GW Nursing

DOCTOR OF NURSING PRACTICE PROGRAM

A DNP PROJECT

TITLE: Implementing SSKIN Bundle for Pressure Ulcer Prevention in Long-term Care Facility

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Abstract

Background: Pressure ulcers are a major challenge in long-term care (LTC) facilities. Adult patients in LTC setting are at risk for developing pressure ulcers due to chronic medical conditions and comorbidities. Preventing the onset of these wounds is more cost-effective than treating pressure ulcers.

AIM/Objectives: The primary objective was to decrease the number of pressure ulcers by 50% within a three-month period. Secondary objectives were to achieve 100% compliance with completion of mandatory staff education, score on the posttest questionnaire, and compliance with mandatory staff documentation as instructed by the SSKIN protocol.

Methods: This DNP Project used a pretest and posttest design to compare the rates of pressure ulcers for patients exposed to the SSKIN bundle protocol versus the current standard of care alone. Retrospective data from two months pre-intervention was collected and compared to data two months post-intervention.

Results: There were more in-house acquired pressure ulcers in the post-intervention period versus the pre-intervention period (4 vs. 3). 100% of current nursing staff completed the education module. Although, there was a significant improvement in the pre and post test scores from 79.8% to 94.6%, the posttest score's goal of 100% was not met.

Conclusions: The analysis showed the incidence of in-house acquired pressure ulcers was not statistically different ($p = 0.62$). While a significant clinical impact was not seen with the implementation of the SSKIN bundle on a three-month timeframe, maintaining the bundle and continuing education for nursing staff may be beneficial and effective. Some limitations to this project included the COVID-19 pandemic requiring isolations associated with decreased patient activities and mobility, and a lack of consistent nursing staffing.

Introduction

Each year, over 2.5 million people in healthcare facilities experience pressure ulcers, with over 60,000 of these patients dying as a result (Au & Wang, 2019). In long term care settings, the prevalence of pressure ulcers ranges from 8.2% to 32.3%, with incidence rates as high as 59%. The annual cost to treat pressure ulcers is estimated to be nearly $11.6 billion (Yap et al., 2019). Preventing the onset or curbing the progression of pressure wounds is more cost-effective than treating extensive tissue damages caused by pressure (Brem, et al., 2010). As envisioned by Florence Nightingale, pressure wounds are preventable and primarily occur because of the deeds of commission or omission in the nursing process (Martin, et al., 2017). Yet, preventing pressure ulcers remains a challenge in long-term care given the pervasiveness of the issues across the United States.

According to the Agency for Healthcare Research and Quality, pressure wounds nearly tripled the hospitalization period, increasing the cost of treatment to approximately $20,000 (Berlowitz et al., 2011). The Centers for Medicaid and Medicare (CMS) noted that the total expenditure of treating pressure injuries in one patient was closer to $43,000 and declared a decision to stop reimbursing for these conditions, setting a precedence for other payers in the health industry (Berlowitz et al., 2011). Health facilities face more than 17,000 legal actions attributed to pressure injuries, with an annual budget of approximately $250,000 in legal costs (Hartmann et al., 2016). The social costs are also immense due to increased mortality and morbidity risks. Health facilities risk poor quality ratings, which has harmful impacts on the general outlook of these establishments. Pressure ulcers are known to increase disease burden because of high risk of infections, reducing life quality of patients (Ibrahim & Qalawa, 2020). Preventing pressure wounds in long-term care facilities is increasingly becoming a significant concern, given the increasing number of older adults in the United States.

Background and Significance

Pressure ulcer development in intensive care, long-term care, or outpatient centers may be prevented if at-risk patients are identified early and prevention measures are implemented (Berlowitz et al., 2011; Hartmann et al., 2016; Hicks, 2019; Martin et al., 2017). The SSKIN (Skin assessment, Surface, Keep moving, Incontinence, Nutrition) bundle that was implemented in this project is an evidenced based intervention that has been successful in decreasing the number of pressure ulcer incidents in various settings (Norris, Bielby, Freeman, & Piper, 2015). The elements of the SSKIN bundle assist in the assessment and care planning for patients at risk for pressure ulcers. This bundle considers major factors involved in maintaining patients' skin integrity when planning care (Norris, Bielby, Freeman, & Piper, 2015).

Long-term care (LTC) patients are particularly prone to pressure ulcers due to immobility, increasing the risk of exposing bony surfaces to pressure, shear, or friction. Pressure ulcers may form on boney prominences such as the hip bones, coccyx, and the spine in malnourished patients. Patients with respiratory failure who used bi-pap masks are more likely to experience pressure ulcers on the bridge of their nose and cheeks. Fluid resuscitation of endotracheal tubing causes mucosal pressure ulcers (Berlowitz et al., 2011). Incontinent patients are most likely to develop pressure ulcers. Patients with low blood pressure are more likely to experience pressure ulcers due to inadequate skin perfusion. Even though the prevalence of pressure ulcers has declined over the past decade, much remains undone to reduce this preventable complication (Cicceri et al., 2020).

Needs Assessment

A strengths, weaknesses, opportunities, and threats (SWOT) analysis (Appendix A) was done in the facility. Strengths identified consist of strong and responsive leadership, effective communication, an actively engaged team, and leadership's focus on quality. Nurse turnover, nursing staff knowledge deficit, lack of a standardized protocol, and lack of accountability were considered weaknesses. Opportunities identified included increase staff awareness, education and training, facility wound care nurse, potential SSKIN bundle champions, and interest for incorporating SSKIN bundle in the policy and procedure on pressure ulcer prevention and health record documentation. Some of the threats identified were increasing costs for pressure ulcers, changes in regulations specific to pressure ulcer reimbursements, and nursing staff not being accountable for daily skin assessment.

