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# Pressure Injury Prevention in an Urban Surgical Intensive Care Unit

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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2020

Abstract

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MSN

MSN, Walden University, 2014

BSN, Mount Carmel University, 2002

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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## Abstract

Hospital-acquired pressure injuries (HAPIs) affect approximately 2.5 million patients in the United States, annually. Prevention requires surgical intensive care unit (SICU) nursing staff to effectively use evidence-based risk assessment measures to appropriately identify patients at risk for developing HAPIs and to prevent poor patient outcomes. The Braden Scale risk assessment tool has demonstrated reliability and validity in the prediction and assessment of patients at risk for the development of HAPIs. The purpose of this Doctor of Nursing Practice (DNP) project was to improve nurses' knowledge of the appropriate use of the Braden Scale risk assessment tool in the SICU of an urban acute care hospital in a Southern state, to identify critically ill patients that are at risk for developing HAPIs. The design and implementation of this educational program were guided by the Lean model and the Lewin's change theory. The practice-focused question focused on determining improvements in the knowledge of the nurses in a SICU following an education program, coupled with an enhancement to the visualization of the Braden Scale items using a teaching sheet. Forty SICU nurses participated in the educational program and completed the pre-test and post-test to evaluate education. The results showed learner knowledge gain with increases in mean correct score on 3 items on pressure injury prevention ($M$ = 36.3; Range 63.2% to 90.8%) and 3 items on effective use of the Braden Scale ($M$ = 33.3; Range 57.5% to 90.8%). Improving the nurses' knowledge and confidence levels can expedite the assessment and appropriate prediction of at-risk patients and prevent the development of HAPIs and other health-related complications associated with HAPIs, which can emphatically impact social change.

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# Dedication

For granting me wisdom, knowledge, strength, opportunities, and making this educational journey possible, I want to give thanks to the Almighty God from whom all blessings flow. I dedicate this doctoral degree to the memories of my father Mr. Willie Gardea Ricks, and my mother Mrs. Rachel Famatta Goba. Mama, thank you for instilling in me the knowledge to understand that in order to achieve success requires faith, vision, hard work, and perseverance. To my two magnificent babies Nicholas G. Barjobo, and Famatta N. Barjobo, I would like to thank you both for your love, understanding, patience, and support. To my brother Mr. Milton N. Ricks, I would like to thank you for your love, support, and encouragement. To my sister Ms. Wilhemina F. Ricks and my niece Lois R. Fidelis, I would like to thank you both for your love, and encouragement. To my sister-in-law Mrs. Deconte Brumskin-Ricks, I would also like to thank you for your love, and encouragement. You all were my amazing cheerleaders throughout my DNP journey. I am honored, grateful, and blessed to have you all in my life. To God be all the glory for great things He has done.

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## Introduction

Annually, hospital-acquired pressure injuries (HAPIs) affect approximately 2.5 million patients in the United States and are also a contributing factor to 60,000 deaths (Henry & Foronda, 2018). The development of HAPIs is considered a hospital-acquired condition (HAC) which is a patient safety problem that can extend patients' hospital stay, mortality rates, and morbidity rates. (Cooper, 2013). The Center for Medicare and Medicaid Services (CMS) considered HAC as a condition that was not present on admission (POA) and therefore, will not reimburse healthcare facilities for HAPIs (National Pressure Ulcer Advisory Panel [NPUAP] & European Pressure Ulcer Advisory Panel [EPUAP], 2014). Prevention of HAPIs with surgical patients in the surgical intensive care unit (SICU) requires nursing staff to effectively perform evidence-based risk assessment measures, to appropriately identify patients at risk for developing HAPIs. The nursing staff could also strengthen compliance to HAPI prevention through the implementation of preventative strategies to decrease the development of HAPI, and achieve positive change in practice. The goal of this DNP project was to provide an enhancement to the visualization of the validated risk assessment scale called the Braden Scale that is being used in the SICU at this urban hospital. It is also the aim of this DNP project to provide knowledge through functional clarity of the vague patient descriptions so that the Braden Scale can be used appropriately to predict at-risk patients and prevent HAPIs.

## Problem Statement

Surgical patients in the intensive care units (ICU) are at higher risk for skin breakdown and developing hospital-acquired pressure injuries (HAPIs) as a result of sedation, mechanical ventilation dependent, and immobility. The National Pressure Ulcer Advisory Panel (NPUAP)

and the European Pressure Ulcer Advisory Panel (EPUAP) (2014) define pressure injury is localized damage to the skin and underlying soft tissue usually over a bony prominence, that may be related to a medical device, or because of extreme and/ or prolonged immobility or pressure in combination with shear. “Approximately 2.5 million patients develop HAPIs, and the cost to treat HAPIs ranges from $9.1 billion to $11 billion each year in the United States, with individual patient care costs ranging from $20,900 to $151,700 per pressure injury” (Spruce, 2017, p. 93). HAPIs are considered never events, and healthcare organizations are not being reimbursed for the care of patients who experience a pressure injury during his or her hospital stay (Black et al., 2014). The gap in practice addressed by this project was the lack of an educational program for nurses using the Braden Scale as a tool for the assessment and prediction of post-surgical at-risk patients with a high incidence of pressure injuries development, and non-healing pressure injuries amongst these patients in the Surgical Intensive Care Unit (SICU). The ineffective use of the Braden Scale to identify at-risk surgical patients in the SICU has caused the patient to be improperly identified, leaving them at risk for the development of HAPIs. The inconsistencies and improper scoring among nurses using the Braden Scale to predict pressure injuries risk factors in these surgical patients will further increase. This gap in practice revealed the lack of knowledge and the need for education of the nurses so that they can appropriately use the Braden Scale to properly identify and determine the patients at risk for the development of HAPIs, and implement evidence-based practice (EBP) prevention strategies to keep these patients safe from developing HAPIs. Padula et al. (2019) described the Braden Scale as an evidence-based tool developed to predict patients’ risk for the development of acquired pressure injuries in healthcare facilities and, this scale uses scores from less than or equal to 9 as a severe risk and, to as high as 23 as no risk. The smaller numbers

indicate that the patients are at higher risk for acquiring pressure injuries. The Braden Scale is composed of six parameters which include the sensory perception, skin moisture status, activity level, mobility level, nutritional status, and friction, and shear (Choi et al., 2014). According to Choi et al. (2014), the risk of pressure injuries is predominantly assessed using the Braden Scale for predicting pressure injuries risk but, several of the patient status descriptions on the Braden Scale are summarized in vague wordings that nurses may interpret inconsistently, which may likely threaten the scale reliability. An education program coupled with an enhancement to the visualization of the Braden Scale tool was provided to increase the knowledge through functional clarity of these vague patient descriptions so that the Braden Scale can be used to appropriately to predict at-risk patients and prevent HAPIs.

## Purpose Statement

The purpose of this DNP project was to evaluate the appropriate use of the Braden Scale risk assessment tool used by the nurses in the SICU of an urban acute care hospital in a Southern state, to identify critically ill patients that are at risk for developing HAPIs. The nurses' compliance with the HAPIs risk assessment scale measurements was evaluated through informal collaboration with the SICU nursing staff which included the SICU nurses, the wound care nurse, and the clinical nurse educator of the SICU. This DNP project answered the following practice-focused question: Does staff knowledge of pressure injuries prevention and proper use of the Braden Scale increase following education using a teaching sheet with the addition of pictures to the standardized version of the Braden Scale?

During the meeting, the wound care nurse presented data that they had collected through an anonymous form from their case management team, and quality improvement reports. The data indicated that there was inconsistency in risk assessment scores among SICU nurses using

the Braden Scale tool to score patients at risk for PIs. As a result, this DNP project's intended purpose was to educate the SICU nurses by implementing an educational program with the objective of using a newly developed Braden Scale teaching sheet that uses pictures for clarity to improve the use of the Braden Scale assessment tool. The wound care nurse had also indicated that they did not have a formal educational program for HAPI prevention, and that there was an increase in annual HAPIs occurrence rate of 4% above the national benchmark rate of 3%. The inconsistent scoring of patient risk assessment, and no formal educational program; the clinical team leader was persuaded that there was a need to educate the staff. The objective of the evaluation was to develop an educational intervention among the nursing staff, to improve the nurses' interpretation of the patients' risk assessment scores when they are using the Braden Scale Assessment tool. The overall aim of this DNP project was to improve the knowledge of the nurses by providing them with an education program coupled with, an enhancement to the visualization of the Braden Scale tool. The enhanced version of the Braden Scale teaching sheet was used to provide the nurses with the knowledge through functional clarity of the vague patient descriptions so that the Braden Scale can be used appropriately to predict at-risk patients and prevent HAPIs. The NPUAP/EPUAP Guidelines for the preventing HAPIs advocates that prevention of HAPIs starts with patient risk assessment using the Braden Scale and by classifying patients before implementing prevention guidelines, hospitals are able to identify high-risk patients in order to minimize excess spending on prevention for low-risk patients (Padula et al., 2019).

Members of the healthcare team were comprised of the Certified Wound Ostomy Continence Nurse (CWOCN), the Clinical Nurse Educator, nurses in the SICU, and the SICU Nurse Manager at the DNP project site. The team members did play pivotal roles in supporting

the implementation of this DNP Project to improve best practice for HAPI prevention, which as a result will reinforce the DNP Essential VI which states, “graduates is to lead inter-professional team collaboration for improving patient and population health outcomes” (AACN, 2006; IOM, 2001).

## Nature of the Doctoral Project

The setting for the DNP project was in the SICU of an acute care urban hospital. The purpose of this EBP project implementation was to evaluate pressure injury prevention knowledge using the Braden Scale for at-risk patients in the SICU. A pre-test and post-test were administered to analyze the impact of the learned Braden Scale assessment tool. After the testing, a comparison using descriptive statistics was used to evaluate the change in nurses’ knowledge of the proper use of the new enhanced Braden Scale tool to determine surgical patients’ risk for developing HAPIs. Appropriate knowledge of the Braden Scale assessment tool was provided so that they could adequately score patients, to prevent and/ or decrease the development of HAPIs. The time frame for the implementation was a one-week period. The sources of evidence that were collected to meet this doctoral project included analysis of the information obtained from the informal collaboration with the SICU nursing staff, reviewing data that was collected through an anonymous form from the organization case management team and quality improvement reports. The data indicated that there were inconsistencies in risk assessment scores among SICU nurses using the Braden Scale tool to score patients at risk for HAPIs.

## Significance

Research had shown that an in-depth and collaborative HAPIs prevention program, together with staff education on the importance of timely and accurate interpretation of pressure injuries (PIs) risk assessment scores in critically ill patients in the ICU, can be an effective and a

beneficial way to prevent and/or reduce the occurrence of HAPIs (Swafford et al., 2016). Reducing HAPIs in at-risk patients in the ICU through the effective use of a validated risk assessment scale tool also has numerous positive healthcare outcomes. Gill (2015) asserted that validated risk assessment tools are essential to practice for evaluating PIs risk in at-risk patients and should be used to guide interventions and improve patients' outcomes.

The education program coupled with an enhancement to the visualization of the Braden Scale tool empowered the nurses in the SICU, increased their understanding and prediction accuracy, and provided them with the knowledge to effectively interpret the risk scales scores of at-risk patients. Educating the nurses had also achieved positive results with the improvement of the change in practice, thereby preventing and/or reducing the development of HAPIs. An enhanced Braden Scale teaching sheet made it a more effective tool for the nurses to easily identify patients' risk classifications so that they could promptly implement the EBP knowledge of HAPIs preventative strategies. According to Cox (2017) decreasing the occurrence or development of HAPIs can have a positive impact and outcomes on patients' health, quality of life, length of stay in healthcare facilities, and promotes cost-effective patient safety and quality care.

