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# Early Prevention of Pressure Ulcers in the Emergency Department

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Submitted in partial fulfillment of the Requirements for the degree of

Doctor of Nursing Practice

Seton Hall University

2015

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## Dedication

This dedication is to my beloved husband, Reverend Michael Jolly, who unfortunately did not have a chance to see me complete this journey. He was the most supportive man I have ever met. He always encouraged me to follow my dreams, wherever they may take me. He will be forever missed.

To my children, Sarah Marie Jolly and Patrick Kenneth Jolly, who are the light of my life. To my grandchildren Caleb Michael Jolly Hatton and Madelyn Elise Jolly O’Kean, who have brought me nothing but joy and happiness.

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## Abstract

**Purpose:** Pressure ulcers characterize a major health problem in clinical practice, which in turn, can have an impact on quality of life and health care costs (Dugaret, Videau, Faure, Gabinski, Bourdel-Marchasson & Salles, 2012). Pressure ulcers can develop during treatment regardless of the setting. They develop in long term facilities, family homes and hospitals. The purpose of this DNP project was to ensure patient health and safety by educating the primary emergency room nurses to at-risk individuals presenting to the Emergency Department and to initiate early intervention strategies.

**Significance of the Project:** Until recently, there has been very little literature written on the prevalence and incidence rates of pressure ulcers in the Emergency Department (Dugaret, et al., 2012). This project will significantly impact an area of nursing, pressure ulcer prevention, considered a major nurse-sensitive outcome. Therefore, nursing care has a major effect on pressure ulcer development and prevention (Lyder & Ayello, 2008). The most important educational tool is to teach nurses and technicians how to recognize at-risk individuals and when to begin interventions so that they are early and effective.

**Methods:** The project was implemented in a 50 bed Emergency Department. The project encompassed three separate goals. The first goal was to have the Braden Scale for Predicting Pressure Ulcer Score Risk added to the Initial Emergency Room Documentation forms. The second goal was to evaluate and then educate the emergency room nurses on the ability to recognize at-risk individuals for pressure ulcers and the interventions needed to prevent pressure ulcers. This goal was completed during a series of steps. First the nurses were given a pre-test to evaluate their knowledge on pressure ulcers. After the pre-test was completed and evaluated for learning needs, an educational



learning presentation was given to the same nurses that had taken the pre-test. After the educational presentation a post-test was given and used to compare the nurses' pre-test knowledge to the post-educational presentation knowledge. The purpose was to assess retention from the educational presentation and to determine if there were any new learning needs. The third goal of this project was completed concurrently with the above objectives. This final goal was to develop a Pressure Ulcer Screening Tool that was to be completed by the triage or charge/rescue squad nurse. After completion it was given to the primary emergency room nurse to alert them that an at-risk individual was entering their room and interventions needed to be implemented.

**Project Outcomes:** The response from all involved was positive. The nurses mentioned that as long as it wasn't a life threatening event, they thought about a patient's skin, undressed them completely, completed the Braden Scale assessment tool and started interventions when appropriate. The manager, assistant managers and educator also noticed more patients were being completely undressed; mattress overlays were being used on regular emergency room stretchers when pressure redistribution mattresses were not available and the pressure ulcer checklist was given to the primary emergency room nurse to alert that this was an at-risk individual.

**Clinical Significance:** Pressure ulcer prevention and treatment should start as early in the hospitalization process as possible. For many patients that means the Emergency Department. The awareness of risk factors, such as age, co-morbidities, nutritionally challenged individuals, limited mobility or immobility of patients is important for nurses to know and understand. The early prevention of pressure ulcers reduces pain, lengths of stay and complications for patients.

## SECTION 1

## BACKGROUND

A pressure ulcer is described by the Agency for Healthcare Research and Quality as “an injury usually caused by unrelieved pressure that damages the skin and underlying tissue” (2011). Pressure ulcers characterize a major health problem in clinical practice, which in turn, can have an impact on quality of life and health care costs (Dugaret, Videau, Faure, Gabinski, Bourdel-Marchasson & Salles, 2012). According to the Prevention and Treatment of Pressure Ulcers: Clinical Practice Guidelines; “Pressure Ulcers increase hospital costs significantly” (Perry, Borchert, Burke, Chick, Johnson, Kraft, Patel, & Thompson, Updated January, 2012). Pressure ulcers characterize a major health problem in clinical practice, which in turn, can have an impact on quality of life and health care costs (Dugaret, Videau, Faure, Gabinski, Bourdel-Marchasson & Salles, 2012). Pressure ulcers can take place in any setting such as long term care facilities, family homes and hospitals. Until recently, there has been very little literature written about the prevalence and incidence rates of pressure ulcers in Emergency Departments (Dugaret, et al., 2012). Recently, the Emergency Department’s practice of holding admitted patients for longer periods of time has increased. This has caused the pressure ulcer issue to move to the forefront of health care workers concerns because holding patients for longer periods of time causes more pressure ulcers. More pressure ulcers then result in increased requests for reimbursement funds, raised concern over patient health and safety, and longer hospital stays. The personal and financial costs of pressure ulcers requires health care administrators to institute procedures on how to correctly recognize at-risk individuals as they present themselves to the Emergency Department.

The entry point for many at-risk individuals is the Emergency Department. It is here the skin assessment must be completed and the evaluation of any risk factors begun. This is where the focus is on the prevention of pressure ulcers, not the treatment of the actual developed pressure ulcer. There are several reasons for pressure ulcers to occur: lack of appetite or malnutrition, immobility, inactivity or unconsciousness. A healthy person will unconsciously change position if pressure occurs on the body. If the ability to change position is impaired, the pressure leads to a decrease in blood flow to the area, which results in lack of oxygen and nourishment to the skin. If the decrease in oxygen and nourishment is prolonged a pressure ulcer may occur.

According to Spahn (2006); “a pressure ulcer and or deep tissue injury can develop in as little as two hours, but not be recognized for two to seven days (p.4). The “boarding” or holding of patients until an inpatient bed in the hospital is available can take as short a time as an hour to 24-48 hours. Often patients are left on narrow stretchers with three inch mattresses which can and does compromise a patient’s skin integrity. These stretchers are so narrow it makes it nearly impossible to reposition most patients appropriately.

The development of these pressure ulcers cost the hospital in numerous ways. From a health and safety standpoint, these hospital acquired pressure ulcers cause the hospital to treat a patient in worse condition than when originally presented to the Emergency Department. This obviously leads to a reputation for poor care. From a financial stand point, the hospital will have to now treat the patient for pressure ulcers in addition to the ailment that brought them to the hospital for care. Financial changes to

Medicare and Medicaid have caused this practice of “treating pressure ulcers” versus “preventing pressure ulcers” to become a monetary burden

As of October 1, 2008, The Centers for Medicare and Medicaid Services changed the hospital reimbursement payments. This change rewards hospitals for quality care and avoids or decreases payments for unnecessary and preventable costs. Hospital Acquired Pressure Ulcers are considered an unnecessary and preventable condition. As a result of the change in procedure, most facilities instituted a skin risk assessment which must be initiated within eight hours of admission to the hospital. Due to these new procedures, the risk for pressure ulcers will be discovered early on and prevention and treatment can be immediately started.