Problem Statement

Many studies have documented the value of implementing the SSKIN bundle for prevention of pressure ulcers (Amr et al., 2017; Anderson et al., 2015; Fleming et al., 2017; Santy-Tomlinson & Limbert, 2020; Tayyib et al., 2016). These studies have documented that implementing a pressure ulcer prevention bundle significantly reduced pressure ulcer incident. Several studies also documented that nursing staff reported that education on pressure ulcer prevention increased their awareness about pressure ulcer prevention and helped them provide better care (Awali et al., 2018; Ekama & Morohunfoluwa, 2016; Park et al., 2020; Porter-Armstrong et al., 2018).

A needs assessment conducted of the skilled-nursing facility for this study showed that nursing staff lack adequate knowledge of the severity of pressure ulcers and the implication on nursing care. Participation in this evidenced-based pressure ulcer prevention initiative may improve nursing knowledge of pressure ulcer prevention. Knowledge deficit about the etiology

and risk factors is a major contributing factor to pressure ulcer development (Awali et al., 2018). Nursing staff need adequate education to promote the competence of handling and managing the risk of pressure ulcers (Hyun et al., 2019).

The problem of pressure injuries in nursing facilities is linked to the lack of proper knowledge and skills required to prevent the onset or exacerbation of pressure ulcers. This gap in knowledge limits the capacity of staff members to develop holistic and patient-centered plans to mitigate pressure ulcer risks in older adults. A significant reason identified for pressure ulcer development in the facility was inadequate knowledge of the effects of pressure ulcers on overall patient outcomes and lack of a standardized pressure ulcer prevention protocol. Nursing staff sometimes do not put standardized preventative measures in place and lack the knowledge of pressure ulcer implications. Currently, the skin care policy that the facility has in place instructs nurses when to assess the patient's skin, where to document findings, and how to monitor pressure ulcers. However, there is no established protocol in place for monitoring patients at-risk for pressure ulcer development or specific interventions to prevent the development of pressure ulcers.

Purpose Statement

The purpose of this project was to implement an evidence-based pressure ulcer prevention protocol (SSKIN) for all staff providing care for patients within a skilled nursing facility to decrease pressure ulcer rates over a three-month period.

Evidenced-Based Practice (EBP) Question

Does implementation of an evidence-based pressure ulcer prevention protocol (SSKIN) decrease pressure ulcer rate for the patient population of two units at a skilled-nursing facility?

PICO

P: Staff providing care to patients within two units at the skill nursing facility

I: Evidence-based pressure ulcer prevention protocol (SSKIN)

C: No evidence-based pressure ulcer prevention protocol (SSKIN)

O: Decreased pressure ulcer rate

Aims

The aim of this scholarly project was to implement an evidence-based intervention that would directly improve health outcomes for the patient population of two units at a skilled nursing facility by reducing the incidence of pressure ulcers by 50% over a three-month period.

Objectives

The primary objective of the intervention was to decrease the number of pressure ulcers in the two LTC units by 50% within a three-month period. Secondary objectives were to achieve 100% compliance with completion of the mandatory staff education module, have all staff score 100% on the posttest after completing the education module, and to attain a target goal of 100% compliance with appropriate mandatory staff documentation every shift per the SSKIN protocol over the course of three months. SSKIN bundle specific goals include making sure that patients have the right surface support, early skin inspection and early detection of skin abnormalities, keeping patients clean and dry, helping patients to have the right diet and plenty of fluids, and checking under and around devices every shift over the course of the three-month intervention.

Measures

The measures for this project encompassed structure, process, outcome, and balancing measures (Appendix B). Structure measures identified are a) all aspects of the SSKIN protocol (Skin assessment, appropriate surface, turning and repositioning, incontinence care, and nutrition), and b) documentation of preventive activities. The process measure was targeted

towards measuring the percentage of patients with a pressure ulcer risk assessment completed on admission and with every in-house unit transfer, percentage of residents at-risk who are receiving full pressure ulcer preventive care upon admission, percentage of residents receiving daily pressure ulcer risk reassessment, percentage of residents with pressure ulcer risk reassessed with any change in condition, and percentage of at-risk residents with individualized care and prevention plan. The outcome measure focused on number of pressure ulcer incidents. Finally, the balancing measure worked to assess nursing staff satisfaction utilizing the SSKIN bundle protocol.

Review of Literature

Various search strategies were used to find published studies on effects of implementing pressure ulcer preventative bundle for the prevention of pressure ulcers in adult patients. The guidance of the university's librarian was immensely helpful. Searches were performed using CINAHL, Scopus, and The Cochrane Library computerized databases. The database searches for evidence to support the use of a pressure ulcer prevention bundle used the following keywords: "pressure injuries," "pressure ulcers," "preventive bundle," "SSKIN", and "adult patients." A Cochran search had one article with no article to review. CINHAL had 97 articles with four articles to review. A SCOPUS search found 24 articles with five articles to review. The article abstracts were reviewed with the research question in mind. Additional search strategies were used to supplement the computerized databases to identify articles that may have been missed through the computerized database search. Searching references cited in relevant articles yielded two additional articles. *International Journal of Nursing Sciences* was searched and found one additional article to review.

Study Selection

Ten studies were selected that met the inclusion criteria (Amr et al., 2017; Anderson et al., 2015; Awali et al., 2018; Bergstrom et al., 2014; Delmore et al., 2018; Mäki-Turja-Rostedt et al., 2019; Norris et al., 2015; Sardari et al., 2019; Tayyib et al., 2016; Wogamon, 2016). The inclusion criteria were (1) published in English, (2) published in or after 2010, (3) qualitative and quantitative studies as well as systematic reviews, meta-analysis, and clinical guidelines, (4) involved elements of pressure ulcer preventative bundle, (5) nursing knowledge/training. Studies were excluded if articles were published over 10 years ago or if articles were case series or literature review. Studies were also excluded if pressure ulcer prevention only involved treatment options (Appendix C).