## Summary

Cox (2017) asserted that the absence of a risk assessment scale to prompt the risk for HAPIs is an obstacle to accurately recognizing the risk of PIs in at-risk patients. SICU patients are more vulnerable due to their immobility and their comorbid conditions such as peripheral vascular disease (PVD), ICU length of stay, and the presence of mechanical ventilation. The study problem for this DNP project was the high incidence of PIs development and non-healing PIs amongst patients in their SICU, and the ineffective use of the Braden Scale to identify those

at-risk patients. The purpose of the project was to evaluate nurses in the SICU compliance with the HAPIs prevention strategies and determine the level of their knowledge of understanding in effectively interpreting the Braden Scale. The overall aim of this DNP project was to improve the knowledge of the nurses by providing them with an education program coupled with, an enhancement to the visualization of the Braden Scale tool, which did provide them the knowledge through functional clarity of the vague patient descriptions so that the Braden Scale can be used appropriately to predict at-risk patients and prevent HAPIs. Section 2 examined the background and context of this DNP project and covered the conceptual frameworks, and theories.

Section 2: Background and Context

## Introduction

The practice problem that was evaluated for this DNP project was the high incidence of HAPIs among critically ill patients in the SICU of an acute care urban hospital. Also, the practice problem addressed the ineffective use of the Braden Scale to identify at-risk surgical patients in the SICU, which can cause patients to be improperly identified, leaving them at risk for the development of HAPIs. An educational program coupled with an enhancement to the visualization of the Braden Scale tool aimed to empower the nurses in the SICU, by increasing their understanding and prediction accuracy and provide them with the knowledge to effectively interpret the risk scales scores of at-risk patients.

By contributing to the nursing staff knowledge of HAPI prevention, there was a potential to prevent harm and suffering to the patients and their families, hence achieving positive change in practice and, preventing and/or reducing the development of HAPIs. The Braden Scale teaching sheet contributed to proving functional clarity to the Braden Scale tool, to make it a more effective tool for the nurses to easily identify patients' risk classifications so that they can promptly implement the EBP knowledge of HAPIs preventative strategies. The Lean's System Approach for Change (Wojciechowski et al., 2016) was used to improve the process of the educational program that will be conducted for the nursing staff to enhance their knowledge on HAPIs prevention strategies, as it relates to the nurses' interpretation of patients' risk assessment status descriptions on the Braden Scale tool. The Lean Model was also used to guide the nurses through working on their consistency and accurate interpretation of their assessment of PIs risk factors to strengthen the reliability of the Braden Scale. Lewin's Model for Planned Change (The Lewin's Change Theory) promoted the implementation of interventions to encourage behavioral

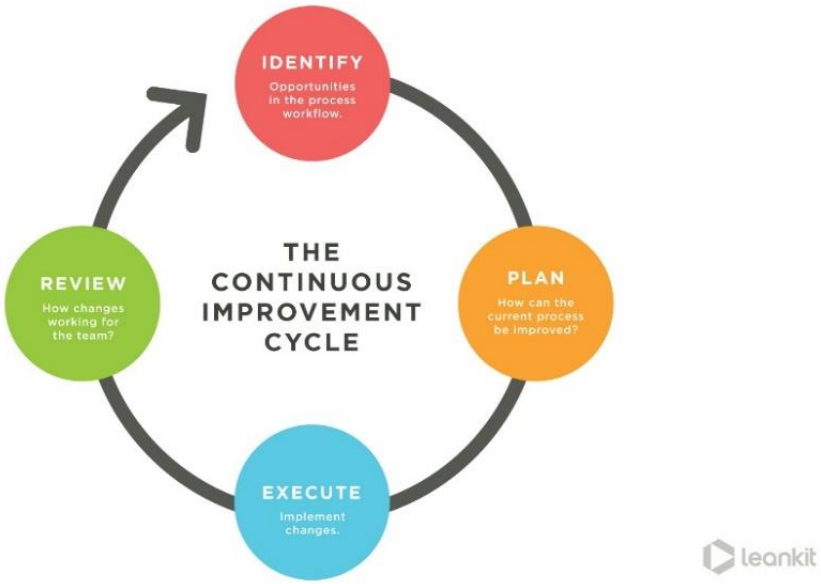
changes in the nursing staff (Wojciechowski et al., 2016). Furthermore, Section 2 of the DNP project provided the background and context of the project in terms of the concepts, models, theories, and relevance to nursing practice.

## Concepts, Models, and Theories

### The Lean Model

The Lean Model was described as a people-based system, centered on helping the process and supporting individuals through efficiently organized work to produce process predictability, clarified process flow, in order to make deficiencies and ineffectiveness recognizable to empower staff members to act (Wojciechowski et al., 2016). The Lean Model empowered the nursing staff to think about improvement as a continuous endeavor and encouraged them to contribute to problem-solving techniques that improved the nursing care of patients and prevented and/or reduced HAPIs. The Lean Model emphasized the significance of using information from identified problems to support staff in eliminating them and to enhance the process to increase quality and efficiency (Wojciechowski et al., 2019). In relation to the DNP project, the problem that was identified and addressed was frequent inconsistencies among the nurses' interpreting the patients' risk assessment scores when using the Braden Scale assessment tool. A plan was made, and the process was examined to improve the vaguely described patient characteristics on the Braden Scale. The nurses can be consistent in their interpretations and accurately predict patients at risk for HAPIs. The plan provided clarity to the nurses through the implementation of an enhancement to the visualization of the Braden Scale tool, which also provided consistency and accuracy in their interpretations of patients that were assessed. After the DNP project was implemented, there was a review of the implementation to determine if the

educational program of the nursing staff, coupled with an enhancement to the visualization of the Braden Scale tool, is effective. The Lean Model is illustrated in Figure 1.




*Note*. From "A Case Review: Integrating Lewin's Theory with Lean's System Approach for Change," by E. Wojciechowski, P., Murphy, T., Pearsall, & E. French, 2016, *The Online Journal of Issues in Nursing*, *21*(2).

*Figure 1*. Schematic illustration of Lean's system approach for change.

**Lewin's Change Theory**

Lewin's Change Theory (Wojciechowski et al. 2016) created an awareness of the problem by allowing individuals to uncover options to show the benefit of the change, which did ensure a new balance into the system so it becomes a standard of practice that can withstand further adverse change. The Lewin's Change Theory ease the implementation of an enhancement to the visualization of the Braden Scale tool, which provided the nursing staff the knowledge through functional clarity of the vague patient descriptions so that the Braden Scale can be used appropriately to predict at-risk patients and prevent HAPIs. Lewin's Change Theory consists of three prime concepts: driving forces, restraining forces, and equilibrium. Wojciechowski et al.

(2016) asserted that driving forces refer to those individuals that move in the direction that brings about change. These individuals influence change because they move towards implementing changes. In contrast to driving forces, restraining forces include all components that resist the driving forces (Wojciechowski et al., 2016). Equilibrium thus exists when driving forces and restraining forces are evenly distributed, and therefore no change occurs. Marquis and Huston (2014) asserted that for a change to occur in an equilibrium state the equilibrium must be unfrozen, old attitudes and behaviors must change, and new habits along with new behaviors must be learned through a proceeding called refreezing.

**Unfreezing Stage**

During the unfreezing stage, the need for change was initiated and what was required to be changed was identified and communicated to all the team members (Wojciechowski et al., 2019). The problem identified in this DNP project was the frequent and improper scoring among nurses, using the Braden Scale to predict PIs risk factors in SICU patients. The empirical data and information obtained from the nursing staff was used to challenge the team to **r**ecognize the need for change.

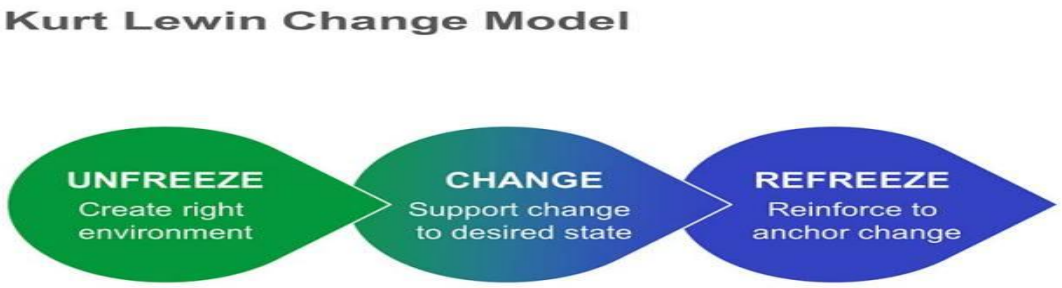
**Changing Stage**

During the changing stage, the nursing staff did participate in an educational program that provided them with operational information that revealed clarity to the vague patient descriptions currently on the Braden Scale, so that they could properly recognize and effectively interpret and score patients at risk for PIs, using the Braden Scale. During this stage, the modified Braden Scale sheet included enhancement to the visualization, which provided clarity of patient descriptions which was implemented. The new change provided accuracy and consistency in scoring and prediction of patients at risk for PIs, thereby maintaining the Braden Scale's

reliability. The nursing staff was empowered by maintaining the Braden Scale's reliability. The nursing staff was also empowered from the knowledge obtained from the educational program and therefore was encouraged to change their attitude, which then also modified their behaviors making them proactive and open to embracing the new change. The Changing stage involved searching for new options, showing benefits of change, and minimizing forces that adversely influence change (Wojciechowski et al., 2016).

**Refreezing Stage**

During the refreezing stage, strategies for sustaining the change were implemented and the change was consolidated and adopted by the nursing staff into their routine standard of practice for the SICU. Refreezing allows consolidation and durability, along with a new equilibrium into the culture so it will become a standard of practice and withstands further change (Wojciechowski et al., 2016). Lewin's Change Theory is illustrated in Figure 2.




*Note*. From "A Case Review: Integrating Lewin's Theory with Lean's System Approach for Change," by E. Wojciechowski, P., Murphy, T., Pearsall, & E. French, 2016, *The Online Journal of Issues in Nursing*, *21*(2).

*Figure 2.* Schematic illustration of Lewin's change theory.

## Relevance to Nursing Practice

Nurses' accurate interpretation of patients' status descriptions on the Braden Scale for recognition and assessment of risk factors is a requirement for implementing appropriate strategies to prevent HAPIs (Cooper, 2013). Early recognition of patients' risk factors is essential so that early interventions can be implemented to prevent the development of HAPIs. Goodman et al. (2018) asserted that HAPIs a notable cause of morbidity and mortality and create substantial healthcare issues within the United States and globally. HAPIs are also known to increase hospitalization, creating remarkable healthcare resource costs and utilization (Goodman et al., 2018). According to Hommel et al. (2016) PI endemic has been endorsed as a quality indicator for both patient safety and quality of care in healthcare facilities, therefore the objective for all nursing staff must be to provide high-quality sustainable care to all patients (Hommel et al., 2016). PIs are considered as a personal reflection of the nursing quality of care and have numerous outcomes, consisting of physical, social, and financial (Irvin et al., 2016). This DNP project had a significant impact on the nursing staff, as it relates to change in their behaviors and knowledge of how to accurately utilize the Braden Scale as an effective assessment tool for predicting PIs in at-risk and thus prevent HAPIs.

