A Scholarly Project
Submitted to the
Faculty of Liberty University
In partial fulfillment of
The requirements for the degree
Of Doctor of Nursing Practice

By
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Lynchburg, VA
May 2020
USING PATIENT SAFETY PRINCIPLES TO PREVENT PATIENT HARM

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Scholarly Project Chair Approval:

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Date
ABSTRACT

While healthcare is intended to promote and restore optimal health and quality of life, it has been realized that patients often experience unintended harm while consuming healthcare services. In a project conducted in a 12-bed intensive care unit, nurses completed a pre-survey to identify a baseline understanding of patient safety principles. They then completed online educational modules designed to teach patient safety principles including patient and family centered healthcare, systems safety, and culture of safety. Following the educational intervention, a postsurvey to assess for increased understanding was administered. Forty-seven nurses completed the presurvey and education showing improved understanding of patient safety principles. To further explore the patient safety concept of family engagement, 80 inpatient medical records were reviewed both before and after the educational intervention to evaluate improvement of documented family engagement. The review demonstrated a 6.67% improvement.

Keywords: Patient safety, patient harm, prevention, nursing education, medical error, ventilated patients, ABCDEF
Dedication

This DNP project is dedicated to my sweet daughters, Tori and Sydney Grace. You are my inspiration.
Acknowledgements

This author wishes to acknowledge Jesus Christ, as my Savior and for always having plans for me that are greater and more beautiful than all of my disappointments. To my husband for believing in me and supporting me; I don’t know how I got so lucky. To my father for never accepting less than my absolute best. To my Preceptor, Emily Mochan, Professors, Drs. Rothwell and Kennedy and Department Chair, Dr. Kenneth Thompson- thank you.
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List of Abbreviations

Collaborative Institutional Training Initiative (CITI)
Doctor of Nursing Practice (DNP)
Health Care Professionals Patient Safety Assessment Curriculum (HCPPSAC)
Health Information Technology (HIT)
Institute for Healthcare Improvement
Institute of Medicine (IOM)
Institutional Review Board (IRB)
Intensive Care Unit (ICU)
Length of Stay (LOS)
Virginia Hospital and Healthcare Association (VHHA)
SECTION ONE: INTRODUCTION

Patient safety is most easily understood to be the prevention of harm to patients. The principle, first do no harm, is likely one of the most popular and widely recognized by healthcare workers of all disciplines. Yet despite this oath to do no harm, preventable adverse events are speculated to occur at a rate of 210,000-410,000 per year (Makary & Daniel, 2016). Any process that causes damage to a patient during the course of treatment for his or her problem is a matter of patient safety. An immediate strategy to achieve a shared and comprehensive understanding of patient safety is to provide patient safety training and education for healthcare professionals (Pelzang & Hutchinson, 2020). In fact, studies have found that all-cause patient harm decreases when the perceptions of safety culture increase (Sammer, Hauck, Jones, & Zaiback-Aldinger, 2020). Understanding and implementing basic patient safety principles can prevent harm to patients receiving treatment in healthcare organizations.

With an understanding that patient safety is the prevention of harm to patients, it is imperative to understand the types of harm that occur in healthcare. One type of patient harm is caused by errors of omission. These are errors that occur as the result of an action not taken and this omission impacts patient safety (McMullen et al., 2017). For example, most hospitals require nurses to scan patients’ barcoded armbands and scan all medications prior to administration. If the nurse fails to perform these scans, this could lead to an error of omission that causes patient harm such as administration of medication to the wrong patient, administering too much or too little of a medication, or giving the wrong medication all together. Similarly, when a member of the healthcare team does not ensure proper identification of a patient, harm can be induced. Another type of patient harm is caused by an error of commission which occurs when a wrong act is taken. Administering an incorrect medication dosage is an error of commission that can
cause patient harm. Likewise, administering a medication to a patient with a known allergy is an error of commission that can lead to patient harm.

Patient safety concepts in nursing development and education are of critical importance for healthcare environments (Bianchi et al., 2016). Knowledge, understanding, and appreciation for the application of patient safety principles in one’s healthcare training are likely to prepare them to be safe clinical practitioners. Patient safety principles can be applied to any facet of healthcare, from medication management to appropriate care of the sedated, ventilated patient.

**Background**

The Institute of Medicine evaluated healthcare in the United States, revealing an astounding number of preventable medical errors (Jones, 2014). Medical error is an unintended act (either of omission or commission) or one that does not achieve its intended outcome (McMullen et al., 2017); the failure of a planned action to be completed as intended (an error of execution); the use of a wrong plan to achieve an aim (an error of planning); or a deviation from the process of care that may or may not cause harm to the patient. Patient harm from medical error can occur at the individual or system level (Makary & Daniel, 2016). For example, a medication administered to the wrong patient due to a clinician’s failure to utilize medication barcode scanning is an individual error. An organization’s failure to have a process in place to standardize patient handoffs could lead to a costly delay in care which would be a system level error.

To prevent errors in care that lead to patient harm, there are fundamental patient safety principles that can be adopted into nursing practice once the intent of those principles is made clear to clinicians. Ricci-Cabello et al., (2020) state that patient safety is the prevention of errors and adverse effects to patients associated with healthcare. One patient safety principle, providing
patient and family centered healthcare, is empowering to healthcare consumers and can lead to reductions in patient harm and poor outcomes. Fix et al. (2018) suggest that patient-centered care is growing in prominence and describes it as understanding the patient to be a unique human. Practicing patient-centered care demonstrates a partnership that allows the healthcare worker to build care relationships that value the patient and their unique needs. According to Donovan et al., (2018), family members accept much of the caregiving responsibility for survivors of critical illness. Furthermore, Marra (2016) indicates that family members must become active partners in decision-making and treatment planning. The author suggests that communication with families can reduce lengths of stay thereby reducing respiratory complications (Marra, 2016; Nakahashi et al., 2016).

Teaching a discharged surgical patient how to recognize early signs of infection in their preferred style of learning is an act of patient-centered care. For instance, Makic and Bridges (2018) indicated that sepsis is a leading cause of critical illness and hospital mortality, and early recognition and intervention are critical for survival. Using patient- and family-centered care principles to engage patients can prevent harm, as the patient would be less likely to ignore symptoms that could indicate maturing infection or even sepsis, and seek medical attention quicker. Family members should be engaged in the centered-care process too, if the patient is agreeable. Engaging a family member in the medication administration process can empower them to ask questions about new or different medications and dosages, which can prevent an untoward outcome which is a significant concern (Sakuma et al., 2020). Demonstrating appropriate hand hygiene and usage of personal protective equipment can prevent the spread of infection in the hospital, homes, and in the community.
Optimizing the safety benefits and minimizing the unintended consequences of health information technology (HIT) is another critical patient safety principle. Computerized physician order entry, for example, has been shown to decrease medication errors by more than 50% in some settings (Radley et al., 2015). Yet there are times when this same system can lead to errors, such as duplicate orders or wrong patient selection (Wang, Liang, Kang, & Gong, 2019). Health IT is responsible for new types of errors, such as those related to alert fatigue, copy and paste, and software malfunction. When technology is paired with human knowledge, such as double checks or independent verifications, the success rate and harm prevention rate is optimized. An effective way to prevent errors is to learn from patient safety events, including unsafe conditions, near misses, and incidents (Wang et al., 2019).

The Institute of Medicine’s (IOM) landmark report, To Err is Human, was released over 20 years ago. According to authors Kohn, Corrigan, and Donaldson (2000), up to 98,000 people die each year because of medical errors. After the IOM report, other researchers proposed 98,000 deaths as an underestimation; the actual count of deaths from medical errors may be in the hundreds of thousands (James, 2013; David, 2019; Scott & Henneman, 2017). In spite of advances in health care quality over the past 15 years Dolansky et al., (2017) share that errors in health care continue to cause more deaths than motor vehicle accidents and plane crashes combined. However, because not all errors lead to patient death, the total number of errors would likely be astounding. It is a common misperception that if there is no apparent patient harm, medical errors do not need to be reported.

According to Lee, Jang, and Park, (2016), patient safety is defined by the Institute of Medicine as “the prevention of harm to patients” (p.163). Nurses are in an ideal state to promote and ensure patient safety because, as the largest group of healthcare professionals, they also
spend the most time with patients at the bedside. It is logical and advantageous that healthcare leaders would be invested in strategies to promote patient safety training among nurses. Patient safety has received continued attention as many patients have suffered from preventable harm due to medical care (Hwang et al., 2016); but more must be done.

**Problem Statement**

While medical errors are the third leading cause of death (Makary & Daniel, 2016), nurses are not always knowledgeable of the patient safety principles that create a foundation for practice and prevent patient harm.

**Purpose of the Project**

The purpose of this study was to identify intensive care nurses’ familiarity with patient safety principles both before and after an educational intervention. Furthermore, because the Intensive Care Unit leadership team indicated challenges with ventilator length of stay, the study sought to explore whether changes in the application of family-centered care techniques increased for those patients who were on ventilators in the Intensive Care Unit. ICU leaders questioned whether the incorporation of care centering on the patient and family would improve overall patient outcomes, which could be evidenced by a reduction in ventilator length of stay. This project was triggered by an understanding that medical error is the third leading cause of death in the United States (Makary & Daniel, 2016), but patient harm is preventable when clinicians are knowledgeable about practices that support patient safety.