Synthesis of the Findings

Healthcare organization leadership struggles with combating the challenge of pressure ulcer incidents. Nursing staff are saddled with the responsibility of maintaining their patients' skin integrity, yet they do not feel adequately prepared for this. Pressure ulcer preventative bundle is one of the ways to prepare nurses with using standardized pressure ulcer prevention protocols and decreases the rate of pressure ulcers (Amr, Yousef, Amirah, & Alkurdi, 2017). When adequately prepared, nursing staff can follow the protocol for preventing pressure ulcers, thereby improving patient outcomes (Tayyib et al., 2016). Implementing a pressure ulcer preventative bundle is precise, clear, easy, boosts compliance, and is helpful in managing chronic and exacerbated conditions in adult patients (Norris et al., 2015; Tayyib et al., 2016). Also, a pressure ulcer preventative bundle is dependable, straightforward to implement, and is appropriate for use in adult patents (Mäki-Turja-Rostedt et al., 2020).

Mäki-Turja-Rostedt et al. (2020) discussed the elements of the SSKIN bundle as they relate to pressure ulcer prevention. Evidence indicates that pressure ulcers are preventable with the use of the SSKIN bundle pressure prevention protocol. Clinical guidelines are not as

effective as a preventative bundle due to the bundle's expected monitoring and audit (Mäki-Turja-Rostedt et al., 2020; Tayyib et al., 2016). According to Mäki-Turja-Rostedt et al. (2020), the long-term care environment presents many challenges in preventing pressure ulcers in patients given their multiple chronic medical conditions, immobility, incontinence, and decreased oral intake.

An important assessment of existing evidence is vital in establishing the necessary components of a pressure injury prevention bundle (Anderson et al., 2015; Tayyib et al., 2016). Many studies incorporated skin assessment as a crucial piece in the bundle implementation (Amr et al., 2017; Anderson et al., 2015; Norris et al., 2015; Tayyib et al., 2016). Skin assessment should occur upon admission, with every change in condition, in-house transfers, and daily (Anderson et al., 2015). Standardized and personalized preventative interventions must be put in place to mitigate pressure ulcer incidence as soon as patients at risk are identified (Tayyib et al., 2016).

Wogamon (2016) established that the use of educational intervention is recommended to improve the clinical performance of the nurses in pressure ulcer prevention, although the financial implications of pressure ulcer training for healthcare facilities was not discussed. The aspect of the potential cost implications for healthcare organizations is a significant area of consideration which must be anticipated when advocating pressure ulcer prevention educational programs. Wogamon (2016) utilized training workshops, pamphlets, and educational CDs in formal group sessions. Two of the studies (Awali et al., 2018; Sardari et al., 2019) utilized the standardized and practical educational program in evaluating nursing knowledge of pressure ulcer prevention during the study, thereby supporting the studies generalizability.

Various approaches to education and training were employed among the studies to evaluate healthcare provider knowledge and attitudes and all the studies used valid instruments that support the dependability of results. Overall, the sample sizes of all studies were small which could influence the level of confidence. Also, there was no application of double blinding in these studies, and this presents potential bias risks. This bias may come from nursing staff whose responses to questionnaires may not accurately represent their level of knowledge of pressure ulcers.

Taking into consideration that the primary goal was to preclude the onset of pressure ulcers to reduce the incidence and prevalence of the problem among patients at risk, this action is possible by empowering nursing staff with enough knowledge required about this issue to provide patient-centered care that will minimize risk factors influencing the onset or progression of pressure ulcers. It is likely that nursing staff may be skeptical about continuing education on pressure ulcers due to the feeling of innate knowledge, but it is important that educational interventions about pressure ulcer prevention be based on nursing needs as it affects patient outcomes. There are known guidelines for pressure ulcer prevention; however, interventions are not performed in a reliable way. Nursing staff knowledge is one of the variables that contributes to the development of pressure ulcers (Awali, et al., 2018 & Sardari et al., 2019).

Delmore et al. (2018) and Sardari et al. (2019) stated that interactive lecture as an educational intervention is an effective method of training for nurses, but other educational approaches should be considered as well as their effects on pressure ulcer prevention practices and outcomes. Review of these studies indicate that educational interventions for healthcare providers on pressure ulcers prevention may significantly minimize incidents of pressure ulcer incidents in patients at risk for pressure ulcer development (Awali, Nagshabandi, & Elgmail,

2018). This quality improvement (QI) project utilized interactive one-on-one nursing staff training on pressure ulcer prevention.

Evidence-Based Practice Translation Model

The DNP project integrated the Iowa Model of Evidence-Based Practice to Improve Quality Care (Titler et al., 2001). For this project, this model helped to maintain consistency, guide nursing to improve patient outcomes, boost nursing practice, and monitor health costs (Taylor-Piliae, 1999). This model has been effectively and universally used to promote nursing practice in various nursing settings (Titler et al., 2001). The Iowa Evidence-Based Practice Model has been widely used in nursing, with a focus on evaluating, developing, implementing, and evaluating evidence-based practice protocols or guidelines (Titler et al., 2001). The Iowa State Model facilitates appropriate topic selection, team formation, retrieval of evidence, classification of evidence, development of EBP standards, implementation of EBP, and evaluation process.

The Iowa State Model is a translation model that effectively guided this quality improvement project. It facilitated choosing an effective pressure ulcer prevention champion team, EBP educational interventions, such as the SSKIN bundle, as well as guided the implementation and evaluation process. The SSKIN bundle helped the facility's nursing staff to implement pressure ulcer preventive strategies focusing on pressure-relieving surfaces, incontinence care, turning and repositioning, and nutritional management. As discussed by Mäki-Turja-Rostedt et al. (2020), effective EBP pressure wound risk assessment and prevention is a fundamental element in long-term care settings. It improves the quality of care and healthcare utilization efficiency.