#### Purpose of this Project

The purpose of this project is to ensure patient health and safety by educating the primary emergency room nurses to at-risk individuals presenting to the Emergency Department and early intervention strategies. There were three identified goals. The first goal was to identify the ability of the emergency room nurses to recognize at-risk individuals. The second goal was to have the Braden Scale added to the Initial Emergency Room Documentation forms. The final step was to develop a paper checklist, not part of the permanent record, which would be given to the primary emergency nurse by the charge/rescue squad or triage nurse. This form would alert the nurse and patient care technician that an at-risk individual was going into one of their rooms and to implement interventions.

The expected patient outcome is to have interventions administered in the Emergency Department for at-risk individuals for the development of pressure ulcers.

This most important aspect of this project is to ascertain that individual patients who are at-risk for the development of pressure ulcers have interventions started early. This includes patients who will eventually be discharged home or to a facility from the Emergency Department.

#### Description of this Project

This project was implemented to alert the Emergency Department nurses to at-risk individuals for pressure ulcers and to start the interventions while the patient was in the Emergency Department. The first step in this process was to give a pre-test to the primary emergency room nurses. The pre-test was given over the course of several weeks and all three shifts were tested. After the pre-test was evaluated, an educational learning experience was developed and presented to the nurses given the pre-test. Concentration was placed on the areas within the pre-test that tested poorly, specifically in areas which raised concern. The interventions for an at-risk individual that presented to the Emergency Department were reviewed with the nurses at this time. Like the pre-test, the educational seminar was given over a period of several weeks on all three shifts. Due to the hectic environment of the Emergency Department, almost every educational experience was exclusively one on one. The one on one learning experience allowed for an open dialogue between the educator and the department nurse. This led to multiple questions, thoughts and opinions that may not otherwise have been elicited. The final component of the process was a post-test, given 7-10 days after the educational learning experience to determine retention of the presentation.

Simultaneously to the testing process, the Braden Scale was added to the Initial Emergency Room Documentation forms. The Braden Scale for Producing Pressure Ulcer

Risk was developed in 1987 by Dr Barbara Braden and Dr. Nancy Bergstrom to help health professionals, especially nurses, assess a patients risk for developing a pressure ulcer (National Institute of Health, 2012AB). The Braden Scale has six criteria to determine the risk of pressure ulcer development; sensory perception, moisture, activity, mobility, nutrition and friction and shear. Each category, except friction and shear, is rated on a scale of 1-4, friction and shear is 1-3, for a total of 23 points, the higher the point score the lower the risk of developing a pressure ulcer.

The final component of the project to be implemented was a paper checklist. The purpose of this checklist is to alert the primary emergency room nurse and patient care technician that an at-risk individual is headed into one of the nurses' rooms and interventions should be started immediately. This checklist is not part of the permanent record. It is initiated by the charge or triage nurse after a quick assessment of the patient at the triage area or the squad area and consists of at-risk characteristics. It was determined by the wound care nurse that the checklist be printed on pink colored paper, as it designates skin care. Once the primary emergency room nurse or the nursing care technician receives this checklist, interventions will be put into place.

Currently there are three pressure relieving devices that can be used, a hospital bed, a special mattress and a mattress overlay. A hospital bed is the ideal prevention device; however these are rarely available in the Emergency Department. The next option is a special mattress for the emergency room stretcher. These mattresses are touted as pressure relieving mattresses and are thicker than the usual emergency room stretcher. The last pressure redistribution device that is available is a mattress overlay; this can be placed over an emergency room stretcher or hospital bed. This is a static

inflatable mattress overlay with circular cutouts that help air reach the patient's skin. It relieves pressure and helps to prevent the development of pressure ulcers. This is the least expensive and the most readily available.

#### Significance of this Project

The project would significantly impact an area of nursing, pressure ulcers prevention, considered a major nurse-sensitive outcome. Because, nursing care has a major effect on pressure ulcer development and prevention (Lyder & Ayello, 2008). Pressure ulcer prevention ranges from (1) the simple and cost effective method of implementing a turning schedule for patients, (2) to providing at-risk patients with a pressure redistribution device described above, (3) to the use of high technology beds. The most important educational tool is to teach nurses and technicians how to recognize at-risk individuals and when to begin interventions so that they are early and effective. The literature suggests that not all pressure ulcers can be prevented; however they can be reduced by a comprehensive pressure ulcer prevention programs facility wide (Black, Edsberg, Baharestani, Langemo, Goldberg, McNichol, Cuddigan, 2011).

The current availability of pressure relieving mattresses for stretchers in the Emergency Department is twelve for a fifty bed emergency room. Due to this study, more pressure relieving mattresses have been placed into the upcoming budget, so that in the next fiscal year, all of the stretchers in the Emergency Department will have pressure relieving mattresses.

## SECTION II

## LITERATURE REVIEW

An extensive literature search using several electronic databases was used to begin this literature review; the databases used most frequently were CINHL (Cumulative Index to Nursing and Allied Health Literature), Google Scholar, and Medline-PubMed. In addition titles of the articles used in the reference area of articles that appeared to coincide with the topic chosen were read and analyzed. The keywords used were: (1) early detection of pressure ulcers; (2) pressure ulcers; (3) emergency room prevention of pressure ulcers; and (4) early intervention of pressure ulcers, (5) support surfaces, (6) preventative devices and (7) the elderly.

The ten articles reviewed fell into two categories. The first group of five articles addressed the early prevention of pressure ulcers and the tools utilized. The second group of five articles involved how to select the proper redistribution device.

The first article selected for review is Stop them at the Door by Denby & Rowlands (2010). The purpose of this article was to determine the feasibility of implementing a Pressure Ulcer Prevention Program in the Emergency Department. This was a descriptive analysis using data abstraction to examine the normal Emergency Department's patients' length of stay and hospital acquired pressure ulcers. The key finding of this article showed that a high percentage of patients who acquired pressure ulcers did so after a stay in the Emergency Department greater than two hours. Seventy-five percent of the patients in the study, who were admitted, were admitted through the Emergency Department. Of those, one 125 patients developed hospital acquired pressure ulcers and of those 99.2% had an Emergency Department length of stay greater than two



hours. The conclusion of this study was that a significant portion of patients in the Emergency Department are at-risk individuals for developing pressure ulcers. The Braden Scale was not implemented in the Emergency Department so the nurses used rudimentary identification tools such as whether a patient was able to lift their heels off the stretcher independently. If not, that patient would be considered at-risk and preventative measures would be initiated. There were two limitations to this study. The first limitation occurred because the study could not be generalized to other Emergency Departments. This was due to the small sample size with only one clinical setting. The second limitation involved the data collection method. The data was collected through medical record review and was only able to document the pressure ulcers identified through nursing documentation.

The second article in the same vein was titled Prevalence and Incidence Rates of Pressure Ulcers in an Emergency Department (Dugaret, et al, 2012). This was a prospective study in a 424 bed hospital for adults. The included subjects/patients were admitted through the Emergency Department over a fifteen day period. Before the study took place the hospital was aware that the nursing staff had inadequate knowledge about pressure ulcers, identifying at-risk individuals or what interventions to initiate. An educational training was conducted by wound care specialists for the entire Emergency Department staff one month prior to conducting the study. All potential body sites at-risk for pressure ulcers were examined upon admission to the Emergency Department and at discharge from the Emergency Department. It did not matter whether the discharge was to home, another facility or admission to the hospital. A total of 27 patients developed new pressure ulcers during their Emergency Department stay. The conclusion was that

only a few hours spent in the Emergency Department induced a high risk of pressure ulcer development. The risk increased for patients over the age of 75 and if the patient had co-morbidities. In addition, the most efficient component of pressure ulcer prevention is awareness of the problem by the Emergency Department staff. Again, the limitation was that the findings could not be generalized, this time because not all Emergency Departments were identical and the knowledge base of the staff was not consistent.