## Local Background and Context

The clinical site where this DNP project was conducted is in a SICU of an urban acute care hospital that cared for critically ill patients with multiple diagnoses and surgical procedures along with factors that increase their risk for developing HAPIs. The purpose of this DNP project implementation was to evaluate PI prevention knowledge using the Braden Scale for the at-risk patient versus high-risk patient in the SICU. Typically, patients in the SICU skin was consistently exposed and in contact with medical devices and equipment, which makes them

susceptible to PIs. The exposure of their skin to these devices, along with vasoactive medications that are administered to critically ill patients places them at higher risk of developing HAPIs. Surgical procedures and other medical interventions can also contribute to patients' immobility and, inability to reposition themselves, thus increasing their risk for the development of HAPIs. The main skin assessment tool used in this SICU was the Braden Scale. According to Zuo and Meng (2015), the Braden Scale is a validated tool for predicting PIs risk that analyzes six indicators that includes sensory perception, moisture, exposure, activity levels, patient mobility, nutrition, and friction. When the anonymous data form from the quality improvement revealed that the SICU nursing documentation on skin assessment and the Braden Scale scores were misinterpreted, and frequently inconsistent partly due to the vaguely described patient characteristics on the Braden Scale , an intervention was implemented.

The ineffective use of the Braden Scale to identify at-risk surgical patients in the SICU can cause patients to be improperly identified, leaving them at risk for the development of HAPIs. The inconsistencies and improper scoring among nurses using the Braden Scale to predict PIs risk factors in these surgical patients did further increased. This gap in practice revealed the lack of knowledge and the need for education of the nurses so that they can appropriately use the Braden Scale to properly identify and determine the patients at risk for the development of HAPIs and implement evidence-based practice (EBP) prevention strategies to keep these patients safe from developing HAPIs. An education program coupled with an enhancement to the visualization of the Braden Scale tool was used to provide the knowledge through functional clarity of these vague patient descriptions so that the Braden Scale can be used appropriately to predict at-risk patients and prevent or decrease HAPIs. The DNP project did evaluate pressure injury prevention knowledge and a Braden Scale teaching sheet was

developed using the same content while adding pictures to depict concepts under each area used to scoring the patient at-risk versus high-risk patients in the SICU. A pre-test and post-test were administered to evaluate the nurses' knowledge of the proper use of the Braden Scale to determine surgical patients' risk of developing HAPIs. Appropriate knowledge of the Braden Scale assessment tool was provided so that they can adequately score patients, to prevent and/or decrease the development of HAPIs. The time frame of this implementation was 8 days period.

Choi et al. (2014) asserted that the quality of clinical nursing care stipulated by various components including skin integrity hence, the Centers for Medicaid and Medicare Services (CMS) declared in 2007 that there will not be reimbursements for HAPIs treatment in stage III and IV PIs. According to the NPUAP and EPUAP (2014), HAPIs prevention begins with the identification of at-risk patients, consistent skin assessments, nutritional support, repositioning, and support surfaces.

## Role of the DNP Student

The role of the DNP student in this project was to provide an educational program coupled with an enhancement to the visualization of the Braden Scale tool, to provide the nursing staff with the knowledge through functional clarity of the vague described patient characteristics found on the current Braden Scale. The DNP student implementation made the Braden Scale more appropriate to predict at-risk patients within a timely, consistently, and accurately manner, thus preventing HAPIs. The American Association of Colleges of Nursing [AACN] (2006) Essential VI advocates that the DNP prepared nurse engaged in interprofessional collaborative endeavors that are necessary for enhancing patient and population healthcare outcomes. Trautman et al. (2018) asserted that DNP prepared nurses are centered on translating evidence

into practice, usually using quality improvement techniques with objectives to advance and change healthcare delivery and patient outcomes.

## Summary

HAPIs continue to be a significant and continuous problem in acute care facilities. According to Irvin et al. (2016), early assessment and identification of at-risk patients for PIs can improve the implementation of early interventions and treatment, along with committed nursing staff equipped with the knowledge required for HAPIs prevention strategies. The basic concept of the Lean Model takes aggressive action on the process rather than the individual to promote a no-blame culture, which is modeled to establish trust, engage staff to be motivated, measure enhancement, and implement and support (Wojciechowski et al., 2016). Lewin's Change Theory enabled the implementation of interventions to encourage behavioral changes amongst the nursing staff, and the driving forces are those that propel the nurses in the required direction (Wojciechowski et al., 2016). The plan in this DNP project as it relates to Lewin's Change Theory was to strengthen the driving forces that did direct behavior away from the current situation by implementing a modified Braden Scale teaching sheet, coupled with an education program to prevent and/decreased the development of HAPIs in the intended setting. Section 3 examined the collection and analysis of evidence from this DNP project.

Section 3: Collection and Analysis of Evidence

## Introduction

The practice problem addressed by this DNP project was the lack of an educational program for nurses using the Braden Scale as a tool for the assessment and prediction of post-surgical at-risk patients with a high incidence of pressure injuries development and non-healing pressure injuries amongst these patients in the Surgical Intensive Care Unit (SICU). The ineffective use of the Braden Scale to identify at-risk surgical patients in the SICU has caused the patient to be improperly identified, leaving them at risk for the development of HAPIs. The inconsistencies and improper scoring among nurses using the Braden Scale to predict pressure injuries risk factors in these surgical patients will further increase if the necessary interventions are not implemented. This gap in practice revealed the lack of knowledge and the need for education of the nurses so that they can appropriately use the Braden Scale to properly identify and determine the patients at risk for the development of HAPIs, and implement evidence-based practice (EBP) prevention strategies to keep these patients safe from developing HAPIs. The clinical site where this DNP project will be conducted is in the SICU of a 300-bed urban acute care hospital that cares for critically ill patients with multiple diagnoses and surgical procedures, along with factors that contribute and increases their risk for developing HAPIs. The purpose of this DNP project implementation is to evaluate PI prevention knowledge using the Braden Scale for at-risk patients versus high-risk patients in the SICU. Typically, patients in the SICU skin are consistently exposed and in contact with medical devices and equipment, which makes them susceptible to PIs. The exposure of their skin to these devices, along with vasoactive medications that are administered to critically ill patients places them at higher risk of developing HAPIs. Surgical procedures and other medical interventions can also contribute to patients' immobility

and, inability to reposition themselves, thus increasing their risk for the development of HAPIs. This DNP project evaluated pressure injury prevention knowledge, and a modified-Braden Scale will be created using the same content while adding pictures to depict concepts, under each area used to scoring the patient at- risk versus high-risk patients in the SICU. A pre-test and post-test were administered to evaluate the nurses' knowledge of the proper use of the Braden Scale to determine surgical patients' risk of developing HAPIs. Appropriate knowledge of the Braden Scale assessment tool was provided so that they can adequately score patients, to prevent and/or decrease the development of HAPIs. The time frame of this implementation was over eight days period.

## Practice-Focused Question

The practice-focused question for this DNP project was: Does staff knowledge of pressure injury prevention and proper use of the Braden scale increase following education using a teaching sheet with the addition of pictures to the standardized version of the Braden Scale? The ineffective use of the Braden Scale to identify at-risk surgical patients in the SICU has caused the patient to be improperly identified, leaving them at risk for the development of HAPIs. The inconsistencies and improper scoring among nurses using the Braden Scale to predict pressure injuries risk factors in these surgical patients will further increase if the necessary interventions are not implemented. This gap in practice revealed the lack of knowledge and the need for education of the nurses so that they can appropriately use the Braden Scale to properly identify and determine the patients at risk for the development of HAPIs, and implement evidence-based practice (EBP) prevention strategies to keep these patients safe from developing HAPIs. The purpose of this DNP project is to provide an enhancement to the visualization of the validated risk assessment scale called the Braden Scale that is being used in

the SICU at this urban hospital and to provide knowledge through functional clarity of the vague patient descriptions so that the Braden Scale can be used appropriately to predict at-risk patients and prevent HAPIs

## Sources of Evidence

A comprehensive review of current relevant evidence-based literature on the prevention of HAPI and the extent of nurses' knowledge regarding PIs, has revealed that nurses have limited knowledge of PIs and that educational strategies based on EBPs can assist in identifying knowledge gap, and wants to improve them (Ayello et al.,2017). The prevalence of PIs internationally in acute care facilities is approximately 15%, whereas the prevalence in critical care units is rising significantly higher with North America been at 22%, Western European countries at 49%, and Australia up to 50% (Coyer et al., 2015). The effectiveness of PI prevention education on the nursing staff and, the consequential knowledge translation into nursing will be straightly associated with quality patient care. PIs are regarded as a direct indicator of the nursing quality of care and have numerous consequences, including social, physical, and financial (Irvin et al., 2017). There is also an ethical duty and financial Incentive for healthcare providers and healthcare facilities to prevent HAPIs from occurring (Ayello et al., 2017). It is estimated that the cost of treating PIs stages III and IV exceeds $40,000 during a hospital length of stay of 8 days (Irvin et al., 2017). Cox (2017) asserted that timely recognition of the risk factors of PIs in at-risk patients is, essential for determining relevant strategies to prevent HAPIs. The Braden Scale leads to the successful recognition of at-risk patient thus, alerting healthcare providers to implement appropriate strategies to prevent HAPIs (Cox, 2017).

Equipped with this information obtained from the literature review, the educational content for the DNP Project will be created to evaluate the appropriate use of the Braden Scale

risk assessment tool used by the nurses in an acute care facility. The information created for the DNP Project will be presented for evaluation to the clinical management team that will include the DNP student, nurse manager (NM), clinical nurse educator (CNE), and the certified wound care nurse (CWCN). The data obtained from participants surveys, questionnaires, and the evaluation of the clinical management team were used to provide enhancement to the visualization of the Braden Scale tool and provide evidence-based knowledge to the nursing staff for help with appropriately predicting at-risk patients which will subsequently prevent the development of HAPIs. The analysis of the data collected will identify nurses' knowledge on predicting PI risk with the Braden Scale, reveal their use of preventatives measures used to decrease HAPIs occurrences in critical care patients, and their skill set used for the interpretation of patients' risk level on the Braden Scale. Henry and Foronda (2017) asserted that for nurses to practice safely, they must have adequate knowledge of the operations, advantages, and risks affiliated with HAPIs. Nurses must be competent in appropriately identifying assessment findings, determine when patients are at risk for PIs, and implement appropriate interventions when indicated.

## Evidence Generated for the Doctor of Nursing Project

Evidence and data generated for this DNP project were used to evaluate the appropriate use of the Braden Scale risk assessment tool, to identify users inconsistencies in the interpretation of patients' risk assessment scores and then, aimed to improve knowledge of the nursing staff by providing them with an educational program, coupled with an enhancement to the visualization of the Braden Scale tool. During the initial phase of generating evidence for this DNP project, team members that were selected comprising of the DNP student as the project leader, the DNP student's practicum preceptor, the nurse manager, the clinical nurse educator, a

nurse executive from the DNP project site, and the wound care nurse. These four nursing experts were strategically selected because, they were nursing leaders with skills, influence, and potential to support this DNP project that is aimed at positively impacting clinical practice and patient safety outcomes at their healthcare facility. The DNP project setting was in an SICU of an acute care urban hospital. The majority of the patients in this setting were post-surgical with multiple comorbidities. An intra-hospital email and correspondent was sent to solicit participation from the point-of-care nursing staff. The plan was to have at least 75 percent of the point-of-care Registered Nurses (RNs) participation in this DNP project. The nurse leaders were instrumental in encouraging participation from the nursing staff. Prior to the initiation of this DNP project, approval will be obtained from Walden University Institutional Review Board (IRB) supervised by Walden's committee members.