Methods

Project Design

This DNP project was a pre and post intervention evidence-based practice (EBP) design. This was chosen because many studies have shown the value of pressure ulcer prevention program training in similar settings (long-term care facility) as a method of increasing staff knowledge of pressure ulcer prevention strategies and decreasing rates of pressure ulcers (Awali et al., 2018; Delmore et al., 2018; Sardari et al., 2019). The long-term care facility for this project did not have a standardized pressure ulcer prevention program; hence, the design of this project aimed to translate the evidence of the SSKIN Bundle into practice.

Setting

The facility is a 148-bed skilled nursing facility located in an urban Maryland county that provides both short-term and long-term care services. The average age of patients at the facility is 75 with a 43% male and 57% female population. Eighty percent (80%) of patients in the facility are over the age of 65. Overall, the facility has about 43 nurses including full time, part-time, and PRN with a total of 22 current and active nurses. The facility has two long-term care units and one short-term care unit. The DNP project was implemented in the two LTC units that consist of 103 beds capacity.

Recruitment

The sample was the same as the patient population given the use of convenience sampling. Sample size was calculated by looking at the number of admitted patients to the two units within the skilled nursing facility over a three-month timeframe. The sample size was based on the number of beds in the units and how often the units remained at capacity over the three-month timeframe. A total of 33 LTC patients were included. Those included were all long-term care

patients on the first and second floor units. Short-term care patients and all patients with existing wounds were excluded.

Consent

Upon admission to the facility, patients are required to sign an admission package which includes a consent to treat agreement, permitting be treated by the facility. The methods used within this project was covered within this initial consent form. No additional informed consent form was needed for this project.

Project Interventions

The components of this intervention included an assessment of pre-intervention data and mandatory educational training for all nursing staff.

Pre-intervention data on in-house acquired pressure ulcers was pulled directly from the facility's electronic medical records (EMR) with the assistance of the quality improvement manager.

Pre-intervention surveys was given to nursing staff to assess their understanding of pressure ulcer prevention (Appendix F). Staff completed mandatory educational training. Educational training occurred in small groups and one-on-one PowerPoint presentations to nursing staff. The educational intervention was developed based on the Agency for Healthcare Research and Quality's (AHRQ) pressure ulcer prevention training guideline with attention to the elements of the SSKIN bundle (Appendix G).

AHRQ has made the guidelines available for public usage. The authors have indicated the training program can be downloaded for personal use and educational training purposes but cannot be reproduced or incorporated into other computer access systems. The AHRQ pressure ulcer prevention training guideline is a valid training program approved by the Department of Health and Human Services to train healthcare providers in developing structured pressure ulcer

prevention programs built on quality improvement standards. Although the AHRQ training guidelines are tailored for hospitals, they are recommended to be used as a guide, and long-term care facilities can and should modify them to meet their specific needs, especially considering the varied availability of resources in the setting.

After the training was completed, staff completed a post-intervention survey to assess their understanding of pressure ulcer prevention (Appendix F). The SSKIN bundle was implemented on the two long-term care units, and evaluation of compliance was done through daily and weekly documentation audits by the facility wound nurse. Five individual evidence-based pressure ulcer prevention strategies were mutually and consistently applied to create the desired positive patient outcomes (Horner & Bellamy, 2012; Tayyib et al., 2016). The components of the bundle consist of ensuring appropriate surface, regular skin inspection, turning and repositioning at least every two hours, incontinence care, and adequate nutrition.

Project Timeline

The project took a total of six months to complete (see Appendix D). This included two months of pre-intervention data collection and two months of post-intervention data. Pre-intervention data was collected between July 1, 2021, and September 7, 2021. Approximately one month was allocated for implementation between September 2021 and October 2021. Post-intervention data was collected between November 2021 and January 2022.

Resources Needed

The facility leadership provided most of the resources and budget that were be needed to complete this QI project. Staff participation was needed for the QI initiative. Nursing staff completed a one-on-one training and were paid their regular wages for attendance at the on-site training session. The training material was made available through the AHRQ website. The

laptop for the PowerPoint training was available at the facility. Sealed boxes for secure survey submission were provided by the facility at no cost. The total cost of the quality improvement project including the pretest, posttest, and educational materials printing was approximately $1,184.99 (see Appendix I).

Cost-Benefit Analysis

The Mind Tools Limited Cost-Benefit Analysis (CBA) was used to determine the cost of the project relative to its potential value (Mind Tools, n.d.). This tool was recommended in the Moran et al. (2020) DNP Practice Project book as a method for determining the CBA. The tool asks for monetary values to be assigned for all the costs as well as the benefits, to list all the anticipated costs related to the project and estimate the benefits that will be experienced from the project. This tool allows users to approximate the value for benefits that are difficult to assign specific monetary values. For example, pressure ulcer prevention in long-term care facilities has been proven to improve patients' quality of life and decrease hospitalization; identify patients at risk and put preventative interventions in place to reduce associated healthcare costs (Lavallée, Gray, Dumville, & Cullum, 2019).

The Centers for Medicaid and Medicare noted that the total expenditure of treating pressure injuries in one patient is around $43,000 (Berlowitz et al., 2011). There are roughly 130 patients at the project facility. Therefore, $43,000 x 130 = $5,590,000. This number will be used to assign monetary value to the potential benefit(s) of the project specific to the nursing facility. Most of the costs for this project were associated with nursing education hours and printing. Total education hours completed by nursing staff during the project is 38 hours. The average salary at the facility was $28.00 per hour for a cost of $1,064. Sealed boxes for survey submission were made from empty boxes that was provided by the facility at no cost. Pretest,

posttest, and educational materials took about two reams of paper to print for a total paper cost of $30.99 and ink cost of $90 estimated. The total cost of the EBP project was approximately $1,184.99 (Appendix I)

The following formula was used to highlight how the benefits override the costs: Total cost of project/total cost of benefits = length of payback period. The CBA for this project was: $1,184.99 (total cost for project)/$5,590,000 (potential total benefit/money saved by pressure ulcer prevention costs) = 0.0002119839 months. This translates to an almost immediate payback of the value of the intervention. With approximately 23% of the facility's residents with pressure ulcers, sustaining this project can potentially decrease pressure ulcer treatment associated costs and overall healthcare costs. Based upon this, it can be confidently stated that the benefits of the project significantly outweighed the total costs.