The Pressure is On! An Innovative Approach to Address Pressure Ulcers in the ED Setting (Bjorklund, Basch, Borregard, Brown, Denno, Montgomery, Pedicini, & Saporito, 2012) was the next article reviewed. In this article a group of nurses and leadership made a commitment to decrease hospital acquired pressure ulcers at their facilities. The health care network gathered a group of multidisciplinary professionals comprised of front line nurses, wound care nurses, nurse managers, physicians, nutritionists, and many other professionals to develop a program that would reduce hospital acquired pressure ulcers. The original team was organized in 2003, and it was discovered that most hospital acquired pressure ulcers were decreasing. However, there was an area of the hospital that was not fully participating. That area was the Emergency Department. In 2008 another team was developed entitled the “ED PUP Team” This team was led mostly by front line nurses. They developed a plan for assessment and early prevention for patients entering into a hospital through the Emergency Department. The emergency room staff realized that the skin assessment tools that were currently available were too cumbersome for the emergency room. The staff then developed two tools to be used; the first was a Simple Triage Tool. This tool was a quick assessment

and identified whether the ED Skin/Risk Assessment Tool needed to be implemented. A monitoring process was implemented and the audit showed that the emergency room physicians and nurses were completing the forms properly and the tools were helpful when a patient was admitted to the hospital or discharged home or to a facility. These forms were part of the permanent record; consequently they stayed with the patient during admission or discharge. If the patient was discharged home the attending physician received a copy to keep him/her informed of his/her patients' progress. There were barriers to overcome for implementing this project. Among them were staff and physician resistance to change, perceived increased workload, and staffing shortages.

Judy Elliot's Strategies to Improve the Prevention of Pressure Ulcers (2010) concentrated on improving tissue viability during the patient journey from admission to discharge. This was an exploratory study of pressure ulcer prevention that was undertaken in a health organization that included three sites covering a large geographical region. The health care network hired and trained tissue viability workers to focus on pressure ulcer prevention from the Emergency Department to floors that had newly admitted patients, who were not necessarily from the Emergency Department. The tissue viability workers concentrated on three areas of prevention; support surfaces, positioning and repositioning and heel offloading. Audit results showed a reduction in hospital acquired pressure ulcers by 4.7%. In addition, there was a reduction in all grades/categories of hospital acquired pressure ulcers. The conclusion was the tissue viability workers were invaluable in raising awareness of prevention, assisting in early risk assessments and interventions. Again barriers were discovered especially in the Emergency Department staff. Concern was expressed over time constraints, extra

paperwork and not being able to care for the emergency room patient properly, because too much pressure was being placed on the skin not the entire patient.

Lastly, Registered Nurses' Attention to and Perceptions of Pressure Ulcer Prevention in Hospital Settings (Sving, Gunningberg, Hogman, & Mamhidir, 2012) was a study that was designed to describe how registered nurses perform, document and reflect on pressure ulcer prevention in a specific nurse-patient care situation. This was a descriptive design study using a multi-method approach. This sample size was small using only nine registered nurses. The registered nurses were first observed in a specific nurse-patient care situation with patients at-risk for pressure ulcers. Interviews followed and patients' records were reviewed. The results were not acceptable. Although all the patients were at-risk individuals and the nurses described pressure ulcer preventions basic care, the nurses' attention to prevention was deficient. Few preventative measures and no structured risk assessments, such as using risk assessment tools were observed. The conclusion was that registered nurses paid little attention to pressure ulcer prevention among patients at-risk. This study was limited in the small sample size and the observational status. Observation is appropriate for gathering information on activities, behaviors or communication in nursing care; however observations can cause changes in behavior (Polit & Beck, 2008).

As previously mentioned the next group of five articles center on pressure redistribution devices/support surfaces. Support surfaces are essential in the prevention of pressure ulcers. Support surfaces attempt to redistribute pressure away from bony prominences, which reduces the degree of loading at these at-risk sites. Pressure redistribution is created by immersion and envelopment. Immersion is a measure of how

deep one sinks into the support surface and envelopment is the capability of a support surface to deform around the human body (Sprigle & Sonnenblum, 2011).

The first article in this series reviewed was Prevention and management of Pressure Ulcers: Support Surfaces (Moore, Haynes, & Callaghan, 2014). The article focused on selecting the proper pressure redistribution device/support surface, as well as the cover needed to ensure the device is effectively operated. The article discusses the importance of the cover for infection control as well as the ease of repositioning the patient. The conclusion was the cover of the pressure redistribution device is just as important as the device itself. The article determined that the cover has to ensure reduction of shear and friction, avoidance of moisture build up and an ability to keep the patient cool. The article did not list any limitations, however the last line, before the references, states a conflict of interest. The article was supported by the Dartex Coating Ltd Company which is the manufacturer of the products this article tested and evaluated.

Pressure Ulcer Preventive Device use Among Elderly Patients Early in the Hospital Stay examined the adherence to guidelines by determining frequency and correlation of the use of preventative devices early in the hospital stay (Rich, Shardell, Margolis & Baumgarten, 2009). A cross sectional study was conducted in two Philadelphia, PA hospitals. The inclusion criterion required that the patient was over 65years old and was admitted through the Emergency Department. Only 15% of patients had any preventative devices in place at the time of the examination. Among the patients considered at risk only 51% had a preventative device in place. Documentation of a pressure ulcer was only documented 68% of the time for a patient who did indeed have a pressure ulcer. The largest limitation in this study was the time period during which the

information was gathered. The study was written in 2010, but the information gathered was in the years 1998-2001. Since that time, prevention of pressure ulcers has come to the forefront of all healthcare organizations, resulting in heightened awareness. It is very likely that if the information were gathered under the current climate, the numbers would be much lower.

The objective of the next article, Early Prevention of Pressure Ulcers Among Elderly Patients admitted Through the Emergency Departments: A Cost Effectiveness Analysis was to evaluate the cost effectiveness of pressure redistribution foam mattresses on Emergency Department (ED) stretchers and beds for early prevention of pressure ulcers in elderly admitted ED patients (Pham, Teague, Mahoney, Goodman, Paulden, Poss, Li, Ieraci, Carcone, & Krahn, 2011). The study design was a cost effective analysis using the Markov Model. The Markov Model is a mathematical modeling technique, which describes the transitions a group of patients makes among a number of mutually exclusive and exhaustive health states during a series of short intervals (Sanders, 2009). The authors simulated a cohort of elderly admitted Emergency Department patients, defined as patients who were aged 65 years or older. They sought care in the Emergency Department and were subsequently admitted to inpatient services. The authors compared standard mattress and stretchers on Emergency Department beds and stretchers with pressure redistribution foam mattresses on the same Emergency Department beds and stretchers. On admission the high risk individuals were placed on pressure redistribution mattresses. The evidence supported early prevention with pressure redistribution mattresses in the Emergency Department from both an economic standpoint and a health

and safety standpoint. Early prevention was likely to improve health for elderly patients and save hospital costs.