The technique that was used to conduct the data collection process was performed in several steps. The clinical nurse educator emailed a letter to each of the point-of-care nurses appealing to them to participate in the DNP project initiative, accompany the emailed letter was an explanation as to how to complete the surveys and questionnaires and when to return the completed documents. The educational section of the DNP project took place for approximately one week, with a classroom presentation using PowerPoint and handouts was conducted twice a day. A poster copy of an enhancement to the visualization of the Braden Scale was created in collaboration with the facility medical media department. The Braden Scale teaching sheet did assist in providing the nursing staff with the knowledge through functional clarity of the vague patient descriptions so that the Braden Scale can be used appropriately to predict at-risk patients.

Results from the questionnaires in the form of pre-test data were obtained with post-test data to ascertain the impact of this DNP project on knowledge gained about the prevention of

HAPIs. The instrument that was used to help with the examination of the project by supplying direction to assist in establishing the facility's strengths and weaknesses was the Agency for Healthcare Research and Quality (AHRQ) Pieper Pressure Ulcer Knowledge pre-test and post-test (Mohamad et al., 2015). A reliable evaluation instrument, "can be more easily understood by identifying the testing methods of stability and consistency" (Mohamad et al., 2015, p. 165).

The surveys and questionnaires were entered into an Excel spreadsheet and, the Statistical Analysis System (SAS) for Windows version 10 was used to process the statistical analyses for this DNP Project. Quantitative and descriptive methods were used to analyze the data and obtained results. The pre-test and post-test were also used to analyzed and measure the outcomes of the educational intervention using SPSS 26.0 software.

The project did not pose any risk to any participants. No personal identifier and or demographics were used or collected for the questionnaires or interviews. Since the descriptions of patient characteristics in the Braden Scale provide the standard for recognizing the importance of at-risk patient, it is therefore essential that all nurses caring for patients in the SICU be able to appropriately interpret the patient status description on the Braden Scale (Braden and Bergstrom, 1988) to prevent and/or decrease the development of HAPIs. Participants were required to sign consent forms prior to participation and, the consent forms delineated participants' protections and ethical guidelines.

## Analysis and Synthesis

The Walden University Manual for Staff Education was used to guide this DNP project. In this project, the occurrence of HAPIs was measured to analyze the effectiveness of the project. In collaboration with the clinical nurse educator and the wound care nurse, the author did create a detailed report on the improvement of nurses' understanding of the interpretation of the

patients' risk descriptions on the Braden Scale. The use of the Braden Scale teaching sheet developed by the DNP student that uses pictures, provided clarity to the nurses to improve their prediction of patients' at risk of PIs, on the Braden Scale. A descriptive statistic was used to outline sample characteristics. A pre-test and post-test were administered to analyze the impact of the learned Braden Scale assessment tool. After the testing, a paired sample t-Test was used to evaluate the nurses' knowledge of the proper use of the Braden Scale to determine surgical patients' risk for developing HAPIs. Appropriate knowledge of the Braden Scale assessment tool was provided so that the participants could adequately score patients, to prevent and/ or decrease the development of HAPIs. The time frame for the implementation was 8 days.

## Summary

Section 3 outlined this DNP Project's rationale, identified the relevant evidence from the literature review to address the practice-focused question, emphasized the objective of using participants' survey and questionnaires to evaluate knowledge gap of healthcare providers and concluded why proper implementation of EBP prevention strategies could keep patients safe from developing HAPIs. Research reviewed documents that PI knowledge surveys of healthcare providers, can assist in identifying unachieved learning needs to help translate knowledge into practice (Ayello et al., 2017). Preventing HAPIs must be an essential part of nursing, which should be embedded in the daily routine care of nursing practice. Cox (2017) asserted that PI prevention strategies including educational programs, routine assessments of at-risk patients, and implementation of performance enhancement tools can improve the prevention of HAPIs. The enhanced Braden Scale teaching sheet aimed to be implemented as the result of this DNP project will provide the knowledge through functional clarity, of the vague patient descriptions so that this tool can be used properly to predict at-risk patients and prevent HAPIs. This DNP project

team was comprised of the DNP student, the DNP student's practicum preceptor, the nurse manager, the clinical nurse educator, a nurse executive from the DNP project site, and the wound care nurse. "Collaboration among healthcare teams can improve patient and staff outcomes" (Frumenti & Kurtz, 2014, p.31). The comprehensive literature review revealed evidence that was utilized to evaluate the appropriate use of the Braden Scale risk assessment tool used by the nursing staff in the acute care hospital that is selected for the DNP project site and, also assisted in answering the practice-focused question. Choi et al. (2014) asserted that, since the descriptions of the patient characteristics in the Braden Scale provide the measure for recognizing the severity of the patient risk, they must be clear to all users to prevent barriers to accuracy and consistency in assessing pressure injuries risk, with the Braden Scale. This section also examined this DNP project's motive and methodological strategy. Furthermore, the evaluation plan of this DNP project, ethical protections, outcomes, instrument, reliability, and timing were discussed.

Section 4: Findings and Recommendations

## Introduction

The local problem addressed by this DNP project was the ineffective use of the Braden Scale (Braden and Bergstrom, 1988) by the SICU nurses to identify at-risk surgical patients in the SICU which resulted in the failure to identify the patient at high risk, leaving them at risk for the development of HAPIs (Personal Communication, March 3, 2017). The inconsistencies and improper scoring among nurses using the Braden Scale tool (Appendix A), to predict pressure injuries risk factors in these surgical patients will further increase if the necessary interventions are not implemented. The lack of an educational program for nurses using the Braden Scale as a tool for the assessment and prediction of post-surgical at-risk patients was the cause of the inconsistencies and improper scoring among the SICU nurses. The gap in practice was determined to be the lack of education offered about the Braden Scale. The educational program was to foster appropriate use of the Braden Scale to properly identify and determine the patients at risk for the development of HAPIs and implement evidence-based practice (EBP) prevention strategies to keep these patients safe from developing HAPIs. According to the wound care nurse, E. Fraser, (Personal Communication, March 3, 2017) of the DNP project site, their hospital data report indicated an increase in annual HAPIs rate of 4% above the national benchmark rate of 3%. One of the primary steps in the prevention of HAPIs is to accurately identify the at-risk patients, by using a validated PI risk assessment tool such as the Braden Scale for PI score risk (Cox, 2017).

The practice-focused question was: Does staff knowledge of pressure injury prevention and proper use of the Braden scale increase following education using a teaching sheet with the addition of pictures to the standardized version of the Braden Scale in the educational program?

The purpose of this EBP project implementation was to improve the knowledge of the nurses by providing them with an education program coupled with, an enhancement to the visualization of the Braden Scale tool used by the nurses in the SICU of an urban acute care hospital in a Southern state, to identify critically ill patients that are at risk for developing HAPIs. As the results of the gap in practice identified by this DNP project, an educational program was developed so that the nurses can appropriately use the Braden Scale risk assessment tool to properly identify and determine the patients at risk for the development of HAPIs. The educational program was intended to improve the nurses' knowledge so that they can effectively use the Braden Scale tool to identify at-risk patients in the SICU. Section 4 comprises of discussion of the findings, the implications, and the strengths and limitations of the DNP project.

## Findings and Implications

This DNP project objective was to improve the knowledge of the nurses by providing them with an educational program coupled with, an enhancement to the visualization of the Braden Scale tool used by the nurses in the SICU of an acute care urban hospital. This DNP project was informed by EBP guidelines obtained from the AHRQ pressure injuries prediction and prevention recommendations, and the Walden University's Manual for Staff Education (Walden University, 2019).

A teaching sheet (Appendix B) developed by the DNP student with pictorial enhancement, using the same content of the Braden Scale tool to depict concepts under each area used to score the patient at-risk, was presented to the participants. The teaching sheet was developed to empower the nurses in the SICU, by increasing their understanding and prediction accuracy and providing them with the clarity and knowledge to effectively interpret the risk scales scores. The Braden Scale teaching sheet also served as a visual depiction to enhance the

nurses' ability to accurately interpret the at-risk patients' risk assessment scores. The teaching sheet was added as an effective means for the SICU nurses to better understand the Braden Scale tool and, more easily identify patients' risk classifications so that they could promptly implement the EBP knowledge of HAPIs preventative strategies.

The Pieper Pressure Ulcer Knowledge Test adopted from the Agency for Healthcare Research and Quality (AHRQ) Tool Kit for preventing pressure ulcers in hospitals, was also used in this DNP project. The Pieper Pressure Ulcer Knowledge Test is used to ascertain five classifications which included: (a) PI prevention, (b) the Braden Scale, (c) wound description, (d) PI staging, and (e) program education. Six test items were selected for analysis to answer the project-focused question about knowledge gained.

This DNP project consisted the analysis of data acquired from the distribution of a pre-test questionnaire on current knowledge of HAPI prevention (Appendix C) that was administered to the nurses. To determine the improvement in nurses' knowledge and understanding of the effective use of the Braden Scale tool to accurately assess patients' risk factors for PIs, a post-test questionnaire was administered to the participants (Appendix D). A PowerPoint presentation was also presented to the participants (Appendix E). Applying the guidelines from the AHRQ, an educational packet (Appendix F) including current EBP on HAPI prevention strategies was provided. The results from the pre and post-test evaluation were analyzed and calculated to determine the knowledge obtained from the educational program.

Of the 50 nurses in the SICU, 40 (80%) nurses participated and were administered the pre-test, and later provided with an education packet on prevention of PI in the SICU. Following the conclusion of the pre-test, 40 nurse participants attended the educational program presentation. The nurses at the educational program participated in an interactive learning

process, along with a question and answer session. The total time allotted for the educational program presentation was 30 minutes. After the educational session, the participants were given color-coded post-test, which they were permitted to complete within one week. Following their return, each participant's pre and post-test were matched up and included in the final analysis of the data set to compare and establish any change in knowledge. Data analyzed using three items for knowledge gained on pressure injury prevention and three items for knowledge gained on using the Braden scale from the Pieper Test are described.

**Nurses' Knowledge on Pressure Injury Prevention**

The following results showed responses to three PI prevention-related questions to ascertain nurses' knowledge of PI prevention and reveal a substantial improvement in nurses' knowledge of PI prevention. Preceding the education program, only 23 nurses (57.5%) exhibited knowledge regarding devices used to help prevent PIs, in comparison to 35 nurses (87.5%) on the post-test; hence there was an increase of 30%. The second question regarding care given to prevent and/or treat PI and document revealed that 25 (62.5%) of the participants specified that this process was essential on the pre-test , in comparison to 36 (90%) of participants on the post-test, which indicate a 27.5% improvement in knowledge. The third question regarding patients' risk assessment for PI development on admission to the hospital revealed that 28 (70%) of the participants displayed knowledge pre-test, in comparison to 38 (95%) on post-test, thus indicated a 25% increase. All three cases in the data demonstrated that there was a substantial improvement in the nurses' knowledge after the education program. The implications of Table one shows the comparison of SICU nurses' knowledge of PI Prevention.