**Clinical Question**

Do nurses who receive education on patient safety principles demonstrate an increased awareness and application of safety principles after an educational intervention, which focuses on the prevention of harm to patients?
SECTION TWO: LITERATURE REVIEW

Literature on patient harm in healthcare has grown steadily, particularly in the last two decades. From the Institute of Medicine’s landmark publication, *To Err is Human*, in 1999, which was the first of its kind to bring to light the immensity of medical errors and the implications thereof, to subsequent publications by field experts, the literary pool has become voluminous (Kohn, Corrigan, & Donaldson, 2000). There is an overall consensus that medical errors are preventable (Makary & Daniel, 2016; Kavanagh, Saman, & Bartel, 2017; James, 2013; Lyu et al., 2017). Examples of types of harm, causes of harm, and strategies to prevent harm are shared in the literature with great detail. National organizations are applauded for their work in identifying medical error as epidemic and organizing action around prevention and elimination strategies.

One study directly asserts that the prevalence of patient harm in hospitals must be taken more seriously if it is to be eliminated (James, 2013). The literature is clear that engaging and educating healthcare teams is a strong strategy in the journey toward zero patient harm (Bishop & Macdonald, 2017; Cavnar, Van Der Like, & Hobby-Burns, 2017). With this project’s intent to assess the application of learned patient safety fundamentals, documentation of the patient and family-centered care component of the ABCDEF model was assessed. Clinical trials in published studies describe how patient/family-centered care is crucial to positive patient outcomes (Barnes-Daly et al., 2018; Costa et al., 2018).

Search Strategy

MEDLINE, CINAHL, and PUBMED databases were searched using a combined date range of 2013 through 2020; articles published before 2014 were used for background information and historical perspective. The search was limited to the English language and
settings within the United States. Peer-reviewed, full text journal articles were included in the search criteria. Search terms included patient safety, patient harm, prevention, medical error, ventilated patients, ABCDEF protocol, and nursing education. A total of 172 articles were returned. Excluded were those focused on long-term care, non-nursing focused, and those not available in full text. The 43 literary sources presented in this work were the most relevant and applicable to the current study.

**Critical Appraisal & Synthesis**

Of the 43 articles presented in this study, most have been peer reviewed and published within the last five years with the exception of four, one of which was a landmark study included for its overwhelmingly relevant and widely accepted content. Included are two level one articles, one level three article, 6 level four articles, and remaining articles classified as levels five and six with four level seven expert opinions. The stronger research articles (i.e., levels one and three) align in their finding that patient safety education increased the knowledge and competency levels of nurses. Remaining articles varied in their findings but most concur that offering patient safety education strengthened the nurses’ ability to apply patient safety tactics that promote the prevention of harm to patients. Some articles indicated that healthcare professionals had an insufficient understanding of *patient safety*, which has hindered improvement processes. There were multiple articles that conveyed using established quality improvement methods foster better implementation of ABCDEF bundle elements.

While the studies aligned in their report that medical errors occur at an alarming rate, they did not agree on the quantity of harm attributed to medical error in the United States. The ranges were great with some speculation that a true count may never be fully known, as death certificates do not capture medical error as a cause of death. This may be seen as a
limitation but one that can be overcome as improvement efforts will be beneficial no matter the true count. Another weakness from a literature perspective is the lack of evidence that family engagement specifically would be improved following patient safety education.

**Conceptual Framework**

The Iowa Model is a widely used framework for the implementation of evidenced based practice (Iowa Model Collaborative, 2017). The model, which serves as a guide to help nurses use research findings to improve care outcomes, allows for a structured approach to clinical decision-making. Studies reveal that nurses do not consistently report or demonstrate competency as it relates to the application of patient safety principles (Bianchi et al., 2016; Gardo et al., 2016). While as students, nurses received a mix of classroom simulation experiences and clinical hospital rotations, they tend to be task focused without a demonstrated clear understanding of the why behind patient safety concepts, such as medication scanning or appropriate handoff communication.

The Iowa Model helps to highlight potential problems with the lack of patient safety education by first requiring the assembly, appraisal, and synthesizing of evidence. Patient safety is compromised when nurses have not been exposed to the patient safety principles that prevent medical error (Bianchi et al., 2017). A foundational understanding of how flawed or ineffective processes and behaviors can lead to patient harm is valuable for nurses. There are times when entire teams drift in their performance as required by policy or general standards of care. This may be observed through practices such as scanning a patient label as opposed to scanning the patient’s armband to ensure proper identification. This would be an example of normalized deviance, when a practice becomes acceptable and considered the norm without a realization of the practice deficiency that can easily lead to medical error and patient harm. The purpose of
assessing nurses’ baseline understanding and application of patient safety principles is to establish their level of awareness and how effective an education intervention may be. The intent of the patient safety education intervention is to improve the nurses’ knowledge and offer strategies that can be adopted into their clinical practice. The postsurvey serves to demonstrate whether there is improved appreciation for patient safety principles, such as patient and family-centered care, following the educational intervention. Quality of care is a principle focus in the intensive care unit (Sutton & Jarden 2016). With intensive care unit leadership having identified opportunities in the documentation of family engagement and involvement, patient records were assessed to determine whether this metric increased. With sufficient evidence, the IOWA Model guides the nurse to design and pilot the practice change or strategy. This is the longest phase of the project as it requires engagement of others, resource identification, appropriate approvals, collection of data, development of plans for implementation and evaluation (Iowa Model Collaborative, 2017).

The organization where this project is being carried out has identified an opportunity to provide additional patient safety training to its nurses, thus making this project a priority. The intensive care unit is particularly engaged in this project, as there are many nurses who do not hold a bachelor’s degree and who have not had training or education specific to patient safety and how patient safety principles such as high-reliability can positively impact the care experience of patients. Patient safety is broad and is the primary goal of healthcare workers and employees of all departments throughout the hospital; however, this takes specific and intentional effort.

To successfully implement this project, charge nurses on each shift were first engaged to be members of the team. This was accomplished through relationship building as the project
leader attended department leader meetings and presented patient safety stories inclusive of what the root causes were, actions that could have prevented the event, and the impact to patients and their families. Through the storytelling process, short stories and sharing of short video clips, the charge nurses committed to support and encourage their teams to participate in the project. Eventually, the project leader was able to share this information during nursing huddles and monthly staff meetings. Additionally, leadership was engaged by soliciting their ideas for metrics that could be improved through the successful implementation of patient safety education.

Examining structure and process measures is important because they ultimately affect quality of care outcomes. Once the educational intervention has been executed, the Iowa Model guides the clinician to evaluate whether the change is appropriate for practice. This evaluation was done through the postsurvey process. With a successful outcome, the implementation of required patient safety education could be integrated and measures put in place to ensure sustainability. The final step of the project was to disseminate the results so that knowledge is shared and others are afforded the opportunity to learn from or benefit from the efforts of those involved in the project.

**Theoretical Framework**

Grounded theory is a form of qualitative research developed in the late 1960s for the purpose of constructing theory. The methodological process utilizes actual data gathered through field work to identify, develop, and integrate concepts (Corbin, 2017). Concepts, out of which the theory is constructed, such as the responses to presurvey items, are derived from data collected during the research process and not chosen prior to beginning the research. Researchers do not enter into the research with a theoretical framework because doing so defeats the purpose of the method, which is to develop a theoretical explanation of a phenomenon from a specific set
of data (Corbin, 2017). In grounded theory, the researcher starts by asking an open-ended question (Harris, 2015). In this case, how does patient safety education improve family engagement in patients on ventilators? Research analysis (frequency of family engagement) and data collection (pre and post survey results) are interrelated and after initial data are collected, the researcher analyzes that data and the concepts derived from the analysis form the basis for the subsequent data collection. This theoretical framework was utilized in this work.

**Summary**

The issue of patient safety in healthcare has received considerable attention since the publication of *To Err Is Human* by the Institute of Medicine in 1999. Healthcare organizations and regulatory agencies have responded with momentous resources devoted to eliminating medical errors and encouraging a safer healthcare system (Weatherford & Viveiros, 2015), yet literature indicates that patient harm continues at an alarming rate. The Iowa Model offered structure and ensured steps were completed in a responsible sequence. The Grounded Theory helped to explain what was happening with the nurses’ understanding and application of patient safety principles. This work sought to measure the patient safety competency awareness of nurses both before and after an evidenced based educational intervention and how it was applied in the care of critically ventilated patients.

**SECTION THREE: METHODOLOGY**

**Design**

This evidence-based practice project utilized the Iowa Model for Evidence-Based Practice, which requires the implementation of a pilot project. Medical errors contribute to massive avoidable harm in healthcare (Makary & Daniel, 2016) and therefore the intent of this project was to assess whether nurses are aware of patient safety principles and how they could
adequately incorporate patient safety principles into their practice. By utilizing a qualitative pre and postsurvey that sandwiched an educational intervention, awareness of safety principles was assessed. Additionally, application of the *F, family engagement and empowerment*, in the ABCDEF bundle protocol in the care of ventilated patients was evaluated through medical record reviews.