The fourth article, Pressure Relief, Cold Foam or Static Air? A single center, prospective, controlled randomized clinical trial” (Van Leen, Hovius, Halfens, & Schols , 2011) compared a cold form mattress and a static air mattress overlay. The cold foam mattresses are made of polyether foam, consisting of many very small closed air cells. After compression it returns to its original shape fairly quickly. The static air overlay mattress allows for air flow throughout the mattress. The air flow holes in the mattress reduce heat and fluid build up, ensuring that the affected areas remain well ventilated and dry. The reason this comparison was interesting, this study was completed in Holland. It was determined by the Dutch CBO, that cold foam mattresses were better than standardized mattress. All of the hospital beds in this country were switched over to the cold foam mattress. Once that decision was made, there was no further research conducted over the years to determine if this was still the best practice. Ultimately the authors of this study concluded that the static air mattress overlays provided a better prevention than the cold foam mattresses alone.

Development and Validity of a New Model for Assessing Pressure Redistribution Properties of Support Surfaces (Matsuo, Sugama, Sanada, Okuma, Nakatani, Konya, & Sakamoto, 2011) is the last article reviewed. This article realized that there was inadequate research on support surfaces and how it affected pressure redistribution. The authors determined that pressure redistribution is influenced by body type and posture, therefore using human subjects would not be as effective in this study. For this reason, they developed a model to use for the study. The model they developed was based on

measurements of heights of 100 bedridden elderly patients and the thickness of the soft tissue on their buttocks. They were able to validate this model by using a pressure mapping system. The support surface used was a urethane foam mattress with different degrees of stiffness and a two layered alternating pressure air mattress. The study demonstrated that the pressure redistribution properties of urethane foam and air mattresses can be assessed using this model based on the body and tissue characteristics of bedridden elderly patients. The model was able to detect differences in the hardness of urethane foam and differences in the internal pressure of an air.

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### THEORETICAL FRAMEWORK

The theoretical framework of this project is based on Ida Jean Orlando's nursing theory. Orlando's Nursing Process Theory focuses on the dealings between the nurse and patient, the perceptions and validations of those perceptions of the nurse and patient, and the use of the nursing process to produce positive outcomes or patient improvement (Current Nursing, 2013). Orlando's theory keeps the nurse focused on the patient. This project depends upon the nurse's focus on the patient in order to detect at-risk individuals and to implement interventions quickly to prevent pressure ulcers. This theory is clear, concise and easy to use. Using this theory allows the nurses to formulate an effective plan of care, which can be easily modified and adapted if and when things change with the patient. Further, Orlando also advocated strong patient involvement, which allows the patients to be individuals and have an active role in their plan of care. Patient involvement prevents inaccurate diagnosis as well as unproductive plans of care, because the nurse is constantly interacting with the patient.

## SECTION III

## METHODOLOGY

The long years of a nursing career spent in critical care and emergency room nursing, it have made this author a staunch patient advocate. During that time period, it was discovered that many of the emergency room patients were not properly having a skin assessment completed in the emergency department. It became apparent one weekend several years ago when this author realized a patient had been waiting for an inpatient bed for 36 hours. At the beginning of the shift, this author went into the patient's room, in order to make introductions and begin assessments; the patient was fully clothed from the waist down and remained on a regular emergency room stretcher. When the patient was undressed and a skin assessment was completed it was found that the patient had a Stage II pressure ulcer on the sacrum. In the Initial Emergency Department Documentation form, the skin assessment showed that the patient's skin was intact and that there were no pressure ulcers documented. The patient was confused and soaked in urine, and could not answer whether he had skin breakdown prior to emergency room hospitalization. This patient was from a long term facility, with no family members present. The long term documentation forms did not show a pressure ulcer documented. It was at this point that the author realized that there was a problem with the system and that there were issues that needed to be addressed.

The first course of action was to obtain approval through the hospital administration to educate the emergency room nurses to at-risk individuals for pressure ulcers presenting to the emergency room. The then Chief Nursing Officer and Senior

Vice President of Clinical Program Development at a local community hospital, granted preliminary approval of the proposed project. The preliminary approval would become full approval when the basic outline of the project was presented. A meeting was then set up with the Director of the Emergency Department. The proposed project was explained and again provisional approval was obtained.

The process of obtaining a mentor, with specialty knowledge and experience, began in earnest. This took several months. Finally, a Critical Care Nurse Specialist at the hospital agreed to become a preceptor/mentor. The Critical Care Nurse Specialist background is as a Critical Care Clinical Specialist; however she often held the responsibility for wound care when the wound care nurse was on vacation. Further, when the wound care nurse retired from the facility, she and several other clinical nurse specialists divided up the wound care nurse's responsibilities. This led to her extensive knowledge in this field.

There are no known risks involved in the education of emergency room nurses to recognize at-risk individuals for pressure ulcers. The benefits are not only to the patients, but also to the hospital by avoiding potential loss of reimbursement money from the government as well as the insurance companies. The hospital's Institutional Review Board (IRB) approval was not necessary, because patients were not involved in the educational learning experience. The educational learning experience is geared towards emergency room nurses.

Implementation of the project was accomplished in five phases. Phase I entailed the determination over the needs assessment. This phase also included the development of the project proposal and objectives. Phase II involved obtaining approval from both

the Chief Nursing Officer and the Director of the Emergency Department. Phase III included meetings with the wound care nurse, wound care committee, emergency room nurses, and the Information Technology (IT) committee. Phase IV was the development and implementation of the pre-test, the educational learning experience to be given to the emergency room nurses, and the post-test. Phase V was the evaluation of the project and if the project had sustainability.

#### Phase I

As mentioned previously this author discovered that skin assessments were not being completed on all emergency room patients. This was detrimental not only for patient safety, but hospitals reimbursements from the government and insurance companies. The one incident already mentioned was not an isolated occurrence. It was determined during staff meetings that many of the emergency room nurses could not properly identify at-risk individuals for pressure ulcers. Further discussion elicited that patients were not always undressed completely and many were sent to inpatient beds mostly clothed. The emergency room nurses claimed that they could not take these steps as they were taking care of life threatening illnesses and had to prioritize. Skin assessment, unfortunately, was often at the bottom of the list of priorities. This then led to the development of the project and objectives.

#### Phase II

Having a working relationship with the Chief Nursing Officer, and the Director of the Emergency Department, was instrumental in speaking with them and receiving provisional approval to go forth with this project. However this project still had to have “selling points” to retain the approval. A lengthy discussion between the author, the

Chief Nursing Officer and the Directory of the Emergency Department was conducted. During this discussion the following topics were brought forth: documentation to prove hospital costs are on the rise; that hospital acquired pressure ulcers would no longer be reimbursed by Medicare or Medicaid; that pressure ulcers increase patients length of stay; that increased pressure ulcers add avoidable costs to the healthcare organization and that pressure ulcer occurrences may negatively impact future patient referrals. According to the Agency for Healthcare Research and Quality (AHRQ) pressure ulcers cost the US healthcare system an estimated 9.1-11.6 billion dollars annually (2011).

After this in-depth discussion, the next step was to outline the Chief Nursing Officer, and the Director of the Emergency Department how the emergency room nurses will implement the early prevention interventions. This step focused on the ease with which the project can be incorporated into the Emergency Department regiment. It was determined that when the at-risk individual enters the Emergency Department triage or rescue squad area, the charge/rescue squad or triage nurse will complete a paper checklist. This paper checklist is then provided to the rescue squad staff or patient care technician accompanying the patient; ultimately it will be given to the patient's nurse. The completed checklist notifies the nurse that the patient will need a special mattress or mattress overlay. Following this meeting approval was given to proceed with the project.