Table 1

*Comparison of SICU Nurses' Knowledge on Pressure Injury Prevention (*N = *40)*

| | Pretest Day 1 *n* (%) | Posttest Day 8 *n* (%) | Percent change |
|---|---|---|---|
| Donut devices/ring cushions help to prevent pressure injuries | 23 (57%) | 35 (87.5%) | 30.0% |
| All care given to prevent or treat PI must be documented | 25 (62.5%) | 36(90%) | 27.5% |
| All individuals should be assessed on admission to a hospital for risk of PI development | 28 (70%) | 38 (95%) | 25.0% |
| *M* | 25.3 (63.2%) | 36.3 (90.8%) | 27.5% |

**Nurses' Knowledge on Braden Scale Tool**

Three questions assessed the nurses' knowledge of the Braden Scale tool. The three questions were in relation to low Braden Scale scores, risk factors for HAPI development, and skin exposure to moisture. The participants' responses to the first question revealed that 21 (52.5%) of them concurred that a low Braden score is associated with an increased PI risk. The post-test results revealed that 35 (87.5%) of the participants concurred that the increased risk of PIs is influenced by a low Braden score. On the second question, 26 (65%) of the participants had some knowledge about the risk factors for the development of PIs which include immobility, incontinence, impaired nutrition, and altered level of consciousness. When the post-test was administered, 38 (95%) of the participants could identify the risk factors for patients in the development of PIs. The result showed that there was a substantial improvement in the nurses' knowledge of identifying patients' risk factors for PIs. In the third question, 22 (55%)

participants concurred that to minimize the skin's exposure to moisture on incontinence, under pads should be used. In the post-test results, 36 (90%) of the participants concurred that under pads should be used to absorb moisture to minimize the patients' skin exposure. The outcome of question 3 indicated a 35% change in knowledge improvement after the educational program. Comparison of SICU nurses' knowledge of the Braden Scale tool are displayed in Table 2.

Table 2

*Comparison of SICU Nurses' Knowledge on Braden Scale Tool* (N = *40)*

| | Pretest Day 1 *n* (%) | Posttest Day 8 *n* (%) | Percent change |
|---|---|---|---|
| A low Braden Score is associated with increased pressure injury risk | 21 (52.5%) | 35 (87.5%) | 35.0% |
| Risk factors in development of PI are immobility, incontinence, impaired nutrition, and altered level of consciousness | 26 (65.0%) | 38 (95.0%) | 30.0% |
| To minimize the skin's exposure to moisture on incontinence, underpads, should be used to absorb moisture | 22 (55%) | 36 (90%) | 35.0% |
| *M* | 23 (57.5%) | 35.3 (90.8%) | 33.3% |

## Project Implications

The findings of this DNP project has the potential to improve the nurses' knowledge on strategies for the prevention of HAPIs, and appropriately identifying patients at risk for the development of HAPIs, by more effectively using the Braden Scale risk assessment tool in the SICU. The findings displayed illustrate an improvement in the SICU nurses' knowledge of HAPIs prevention, the Braden Scale, and the educational program. The post-test results revealed that with education, the SICU nurses' breadth of knowledge on HAPIs prevention was improved. The nurses' accurate identification of at-risk patients can also be accomplished using a validated PI risk assessment tool such as the Braden Scale tool. When the nurses fully understand the PI prevention pathway and the metric of the Braden Scale tool, their patient care outcomes will improve. The educational program firmly established that with knowledge improvement, nurses can be able to accurately perform patients' risk assessment and identify at-risk patients thereby

preventing HAPIs development. The effectiveness of an education program will produce knowledgeable nurses, and hence resulting in optimal patient care outcomes. Being able to understand the SICU nurses' limitations on HAPIs prevention strategies, can provide an opportunity to develop an educational program that is tailored specifically to the SICU nurses learning needs. A better understanding of the predictive ability of the Braden Scale tool for PIs risk in the ICU is made using a comprehensive literature review focusing on the predictive value of the total Braden Scale tool, and the individual patient's score in deciding PIs risk in the critical care patients (Cox, 2017). According to Qalawa and El-Ata (2016), the factor that has impacted the predictive validity of the Braden Scale is the timing, therefore the Braden Scale score obtained on a patient's admission is crucial from a clinical perspective because it allows rapid identification of risk and early implementation of HAPIs prevention strategies.

The National Pressure Ulcer Advisory Panel (NPUAP) and the European Pressure Ulcer Advisory Panel [EPUAP] (2014) asserted that validated improvement attempts directed at the identification of at-risk patients with the Braden Scale tool, and other early prevention strategies have a crucial impact on reducing HAPIs. The NPUAP, EPUAP and the Pan Pacific Pressure Injury Alliance (PPPIA) collaborated to develop an evidence-based guideline which asserted that risk factors and risk assessment are vital ingredients of nursing clinical practice that aimed to identify patients that are at-risk for HAPIs in order that timely interventions to prevent PIs occurrence can be implemented (NPUAP & EPUAP, 2014).

According to Padula et al. (2019), prevention of HAPIs begins with patients' risk assessment using a tool such as the Braden Scale, which is recommended in NPUAP and EPUAP International Guidelines. By identifying and predicting patients at-risk before initiating prevention strategies, hospitals can target high-risk patients and steer clear of unnecessary cost

on prevention strategies for patients at low risk for developing HAPIs. Effective PIs prevention programs are shaped by national and international guidelines that consist of risk assessment, skin assessment, nourishment, repositioning, barrier creams, accurate monitoring and documentation pressure redistributing devices, and education and training for nursing staff (Spruce, 2017).

Reducing avoidable injuries such as HAPIs development, can have a positive impact and outcomes on patients' health, quality of life, length of stay in healthcare facilities, and promote cost-effective patient safety and quality care. Education will also improve the nursing staff's knowledge, attitudes, and reinforce their standardized nursing competency on HAPIs, hence providing them with a theoretical understanding of the detailed process of PIs development. Creating opportunities for nursing staff to consistently perform effective measures in the prevention of HAPIs is essential in ensuring high-quality care, with optimal patient outcomes. Education will also improve the nursing staff's knowledge, attitudes, and reinforce their standardized nursing competency on HAPIs, hence providing them with a theoretical understanding of the detailed process of PIs development. This DNP project will positively influence social change by improving the nurses' knowledge of PIs prevention, thereby reducing the development of HAPIs. Creating opportunities for nursing staff to consistently perform effective measures in the prevention of HAPIs is essential for ensuring high-quality care, patient safety, and reducing financial problems on patients, their families, and healthcare systems

## Recommendations

This DNP project was conducted to address the gap in practice, which was the lack of an educational program for nurses using the Braden Scale as a tool for the assessment and prediction of post-surgical at-risk patients in the SICU. The findings from the post-test summative evaluation data indicated that the educational program was effective in improving the

nurses' knowledge of appropriately using the Braden Scale tool to predict at-risk patients and prevent HAPIs. The findings from the post-test suggest that educational programs may improve knowledge, thereby potentially leading to a decrease in the occurrence of HAPIs, with improved PI risk assessment resulting in optimal patient care and outcomes. The overarching of this DNP project was to improve the knowledge of the nurses by providing them with an education program coupled with, an enhancement to the visualization of the Braden Scale tool. The educational process provided the nurses with the knowledge through functional clarity of the vague patient descriptions so that the Braden Scale was used appropriately to predict at-risk patients and prevent HAPIs.

It was recommended that all newly hired nurses in the SICU have the educational program training on the effective use of the Braden Scale tool, to prevent the inconsistencies and improper scoring among nursing using the tool. The summative evaluation from this DNP project provided information to the stakeholders that can assist in the development of the organization-specific implementations that will improve their prevention strategies of HAPIs. According to Creehan et al. (2019), leadership involvement in addressing and reducing hospital-acquired conditions (HAC) is demonstrative of an organization's commitment to becoming a high-reliability organization (HRO). Using the Braden Scale teaching sheet with pictorial depictive representation under each area used to score the patients' risk, can enhance the SICU nurses' ability to accurately interpret the at-risk patients' risk assessment scores. Hospitals' leadership might consider including pictorial depictions of patients' risk to use in conjunction with the Braden Scale tool for nurses to reference (see Appendix B), to assist in accurate identification of patients' risk factors. Cox (2017) asserted that modifying the current Braden Scale tool may assist in accurately recognizing critical care patients who are at a notable risk of

HAPI development. Further testing of the effectiveness of this added teaching tool with visual cues is needed to lend support to the findings of this project.

## Strengths and Limitations of the Project

The strength of this DNP project was the use of a validated and reliable tool to evaluate the nurses' knowledge for predicting PIs risk assessment. The summative evaluation demonstrated that the educational program did improve the nurses' knowledge of the proper use of the Braden Scale assessment tool to adequately score patients, to prevent and/ or decrease the development of HAPIs. Subsequently, this educational program will be used routinely for all newly hired nurses to ensure all the nurses are skilled and knowledgeable inappropriately using the Braden Scale tool to properly identify and determine the patients at risk for the development of HAPIs. Another strength was the involvement of key stakeholders. Stakeholders' engagement and support made the educational program a successful outcome. Padula et al. (2019) asserted that the connection between successful HAPIs prevention and leadership support and engagement is confirmed in the literature through evidence-based research.

The limitations of this DNP project include a short timeframe, a small sample size, and the educational program participants were only from one unit of the hospital. A longer timeframe would be needed to produce much more conclusive results. Larger sample size would have provided more data on nursing staff in other nursing units and a much better indicator of success or failure. The data from the summative evaluation, however, was a valid indicator that the educational program was effective and successful. Recommendations for future projects will include a longer timeframe for the implementation process and a larger sample size will give more definitive statistical analysis data. Section 5 will describe the dissemination plan of this DNP project.

## Section 5: Dissemination Plan

The findings of this DNP project are essential to nursing practice and will facilitate better care for the patients at risk of HAPIs at the DNP project site. The purpose of this DNP project was to improve the knowledge of the nurses by providing them with an education program coupled with, an enhancement to the visualization of the Braden Scale tool used by nurses in the SICU to identify patients that are at-risk for the developing HAPIs. The development of a Braden Scale teaching sheet with pictorial enhancement was intended for educational purposes, to provide the nurses with real-time visualization of the Braden Scale, and functional clarity of the Braden Scale tool. The plan was to disseminate my DNP project findings and share the outcomes with the DNP project site clinical leadership team, and the SICU nursing staff.

The dissemination of this DNP project was essential to the practice of nursing and will contribute to the patient population, and nursing staff at the organization. The results of this DNP findings were presented to the organization's clinical leadership team to prompt clinical practice decisions and create positive change in improving the way nursing care is delivered. According to Curtis et al. (2016), translating research evidence to clinical practice is significant for safe, cost-effectiveness, and efficient healthcare provision that meets the expectations of patients, families, and society. The healthcare facility also plans to disseminate the results of this DNP project internally with the healthcare organization, externally through publications, and locally with my hospital through an ongoing continual educational section in the SICU.

This DNP project reinforced the reality that educating the nursing staff will improve their knowledge and confirmed the effectiveness of nursing staff response to the educational program. The educational program development produced information on a new approach to enhance the quality of care, patient safety, and nursing practice. Initially, SICU nurses are the intended

audience, and the ICU is the planned venue to share this DNP project's results. The findings of this DNP project were disseminated to the clinical nurse educator, WCON, Nurse manager, and other stakeholders of the organization during a scheduled meeting after the educational program was completed. The results were presented using the descriptive data analysis obtained from the summative evaluation. The stakeholders' support was essential for sustaining and guiding improvement initiatives to engage the nursing staff (Creehan et al., 2019). I also plan to share the findings with my healthcare facility through ongoing education in the SICU and, critical care unit skills fair in the hospital for enhancing the knowledge of the bedside nurses.

