appendix G: Audit Tool for the Enteral Feeding Initiative

MR number	When was the patient admitted Date Time	Start of enteral feedings Date Time	Was the policy followed?	Did the patient receive enteral feedings within 48 hours?	Comments:

Appendix H: Evaluation-Nursing Questionnaire for the Enteral Feeding Initiative

	Enteral Feeding Initiative Strongly disagree 1 Neutral 3 Strongly agree 5	**Strongly Disagree**			**Strongly Agree**	
	Questions	**1**	**2**	**3**	**4**	**5**
1	The enteral feeding algorithm was easy to implement in my nursing practice					
2	I feel more confident addressing the nutritional needs of my patients					
3	My knowledge level has increased after the educational intervention (on line Healthstream Module(PowerPoint) & 1:1review with the nurse educators					

Appendix I: Summative Evaluation – The DNP as a Leader

Problem: Malnutrition remains costly to the patient and health care system and continues to be associated with prolonged hospital stay and mortality

Goal: The goal of this QI initiative is to provide optimal nutrition for patients receiving enteral feedings in the hospital through the development of an evidence-based initiative for enteral feedings.

Objectives:

1. Update current policy on enteral feedings
2. Develop algorithm to facilitate the initiation of enteral feedings
3. Educational component to assist the ICU nurse with enteral feedings (PowerPoint presentation/ pretest-posttest design)

Questions

1. Was the significant problem of malnutrition presented?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

2. Was the result of an informal audit that highlighted patients not being fed in a timely manner and lack of evidence-based practices presented?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

3. Did the DNP student synthesize the literature regarding malnutrition & enteral feeding protocols?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

4. Were the objectives met-
   Update the current policy on enteral feedings

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

5. Develop an algorithm to facilitate the initiation of enteral feedings?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

6. Educational component to assist the ICU nurse (power point presentation/ pretest-posttest)?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

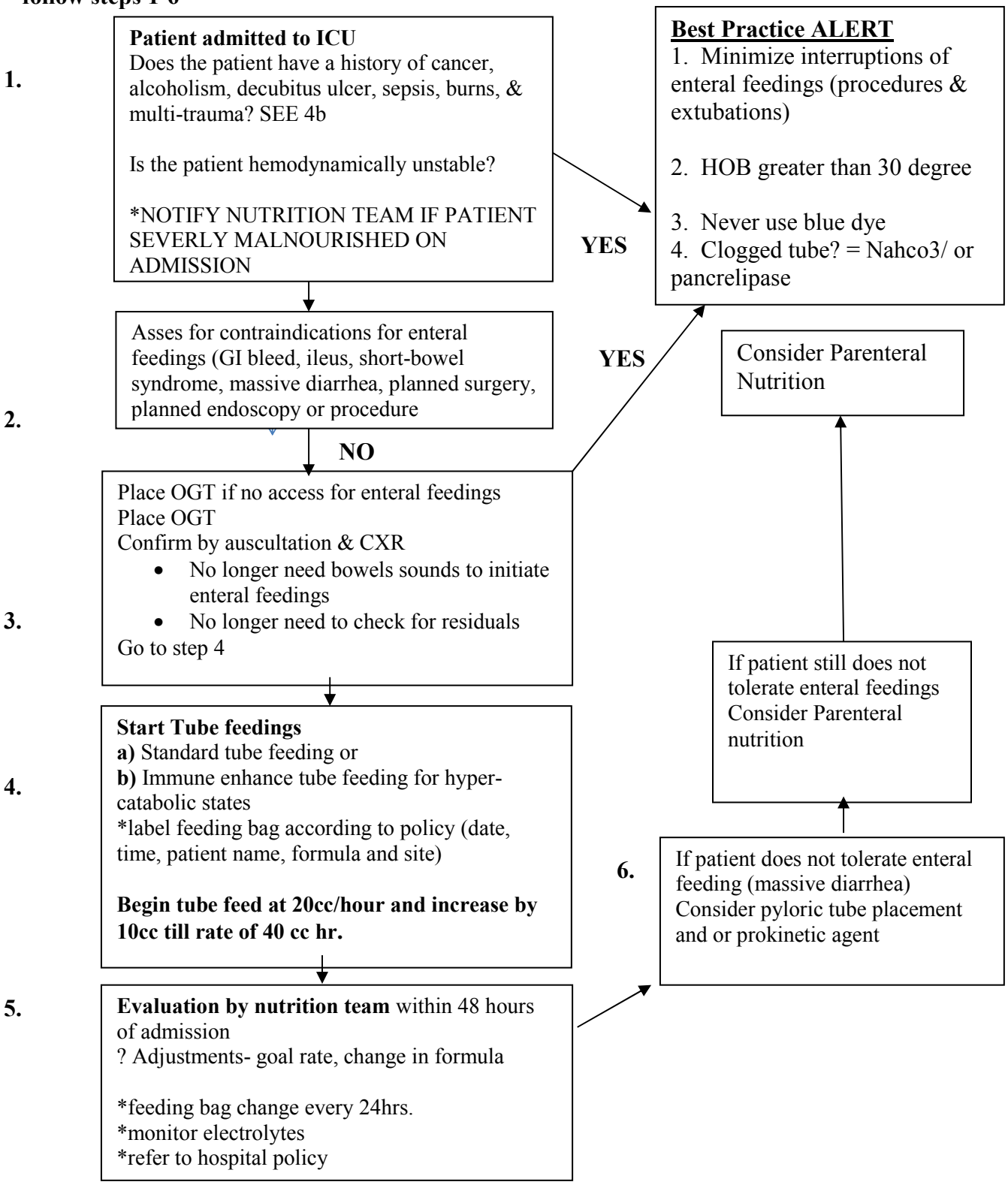
7. Was the DNP student's leadership effective during the meeting(s)?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