### Phase III

The first objective undertaken with the implementation of the plan was to have the Braden Scale added to the Initial Emergency Department Documentation forms. To do that, this had to be approved by the Wound Care Committee and then the Information Technology Committee. With the help of the wound care nurse at the facility, this author

was able to attend the meeting and speak to the necessity of adding the Braden Scale to the Initial Emergency Department Documentation forms. The wound care committee approved adding the Braden Scale to the agenda for the IT committee. At this point, the IT committee chair was contacted and a meeting was scheduled. At this meeting the proposal of adding the Braden Scale to the Initial Documentation forms was approved, then the IT committee chair spoke with the IT developer/installer to add the Braden Scale to the Initial Emergency Room Documentation forms. This was implemented June 24, 2015 at 11am.

The next part of the project concerned the emergency room nurses. It was obvious that the key to a successful implementation is the support of the emergency room nurses. It is imperative that the nurses are engaged in the project. Therefore, an ongoing discussion began with the emergency room nurses. This dialogue targeted patient health and safety, patient outcomes and how lack of reimbursement monies could affect hospital staffing, including emergency room nurses. It was during this phase that the pre-test and post-test was developed. The educational learning experience was in the infant stage, because the results of the pre-test were needed to develop the educational learning experience.

The last piece of this project was the development of the paper checklist titled Pressure Ulcer Screening/Alert Tool (Appendix D). This checklist would be at the triage desk and rescue squad desk to be distributed by the triage or charge/rescue squad nurse when an at-risk individual presents to the Emergency Department. This checklist is then given to the primary emergency room nurse, so interventions can be implemented. This checklist includes a list of medical and nursing diagnoses that is suggestive of an at-risk

individual. This checklist further lists preventative measures to follow if this is an at-risk individual.

#### Phase IV

During this phase the pre-test (Appendix A) was given to the emergency room nurses. This was given over several weeks on all three shifts, to capture as many of the nurses as possible. The pre-test included one scenario with thirteen questions related to the scenario. The first seven questions were related to the Braden Scale. The test questions covered the six criteria to determine the risk of pressure ulcer development; sensory perception, moisture, activity, mobility, nutrition and friction and shear. The definition and scale of the six criteria were included to assist in answering the questions. The rest of the questions are general questions related to recognizing at-risk individuals and implementing interventions.

After reviewing the pre-test and discovering the areas that were an issue, the educational learning experience (Appendix B) was developed. This was a power point presentation, again given over several weeks on all three shifts. The educational learning experience was only given to the nurses that had taken the pre-test. The educational learning experience was often given one on one to the nurses due to the patient volume and acuity level. During the presentation the pre-test was reviewed and feedback was obtained from the nurses. The advantage of the one on one presentation and review of the pre-test was found when the nurses felt they could disagree with the answers and ask more in-depth questions that they may not have otherwise asked in a larger group setting.

The post-test (Appendix C) followed the format of the pre-test; however it had a different scenario. Again the post-test was only given to the nurses that had taken the

pre-test and were given the educational learning presentation. The post-test was given to evaluate the retention of the nurses in recognizing at-risk individuals as well as the correct way to use the Braden Scale. The post-test was reviewed with the nurses immediately after it was corrected. Again this was done on a one on one basis and allowed the nurses to have a discussion about the entirety of the learning experience. Overall, the nurses all stated that this was a good learning experience. The nurses were now consistently thinking about patients' skin, interventions and documentation.

#### Phase V

This project was divided into three separate parts. The first and easiest to complete was the addition of the Braden Scale to the Initial Emergency Room Documentation forms. After several meetings with committees this was accomplished. It was then sent to the IT developer/installer who added it to the initial documentation forms. This process "went live" on June 24, 2015 and is still going strong.

The second part was evaluating the emergency room nurses knowledge of pressure ulcers, at-risk individuals for pressure ulcers and intervention techniques to prevent pressure ulcers. This was accomplished by a pre-test, educational learning presentation and a post-test. Further, this educational presentation will now be included in the annual competencies required by the Emergency Department.

The final portion of the project was the development of the Pressure Ulcer Screening/Alert Tool (Appendix D). This appeared to be a simple objective; however it required approval of the policy and procedure committee. Within the committee the form was debated for several months with the granting of the final approval July 27, 2015. Once approved by this committee, the checklist was sent to the facilities print shop and



then placed in the Emergency Department. The checklist went “go live” on August 3, 2015.

## SECTION IV

## PROJECT OUTCOMES

A total of 39 emergency room nurses participated in the pre-test, educational learning presentation and the post-test. The pre-test measured the general knowledge of the emergency room nurses at recognizing at-risk individuals for pressure ulcer development. Evaluating the pre-test, it was determined that there were two areas that needed increased concentration on the educational presentation. The first area was friction and shear on the Braden Scale. The emergency room nurses who answered this question incorrectly gave the patient in the scenario a greater risk score than was actually the case. This in turn gave the next question, which was determining the risk assessment score based on the six previous questions, a higher risk than was, in fact, the case.

The educational learning presentation was a power point presentation consisting of nine slides. The slides captured the main talking points with an in-depth verbal explanation. During the oral discussion friction and shear was defined and discussed at length. Also explained in detail was the initiation of interventions. Specifically, the presentation educated the participants on when the interventions were to be initiated, which was partially based on the Braden Scale results.

On completion of the educational learning experience a post-test was given. The effectiveness of the educational learning experience was measured by the evaluation of the results of these tests. Evaluation of the educational program involved feedback from the emergency room nurses and discussions with the emergency room assistant managers (one for each shift), emergency room manager and the emergency room educator. This discussion took place several weeks after the program was completed. The discussion

involved any notable changes in staff behavior in recognizing at-risk individuals for pressure ulcers and the timely use of interventions. Upon review of the pre-test and the post-test taken by the emergency room nurses, it concluded that the nurses did improve in their knowledge of identifying at-risk individuals and to start early intervention to prevent pressure ulcers.

After much discussion with the wound care committee and the IT committee the Braden Scale was added to the Initial Emergency Room Documentation form on June 24, 2015 at 11am. The Pressure Ulcer Screening Tool went through the approval process as dictated by the Policy and Procedure Committee at the facility. This checklist was put into effect on August 3, 2015.

## SECTION V

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The response from all involved was positive. The nurses mentioned that as long as the patient was not suffering a life threatening event, they thought about a patient's skin, undressed them completely, completed the Braden Scale assessment tool and started interventions when appropriate. The manager, assistant managers and educator also noticed more patients were being completely undressed; mattress overlays were being used on regular emergency room stretchers when pressure redistribution mattresses were not available and the pressure ulcer checklist was being placed outside a patients room/door to indicate to everyone this was an at-risk individual.

Based on the pre-test and the post-test, the educational learning presentation was successful in increasing the emergency room nurses knowledge of recognizing at-risk individuals for pressure ulcers as well as implementing proper interventions in a timely manner. Upon returning to the Emergency Department, several weeks after the project completed, this author noted that triage and charge nurses are now using the Pressure Ulcer Screening Tool. This checklist is in fact printed on pink paper. This checklist is given to the primary emergency room nurse, who in turn places it into the patients chart until the patient is discharged or admitted. At that time the checklist is placed into the shredder box to protect patient confidentiality. An off-shoot of the project was the patient care technicians, on their own, implemented a turning schedule when an at-risk individual was identified by the primary care emergency nurse.