## Analysis of Self

This DNP project has provided me with the opportunity to serve in the roles of a practitioner, a scholar, and a project manager. As a practitioner, I was able to contribute to promoting positive patient outcomes through educating the nurses on how to appropriately use the Braden Scale tool, to properly identify at-risk patients and prevent the development of HAPIs.

As a scholar, I was able to conduct evidence-based research, and translate them into clinical practice. Implementing effective interventions to prevent or reduce HAPIs is essential for the achievement of positive change in nursing practice, and optimal patients' outcomes. Curtis et al. (2016) asserted that knowledge and evidence obtained from scholarly methods should guide clinical practice, decisions, and transformations to improve the way we deliver care.

A project manager role allowed me to use advanced clinical judgment skillset to initiate an educational program, after identifying a gap in clinical practice. My experience with the interactions between the nursing staff and other stakeholders of my DNP project site provided

me with the opportunities to coordinate a project while building a collaborative relationship with interdisciplinary professionals.

The completion of this DNP project did have some challenges. Due to the COVID-19 pandemic, I had to extend the timeframe of my data collection process, since meetings with the participants and stakeholders were rescheduled on several occasions. I am grateful to the nursing staff and stakeholders at my DNP project site for accommodating me during this pandemic and, granting me the opportunity to complete my project at their facility. This journey of my DNP project has granted me the ability to conduct research and translate them into clinical practice. I now have the insight into understanding that, the success of any research implementation in healthcare requires clinical behavior change and stakeholder engagement.

## Summary

In summary, HAPIs continue to be a healthcare concern, especially in the acute-care setting. Prevention of HAPIs with surgical patients in the SICU requires nursing staff to effectively perform evidence-based risk assessment measures, to appropriately identify patients at risk for developing HAPIs. Providing educational programs, best practice for PI prevention validated risk assessment, and evidence-based practice guideline tools for PI can contribute to positive change in nurses' knowledge and practice. Educating the nursing staff to appropriately use the Braden Scale tool to properly identify at-risk patients is one of the first steps in preventing HAPIs. The NPAUP/EPUAP Guidelines for the prevention of HAPIs advocates that prevention of HAPIs starts with patient risk assessment using the Braden Scale (Padula et al., 2019). This DNP project addressed the lack of education offered about the Braden Scale, to foster appropriate use to properly identify and determine patients at risk for the development of HAPIs. The outcome from this DNP project encourages educating nurses on the proper use of

the Braden Scale risk assessment tool, to improve knowledge which results in optimal patient care outcomes, positive change in practice, to ensure a positive social change.

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# Appendix A: Braden Scale Risk Assessment Tool

## BRADEN SCALE – For Predicting Pressure Sore Risk

**SEVERE RISK**: Total score ≤ 9 **HIGH RISK**: Total score 10-12
**MODERATE RISK**: Total score 13-14 **MILD RISK**: Total score 15-18

| RISK FACTOR | SCORE/DESCRIPTION | | | | DATE OF ASSESS ➡ 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|
| **SENSORY PERCEPTION** Ability to respond meaningfully to pressure-related discomfort | **1. COMPLETELY LIMITED** – Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation, **OR** limited ability to feel pain over most of body surface. | **2. VERY LIMITED** – Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness, **OR** has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body. | **3. SLIGHTLY LIMITED** – Responds to verbal commands but cannot always communicate discomfort or need to be turned, **OR** has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities. | 4. **NO IMPAIRMENT** – Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort. | | | | |
| **MOISTURE** Degree to which skin is exposed to moisture | 1. **CONSTANTLY MOIST**– Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned. | 2. **OFTEN MOIST** – Skin is often but not always moist. Linen must be changed at least once a shift. | 3. **OCCASIONALLY MOIST** – Skin is occasionally moist, requiring an extra linen change approximately once a day. | 4. **RARELY MOIST** – Skin is usually dry; linen only requires changing at routine intervals. | | | | |
| **ACTIVITY** Degree of physical activity | 1. **BEDFAST** – Confined to bed. | 2. **CHAIRFAST** – Ability to walk severely limited or nonexistent. Cannot bear own weight and/or must be assisted into chair or wheelchair. | 3. **WALKS OCCASIONALLY** – Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair. | 4. **WALKS FREQUENTLY**– Walks outside the room at least twice a day and inside room at least once every 2 hours during waking hours. | | | | |
| **MOBILITY** Ability to change and control body position | 1. **COMPLETELY IMMOBILE** – Does not make even slight changes in body or extremity position without assistance. | 2. **VERY LIMITED** – Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently. | 3. **SLIGHTLY LIMITED** – Makes frequent though slight changes in body or extremity position independently. | 4. **NO LIMITATIONS** – Makes major and frequent changes in position without assistance. | | | | |
| **NUTRITION** Usual food intake pattern<br>[1]NPO: Nothing by mouth.<br>[2]IV: Intravenously.<br>[3]TPN: Total parenteral nutrition. | **1. VERY POOR** – Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement, **OR** is NPO[1] and/or maintained on clear liquids or IV[2] for more than 5 days. | **2. PROBABLY INADEQUATE** – Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement **OR** receives less than optimum amount of liquid diet or tube feeding. | **3. ADEQUATE** – Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally refuses a meal, but will usually take a supplement if offered, **OR** is on a tube feeding or TPN[3] regimen, which probably meets most of nutritional needs. | 4. **EXCELLENT** – Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation. | | | | |
| **FRICTION AND SHEAR** | 1. **PROBLEM**- Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures, or agitation leads to almost constant friction. | 2. **POTENTIAL PROBLEM**– Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against sheets, chair, restraints, or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down. | 3. **NO APPARENT PROBLEM** – Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times. | | | | | |
| **TOTAL SCORE** | **Total score of 12 or less represents HIGH RISK** | | | | | | | |

| ASSESS | DATE | EVALUATOR SIGNATURE/TITLE | ASSESS. | DATE | EVALUATOR SIGNATURE/TITLE |
|---|---|---|---|---|---|
| 1 | / / | | 3 | / / | |
| 2 | / / | | 4 | / / | |

| NAME-Last First Middle | Attending Physician | Record No. | Room/Bed |
|---|---|---|---|
| | | | |

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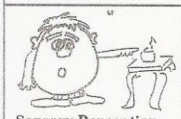
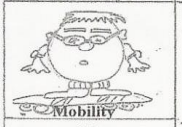
**BRADEN SCALE**

Appendix B: Braden Scale Teaching Sheet Developed by DNP Student

# Braden Pressure Ulcer Risk Assessment: Act To Prevent Pressure Injuries A Teaching Sheet

| Picture Clues | 4 | 3 | 2 | 1 | ☐ |
|---|---|---|---|---|---|
|  Sensory Perception | **NO IMPAIRMENT** Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort. | **SLIGHTLY LIMITED** Responds to verbal commands but cannot always communicate discomfort or ask to be moved or turned OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities. | **VERY LIMITED** Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body. | **COMPLETELY LIMITED** Unresponsive (does not moan, flinch, or grasp) to painful stimuli due to diminished level of consciousness or sedation OR limited ability to feel pain over most of body surface. | ☐ |
|  Moisture | **RARELY MOIST** Skin is usually dry; linen only requires changing at routine intervals. | **OCCASIONALLY MOIST** Skin is occasionally moist, requiring an extra linen change approximately once a day. | **OFTEN MOIST** Skin is often but not always moist. Linen must be changed at least once a shift. | **CONSTANTLY MOIST** Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned. | ☐ |
|  Activity | **WALKS FREQUENTLY** Walks outside the room at least twice a day and inside room at least once every 2 hours during walking hours. | **WALKS OCCASIONALLY** Walks occasionally during day but for very short distances, with or without assistance. Spends majority of each shift in bed or chair. | **CHAIRFAST** Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair. | **BEDFAST** Confined to bed. | ☐ |
|  Mobility | **NO LIMITATIONS** Makes major and frequent changes in position without assistance. | **SLIGHTLY LIMITED** Makes frequent though slight changes in body or extremity position independently. | **VERY LIMITED** Makes occasional slight changes in body extremity position but unable to make frequent or significant changes independently. | **COMPLETELY IMMOBILE** Does not make even slight changes in body or extremity position without assistance. | ☐ |
|  Nutrition | **EXCELLENT** Eats most of every meal. Never refuses a meal. Usually ears a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation. | **ADEQUATE** Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally will refuse a meal, but will usually take a supplement if offered, OR is on a tube feeding or TPN regimen, which probably meets most of nutritional needs. | **PROBABLY INADEQUATE** Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings or meat or dairy products per day. Occasionally will take a dietary supplement, OR receives less than optimum amount if liquid diet or tube feeding. | **VERY POOR** Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement, OR is NPO and/or maintained on clear liquids or IV for more than 5 days. | ☐ |
|  Friction & Shear | | **NO APPARENT PROBLEM** Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during more. Maintains good position in bed or chair at all times. | **POTENTIAL PROBLEM** Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against sheets, chair, restraints, or other devices. Maintains relatively good position in chair or most of the time but occasionally slides down. | **PROBLEM** Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures, or agitation leads to almost constant friction. | ☐ |

| | | | | | | | | | | | | | | | | | | Total Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Risk Scale** | NONE | | | | | MILD | | | | MODERATE | | HIGH | | | SEVERE | | | |
| | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 |

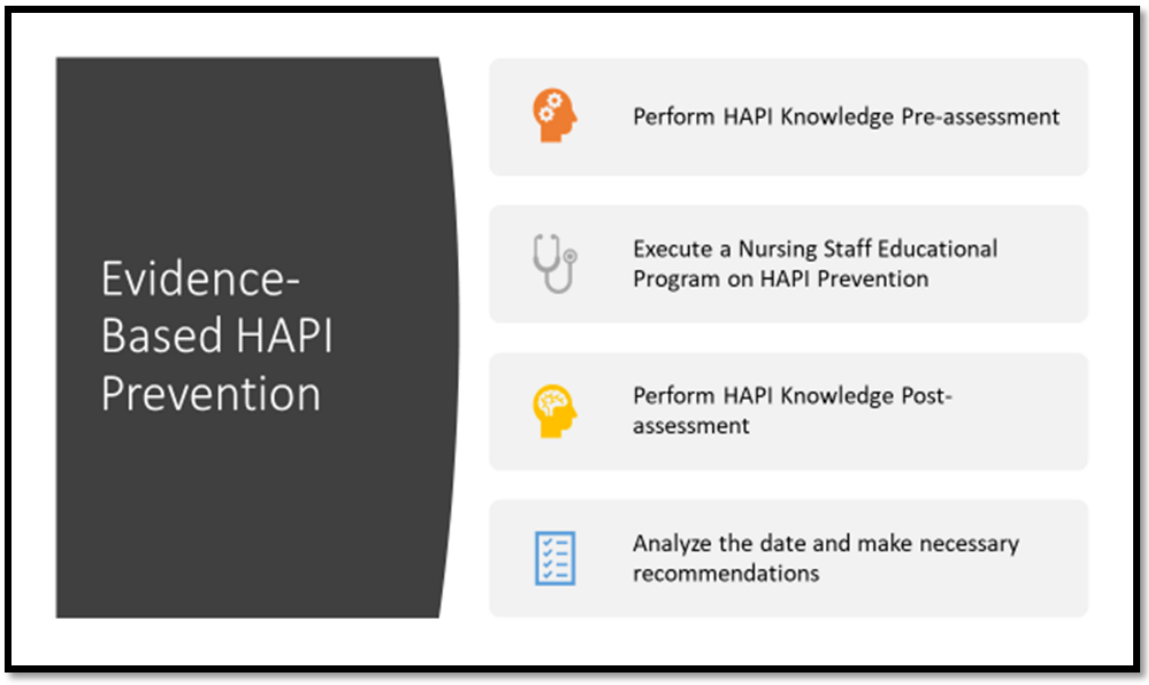
| | | | |
|---|---|---|---|
| **Equipment** | No additional pressure support required. | High specification foam mattress or static air overlay. Consider cushion for chair. Bed cradle | Dynamic air overlay, Dynamic air cushion Dynamic mattress Replacement or Low Air Loss |
| **Practice** | • Educate: • Weight-shifting, skin inspection • Evaluate on change of condition • Encourage Independence | • Reposition: Weight-shifting, skin inspection • Promote Activity • Manage individual risk factors: nutrition; shear; friction; continence • Educate • Evaluate on change of condition | ALL PLUS • Supplement with small positional shifts • Seating/posture assessment • Nutritional assessment • Educate • Evaluate on change of condition |