As a first step, the electronic medical record of 80 ventilated patients were audited to identify the frequency in which family engagement was documented. Once complete, over a period of two weeks, the Health Care Professionals Patient Safety Assessment (HCPPSA) survey was administered to identify the nurses’ self-reported baseline knowledge of patient safety principles as they relate to the prevention of harm to patients. Participants of the presurvey were then given approximately three weeks to complete three designated education modules on basic patient safety principles from the IHI Open School. This online education was self-paced and there was an option to complete the modules while at work or at home and in multiple sessions, if necessary.

Once the patient safety education timeframe was exhausted, a postsurvey was administered to the nurses to determine whether there was a demonstrated increase in the understanding of patient safety principles. This postsurvey period occurred over an approximate two-week timeframe. To assess for improvement in family engagement and empowerment in families of ventilated patients- a patient safety principle included in the education- 80 different medical records were reviewed. Careful attention was given to ensure days that a project participating nurse was not caring for the ventilated patients, were excluded. The study design was approved by the hospital and the university institutional review boards.
Measurable Outcomes

The project sought to identify whether there was a lack of nursing knowledge and awareness of patient safety principles and if education would improve nurses’ application of safety practices in the engagement and empowerment of the families of ventilated patients. With an 18 question, Likert format, the pre and post surveys compared the knowledge/awareness of nurses both before and after the education module. The review for changes in the application of the F component of the ABCDEF protocol sought to assess for an enhancement in the application of patient safety principles. There were four measurable outcomes:

Measurable Outcome 1

The first measurable outcome is the baseline frequency of family engagement or empowerment. Frequency was measured in days with the denominator being the total number of days the patient was ventilated. Prior to the presurvey and subsequent education, the charts of 80 patients were reviewed.

Measurable Outcome 2

The second measurable outcome is the nurses’ baseline awareness of patient safety principles, determined through a Likert-style pre survey. Demographic data, including age and gender, were collected from all participants as none opted not to answer these voluntary questions.

Measurable Outcome 3

The third measurable outcome is nurses’ post education awareness of patient safety principles. The same Likert-style survey was re-administered to nurses following the educational intervention.
Measurable Outcome 4

The fourth measure outcome is the frequency of documentation of family engagement in ventilated patients post education completion. Days that the primary nurse was one who did not participate in the project were excluded.

Setting

The project took place within an intensive care unit of an acute care facility. Site approval to conduct the project was obtained as reflected in Appendix D. A section of the ICU breakroom was used to administer the pre surveys and post surveys. Surveys were administered in groups of one to three, proctored by the project facilitator. Nurses were given the option to complete the education module on-site or remotely at a location of their choosing. Most chose a combination of the two options. This writer collected survey results and was given certificates of completion as the nurses completed the online educational modules.

Population

All employed ICU registered nurses on the specified unit were invited to participate in this project. This was inclusive of full time, part time, and PRN nurses as they are the primary caregivers in the ICU. This convenience sample excluded agency and travel nurses as they are less likely to have unit specific buy-in and in-depth knowledge of the documentation screens required to capture family engagement. Of the 47 participants, 40 participated in all three required elements of the project. The additional seven participants completed the presurvey but did not complete the education modules and/or the post survey. All participants voluntarily participated in the project based on their awareness of the potential for gained knowledge.
Ethical Considerations

Participants were informed of their right to voluntary participation, anonymity, confidentiality, and withdrawal at any point during the study. Collected data were stored securely (Marvi-Langari, Tella, Smith, & Turunen, 2017) in a locked drop box and then in the project leader’s locked filing cabinet. Eventually documents were scanned into a secure drive where they will be permanently deleted. This project was submitted to and approved by the university Institutional Review Board (IRB) and the project site. A copy of the IRB approval letter is attached in Appendix C. Additionally, a copy of the Collaborative Institutional Training Initiative (CITI) Certificate is provided in Appendix B.

Data Collection

To initiate the project, 80 medical records were reviewed to assess the frequency of documentation of family engagement in those patients who experienced ventilator treatment. This was determined by evaluating documentation in the Family Engagement module. After this, the baseline presurvey and postsurvey data were collected using the Health Care Professionals Patient Safety Assessment Curriculum Survey. The HCPPSAC survey is a Likert scale survey that asks survey participants their level of agreement with 18 questions. Questions range from whether making errors in healthcare is inevitable to who can determine the causes of errors in healthcare and disclose to the family and/or patient, as seen in Appendix G. Collected from an additional 80 chart reviews, information included the application of safety principles, specifically family engagement and empowerment in the care of the ventilated patient since the education intervention. Additionally, the survey assessed basic demographical characteristics, including gender and age, of the participating nurses.
Tools

The Health Care Professionals Patient Safety Assessment Curriculum survey was utilized to establish a baseline of knowledge and awareness of patient safety principles among nurses in the intensive care unit at an acute care facility (Mansour, 2015). Permission was sought and approved by the tool developers to use this survey tool. The HCPPSAC survey was utilized to identify statistically significant conclusions and changes that indicated whether improvements in the understanding of patient safety improvements were realized and if so, were patient safety principles, specifically the engagement and empowerment of families in the care for the ventilated patient, improved as well.

Three modules from the Institute for Healthcare Improvement’s (IHI) Open School Patient Safety Curriculum modules, available at no cost, were assigned to participating nurses as the project intervention. These modules are a compilation of patient safety education designed to introduce learners to basic principles of harm prevention. The first module was *Eight recommendations for total systems safety* with a primary objective to list eight recommendations for leaders to accelerate patient safety and prevent harm describing the roles of measurement, improvement science, and technology in patient safety and explain why advancing safety requires learning and collaboration across settings and health systems. The second module was *Partnering with patients and families*, which described how patients and families can provide a valuable lens to improve safety processes of all types of healthcare organizations, identify practices that empower patient and family engagement in patient safety, and discuss how healthcare systems can collaborate with patients and families on an institution-wide level. The third module, *building a culture of safety*, focused on the six domains of a culture of safety,
effective leadership behavior, and prerequisites to holding individual healthcare workers accountable (IHI Open School Online Courses, 2020).

**Intervention**

This project originated with the writer’s realization of the widespread impact of medical error and how teams that embrace strong safety cultures have safer outcomes (Pelzang & Hutchinson, 2020). In consultation with the practicum preceptor, it was identified that patients in the ICU were experiencing longer than expected ventilator lengths of stay. Five million Americans are admitted to ICUs each year due to life-threatening illnesses, and nearly 36% of these critically ill patients require mechanical ventilation (Khan et al., 2014). According to Heim et al. (2019), duration of mechanical ventilation and intensive care unit and hospital length of stay (LOS) are reduced when guidelines are used. Ventilator associated events are common in mechanically ventilated patients and ultimately increases the risk of mortality (Khan et al., 2019; Ramoo et al., 2016). In interviews with the nursing and respiratory teams, it was identified that the $F$ component of the ABCDEF model was often lacking in the treatment approach for ventilated ICU patients. ABCDEF is a bundle that characterizes an evidence-based guide for clinicians to approach the strategies needed for optimizing ICU patient recovery and outcomes. Elements of the ABCDEF bundle are: (a) **awakening**, (b) **both spontaneous awakening trials and spontaneous breathing trials**, (c) **choice/coordination of analgesia or sedation**, (d) **delirium (assess, prevent manage)**, (e) **early mobility and exercise**, and (f) **family engagement and empowerment** (Morandi et al., 2017; Hsieh, 2019).

Engaging patients and families is a widely accepted patient safety concept and is paramount to reaching patient safety targets (Bishop & Macdonald, 2017). This practice opportunity, to increase engagement of patients and families, presented the foundation for this
project, which once detailed for the university IRB and project location, were approved. Participants were informed of the project through leadership emails, flyers, and conversation with the project leader. Patient safety stories, particularly those that highlighted patient harm secondary to preventable medical error, were shared by the project leader during employee huddles and staff meetings to engage participation. Most project participants completed the 18-question assessment in less than five minutes. Singles and groups of no more than three nurses completed the surveys in a small section of the ICU breakroom. Completed surveys were collected and maintained in a locked drawer in the project leader’s office. Once participants completed the survey, they were emailed the link to create an account on the IHI’s Open School site. The participants were asked to complete the following three modules: PS 202- Achieving total systems safety: Eight recommendations for total systems safety; Partnering with patients and families; and PS 203- Building a culture of safety.