Institutional Review Board and/or Ethical Issues

There were no major ethical issues within this project given that this is a quality improvement study. Data were blinded and secured in the office of the quality improvement manager. The computer system was consistently locked, and password protected. Data was evaluated by designated trained individuals inclusive of the DNP student and the quality improvement manager. No specific patient health information was included within the study. The study underwent a human subject's determination via the George Washington University's Institutional Review Board (IRB), and it was determined that the project did not meet the definition of research.

Evaluation Plan

The logic model approach, utilized by the National Institute of Health (NIH), is a useful project tool that increases the likelihood that a project will be implemented successfully (Hayes,

Parchman, & Howard, 2011). Logic model provides a visual representation of a project's resources, activities, short-term, intermediate, and long-term outcomes (Schiffman, et al., 2019). This is appropriate for this project as it included short, intermediate, and long-term goals regarding pressure ulcer prevention.

Specific short-term outcomes were to increase the percentage of staff trained to use the SSKIN bundle and increase nursing staff pressure ulcer knowledge. Intermediate outcomes were to have 100% of patients with pressure ulcer risk assessment completed, ensure that 100% of patients have an individualized pressure ulcer prevention care plan, and have 100 % of patients receive daily pressure ulcer risk assessments. The long-term outcome was to reduce the incidents of in-house acquired pressure ulcers at the facility. (Appendix B)

Data Analysis, Maintenance, & Security

Data Collection

Prior to the intervention, baseline data on the number of in-house acquired pressure ulcers was obtained by conducting a chart review of the previous 2-months. Pressure ulcer rates two months prior to the intervention and two months post intervention was obtained from the facility's EMR for comparison. Also, The Pieper-Zulkowski Pressure Ulcer Knowledge Test (PZ-PUKT, version 2), a standardized, validated instrument with 72 items, was used to measure nursing staff pressure ulcer knowledge. (Delmore, Ayello, Smart, & Sibbald, 2018). The test was used to determine the baseline pressure ulcer knowledge of nursing staff on Day 1 before the educational intervention begins, and on Day 2 after related educational content was completed. Nursing staff answered the same knowledge test questions before and after the education presentation. Post-intervention, Nurses' perception of the SSKIN protocol related to ease of use, improved pressure ulcer prevention and management were also measured.

Charge nurses performed daily documentation audits using the data collection audit tool (see Appendix E). Nursing staff documented on each assigned patient if there is any in-house incidence of pressure ulcer, and if so, the stage and location was documented on the audit sheet. The compliance checklist consisting of daily skin assessment, use of low air loss mattress over regular mattress, patient turning every two hours, incontinence care every shift, and nutritional consultation was documented on the audit tool by nursing staff.

The facility's wound nurse reviewed these audits every Tuesday on wound rounds and ensured that it was done effectively. These audits aimed to and attained 100% compliance with nurses' documentation of the patient's age, surface support in place, skin inspection, position change, incontinence status, and nutrition/hydration status.

Data Analysis

For objectives 1, 3, 4, 5. and 6, descriptive statistics was used to report variables (percentage of staff trained in SSKIN bundle, percent of patients with completed pressure ulcer assessment, percentage of patients with individualized pressure ulcer prevention care plan, percentage of residents receiving daily pressure ulcer risk reassessment, and number of patients with new pressure ulcers). For objective 2, data from the Pieper-Zulkowski Pressure Ulcer Knowledge Test pre-test and post-test knowledge scores were analyzed by calculating the mean score in Excel and using a paired t-test to compare the different responses before and after the education session. For objective 7, descriptive statistics was used to measure nursing satisfaction with the SSKIN bundle since it was only measured once (after the implementation). For the Likert-scale questions, most nurses answered, "very satisfied" or "satisfied," when asked about different aspects of the SKKIN bundle program. This demonstrated that the nursing staff were overall highly satisfied with many aspects of the program, such as the ease of use, self-drive in

monitoring their patients' skin status and surface support, and satisfaction of improvement in pressure ulcer incidents in monitoring their patients' nutritional and incontinence status.

The outcome of interest in this analysis was the number of patients with new pressure ulcers post implementation of the SSKIN bundle. The aim of decreasing the number of patients with in-house acquired pressure ulcers by 50% within a three-month period was analyzed by looking at the incidence of in-house acquired pressure ulcers pre-intervention and post-intervention. Eventually, this objective was not met because there was not a decrease in the incidence of in-house acquired pressure ulcers. There were more in-house acquired pressure ulcers in the post-intervention period compared to the pre-intervention period (4 vs. 3).

Mandatory nursing staff training module was done in small groups and one-on-one and was tracked by the attendance sheet signed by all nursing staff. The Pieper-Zulkowski Pressure Ulcer Knowledge Test was printed and handed to nursing staff for pre and post-tests. Test results were hand-scored by the DNP student using the Pieper-Zulkowski Pressure Ulcer Knowledge Test answer key (Appendix K). The goal was for 100% of nursing staff to receive the AHRQ Pressure Ulcer Prevention Training Module and this goal was met as all current nursing staff received this training.

Data Maintenance and Security

The DNP student was responsible for the maintenance and security of all data related to this project. All data was locked and secured in the quality improvement manager's office. Data was double-checked by facility Assistant Director of Nursing and Nurse Educator/Staff development Director for accuracy. There was no missing data as all data was collected and entered on a day-to-day basis.