### Sustainability of Project

The community hospital this project took place at, as a facility, has instituted annual competencies for the clinical staff, this includes registered nurses and patient care technicians. These competencies are offered three times a year, and part of the competency packet is wound care. The wound care nurse will incorporate part of this project for the hospital wide education/competency day.

The Emergency Department also has annual competencies that are mandatory. The early prevention of pressure ulcers will be part of the annual competencies. The emergency department educator will integrate parts of this project into those annual competencies. In addition, several of the nurses in the Emergency Department are on the Wound Care Committee and will continue to encourage the nurses to keep the project going.

## SECTION VI

## REFERENCES:

Agency for Healthcare Research and Quality (AHRQ, 2011). Are We Ready for This change? Preventing Pressure Ulcers in Hospitals: A Toolkit for Improving Quality of Care.

<http://www.ahrq.gov/professionals/systems/hospital/pressureulcertoolkit/index.html>

Bjorklund, L., Basch, A., Borregard, B., Brown, B., Denno, J., Montgomery, E., Pedicini, K., & Saporito, J. (2012). The Pressure is On! An Innovative Approach to Address Pressure Ulcers in the ED Setting. *The Journal of Emergency Nursing* 38 (2)

Black, J., Edsberg, L., Baharestani, M., Langemo, D., Goldberg, M., McNichol, L., Cuddington, J., & the National Pressure Ulcer Advisory Panel. (2011). Pressure Ulcers: Avoidable or Unavoidable? Results of the National Pressure Ulcer Advisory Panel Consensus Conference. *Ostomy Wound Management* 57(2)

Current Nursing (2013). Orlando's Nursing Process Theory. Retrieved from

[http://currentnursing.com/nursing\\_theory/Orlando\\_nursing\\_process.html](http://currentnursing.com/nursing_theory/Orlando_nursing_process.html)

Denby, A., Rowlands, A. (2010). Stop Them at the Door. *The Journal of Wound Ostomy Continence Nursing* Retrieved from

<http://www.qsource.org/toolkits/pressureUlcer/docs/articles/supportingArticles/stopThemAtTheDoor.pdf>

Dugaret, E., Videau, M. Faure, I., Gabinski, C., Bourdel-Marchasson, I., & Salles, N. (2012). Prevalence and Incidence Rates of Pressure Ulcers in an Emergency

- Department. *International Wound Journal*
- Elliot, J., (2010). Strategies to Improve the Prevention of Pressure Ulcers. *Nursing Older People* 22 (9)
- Lyder, C., & Ayello, E., (2008). Patient Safety and Quality: An Evidence Based Handbook for Nurses. (Prepared with support from the Robert Wood Johnson Foundation). AHRQ Publications No 08-0043. Rockville, MD: Agency for Healthcare Research and Quality; March, 2008.
- Matsuo, J., Sugama, J., Sanada, H., Okuwa, M., Nakatani, T., Konya, C., & Sakamoto, J. (2011). Development and Validity of a New Model for Assessing Pressure Redistribution Properties of Support Surfaces. *Journal of Tissue Viability* 20(2).
- Moore, Z., Haynes, J., & Callaghan, R. (2014) Prevention and Management of Pressure Ulcers: Support Surfaces. *British Journal of Nursing*
- National Institute of Health (NIH). 2012AB Braden Scale Source Information [http://www.nlm.nih.gov/research/umls/sourcereleasedocs/current/LNC\\_BRADEN/index.html](http://www.nlm.nih.gov/research/umls/sourcereleasedocs/current/LNC_BRADEN/index.html)
- Perry D, Borchert K, Burke S, Chick K, Johnson K, Kraft W, Patel B, Thompson S., Updated January 2012 Institute for Clinical Systems Improvement. Pressure Ulcer Prevention and Treatment Protocol.
- Pham, B., Teague, L., Mahoney, J., Goodman, L., Paulden, M., Poss, J., Li, J., Ieraci, L., Carcone, S., & Krahn, M. (2011). Early Prevention of Pressure Ulcers Among Elderly Patients Admitted Through Emergency Departments: A Cost-effectiveness Analysis. *Annals of Emergency Medicine* 58(5).

Polit, D., & Beck, C. (2008) *Nursing Research. Generating and Assessing Evidence for Nursing Practice*, 8<sup>th</sup> ed. Lipincott, Williams & Wilkins: Philadelphia.

Rich, S.E., Shardell, M., Margolis, D., and Baumgarten, M. (2009). *Pressure Ulcer Preventive Device use Among Elderly Patients Early in the Hospital Stay*. NIH Public Access Author Manuscripts. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2832670/>

Sanders, G. (2009). *Introduction to Medical Decision Making and Decision Analysis*. Duke Clinical Research Institute, Duke University.

Spahn, J. (2006). *Pressure Ulcer Dilemma in the Emergency Department Environment*. *EHOB*. Retrieved from <http://www.ehob.com/pdf/seamless/ulcers-er.pdf>

Sprigle, S., & Sonnenblum, S. (2011). *Assessing Evidence Supporting Redistribution of Pressure for Pressure Ulcer Prevention, A Review*. *Journal of Research and Development* 48(3)

Sving, E., Gunningberg, L., Hogman, M., & Mamhidir, A. (2012). *Registered Nurses' Attention to and Perceptions of Pressure Ulcer Prevention in Hospital Settings*. *The Journal of Clinical Nursing* 21

Van Leen, M., Hovius, J., Halfens, R., Schols, J. (2011). *Pressure Relief Cold Foam or Static Air: A Single Center, Prospective, Controlled Randomized Clinical Trial*. *The Journal of Tissue Viability* Retrieved from <http://www.sciencedirect.com.ezproxy.shu.edu/science/article/pii/S0965206X10000379>



## SECTION VII

*Appendix A*

## AT- RISK INDIVIDUAL PRE-TEST

NAME \_\_\_\_\_ DATE \_\_\_\_\_

Read the following scenario and answer the questions that follow.

An 89 year old female Ms. A.B. presents to the Emergency Department (ED) with abdominal pain, nausea & vomiting, fever and history of Alzheimer's disease. Ms. A.B. is 5 feet 2 inches and weighs 102 pounds. On admission to the ED her vital signs were BP 90/50, HR 118, RR 22, Temp 101.6. Ms. A.B. moans with movement, but responds only to painful stimuli. Family reports she never eats a complete meal. She eats less than two servings of protein per day. Her skin is almost constantly moist secondary to diaphoresis and urinary incontinence. She is unable to walk and cannot bear own weight. She needs assistance to get into a wheelchair. She does make occasional slight changes in body position while on stretcher. She occasionally slides down to foot of stretcher when head of stretcher is elevated. Ms. A.B. is being admitted and her orders are as follows: NPO; 1000ml of D5.45 NS with 40 meq of KCl at 125 ml/hour; NGT to low intermittent suction.