Participants were given the opportunity to complete the education electronically while at work or at an offsite location. Studies show that online video training can be effectively used in teaching nurses (Bahar et al., 2017). Modules in this intervention were self-paced, guided learning sessions following an assessment at the end of each module to assess for understanding. Upon the completion of each module, a certificate of completion was generated for the participants. To demonstrate mastery of the content, participants were expected to receive a score of at least 80% on each post course assignment as evidenced by their certificate of completion. Those who did not successfully complete the posttest on the first attempt were permitted to re-take the course and/or the posttest. Continuing Education credits were provided by IHI. Following successful completion of the required education, the HCPPSCA survey was re-administered to assess for changes in understanding of patient safety principles.
Timeline

In March 2020, prior to the start of the project, 80 patient records were reviewed to assess the frequency of family engagement in the care of ventilated patients, which had been identified by department leadership as a practice gap in the ICU. Later in the month, following this assessment, over a three-week period, pre-surveys were provided to the project participants on paper. To ensure the integrity of the questions were maintained, the project leader proctored each pre survey. In April 2020, an additional three weeks were given to the nurses to complete the educational intervention. Most of the nurses utilized the entire timeframe to complete the three modules. While it was the intent to allow a full three weeks to complete the post survey, most of the nurses were able to complete this in less than two weeks in late April in May. Like the pre survey, the project leader proctored the post surveys. Later in May, 80 new records of patients with ventilator lengths of stay were analyzed to assess for application of learned family engagement strategy.

Feasibility Analysis

This project provided meaningful insight into the level of patient safety awareness and knowledge possessed by ICU nurses. Initial chart review data collection was done solely by the project leader, using only the site’s computer and electronic medical record system. Surveys for the project participants were printed at the cite with no associated fees. The educational intervention from the Institute for Healthcare Improvement’s Open School was available without associated costs. Nurses were given the option to utilize computers within the organization to complete the educational modules and no additional resources were needed. The time required to complete each module was approximately 30 minutes. Nurses’ certificates of completion were
either emailed or placed in a secure drop box, provided by the organization, until retrieved by the project leader.

**Data Analysis**

This project sought to explore the baseline level of patient safety knowledge and awareness among ICU nurses. This was accomplished first through an 18-question pre survey. The nurses then completed three patient safety educational modules developed by the Institute for Healthcare Improvement. After the educational offering, the nurses completed a post survey to determine whether changes in their patient safety knowledge and potential application of safety principles, was realized. Just prior to the administration of the pre survey, 80 patient records were reviewed to assess the frequency of family engagement in the care of ventilated patients. The unit maintains a log of all patients requiring ventilator support, thereby making it seamless to identify appropriate medical records to review. Following the completion of post surveys, another 80 patient records were reviewed to assess for changes in the application of the family engagement patient safety principle.

Demographic data, including gender and age, were included in the survey to aid in identifying correlations. The findings from the pre/post surveys were analyzed using an ANOVA one-way test to determine whether the differences in means between the two surveys were significant. The results are displayed using multiple bar graphics to illustrate changes in the means within the pre and post surveys. The IBM SPSS statistics 25 software was leveraged to complete the analysis.

**Measurable Outcome 1**

The first measurable outcome is the baseline frequency of family engagement or empowerment. Frequency was measured in days with the denominator being the total number of
days the patient was ventilated. Prior to the presurvey and subsequent education, the charts of 80 patients were reviewed.

**Measurable Outcome 2**

The second measurable outcome is the nurses’ baseline awareness of patient safety principles, determined through pre survey. Demographic data, including age and gender, were collected from all participants as none opted not to answer these voluntary questions.

**Measurable Outcome 3**

The third measurable outcome is the nurses’ post education awareness of patient safety principles. The same Likert-style survey was re-administered to nurses following the educational intervention.

**Measurable Outcome 4**

The fourth measurable outcome is the frequency of documentation of family engagement in ventilated patients post education completion. Frequency was measured in days with the denominator being the total number of days the patient was ventilated and the numerator being the total number of ventilator days with documentation of family engagement. Days that the primary nurse was one who did not participate in the project were excluded.

**SECTION FOUR: RESULTS**

**Descriptive Statistics**

A total of 47 nurses completed the pre survey. Descriptive statistics reveal the minimum age was 22 and the maximum age was 63, with a mean of 35.36 and a standard deviation of 9.502. In the pre survey, 40 survey participants were female (85%) and seven were male (14.89%). In the post survey, 35 participants were female and five were male.
In the survey, respondents were asked to indicate their levels of agreement or disagreement on a Likert scale, for 18 questions, as: 5 (strongly agree), 4 (agree), 3 (neutral), 2 (disagree), and 1 (strongly disagree). Each question was responded to by each of the 47 respondents. The following results were calculated using ANOVA one way testing: Question 1 (making errors in healthcare is inevitable; $M = 3.61, SD = 1.15$); Question 2 (competent healthcare workers do not make errors that lead to harm; $M = 2.46, SD = 1.38$); Question 3 (healthcare workers should spend part of their time working to prevent errors; $M = 4.53, SD = 0.65$); Question 4 (only physicians can determine the causes of medical error; $M = 1.12, SD = 0.33$); Question 5 (healthcare workers should not tolerate uncertainty, $M = 2.55, SD = 1.15$); Question 6 (healthcare culture makes it easy to deal with errors, $M = 2.08, SD = 1.05$); Question 7 (learning how to improve patient safety is appropriate use of time in nursing schools; $M = 4.74, SD = 0.44$); Question 8 (healthcare workers routinely share information about medical errors and what caused them; $M = 1.93, SD = 0.86$); Question 9 (faculty and staff communicate patient safety as a high priority; $M = 4.10, SD = 1.14$); Question 10 (healthcare workers routinely report medical errors; $M = 2.95, SD = 1.27$); Question 11 (reporting systems do little to prevent medical errors; $M = 3.12, SD = 1.19$); Question 12 (physicians should be the healthcare worker who reports medical errors to patients and families; $M = 3.38, SD = 1.09$); Question 13 (effective responses to error focus primarily on the HCW involved; $M = 3.19, SD = 1.09$); Question 14 (if there is no harm to a patient there is no need to address an error; $M = 3.06, SD = 1.29$); Question 15 (if I saw a medical error, I would keep it to myself; $M = 1.46, SD = 0.65$); Question 16 (most errors are due to things healthcare workers cannot do anything about; $M = 3.59, SD = 1.36$); Question 17 (after an error, an effective strategy is be more careful; $M = 4.25$).
Since only 40 nurses produced certificates to indicate that they had completed all the training, 35 females and five males, the posttest was given only to this smaller group with the following results, as calculated using ANOVA one-way testing: Question 1 (making errors in healthcare is inevitable; $M = 2.30, SD = 1.04$); Question 2 (competent healthcare workers do not make errors that lead to harm; $M = 2.02, SD = 1.07$); Question 3 (healthcare workers should spend part of their time working to prevent errors; $M = 4.65, SD = 0.48$); Question 4 (only physicians can determine the causes of medical error; $M = 1.00, SD = 0.00$); Question 5
(healthcare workers should not tolerate uncertainty, $M = 3.15, SD = 1.09$); Question 6
(healthcare culture makes it easy to deal with errors, $M = 3.35, SD = 1.23$); Question 7 (learning
how to improve patient safety is appropriate use of time in nursing schools; $M = 4.95, SD = 
0.22$); Question 8 (healthcare workers routinely share information about medical errors and what
cause them; $M = 2.65, SD = 1.09$); Question 9 (faculty and staff communicate patient safety as
a high priority; $M = 4.12, SD = 1.01$); Question 10 (healthcare workers routinely report medical
errors; $M = 2.30, SD = 1.18$); Question 11 (reporting systems do little to prevent medical errors;
$M = 2.77, SD = 1.09$); Question 12 (physicians should be the healthcare worker who reports
medical errors to patients and families; $M = 2.35, SD = 1.09$); Question 13 (effective responses
to error focus primarily on the HCW involved; $M = 2.10, SD = 0.84$); Question 14 (if there is no
harm to a patient there is no need to address an error; $M = 2.40, SD = 1.19$); Question 15 (if I
saw a medical error, I would keep it to myself; $M = 1.35, SD = 0.53$); Question 16 (most errors
are due to things healthcare workers cannot do anything about; $M = 3.05, SD = 1.29$); Question
17 (after an error, an effective strategy is be more careful; $M = 2.85, SD = 1.38$); Question 18
(there is a gap between best practice and what we do daily; $M = 3.85, SD = 1.02$). Table 2
provides additional descriptive statistics.

Table 2
Seventeen out of 18 questions showed a favorable improvement in the understanding of patient safety principles. Table 3 shows the one question, *healthcare workers should not tolerate uncertainty*, with statistical significance between the pre education and post education surveys. The pre survey data shows an opportunity for nurses to better understand what uncertainty is as it relates to patient safety. It is not simply, for example, uncertainty about what the admission from the emergency department will look like. It refers to uncertainty in processes, policies, and practice standards of care. The more favorable responses, those closer to
‘strongly disagree’, suggests increased appreciation for this patient safety principle of high reliability and reducing uncertainty.