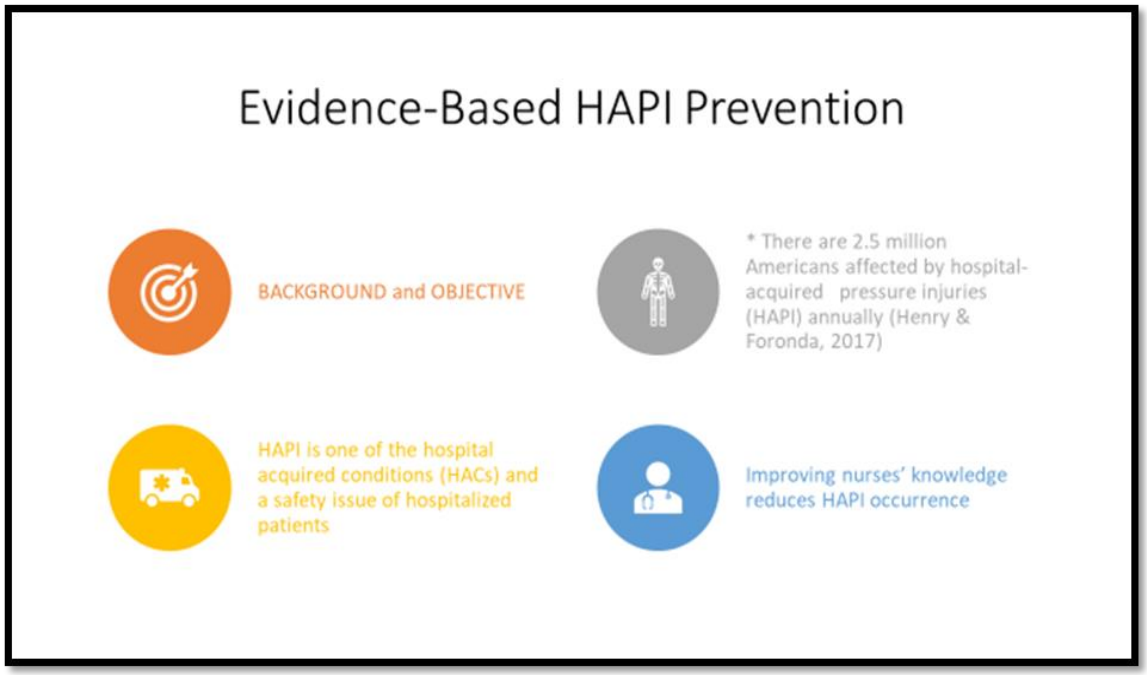
Appendix C: Pieper Pressure Ulcer Knowledge Test

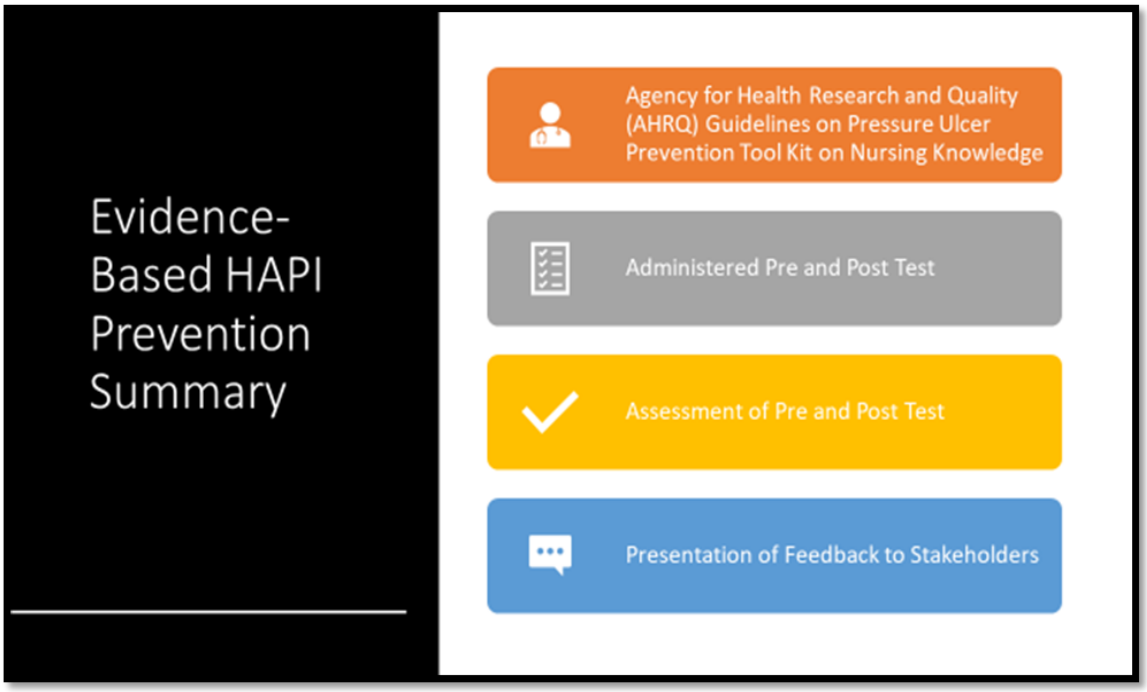
| | True | False | Answer Key |
|---|---|---|---|
| **Knowledge of pressure injury prevention** | | | |
| Donut devices/ring cushions help to prevent pressure injuries | | | False |
| All care given to prevent or treat PI must be documented | | | True |
| All individuals should be assessed on admission to a hospital for risk of PI development | | | True |
| **Knowledge on Braden Scale Tool** | | | |
| A low Braden score is associated with increased pressure injury risk | | | True |
| Risk factors in development of PI are immobility, incontinence, impaired nutrition, and altered level of consciousness | | | True |
| To minimize the skin's exposure to moisture on incontinence, under pads, should be used to absorb moisture | | | True |

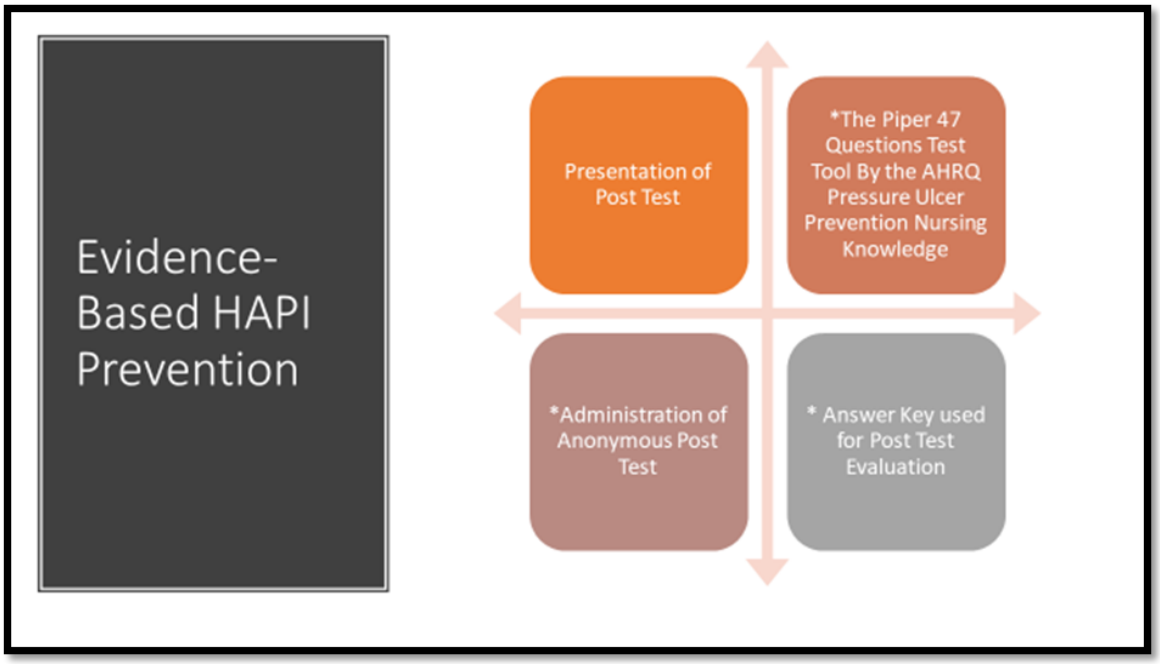
*Note.* Adapted from Pieper Pressure Ulcer Knowledge Test, Section 7. Tools and Resources – Agency for Healthcare Research and Quality. Retrieved from: https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/systems/hospital/pressureulcertoolkit/putoolssect7.pdf

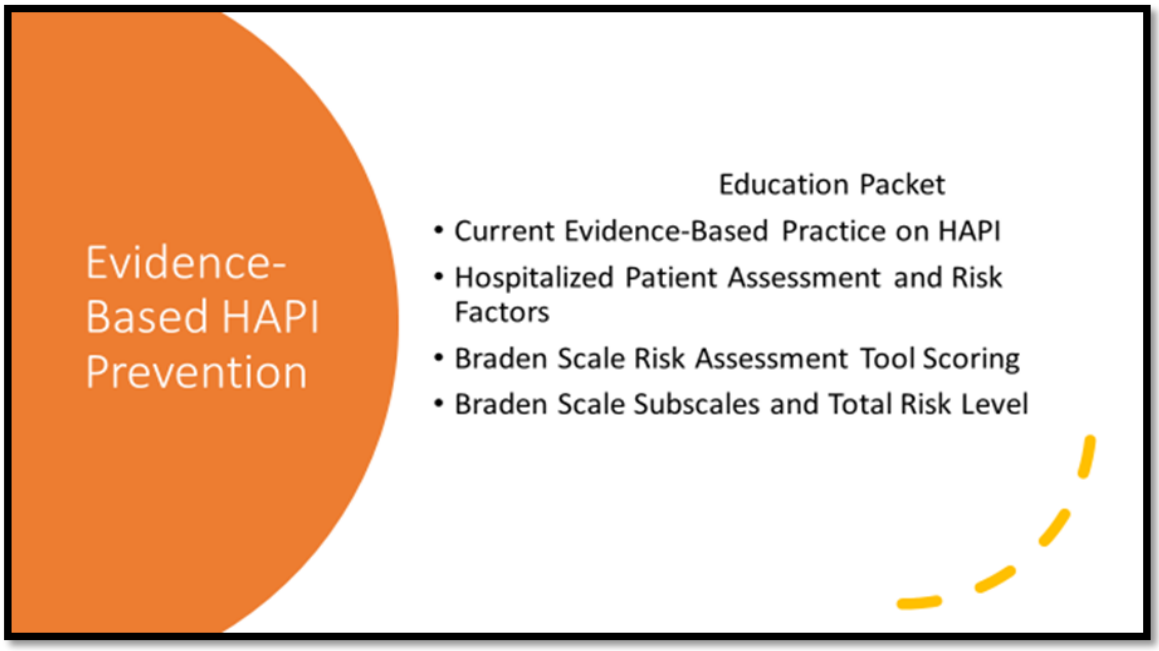
Appendix D: PowerPoint Presentation for Stakeholders