<b>Sensory Perception</b>	<b>1. Completely Limited</b>	<b>2. Very Limited</b>	<b>3. Slightly Limited</b>	<b>3. No impairment</b>
<b>Ability to respond meaningfully to pressure related discomfort</b>	Unresponsive(does not moan, flinch or grasp) to painful stimuli due to diminished level of consciousness or sedation <b>OR</b> Limited ability to feel pain over most of body	Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness <b>OR</b> Has a sensory impairment which limits the ability to feel pain or discomfort over the body	Responds to verbal commands, but cannot always communicate discomfort or the need to be turned <b>OR</b> Has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities	Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort

1. Using the Braden Scale, what is Ms. A.B.’s sensory perception score?
- A. 1
  - B. 2
  - C. 3
  - D. 4

<b>Moisture</b>	<b>1. Constantly Moist</b>	<b>2. Very Moist</b>	<b>3. Occasionally Moist</b>	<b>4. Rarely Moist</b>
<b>Degree to which skin is exposed to moisture</b>	Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time the patient is moved or turned.	Skin is often, but not always moist. Linen must be changed at least once a shift.	Skin is occasionally moist, requiring an extra linen change approximately once a day.	Skin is usually dry, linen only requires changing at routine intervals.

2. Using the Braden Scale, what is Ms. A.B.’s moisture score?
- A. 1
  - B. 2
  - C. 3
  - D. 4

<b>Activity</b>	<b>1. Bedfast</b>	<b>2. Chairfast</b>	<b>3. Walks occasionally</b>	<b>4. Walks frequently</b>
<b>Degree of physical activity</b>	Confined to bed	Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair	Walks occasionally during the day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair	Walks outside room at least twice a day and inside room at least once every two hours during waking hours.

3. Using the Braden Scale, what is Ms. A.B.’s activity score?
- A. 1
  - B. 2
  - C. 3
  - D. 4

Mobility	1. Completely Immobile	2. Very Limited	3. Slightly Limited	4. No Limitation
Ability to change and control body position	Does not make even slight changes in body or extremity position without assistance.	Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently	Makes frequent though slight changes in body or extremity position independently	Makes major and frequent changes in position without assistant

4. Using the Braden Scale, what is Ms. A.B’s mobility score?

- A. 1
- B. 2
- C. 3
- D. 4

Nutrition	1. Very Poor	2. Probably Inadequate	3. Adequate	4. Excellent
Usual food intake pattern	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 fluid poorly. Does not take a liquid dietary supplement. <b>OR</b> Is NPO and/or maintained on clear liquids or IVs for more than 5 days	Rarely eats a complete meal and generally eats only about 1/3 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement. <b>OR</b> Receives less than optimum amount of liquid diet or tube feeding.	Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) per day. Occasionally will refuse a meal, but usually takes a supplement when offered <b>OR</b> Is on tube feeding or TPN regimen which probably meets most of nutritional needs.	Eats most of every meal. Never reuses a meal. Usually eats a total of 4 or more servings of meat or dairy products. Occasionally eats between meals. Does not require supplementation.

5. Using the Braden Scale, what is Ms. A.B.’s nutrition score?

- A. 1
- B. 2
- C. 3
- D. 4

Friction & Shear	1. Problem	2. Potential Problem	3. No Apparent 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 constant friction.	Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against the sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time, but occasionally slides down.	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.

6. Using the Braden Scale, what is Ms. A. B.'s friction and shear score?

- A. 1
- B. 2
- C. 3

The answers you selected on the preceding subscale questions make a total Braden Scale score of:

7. Based on Ms. A.B.'s total Braden Scale Score, indicate her level of risk for developing a pressure ulcer.

- A. 9 or less = Very High Risk
- B. 10 – 12 = High Risk
- C. 13 – 14 = Moderate Risk
- D. 15 – 18 = Mild Risk
- E. 19 – 23 = Generally not at risk

8. Given her level of risk, what preventative measures are indicated to protect Ms. A. B.? from developing a pressure ulcer?

- A. Pad bony prominences when positioning.
- B. Reposition her at least q2hr.
- C. Use a lift sheet for repositioning to avoid friction and shear injuries when moving her across sheets.
- D. Use the 30 degree lateral side lying position to avoid positioning onto sacral and trochanteric bony prominences.
- E. All of the above.

9. Ms. A.B. develops non-blanchable erythema over her sacrum after lying on the stretcher for several hours. This indicates a Stage I pressure ulcer.

- A. True
- B. False

10. Non-blanchable reddened areas of skin over bony prominences should be massaged every 2 hours.

- A. True
- B. False

11. Ms. A.B.'s nutrition Braden Subscale score places her at increased risk for pressure ulcers?

- A. True
- B. False

12. Ms. A.B.'s perineum and buttocks are constantly moist due to urinary incontinence. What is the best prevention plan?

- A. Place her in diapers.
- B. Clean her skin vigorously with soap and water after each episode of urinary incontinences.
- C. Place four blue pads under Ms. A.B.'s buttocks and upper thighs to absorb the urine.
- D. Gently cleanse skin, protect it with a barrier cream and use absorbent under pads to wick moisture from the skin.

13. Ms. A.B.'s diaphoresis and urinary incontinence are risk factors for pressure ulcer development.

- A. True
- B. False

*Appendix B*

Educational Learning Presentation

•Pressure Ulcer Prevention  
•Marie Fagan, MSN, RN

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Most pressure ulcers are preventable if patient  
RISK is recognized in time for  
**PREVENTABLE ACTIONS**  
to be initiated

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"Determining patient risk for pressure ulcer  
development is greatly assisted by the  
availability of research based instruments such  
as the Braden Scale"  
(Makelbust, J., Sieggreen, M.Y., Sidor, D., Gerlach M.A., Mauer, C., & Anderson,  
C. (2005)

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Braden Scale

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Breakdown of the Braden Scale

- **At Risk (Braden score 15-18)**
  - Turn the patient on a regular schedule
  - Help the patient be as active as possible (e.g. walk or get up from bed)
  - Protect the patient's heels
  - Use pressure-redistribution surfaces
  - Manage moisture, nutrition, friction and shear
  - Advance to a higher level of risk if other major risk factors are present
- **Moderate Risk ( Braden score 13-14)**
  - Use same protocol as for "at risk patients
  - Position patient at 30° lateral incline using foam wedges

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Breakdown of Braden Score

- **High risk (Braden score 10-12)**
  - Use same protocol as for 'moderate risk' patients
  - In addition to turning the patient on a regular schedule, make small shifts in their position
- **Very high risk (Braden score = 9)**
  - Use same protocol as for 'high risk' patients
  - Add a pressure-redistribution surface (e.g. low-air-loss bed) for patients with severe pain or with additional risk factors (e.g. immobility, malnutrition)

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Risk Factors for Development of Pressure Ulcers

- Elderly
- Inability to easily move or reposition self
- Malnourished or obese individuals
- Altered mental status
- Inability to feel sensation or pain
- Shearing or friction injuries
- Previous history of pressure ulcers
- Bowel or bladder incontinence

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DEFINITION

“A pressure ulcer is a localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure.” (NPUAP, 2007)

The pressure is almost always caused from an outside source

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Pressure Ulcer Development

- When the skin is starved of blood and nutrients for too long, the tissue dies
- Pressure ulcers then develop
- Latest research: This can happen in LESS THAN 2 HOURS!!!!
- Occurs when blood flow to the area is reduced

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INTERVENTIONS

- Pressure redistribution stretcher mattresses
- Mattress overlays
- Low air loss bed
- Fluid air bed
- Heels off of bed
- HOB 30 degrees or less
- Reposition schedule(Q2hr)

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RISK ASSESSMENT

Risk assessment is more than determining a numerical score. It involves identifying risk factors that contribute to the score and minimizing those deficits

Risk assessment should be performed on entry into a healthcare facility. This means the EMERGENCY DEPARTMENT!!!