Table 3

*Healthcare Workers Should Not Tolerate Uncertainty; Statistically Significant Change in Pre and Post Surveys*

The question, *there is a gap between best practice and what we do daily*, yielded the greatest change between pre education and post education surveys with a standard deviation of 1.37, as depicted in Table 4. This unfavorable change indicates that initially more nurses disagreed that there was a gap between current practice and evidence-based practice. The education modules illuminated the fact that there may be principles and practices that should be incorporated as standards of care but unfortunately are not.
Table 4

*There Is A Gap Between Best Practice and What We Do Daily; Std Dev = 1.37*

The next item with the most change was *most errors are due to things healthcare professionals cannot do anything about*. With a standard deviation of 1.35, more nurses disagreed or strongly disagreed that they were unable to do anything to prevent errors from occurring. This suggests improved perception of empowerment as a result of the education. Table 5 illustrates this change.
Table 5

*Most Errors Are Due to Things Healthcare Professionals Cannot Do Anything About;*

*Std Dev = 1.31*

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Item *after an error occurs, an effective strategy is to work harder to be more careful,* yielded a standard deviation of 1.34, which was the third highest change. Movement in this question illustrates a recognition that more can be done to prevent errors from occurring. Implementation of patient safety concepts was likely recognized as achievable by the nurses following the educational intervention. Table 6 depicts the change between the pre and post surveys for this item.
Table 6

After an Error Occurs, an Effective Strategy Is to Work Harder to Be More Careful; Std Dev = 1.34

The culture of healthcare makes it easy for healthcare professionals to deal constructively with errors was initially answered closest to disagree. In the postsurvey, respondents’ answers moved closer to agree, as seen in Table 7. This suggests that prior to education, the nurses disagreed that culture made reporting easy. Once the education was completed, the group seems to believe that the culture in which they work, in fact, does support error reporting. Table 7 depicts the change.
Table 7

*The Culture of Healthcare Makes It Easy for Healthcare Professionals to Deal Constructively with Errors; Std Dev = 1.29*

With a standard deviation of 1.28, the query *making errors in healthcare is inevitable*, had the fifth greatest change in presurvey and postsurvey answers, as illustrated in Table 8. These responses portray that prior to the education, the group did not believe there were standardized processes that could, in fact, prevent errors from happening.
Table 8

*Making Errors in Healthcare Is Inevitable; Std Dev = 1.28*

Of the 80 medical records reviewed pre education, there were 379 patient ventilator days with family engagement documented as having occurred 201 days. This represented a baseline percentage of 53%. In the post educational intervention chart review, there were 313 patient days with family engagement documented as having occurred 187 days or 59.74% of days. The increase in family engagement represents an overall improvement of 6.67%.

**SECTION FIVE: DISCUSSION**

**Implications for Practice**

Errors in healthcare are common and can lead to adverse events and patient death (Thom et al., 2016). The United States healthcare system can substantially decrease the number of adverse events and associated deaths as it is estimated that 44% are preventable (Kavanagh et al., 2017). Pelzang and Hutchinson (2020) affirm that an inadequate understanding of patient safety has the potential to hamper development of patient safety processes and practices in healthcare.
systems, as improvement is hindered by a lack of understanding of patient safety concepts and absence of a standardized approach to classifying the patient safety concepts. This project was important to the organization because the analysis of nurses’ understanding of patient safety principles revealed that there was a lower level of understanding of patient safety principles and an appreciation for how those principles should be applied on a daily basis in healthcare. With 17 of 18 questions favorably answered, after the educational intervention, it can be surmised that the education strengthened the nurses’ awareness of patient safety principles. One survey question, *healthcare workers should not tolerate uncertainty*, had statistically significant changes from the presurvey to the postsurvey, following the educational offering. This strongly represented the nurses’ changed perception about uncertainty in healthcare, which was highlighted in the education. The improvement in the engagement of families of ventilated patients was seen post education, signaling that when nurses understand the relevance of a strategy, they are more likely to implement it in the prevention of patient harm.

There were limitations to this study, some of which were unforeseen consequences of the unanticipated COVID-19 pandemic. This project sought to measure activation of the safety principle *family engagement*; however, the hospital implemented a no visitors policy during a portion of the project implementation period. Two exceptions to the visitation policy were end-of-life and medical decision-making; therefore, some of the patients in this study had family at the bedside daily while others did not. As a result of the visitation policy, the hospital rolled out electronic devices that were to be used by nurses to communicate on applications such as Skype and FaceTime. When utilized, it was the expectation that this be documented on the same *family engagement* screen and, thereby, would count favorably in this project analysis. However, this was a new practice and may not have been utilized to its full capacity and documented
appropriately in all instances. This could have led to a reduction in application of the family engagement principle. Lastly, part time and PRN employees, including nurses, were furloughed as a result of a significantly reduced census following the wake of COVID-19. This decreased the sample size for this project and was also a factor in not having all presurvey respondents follow through by completing all education components and post surveys until the end of the project.

**Sustainability**

Healthcare organizations are required by regulatory and accreditation agencies to provide education for their employees. Education is offered once at the onsite of hiring, during orientation, annually, as a component of action plans, with the purchase of new equipment, or as the need arises. Education within healthcare organizations can be conducted in classrooms, simulation labs, in the practice environment, or even online through computer-based training. The avenues for which education can be offered are familiar; however, it is the determination of appropriate, relevant, and meaningful content that tends to be the most challenging. Healthcare is ever changing, and the organizational priorities shift in response. One thing, however, remains consistent; patient safety must be the top priority. James (2013) indicates the epidemic of patient harm in hospitals must be taken more seriously if it is to be curtailed. Completely engaging patients and their advocates during hospital care will be essential to achieve this goal.

To reach a level of sustainment in offering patient safety education, leaders must be engaged in the outcomes within their care areas and committed to implementing education that increases their teams’ appreciation for patient safety principles. Understanding the *why* behind actions increases the likelihood that healthcare professionals will apply principles, such as family engagement, demonstrated to prevent patient harm (Bishop & Macdonald, 2017). Patient safety
champions who are committed to advocating for safe practices would facilitate sustainability of education that promotes safe patient care.

**Dissemination Plan**

This project and its results will be shared at the participating organization’s nurse skills fair. The unit’s quality board and the hospital’s quality boards will house a poster presentation outlining this project and its findings. Abstracts of the poster and podium presentations will be submitted for various conferences, such as the Virginia Hospital and Healthcare Association (VHHA) Patient Safety Summit. Ultimately, a manuscript of this work will be submitted for future publication.
References


https://doi.org/10.1097/PTS.00000000000000364


https://doi.org/10.1097/PTS.0000000000000468


https://doi-org.ezproxy.liberty.edu/10.1080/13561820.2016.1215972

## Appendix A

<table>
<thead>
<tr>
<th>Article Title, Author, etc. (Current APA Format)</th>
<th>Study Purpose</th>
<th>Sample (Characteristics of the Sample: Demographics, etc.)</th>
<th>Methods</th>
<th>Study Results</th>
<th>Level of Evidence (Use Melnyk Framework)</th>
<th>Study Limitations</th>
<th>Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahar, A., Arslan, M., Gokgoz, N., Ak, H., &amp; Kaya, H. (2017). Do Parenteral Medication Administration Skills of Nursing Students Increase with Educational Videos Materials? <em>International Journal of Caring Sciences, 10</em>(3), 1514–1525.</td>
<td>Study was conducted to examine the effects of the use of supported educational videos on the nursing student’s skills to administer parenteral medication.</td>
<td>80 first year nursing students enrolled at a University in Turkey</td>
<td>40 students were randomly selected into the control group while the remaining 40 students were assigned to the experimental group. The parenteral treatment training was given to the control group only with the demonstration method while the experimental group was trained using educational videos in addition to the demonstration method. A questionnaire and obstructed skill clinical examination (OSCE) were used for the data collection</td>
<td>The obstructed skill clinical examination post survey skill scores of the experimental group trained with supported educational videos were found to be higher than control group was trained with just demonstration method. In addition, most of the students who were experimental group were quite satisfied.</td>
<td>Level 1: RCT</td>
<td>The authors did not compose a particular video for all nursing skills, only parenteral medication skills videos were incorporated into the contents of the intervention. Second limitation was small size of sample and the setting was just one institution. Months later measurements could have been repeated so that it could be seen whether the educational method with the learning videos makes contribution to the students.</td>
<td>Yes, level 1 evidence demonstrating support for educational videos education and conventional teaching to enhance nursing student education.</td>
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### PATIENT SAFETY PRINCIPLES