Findings

Implications for Practice

According to the literature review, educating nursing staff to provide direct patient care is an effective strategy to reduce the incidents of pressure ulcers in any healthcare setting, and especially in long-term care facilities. Education and utilization of the SKKIN bundle for pressure ulcer prevention, is expected to improve nursing knowledge, assessment, reporting, and subsequently preclude the onset of pressure ulcer in long-term care patients at the facility. The combination of nursing staff education and utilization of a pressure ulcer prevention bundle is expected to improve nursing knowledge about pressure ulcers and how to prevent them, and subsequently decrease the rates of in-house acquired pressure ulcers. The literature identified direct care nursing staff as the best to lead pressure ulcer prevention efforts. Their involvement in the project is anticipated to improve nursing attitude about the potential medical, costs, and legal implications associated with in-house acquired pressure ulcers.

Implications for Healthcare Policy

Tasking the pressure ulcer prevention committee with recommending a pressure ulcer prevention bundle for long-term care patients is expected to reduce the incidents of in-house acquired pressure ulcers. Unreliable application of best practice pressure ulcer prevention protocol occurred at most institutions due to inadequate resources. Modifications in healthcare policy could streamline education for nursing staff across long term care facilities. For instance, mandatory ongoing nursing education hour requirements on pressure ulcer prevention for renewals of licenses all nurses, both registered nurses and licensed practical nurses could standardize training on best practice guidelines in pressure ulcer prevention.

Implications for Quality/Safety

Implementation of the SSKIN bundle was expected to decrease the number of in-house acquired pressure ulcers. This goal was not met with this project due to underlying conditions of some of the patients involved in the study, mobility restrictions due to COVID-19 precautions, and staffing issues. Maintaining adequate staffing and continuing nursing education on pressure ulcer prevention could potentially improve the safety and quality of care. In the long-term, the facility can expect cost saving effects and improved CMS (Center for Medicare and Medicaid Services) quality rating.

Implications for Executive Leadership

One of the main drawbacks of this project was the staffing shortage due to the COVID-19 pandemic requiring staff members who tested positive to be off the schedule for ten to fourteen days. Having a pool of "as needed" (PRN) nursing staff with incentives and working directly with nursing staffing agencies could potentially improve staffing issues allowing for better nurse-patient ratio, and subsequently decreasing incidents of in-house acquired pressure ulcers.

Summary

The aim of this quality improvement project was to implement an evidence-based intervention that will directly improve health outcomes for the older adult patient population at two units within a skilled-nursing facility by reducing the incidence of pressure ulcers by 50% within a three-month period. Pressure ulcers are a major healthcare challenge with long-term care patients being particularly at-risk for development of pressure ulcers given their chronic medical conditions and comorbidities. Evidence from the literature search supports the effectiveness of implementing elements of the SSKIN protocol for pressure ulcer prevention in

substantially decreasing the incidence of pressure ulcers in adult patients. Successful SSKIN protocol implementation and pressure ulcer rate reduction will require a high nursing staff compliance with all five elements of the bundle. Although a significant clinical impact was not seen with the implementation of the SSKIN bundle protocol over a three-month period, sustaining the protocol may prove to be more effective.

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Appendices

Appendix A. SWOT Analysis

	Helpful To achieving the objective	**Harmful** To achieving the objective
Internal Origin {Attributes of the organization}	**Strengths** • Strong and responsive leadership • Leadership focus on quality • Effective communication • Actively engaged team	**Weaknesses** • Nurse turnover • Staff knowledge deficit • Inconsistencies • Lack of accountability
External Origin {Attributes of the organization}	**Opportunities** • Increase staff awareness. • Education and training • Wound care Nurse • LTC SSKIN Bundle Champions • Incorporate SSKIN bundle implementation in the policy and procedure on PU prevention and health record documentation	**Threats** • Nurses not accountable • Increase costs. • Changes in regulations specific to pressure ulcer reimbursements

Appendix B. Evaluation Plan

Aim 1: Increase the percentage of staff trained in SSKIN bundle.

Measure	Measure Type*	Data Source	Sampling Method	Timing/Frequency
% of staff who completed training.	Process	Staff training attendance sheet	All nursing staff	Every shift for two weeks prior to the intervention.

Standard Measure?	*No*
Numerator	% of nursing staff who completed the SSKIN bundle training.
Denominator or Population	All nursing staff (population)
Exclusions	Non-direct care staff in the facility
Calculation/Statistic(s)	Percent
Goal/Benchmark	100%

Data Element	Variable Name	Definition	Data Type	Data Values & Coding	Restrictions/ Validation
Overall % of nursing staff who completed training.	Nurs_train	The total number of nursing staff who completed SSKIN bundle training	Continuous	N/A	

Aim 2: Increase nursing staff knowledge of pressure ulcers

Measure	Measure Type*	Data Source	Sampling Method	Timing/Frequency
% of nursing staff with increased pressure ulcer knowledge.	Knowledge	Pieper-Zulkowski Pressure Ulcer Knowledge Test (PZ-PUKT)	All nursing staff.	Pre and post intervention

Standard Measure?	*No*
Numerator	Mean rating on knowledge test
Denominator or Population	All nursing staff in the facility
Exclusions	Non-nursing staff in the facility
Calculation/Statistic(s)	Percentage
Goal/Benchmark	100%

Data Element	Variable Name	Definition	Data Type	Data Values & Coding	Restrictions/ Validation
Overall % of nursing staff with increased pressure ulcer knowledge.	Nurs_know	The total % nursing staff with increased pressure ulcer knowledge	Continuous	N/A	

Aim 3: 100% of patients will have pressure ulcer risk assessment completed

Measure	Measure Type*	Data Source	Sampling Method	Timing/Frequency
Overall percentage of long-term care residents who have a pressure ulcer risk assessment completed on admission and with every in-house transfer.	Process	EMR	All long-term care patients	Weekly for three months during the intervention period

Standard Measure?	*No*
Numerator	% of patients with pressure ulcer risk assessment completed
Denominator or Population	All long-term care patients.
Exclusions	Short-term care patients
Calculation/Statistic(s)	Percent
Goal/Benchmark	100%

Data Element	Variable Name	Definition	Data Type	Data Values & Coding	Restrictions/ Validation
Percentage with pressure ulcer risk assessment completed on admission and with every in-house unit transfer.	Patient_assess	The % of patients with pressure ulcer skin assessment completed on admission and in-house transfers.	Continuous	N/A	

Aim 4: 100% of patients will have individualized pressure ulcer prevention care plan.