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*Appendix C*

## AT- RISK INDIVIDUAL POST-TEST

NAME \_\_\_\_\_ DATE \_\_\_\_\_

Read the following scenario and answer the questions that follow.

A 75 year old male, Mr. L.W., with Non-Hodgkin's lymphoma, is alert and oriented. He is 5'9" and weighs 160 pounds. Mr. L.W. spends most of the day in bed, making occasional slight changes in body or extremity position, but unable to make frequent or significant changes independently. He occasionally slides down to the foot of the bed, requiring some assistance to move back to the top. Mr. L.W. is able to walk a short distance to the chair with assistance. He is incontinent of stool, but able to use the urinal as needed. His skin is occasionally moist from incontinence. Mr. L.W. is being admitted and the following are part of his admitting orders: Dietician consult for tube feeding recommendations. Tube feeding formula 400 ml every 4 hours per PEG tube. Up in chair daily.

<b>Sensory Perception</b>	<b>1. Completely Limited</b>	<b>2. Very Limited</b>	<b>3. Slightly Limited</b>	<b>3. No impairment</b>
<b>Ability to respond meaningfully to pressure related discomfort</b>	Unresponsive(does not moan, flinch or grasp) to painful stimuli due to diminished level of consciousness or sedation <b>OR</b> Limited ability to feel pain over most of body	Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness <b>OR</b> Has a sensory impairment which limits the ability to feel pain or discomfort over the body	Responds to verbal commands, but cannot always communicate discomfort or the need to be turned <b>OR</b> Has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities	Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort

1. Using the Braden Scale, what is Mr. L.W.’s sensory perception score?
- A. 1
  - B. 2
  - C. 3
  - D. 4

<b>Moisture</b>	<b>1. Constantly Moist</b>	<b>2. Very Moist</b>	<b>3. Occasionally Moist</b>	<b>4. Rarely Moist</b>
<b>Degree to which skin is exposed to moisture</b>	Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time the patient is moved or turned.	Skin is often, but not always moist. Linen must be changed at least once a shift.	Skin is occasionally moist, requiring an extra linen change approximately once a day.	Skin is usually dry, linen only requires changing at routine intervals.

2. Using the Braden Scale, what is Mr. L.W.’s moisture score?
- A. 1
  - B. 2
  - C. 3
  - D. 4

<b>Activity</b>	<b>1. Bedfast</b>	<b>2. Chairfast</b>	<b>3. Walks occasionally</b>	<b>4. Walks frequently</b>
<b>Degree of physical activity</b>	Confined to bed	Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair	Walks occasionally during the day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair	Walks outside room at least twice a day and inside room at least once every two hours during waking hours.

3. Using the Braden Scale, what is Mr. L. W.’s activity score?
- A. 1
  - B. 2
  - C. 3
  - D. 4

<b>Mobility</b>	<b>1. Completely Immobile</b>	<b>2. Very Limited</b>	<b>3. Slightly Limited</b>	<b>4. No Limitation</b>
<b>Ability to change and control body position</b>	Does not make even slight changes in body or extremity position without assistance.	Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently	Makes frequent though slight changes in body or extremity position independently	Makes major and frequent changes in position without assistant

4. Using the Braden Scale, what is Mr. L.W.'s mobility score?

- A. 1
- B. 2
- C. 3
- D. 4

<b>Nutrition</b>	<b>1. Very Poor</b>	<b>2. Probably Inadequate</b>	<b>3. Adequate</b>	<b>4. Excellent</b>
<b>Usual food intake pattern</b>	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 fluid poorly. Does not take a liquid dietary supplement. <b>OR</b> Is NPO and/or maintained on clear liquids or IVs for more than 5 days	Rarely eats a complete meal and generally eats only about 1/3 of any food offered. Protein intake includes only 3 servings of meat per dairy products per day. Occasionally will take a dietary supplement. <b>OR</b> Receives less than optimum amount of liquid diet or tube feeding.	Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) per day. Occasionally will refuse a meal, but usually takes a supplement when offered <b>OR</b> Is on tube feeding or TPN regimen which probably meets most of nutritional needs.	Eats most of every meal. Never reuses a meal. Usually eats a total of 4 or more servings of meat or dairy products. Occasionally eats between meals. Does not require supplementation.

5. Using the Braden Scale, what is Mr. L.W.'s nutrition score?

- A. 1
- B. 2
- C. 3
- D. 4

Friction & Shear	1. Problem	2. Potential Problem	3. No Apparent 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 constant friction.	Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against the sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time, but occasionally slides down.	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.

6. Using the Braden Scale, what is Mr. L. W.'s friction and shear score?
- A. 1
  - B. 2
  - C. 3

The answers you selected on the preceding subscale questions make a total Braden Scale score of:

7. Based on Mr. L.W.'s total Braden Scale Score, indicate his level of risk for developing a pressure ulcer.

- F.** 9 or less = Very High Risk
- G.** 10 – 12 = High Risk
- H.** 13 – 14 = Moderate Risk
- I.** 15 – 18 = Mild Risk
- J.** 19 – 23 = Generally not at risk

8. Given Mr. L. W.'s level of mobility, what preventative measures are indicated to protect him from the effects of unrelieved pressure?
- A. Apply an air mattress to the bed
  - B. Apply a chair cushion when sitting
  - C. Apply a donut ring when to the chair when sitting
  - D. A & B
  - E. A & C
9. Fecal and urinary incontinence are not a risk factor for pressure ulcer development.
- C. True
  - D. False
10. As long as there is an air mattress on the bed, repositioning every 2 hours does not need to be done.
- A. True
  - B. False
11. Mr. L.W.'s nutrition Braden Subscale score places him at increased risk for pressure ulcers?
- A. True
  - B. False
12. Mr. L. W.'s buttocks are occasionally moist due to bowel incontinence. What is the best prevention plan?
- A. Place him in diapers.
  - B. Clean his skin vigorously with soap and water after each episode of bowel incontinence.
  - C. Place four blue pads under Mr. L.W.'s buttocks and upper thighs to absorb the stool.
  - D. Gently cleanse skin, protect it with a barrier cream and use absorbent under pads to wick moisture from the skin.
13. Pressure ulcers DO NOT heal from a Stage IV to a Stage I.
- A. True
  - B. False
14. Did the educational materials presented give you a better understanding of the Braden Scale?
- A. Yes
  - B. No

*Appendix D***PRESSURE ULCER SCREENING/ALERT TOOL**

Does the patient have a history suggestive of pressure ulcers?

- Advanced age
- Malnutrition
- Obesity
- Dehydration
- Contractures
- Neurological impairment
- Inadequate patient immobility
- Incontinence of bowel and bladder
- Cognitive decline
- History of previous pressure ulcers
- Co-morbidities (Diabetes, Peripheral Vascular Disease)

If yes, consider the following preventative measures:

- Pressure redistribution mattress for stretcher
- Hospital bed
- Order specialized mattress (low air loss bed, fluid air bed)
- Repositioning every two hours
- Head of bed less than 30 degrees if medically feasible
- Heels off of bed

Date \_\_\_\_\_ Time \_\_\_\_\_