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<tr>
<td><strong>To describe the Society of Critical Care Medicines’ ABCDEF Improvement Collaborative’s history, the evidence-based implementation strategies used to foster change and teamwork, and the performance and outcome metrics used to monitor progress</strong></td>
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<td><strong>69 adult and 9 pediatric ICUs fully completed the program. Baseline and prospective data were collected on over 17,000 critically ill patients</strong></td>
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<td><strong>Collaborative participants were required to attend four in-person meetings, monthly colearning calls, database training sessions, an e-Community listserv, and select in-person site visits. Teams submitted patient-level data and completed pre- and postimplementation questionnaires focused on the assessment of teamwork and collaboration, work environment, and overall ICU care.</strong></td>
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<tr>
<td><strong>Retention in the Collaborative was high, with 67 of 69 adult and eight of nine pediatric ICUs fully completing the program. Baseline and prospective data were collected on over 17,000 critically ill patients.</strong></td>
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<td><strong>Level 6: Single descriptive/qualitative study</strong></td>
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<td><strong>This was a single study. It would be beneficial to determine and publish the replicability of the findings.</strong></td>
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<td><strong>Yes, this study shared clear guidance and action steps on how to translate evidence-based strategies into practice</strong></td>
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<tr>
<td><strong>The purpose of this study was to identify patient safety competencies, and determine the clinical learning environments that facilitate the development of patient safety competencies in nursing students.</strong></td>
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<td><strong>500 citations published between 1 January 2004–30 September 2014</strong></td>
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<td><strong>Following the Rapid Evidence Assessment process, 17 studies were included in the review. Hawker’s quality assessment tool was used to assess the quality of the selected studies</strong></td>
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<tr>
<td><strong>Undergraduate nursing students need to develop competencies to ensure patient safety. The quality of the educational atmosphere in the clinical setting has an important impact on the students’ overall level of competence. Active student engagement in clinical processes stimulates their critical reasoning, improves</strong></td>
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<td><strong>Level 1: Systematic Review</strong></td>
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<td><strong>There were a small number of papers relevant to the topic. There was heterogeneity of the studies included in the review due to their different designs, findings and methodologies. In some studies, the sample is very small and findings are not generalizable.</strong></td>
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<td><strong>Yes, this writer would use this study as evidence to support a change because it leveraged multiple articles in determining results. Further, the propose change would not lead to any foreseeable adverse consequences.</strong></td>
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<tr>
<td>Author(s)</td>
<td>Study Title</td>
<td>Design</td>
<td>Sample</td>
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<tr>
<td>Bishop, A. C., &amp; Macdonald, M. (2017).</td>
<td>Patient involvement in patient safety: A qualitative study of nursing staff and patient perceptions, Journal of Patient Safety, 13, 82-87. doi:10.1097/PTS.0000000000000123</td>
<td>Qualitative</td>
<td>nursing staff and patients who had previously completed a patient safety survey.</td>
</tr>
<tr>
<td>Cavnar, K., Van Der Like, J., &amp; Hobby-Burns, L. (2017).</td>
<td>Promoting Patient Safety Through Interprofessional Education Simulation. Clinical Laboratory Science, 30(4), 228-232. Retrieved from <a href="http://search.ebscohost.com/login.aspx?direct=true&amp;db=zh&amp;AN=128158182">http://search.ebscohost.com/login.aspx?direct=true&amp;db=zh&amp;AN=128158182</a> &amp;site=ehost-live&amp;scope=site</td>
<td>Cohort study</td>
<td>Clinical Laboratory Sciences (CLS) junior-level students who were divided into a control group and an intervention group.</td>
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<tr>
<td>Corbin, J. (2017).</td>
<td>Grounded theory. The Journal of Positive</td>
<td>Expert opinion</td>
<td>n/a</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Title</td>
<td>Methods</td>
<td>Results</td>
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<td>-----------</td>
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<td>Costa, D. K., Valley, T. S., Miller, M. A., Manojlovich, M., Watson, S. R., McLellan, P., . . . Iwashyna, T. J. (2018).</td>
<td>ICU team composition and its association with ABCDE implementation in a quality collaborative.</td>
<td>293 attendees from 61 hospitals attending the 2015 MHA ICU workshop in Dearborn, Michigan who completed paper surveys.</td>
<td>From 293 surveys (75% response rate), frequent nurse and physician involvement in SATs, nurse and nurse assistant’s involvement in delirium and nurse, physician and nurse assistant involvement in early mobility were significantly associated with higher odds of bundle implementation.</td>
</tr>
<tr>
<td>David, D. (2019).</td>
<td>The association between organizational culture and the ability to benefit from “just culture” training.</td>
<td>172 care providers and administrators in two like size suburban hospitals.</td>
<td>There was a greater reduction in problematic responses with the more group orientated organizational culture suggesting the importance of assessing culture before training.</td>
</tr>
<tr>
<td>Dolansky, M., Schexnayder, J., Patrician, P., &amp; Sales, A. (2017).</td>
<td>Implementation science new approaches to integrating quality and safety education.</td>
<td>An exploration of examples of implementation strategies for quality and safety competency integration at program (organizational) and course (individual) levels.</td>
<td>The authors propose the use of implementation science methods as a novel way to facilitate implementation of quality and safety competencies into Level 6, single descriptive study.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Purpose</td>
<td>Sample</td>
<td>Research Design</td>
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<td>Donovan, A. L., Aldrich, J. M., Gross, A. K., Barchas, D. M., Thornton, K. C., Schell-Chaple, H. M., et al. (2018).</td>
<td>To describe the importance of interprofessional care in modern critical care medicine</td>
<td>No real sample existed in this study.</td>
<td>Studies were identified through MEDLINE search using a variety of search phrases related to interprofessional care, critical care provider types, and quality improvement initiatives. Additional articles were identified through a review of the reference lists of identified articles.</td>
</tr>
<tr>
<td>Fix, G. M., VanDeusen Lukas, C., Bolton, R. E., Hill, J. N., Mueller, N., LaVela, S. L., &amp; Bokhour, B. G. (2018).</td>
<td>To understand how hospital employees conceptualize Patient Centered Care</td>
<td>77 clinical and non-clinical employees across 4 medical centers</td>
<td>Interviews conducted with the employees</td>
</tr>
<tr>
<td>Gardulf, A., Nilsson, J., Florin, J., Leksell, J., Lepp, M., Lindholm, C., . . . Omvårdnad. (2016).</td>
<td>To investigate self-reported competence among nursing students on the point of graduation</td>
<td>In total, 1086 NSPGs (mean age, 28.1 [20–56] years, 87.3% women) from 11 universities/university colleges participated</td>
<td>The NPC Scale consisted of 88 items within eight competence areas (CA) and two overarching themes. Questions about socioeconomic background and perceived overall quality of the degree program were added.</td>
</tr>
</tbody>
</table>

Yes, I would use highlights of the essential roles each discipline plays to increase awareness among team members.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Self-reported Competence among NSPGs</th>
<th>Level</th>
<th>Author Authority</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harris, T. (2015). Grounded theory. Nursing Standard (Royal College of Nursing, Great Britain) 29(35), 32-39. doi:10.7748/ns.29.35.32.e9568</td>
<td>To explain Grounded Theory and how it is applied</td>
<td>n/a</td>
<td>n/a</td>
<td>Level 7-expert opinion</td>
<td>n/a</td>
</tr>
<tr>
<td>Heim, M., Draheim, R., Krupp, A., Breihan, P., O’Rourke, A., Wells, J., &amp; Fish, J. (2019). Evaluation of a multidisciplinary pain, agitation, and delirium guideline in mechanically ventilated critically ill adults. Hospital Pharmacy, 54(2), 119-124. doi:10.1177/0018578718769570</td>
<td>The purpose of this study was to evaluate the impact of implementation of a PAD guideline on clinical outcomes and medication utilization in an academic medical center intensive care unit (ICU)</td>
<td>All critically ill, mechanically ventilated adults in the medical/surgical ICU admitted during the chart review period were included in the study.</td>
<td>After guideline implementation, average ventilation days was reduced (3.98 vs 3.43 days, P = .0021), as well as ICU and hospital length of stay</td>
<td>Level 6 – single descriptive study</td>
<td>The study design is subject to period effect and sample size. In addition, all patients who were mechanically ventilated were included in the analysis, regardless of whether the patient required paralytics at some point.</td>
</tr>
<tr>
<td>Hsieh, S. J., Otusanya, O., Gershengorn, H. B., Hope, A. A., Dayton, C., Levi, D., . . . Gong, M. N. (2019). Staged implementation of awakening and breathing, coordination, delirium monitoring and management, and early mobilization bundle improves patient outcomes and reduces hospital costs. Critical Care Medicine, 47(7), 885-893.</td>
<td>To measure the impact of staged implementation of full versus partial ABCDE bundle on mechanical ventilation duration, ICU and hospital lengths of stay, and cost.</td>
<td>The primary cohort consisted of all MV adults (≥ 18 yr) admitted to the two 14-bed ICUs for greater than or equal to 24 hours between July 1, 2011, and June 30, 2014 At baseline, spontaneous breathing trials (B) were ongoing in both ICUs; in period 1, (A)wakening and (D)elirium management (E)arly mobilization and structured (C)oordination of ABCDE bundle components to a spontaneous breathing background led to substantial reductions in the duration of mechanical</td>
<td>In a clinical practice setting, the addition of (E)arly mobilization and structured (C)oordination of ABCDE bundle components to a spontaneous breathing background led to substantial reductions in the duration of mechanical</td>
<td>Level 4-Cohort study</td>
<td>Resource and staffing limitations created documented situations of bundle noncompliance</td>
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Note: NSPGs = Nursing Standards Panel Group.
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<tr>
<th>doi:10.1097/CCM.00000000003765</th>
<th>both full and partial bundle ICUs; in period 2, (E)arly mobilization and structured bundle (C)oordination (EC) were implemented in the full bundle (B-AD-EC) but not the partial bundle ICU (B-AD).</th>
<th>ventilation, length of stay, and cost.</th>
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<tr>
<td>Hwang, J.-I., Yoon, T.-Y., Jin, H.-J., Park, Y., Park, J.-Y., &amp; Lee, B.-J. (2016). Patient safety competence for final-year health professional students: Perceptions of effectiveness of an interprofessional education course. <em>Journal of Interprofessional Care, 30</em>(6), 732–738. <a href="https://doi-org.proxy.liberty.edu/10.1080/13561820.2016.1218446">https://doi-org.proxy.liberty.edu/10.1080/13561820.2016.1218446</a></td>
<td>To assess patient safety competencies of final-year health profession students, and the effect of a 1-day patient safety education programme on these competencies.</td>
<td>233 students in three colleges of medicine, nursing, and traditional medicine in Seoul.</td>
</tr>
<tr>
<td>James, J.T (2013). A new, evidence-based estimate of patient harms associated with hospital care. <em>Journal of Patient Safety, 9</em>(3), 122–128. doi:10.1097/PTS.0b013e3182948a69</td>
<td>To provide an updated estimated of the number of people who die each year from medical error in the US</td>
<td>n/a</td>
</tr>
<tr>
<td>Jones, A. (2014). The impact of integrating quality and safety education for nurses’</td>
<td>The purpose of this pilot project was to integrate Quality and Project implemented in an ADN program in Texas during a fall semester. 84 total</td>
<td>A pre-survey/post-survey design</td>
</tr>
</tbody>
</table>
Safety competency in first year associate degree nursing students. *Teaching and Learning in Nursing, 8*, 140-146.