8. Comments/ Suggestions:

Appendix J: Complex Algorithm (Prior to revisions)

ICU Enteral Feeding Algorithm for Adults
*** follow steps 1-6**



Appendix K: Content Validity Likert Scale

Content Evaluation

Please rate the following aspects of the enteral feeding initiative using a 5- point Likert scale.

PowerPoint

1. Was the PowerPoint presentation easy to follow?

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

2. Did the PowerPoint presentation have stated objectives?

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

3. Did the PowerPoint presentation highlight the 3 step algorithm accurately?

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

4. Did the PowerPoint presentation identify background information associated with malnutrition?

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

5. Did the PowerPoint presentation highlight why critically ill patients are at greater risk for malnutrition?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

6. Did the PowerPoint presentation define malnutrition?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

7. Were the benefits of enteral feedings discussed in the PowerPoint?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

8. Did the PowerPoint discuss common misconceptions and changes in practice surrounding enteral feedings?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

Algorithm

9. Was the algorithm clear and concise?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

10. Was the algorithm easy to follow?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

11. Did the algorithm address contraindications of enteral feedings?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

12. Did the algorithm address the practice issue of access such as OGT (oral gastric tube)?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

13. Did the algorithm highlight alternative feeding methods such as parenteral nutrition?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

Pretest/Posttest

14. Was the pretest/posttest comprehensive?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

15. Did the pretest/posttest assess knowledge regarding the latest guidelines for enteral feedings?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

16. Did the pretest/posttest assess practice issues regarding enteral feedings?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

17. Did the pretest/posttest identify characteristics of malnutrition?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

18. Did the pretest/posttest identify benefits of enteral feedings?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

19. Did the pretest/posttest identify situations that interrupt enteral feedings?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

20. Did the pretest/posttest discuss adverse clinical outcomes?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

21. Did the pretest/posttest highlight contraindications to enteral feedings?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

22. Did the pretest/posttest highlight the relationship between nutrition and pressure ulcer development?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

Audit Tool

23. Was the audit tool clear and concise?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

24. Did the audit tool convey when the patient was admitted?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

25. Did the audit tool convey the start of enteral feedings?

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

26. Did the audit tool highlight the initiation of enteral feedings within 48 hours?

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

27. Did the audit tool monitor compliance with the health care facility's policy?

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

Evaluation / Nursing Questionnaire

28. Was the questionnaire clear and concise?

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

29. Did the evaluation tool assess the nurse's comfort level?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

30. Did the evaluation tool assess ease of using algorithm in practice?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

31. Did the evaluation tool measure knowledge after the educational intervention?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

Policy Revision

Was the policy revision relevant and based on current evidence-based guidelines?

Strongly Disagree		**Neutral**	**Strongly Agree**	
1	**2**	**3**	**4**	**5**

Appendix L: Article Guidelines

American Nurse Today, the official peer-reviewed journal of the American Nurses Association, is dedicated to integrating the art and science of nursing. If you're considering writing for us, use these guidelines to help choose an appropriate topic, learn how to submit your manuscript, and improve the likelihood that we'll accept your article for publication.

BEFORE YOU SUBMIT AN ARTICLE

Please send a brief email query to csaver@healthcommedia.com. In the email:

• Describe the topic of your proposed article.

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- Briefly explain why the topic would be of interest to readers of *American Nurse Today*.
- Briefly explain why you're qualified to write on this topic.
- Provide your name, position title, employer, and phone number.

We'll let you know if we're interested in the article you've proposed and can advise you on how to focus it.