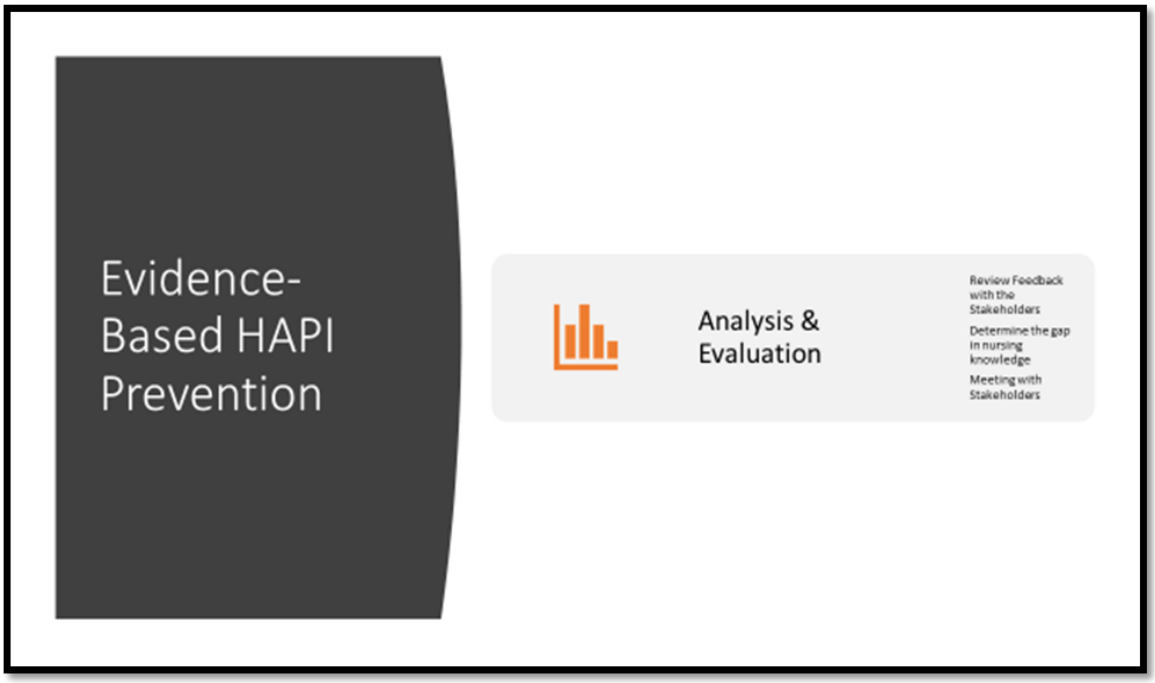



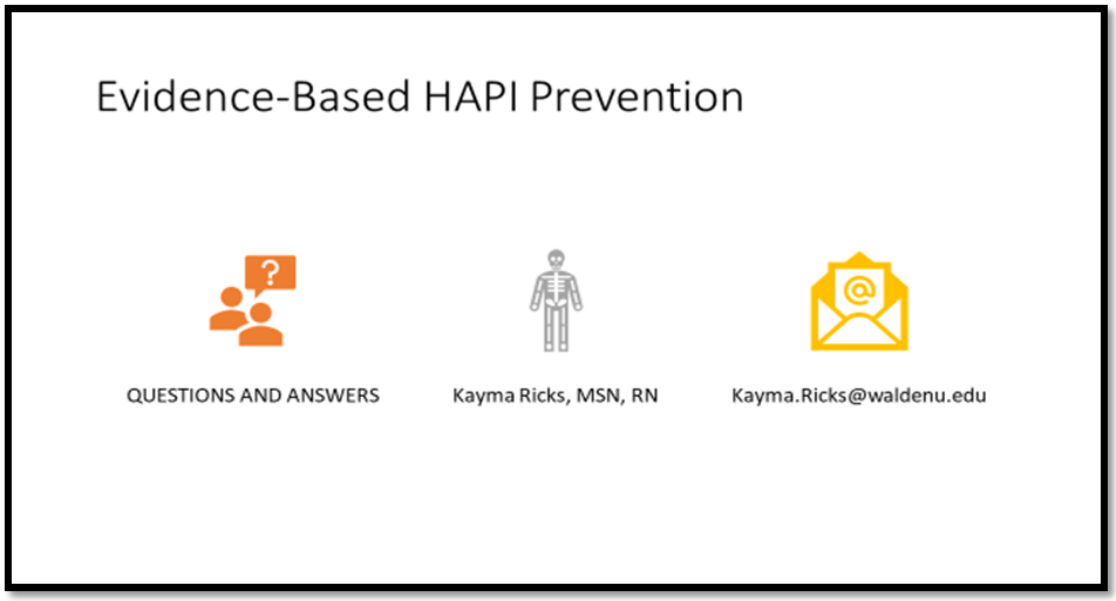

Evidence-Based HAPI Prevention
BACKGROUND and OBJECTIVE
* There are 2.5 million Americans affected by hospital-acquired pressure injuries (HAPI) annually (Henry & Foronda, 2017)
HAPI is one of the hospital acquired conditions (HACs) and a safety issue of hospitalized patients
Improving nurses' knowledge reduces HAPI occurrence


Evidence-Based HAPI Prevention Summary
Agency for Health Research and Quality (AHRQ) Guidelines on Pressure Ulcer Prevention Tool Kit on Nursing Knowledge
Administered Pre and Post Test
Assessment of Pre and Post Test
Presentation of Feedback to Stakeholders


Evidence-Based HAPI Prevention
Presentation of Post Test
*The Piper 47 Questions Test Tool By the AHRQ Pressure Ulcer Prevention Nursing Knowledge
*Administration of Anonymous Post Test
* Answer Key used for Post Test Evaluation


Evidence-Based HAPI Prevention
Education Packet
• Current Evidence-Based Practice on HAPI
• Hospitalized Patient Assessment and Risk Factors
• Braden Scale Risk Assessment Tool Scoring
• Braden Scale Subscales and Total Risk Level


Evidence-Based HAPI Prevention
Analysis & Evaluation
Review Feedback with the Stakeholders
Determine the gap in nursing knowledge
Meeting with Stakeholders


Evidence-Based HAPI Prevention
QUESTIONS AND ANSWERS
Kayma Ricks, MSN, RN
Kayma.Ricks@waldenu.edu

Appendix F: Educational Packet for Participants

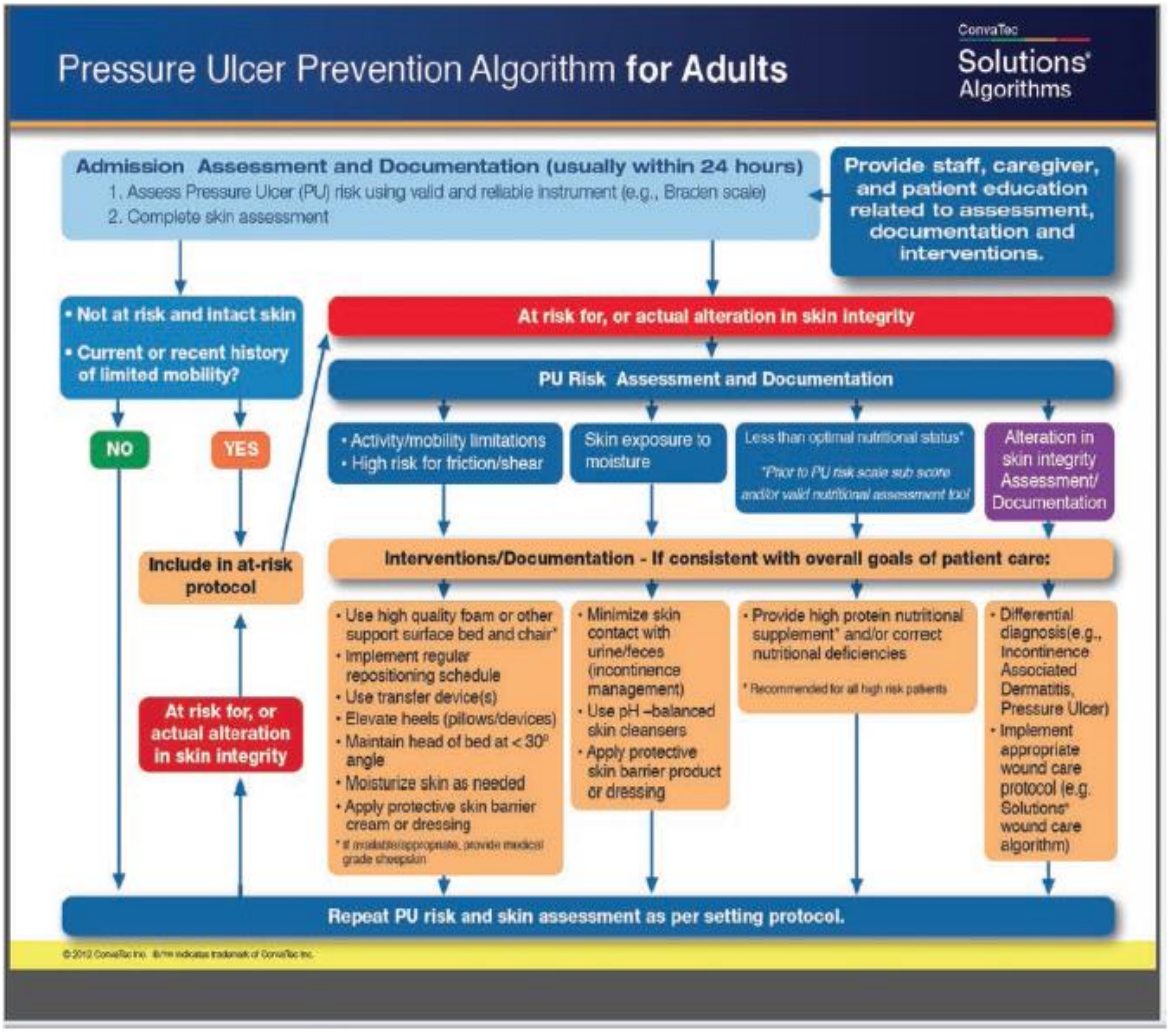



**Figure 1. The pressure ulcer algorithm.**

Retrieved from https://www.o-wm.com/article/creating-pressure-ulcer-prevention-algorithm