Safety Education for Nurses (QSEN) safety competency teaching strategies in first-semester associate degree in nursing (ADN) students and evaluate student learning outcomes.

Participants at least 18 years of age.

Instruction of QSEN safety competency teaching strategies to enhance students' awareness of safety, thus fostering quality patient care.

Population of ADN students in a single nursing program.

The QSEN safety competency tools would be warranted. Furthermore, the effects of the described interventions on students' adoption of a culture of safety across the nursing curriculum should be evaluated.


Commentary on medical errors

As a healthcare industry, we can and must do better to prevent avoidable patient deaths. This is possible and there are known solutions.


To describe the impact of implementing the CUSP MVP-VAP project on patient care in ICUs

Ventilated ICU patients at the Ministry of National Guard Health Affairs Riyadh between October 1, 2015 – October 31, 2016 (N=1,231)

A prospective quality improvement and patient safety study to describe the impact of implementing the CUSP 4 MVP-VAP in a cohort of ICU patients.

The implementation of a multi-pronged program like CUSP could improve the care processes and outcomes for MVPs.

Level 4- Cohort studies

The implementation of a multi-pronged program like CUSP could improve the care processes and outcomes for MVPs.

Level 3- Controlled trial

This was not a pre/post intervention study so analyzing the full effect of the bundle is difficult. Also, team member motivations could have biased results.


Seven hundred two consecutive mechanically ventilated ICU

Implementation of daily paired spontaneous awakening trials

Implementing a “Wake Up and Breathe Program” resulted in reduced

Level 6- A pre/post intervention study

1. Due to the pre/post-design, authors could not definitively

Yes, while there were numerous limitations,
<table>
<thead>
<tr>
<th>Authors</th>
<th>Description</th>
<th>Results</th>
</tr>
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<tbody>
<tr>
<td>Y. M. (2019).</td>
<td>Implementing the comprehensive unit-based safety program model to improve the management of mechanically ventilated patients in Saudi Arabia.</td>
<td>attribute the improvement in the sedation scores and acute brain dysfunction to the implementation project. 2) They did not have the drug dispensing data, necessary to show that the protocol actually reduced the drug exposure. 3) The study was conducted at a single site, so the results may not be generalizable. 4) They did not collect data on failed spontaneous awakening and spontaneous breathing attempts; therefore, adherence to the intervention could not be reported.</td>
</tr>
<tr>
<td>Lee, N., Jang, H., &amp; Park, S. (2016).</td>
<td>This study examines baccalaureate nursing programs in South Korea to determine how and to what extent patient safety education was delivered, and to assess nursing students' patient safety competency.</td>
<td>The potential response and selection bias that may arise from using non-randomly selected samples and self-reported responses may have affected the results.  No, this study was based in South Korea therefore the curriculum may be significantly different than in the US.</td>
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<tr>
<td>Reference</td>
<td>Description</td>
<td>Study Design</td>
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<tr>
<td>Lyu, H. G., Cooper, M. A., Mayer-Blackwell, B., Jiam, N., Hechenbleikner, E. M., Wick, E. C., . . . Makary, M. A. (2017). Medical harm: Patient perceptions and follow-up actions. Journal of Patient Safety, 13, 199-201. doi:10.1097/PTS.0000000000000136</td>
<td>To describe patients' perceptions regarding disclosure of their actions after harm.</td>
<td>236 respondents reporting patient harm</td>
</tr>
<tr>
<td>Makary, M. A., &amp; Daniel, M. (2016). Medical error—the third leading cause of death in the US. BMI, 353, i2139. doi:10.1136/bmj.i2139</td>
<td>This study explores the magnitude of medical errors and how mortality likely caused by error are classified by the CDC.</td>
<td>Review of data reported in multiple studies such as the IOM’s to Err is Human (1999)</td>
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<tr>
<td>Makic, M. B. &amp; Bridges, E. (2018). Managing sepsis and septic shock: Current guidelines and definitions. American Journal of Nursing, 118 (2), 34-39.</td>
<td>To discuss how the new SSC treatment guidelines, changes in the sepsis bundle interventions, and the Sepsis-3 definitions and tools, enable nurses to improve patient outcomes</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Mansour, M. (2015). Factor analysis of nursing students' perception of patient safety education. Nurse</td>
<td>The purpose of this study is to investigate the factor structure of the Healthcare Professionals Patient Safety Assessment Curriculum</td>
<td>Pre-registration nursing students (n=272) from three campuses of a university in East of</td>
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<td><strong>Education Today, 35(1), 32-37. doi:10.1016/j.nedt.2014.04.020</strong></td>
<td>Safety Assessment Curriculum Survey (HPPSACS) when completed by a group of nursing students from one University in the UK.</td>
<td>England. 222 students (82%) returned the questionnaires</td>
</tr>
<tr>
<td><strong>Marra, Annachiara, MD, PhD(c), Ely, E. Wesley, MD, MPH, Pandharipande, Pratik P., MD, MSCI, FCCM, &amp; Patel, Mayur B., MD, MPH. (2016;2017).</strong> The ABCDEF bundle in critical care. Critical Care Clinics, 35(2), 225-243. doi:10.1016/j.ccc.2016.12.005</td>
<td>To describe how the ABCDEF bundle should be implemented in the care of the mechanically ventilated patient.</td>
<td>821 critically ill patients with respiratory failure or shock</td>
</tr>
<tr>
<td><strong>Marvi Langari, M. N., Tella, S., Smith, N.-J., &amp; Turunen, H. (2017).</strong> Self-Assessment of Patient Safety Competence: A Questionnaire Survey of Final Year British and Finnish Pre-Registration Nursing Students. International Journal of Caring Sciences, 10(3), 1212–1223. Retrieved from <a href="http://search.ebscohost.com/login.aspx?direct=true&amp;db=rz&amp;AN=127731910">http://search.ebscohost.com/login.aspx?direct=true&amp;db=rz&amp;AN=127731910</a></td>
<td>To examine and compare the self-assessment of patient safety competence between British and Finnish nursing students.</td>
<td>The Patient Safety in Nursing Education Questionnaire (PaSNEQ), in the 4-point Likert scale format, was used.</td>
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<td>Study</td>
<td>Objective</td>
<td>Methodology</td>
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<td>Monaca, C., Bestmann, B., Kattain, M., Langner, D. (2020). Assessing patients’ perceptions of safety culture in the hospital setting: Development and initial evaluation of the patients' perceptions of safety culture scale. Journal of Patient Safety, 16, 90-97.</td>
<td>To develop a measure explicitly focusing on patient’s perspective of safety in the hospital and perform an initial evaluation of its measurement properties</td>
<td>Multi-step development approach including literature review and item categorization and selection</td>
</tr>
<tr>
<td>Morandi, A., Piva, S., Ely, E. W., Myatra, S. N., Salluh, J. I. F., Amare, D., . . . Latronico, N. (2017). Worldwide survey of the assessing pain, both spontaneous awakening and</td>
<td></td>
<td>Worldwide online survey</td>
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<tr>
<td>Study</td>
<td>Research Question</td>
<td>Methods</td>
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<td>Nakahashi, S., Yamada, T., Obara, T., Nakajima, K., Suzuki, K., &amp; Imai, H. (2016).</td>
<td>Association of patient care with ventilator-associated conditions in critically ill patients: Risk factor analysis.</td>
<td>To explore care-related risk factors as a process indicator and provide valuable information pertaining to VAC preventive measures.</td>
</tr>
<tr>
<td>Pelzang, R., Hutchinson, A. (2020).</td>
<td>How is patient safety understood by healthcare professionals? The case of Bhutan.</td>
<td>To explore how the term ‘patient safety’ is understood by healthcare professionals charged with promoting the safety agenda.</td>
</tr>
<tr>
<td>Radley D. C., Wasserman M. R., Olshe, L. E., Shoemaker, S. J., Spranca, M. D., Bradshaw B. (2013).</td>
<td>Reduction in medication errors in hospitals due to adoption of computerized provider</td>
<td>To derive a nationally representative estimate of medication error reduction in hospitals attributable to electronic prescribing through</td>
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<td>Bradshaw B. (2013).</td>
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<td>Patient Safety Principles</td>
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<td>order entry systems.</td>
<td>computerized provider order entry (CPOE) systems</td>
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<td>To evaluate the impact of an educational intervention on nurses’ knowledge of sedation assessment and management.</td>
<td>A quasi-experimental design with a pre- and post-survey method was used</td>
<td></td>
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<td>The aim of the study was to identify the main factors leading to harm in primary care based on the experiences reported by patients.</td>
<td>A mixed-methods, cross-sectional study in 45 primary care centers.</td>
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<td>To categorize medication classes according to frequency and severity of Adverse Drug Reactions</td>
<td>The rate of ADE for each medication class was calculated by dividing the number of ADEs by the number of patients who received medication class during admission</td>
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<thead>
<tr>
<th>Reference</th>
<th>Methodology</th>
<th>Findings</th>
<th>Level</th>
<th>Study Details</th>
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<tr>
<td>Thom, K. A., Heil, E. L., Croft, L. D., Duffy, A., Morgan, D. J., &amp; Johantgen, M. (2016). Advancing understanding and knowledge of the four competency domains in patient safety was low before the course.</td>
<td>TO DESCRIBE THE DEVELOPMENT AND IMPLEMENTATION OF AN INTERPROFESSIONAL COURSE</td>
<td>THE COURSE WAS OFFERED AS RECURRING THREE 1-HOUR SESSIONS, INCLUDING CASE-BASED</td>
<td>LEVEL 6, QUALITATIVE STUDY</td>
<td>THE STUDY WAS IMPLEMENTED IN A SINGLE ACADEMIC MEDICAL SCHOOL.</td>
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<td>Thom, K. A., Heil, E. L., Croft, L. D., Duffy, A., Morgan, D. J., &amp; Johantgen, M. (2016). Advancing understanding and knowledge of the four competency domains in patient safety was low before the course.</td>
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**Notes:**
- **PATIENT SAFETY PRINCIPLES**
- **66**
interprofessional patient safety education for medical, nursing, and pharmacy learners during clinical rotations. *Journal of Interprofessional Care, 30*(6), 819–822.