Measure	Measure Type*	Data Source	Sampling Method	Timing/Frequency
Percentage of long-term care residents with	Process	EMR	All long-term care patients	Weekly for three months during the

individualized care and prevention plan				implementation period

Standard Measure?	*No*
Numerator	% of patients with individualized pressure ulcer prevention care plan.
Denominator or Population	All long-term care patients.
Exclusions	Short-term care patients
Calculation/Statistic(s)	Percent
Goal/Benchmark	100%

Data Elements

Data Element	Variable Name	Definition	Data Type*	Data Values & Coding	Restrictions/ Validation
Percentage of long-term care residents with individualized care and prevention plan	Patient_ plan	Patients with individualized care plan that addresses each patient's specific needs and comprises all five elements of the SSKIN bundle	Continuous	N/A	

Aim 5: 100% of residents will receive daily pressure ulcer risk assessment

Measure	Measure Type*	Data Source	Sampling Method	Timing/Frequency
Percentage of residents receiving daily pressure ulcer risk reassessment	Process	EMR	All long-term care residents during the trial period	Weekly for three months during the implementation period

Standard Measure?	No
Numerator	% of residents who received daily pressure ulcer risk reassessment
Denominator or Population	All long-term care residents in the facility (population)
Exclusions	Short stay patients in the facility
Calculation/Statistic(s)	Percent
Goal/Benchmark	100%

Data Elements

Data Element	Variable Name	Definition	Data Type*	Data Values & Coding	Restrictions/ Validation
Percentage of residents who received daily pressure ulcer risk assessment	Assess_QD	Patients who received pressure ulcer risk assessment daily.	Continuous	N/A	

Aim 6: Decrease the percent of patients who develops in-house acquired pressure ulcers.

Measure	Measure Type*	Data Source	Sampling Method	Timing/Frequency
Percentage of patients developing new pressure ulcers	Outcome	Health records	All long-term care patients	Weekly for three months during the implementation period

Standard Measure?	*No*
Numerator	Number of patients who developed new pressure ulcers post intervention
Denominator or Population	All patients in the facility (population)
Exclusions	Short stay patients in the facility
Calculation/Statistic(s)	Percent
Goal/Benchmark	Decrease by 50%

Data Elements

Data Element	Variable Name	Definition	Data Type*	Data Values & Coding	Restrictions/ Validation
Number of long-term care patients who developed new pressure ulcer.	New_PU	Patients who developed new in-house acquired pressure ulcers of any stage.	Continuous	N/A	

Aim 7: Ensure nursing satisfaction with the pressure ulcer prevention protocol.

Measure	Measure Type*	Data Source	Sampling Method	Timing/Frequency
Nurses' perception of the SSKIN protocol related to ease of use, improved pressure ulcer prevention and management.	Balancing	Survey	Survey of all nursing staff at the end of the three-month trial period who used the SSKIN bundle.	At the end of the three-month trial period

Standard Measure? **	No
Numerator	Mean rating on all surveys
Denominator or Population***	Nursing staff who used the SSKIN bundle during the trial period (Population)
Exclusions	Non-nursing staff
Calculation/Statistic(s)	Mean
Goal/Benchmark	4 (On a scale of 0-5)

Data Elements	Variable Name	Definition	Data Type*	Data Values & Coding	Restrictions/ Validation
How satisfied are you with using the SSKIN bundle to monitor your patients' skin condition and ensure appropriate surface support?	Nurs_dri	Nursing satisfaction with improvement in self-drive in monitoring their patients' skin status and surface support. How the SSKIN bundle helps nurses to better track their patients' skin condition.	Categorical	1 = Very unsatisfied; 2 = Unsatisfied; 3 = Somewhat satisfied; 4 = Satisfied; 5 = Very satisfied	
How satisfied are you with using the SSKIN Bundle to ensure turning and repositioning of your patients and improving their skin health?	Patient_TP	Nurses' satisfaction with using the SSKIN bundle protocol for improvement in patients' skin health.	Categorical	1 = Very unsatisfied; 2 = Unsatisfied; 3 = Somewhat satisfied; 4 = Satisfied; 5 = Very satisfied	

How satisfied are you with using the SSKIN bundle to monitor your patients' nutritional status as an effort to decrease PU incidents on your unit?	Patient_Nutr	Nurses' satisfaction of improvement in pressure ulcer incidents in monitoring their patients' nutritional status. How the SSKIN bundle helps nurses better manage their patients at risk for pressure ulcer.	Categorical	1 = Very unsatisfied; 2 = Unsatisfied; 3 = Somewhat satisfied; 4 = Satisfied; 5 = Very satisfied	
How satisfied are you with using the SSKIN bundle to manage your patients' incontinence?	Patient_inc	Nurses' satisfaction of improvement in maintaining patients' skin integrity.	Categorical	1 = Very unsatisfied; 2 = Unsatisfied; 3 = Somewhat satisfied; 4 = Satisfied; 5 = Very satisfied	
How satisfied are you with the overall ease of using the SSKIN bundle protocol?	Nurs_ease	Nurses' satisfaction of how easy the SSKIN bundle protocol is to use. How easy it is to incorporate the SSKIN bundle into nurse's daily workflow.	Categorical	1 = Very unsatisfied; 2 = Unsatisfied; 3 = Somewhat satisfied; 4 = Satisfied; 5 = Very satisfied	