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<td>To conduct a retrospective analysis of medication safety reports.</td>
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</table>

|Weatherford, B. and Viveiros, J. (2015). Senior nursing students’ perspectives on safety | To provide nursing students’ self-reported perspectives on their knowledge | 99 survey responses from senior nursing students | Gap analysis conducted through survey. The Health Professional | The H-PEPSS provides a promising means to evaluate BSN program | Level – 6 single descriptive study | A small sample size in one setting, which impacts | No- small sample size, not generalizable |
| Patient Safety Principles | Competencies: An end-of-program outcome evaluation. Nursing Education Perspectives, 36(3), 182-184. | and attitudes toward safety competencies | Education in Patient Safety Survey (H-PEPSS) was used to measure self-perceived safety competencies in both classroom and clinical experiences. | Outcomes regarding safety competencies using a reliable and valid measure. | Generalizability to other settings. |
This is to certify that:

Octavia Wynn

Has completed the following CITI Program course:

Biomedical Research - Basic/Refresher
Biomedical & Health Science Researchers
1 - Basic Course

(Curriculum Group)
(Course Learner Group)
(Stage)

Under requirements set by:

Liberty University

Verify at www.citiprogram.org/verify/?w4f0bbbe6-7e04-4829-a546-fa91a2acdaac:31664642
March 24, 2020

Octavia Wynn
Kenneth Thompson


Dear Octavia Wynn, Kenneth Thompson:

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study does not classify as human subjects research because:

(2) evidence-based practice projects are considered quality improvement activities, which are not considered "research" according to 45 CFR 46.102(d).

Please note that this decision only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office
Appendix D

March 18, 2020

Octavia Reed Wynn
Liberty University
10725 Mclean Drive
Chester, VA 23831

Dear Octavia Wynn,

After careful review of your research proposal entitled *Using Patient Safety Principles to Prevent Patient Harm*, I have decided to grant you permission to conduct your study at Chippenham Medical Center.

Sincerely,

[Redacted]
February 19, 2020

Octavia Reed Wynn, MSN, RN, MBA, CPPS, CPHQ
DNP Student

Dear Ms. Reed:

As requested, you have permission to use and reproduce the 2015 Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Healthcare Care in your capstone project.

If you wish to use the Iowa Model in a publication, please be sure to inform the editor that copyright of the 2015 Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care will be retained by the University of Iowa Hospitals & Clinics.

In written material, please add the following statement: Used/Reprinted with permission from the University of Iowa Hospitals & Clinics, Copyright 2015. For permission to use or reproduce, please contact the University of Iowa Hospitals & Clinics.

Citation: The Iowa Model Collaborative (2017). The Iowa Model-Revised: Development and validation. Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223

Permission is not granted for placing on the intranet.

If you have any questions, please feel free to contact me at [redacted]. Thank you.

Sincerely,
Appendix F

External] RE: HPPSACS Access

Madigosky, Wendy S <WENDY.MADIGOSKY@CUANSCHUTZ.EDU>
Sun 12/22/2019 6:20 PM
To: Chenot, Theresa <tchenot@ju.edu>; Wynn, Octavia <owynn@liberty.edu>

[ EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content. ]

I agree as well!

Wendy Madigosky MD MSPH | Director, Interprofessional Education and Development Course
Assistant Director--School of Medicine | Center for Interprofessional Practice and Education
(303) 724-8291 | Wendy.Madigosky@cuanschutz.edu | Fulginiti Pavilion, Room 004C

From: Chenot, Theresa <tchenot@ju.edu>
Sent: Sunday, December 1, 2019 8:32 AM
To: Wynn, Octavia <owynn@liberty.edu>
Cc: Chenot, Theresa <tchenot@ju.edu>; Madigosky, Wendy S <WENDY.MADIGOSKY@CUANSCHUTZ.EDU>
Subject: Re: HPPSACS Access

Hi Octavia - you have my permission to use the HPPSACS instrument with acknowledgements. I have included Dr. Wendy Madigosky, PI of the original instrument, for her approval too. Please keep us updated on your study's findings and publications. Thank you - Dr. Chenot

Teri Chenot, Ed.D., MS, M.Ed., MSN, RN, CCE, FAAN
Associate Professor, Keigwin School of Nursing
Department Chair, Healthcare Quality and Safety Programs
Director, QSEN Institute Regional Center at Jacksonville University
Brooks Rehabilitation College of Healthcare Sciences
Jacksonville University
2800 University Blvd. No., BRCHS – Room 202
Jacksonville, FL 32211
Office: (904) 256-7284
Fax: (904) 256-7287
E-mail: tchenot@ju.edu
JU Healthcare Quality and Safety
Programs: https://www.ju.edu/healthcaresafety/index.php
JU QSEN Website: https://www.ju.edu/qsen
2020 Patient Safety Forum: www.ju.edu/qsenforum

From: Wynn, Octavia <owynn@liberty.edu>
Sent: Saturday, November 30, 2019 4:49 PM
To: Chenot, Theresa <tchenot@ju.edu>
Subject: Re: HPPSACS Access

Hi Dr. Chenot,

I am sending this email to ask permission to utilize the HPPSACs survey as a pre/post survey tool in my DNP scholarly project. Please let me know if your permission is granted or if you need additional information. Thank you.

Octavia Reed Wynn, MBA, MSN, BSN, RN, CPPS, CPHQ
DNP Student, C/O 2020
Appendix G

HCPPSAC Survey Questions

Question 1- Making errors in healthcare is inevitable

Question 2- Competent healthcare workers do not make errors that lead to harm

Question 3- Healthcare workers should spend part of their time working to prevent errors

Question 4- Only physicians can determine the causes of medical error

Question 5- Healthcare workers should not tolerate uncertainty

Question 6- Healthcare culture makes it easy to deal with errors

Question 7- Learning how to improve patient safety is appropriate use of time in nursing schools

Question 8- Healthcare workers routinely share information about medical errors and what caused them

Question 9- Faculty and staff communicate patient safety as a high priority

Question 10- Healthcare workers routinely report medical errors

Question 11- Reporting systems do little to prevent medical errors

Question 12- Physicians should be the healthcare worker who reports medical errors to patients/families

Question 13- Effective responses to error focus primarily on the HCW involved

Question 14- If there is no harm to a patient there is no need to address an error

Question 15- If I saw a medical error, I would keep it to myself

Question 16- Most errors are due to things healthcare workers can’t do anything about

Question 17- After an error, an effective strategy is be more careful

Question 18- There is a gap between best practice and what we do daily