Appendix C. Evidence Table

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
1.	Amr, et al., (2017)	A pre-post study	660 patients	In this study, a PRESSURE bundle was implemented to evaluate the effectiveness of using specific elements in the prevention of pressure ulcers. Guideline recommendations for preventing pressure ulcers include methods for identification and risk assessment and preventive measures including skin assessment, nutrition, repositioning, and choosing appropriate support surfaces. These are all elements of the	Significant reduction in the incidence in two months compared with standard care group prevalence of sacral ulcers. In the care bundle group, there was a significant reduction ($P < 0.001$) in the incidence of newly developed sacral pressure ulcers in the two-month treatment period (n = 1, 0.3%) compared with the standard care group (n = 16, 4.6%). There was also a significant reduction ($P < 0.001$) in the prevalence of sacral pressure ulcers in the care bundle group (4.75%) compared with the standard care group (22.7%) when	ICU setting. May be generalized to LTC setting with modifications.	Level III Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				SSKIN bundle in this proposed project.	prevalence figures were compared at the end of the treatment periods.		
2.	Anderson, et al., (2015)	Quasi-experimental, pre- and post - intervention	327 patients	This study examined the effectiveness of a universal pressure ulcer prevention bundle. Five evidence-based interventions comprising the elements of the SSKIN bundle were implemented throughout patients' stay.	The incidence of unit-acquired pressure ulcers decreased from 15.5% to 2.1%. WOC nurses logged 204 rounds over six months, focusing primarily on early detection of pressure sources. Analysis revealed significantly increased adherence to heel elevation ($t = -3.905$, $df = 325$, $P < .001$) and repositioning ($t = -2.441$, $df = 325$, $P < .015$). Multivariate logistic regression modeling showed a significant reduction in unit-	ICU setting. May generalize to LTC setting with modifications.	Level II Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
					acquired pressure ulcers ($P < .001$). The intervention increased the Nagelkerke R-Square value by 0.099 ($P < .001$) more than 0.297 ($P < .001$) when including only covariates, for a final model value of 0.396 ($P < .001$).		
3.	Awali, N. & Elgmail, (2018)	Quasi-experimental design	100 nurses voluntarily participated.	This study utilized the PZ-PUKT pressure ulcer knowledge pre and post-test to determine the effect of implementing pressure ulcer prevention educational protocol on nurses' knowledge, attitude, and practices. An in-service education in small groups on	The pretest results indicated that nurses' knowledge was a moderate level (74.05% SD ± 13.499), nurses' attitude was positive (42% SD ± 4.767) and nurses' practice was (67% SD ± 2.983). However, the mean percentage of all posttests showed a significant increase in nurses' knowledge, attitude, and practice.	Small sample size.	Level II Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				pressure ulcers prevention was utilized. Nurses' knowledge towards pressure ulcers pretest and posttest was then collected using the Pieper knowledge test. This study established that educational intervention is an effective tool to improve and update nurses' knowledge, attitude, and practice toward pressure ulcer prevention. The pressure ulcer knowledge test used in this study will be used for this proposed project.	Educating nurses in this study increased the mean score percentage to 93.75% immediately after educational session from initial evaluation of 66.79%.		

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
4.	Delmore et al., 2018).	Quasi-experimental study	57 healthcare professionals participated on Day 1 and 55 on Day 2. The total number of participants for both days was 65.	This study utilized the Pieper-Zulkowski Pressure Ulcer Knowledge Test (PZ-PUKT, version 2), a standardized, validated instrument with 72 items to measure 3 domains: prevention (28 items), staging (20 items), and wounds (24 items). The test was used to determine the baseline pressure injury knowledge of the participants on Day 1 before the course began and on Day 2 after related content was completed. The educational intervention in this	There was a statistically significant increase in pressure injury knowledge scores after healthcare professionals received an interactive, educational intervention. The percentage of "high" knowledge scores was higher at posttest, increasing from 1.8% to 31%. Conversely, there was a decrease in the percentage of "low" knowledge scores, decreasing from 21.1% to 3.6%. There was a statistically significant increase in pressure ulcer knowledge scores from 1.8% pre-test to 31% post-test.	Small sample. Short time interval between the pretest and posttest administration.	Level II Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				study was a two-day interprofessional course that used didactic but other interactive, educational techniques like handouts, articles, group activities, and case example. The proposed project intends to adopt techniques in this study (handouts, case example) for effective nursing staff training.			
5.	Norris, et al., 2015)	Qualitative descriptive research design	22 residential homes	The primary intervention in this study is the SSKIN bundle. This study implemented the SSKIN bundle comprising of skin assessment, appropriate surface,	In the six-month comparator period following the educational initiative, a total of two avoidable pressure ulcers were recorded, comprising one Category 3 and one Category 4 ulcer. This	N/A	Level III Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				turning and repositioning, prompt incontinent care, and adequate nutrition. The results of this study have been very positive and demonstrate a model that strives to achieve zero tolerance towards the development of avoidable pressure ulcers that should be repeatable elsewhere. The structured approach of the SSKIN Bundle and training will ensure that all nursing staff are adequately equipped to recognize those patients that are at risk and take steps to	represents a reduction of 95.3% in the total number of avoidable pressure ulcers. The most dramatic reduction was achieved in Category 2 ulcers, with a 100% reduction being achieved from a high of 26 at baseline before the initiative to zero during the six-month period following the project.		

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				prevent pressure ulcers.			
6.	Tayyib, et al., 2016)	Observational prospective study design	11 RNs	Implementation strategies in this study included regular education, training, audit and feedback, and the presence of a champion on each unit. These strategies can be applied to this proposed project as training, audit, and feedback survey are all part of this proposed project. Implementation compliance in this study was measured using a compliance checklist. This helped nursing staff to stay on track and committed to	Study participants demonstrated a high level of compliance towards the pressure ulcer prevention bundle implementation (78.1%), with 100% participant acceptance. No significant differences were found between participants' demographic characteristics and the compliance score. There was a significant effect for time in the implementation compliance (Wilks Lambda = 0.29, F (3,8) = 6.35, $p < 0.016$), indicating that RNs needed time to become familiar with the	Small sample size	Level III Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				pressure ulcer prevention protocol.	bundle and routinely implement it into their practice.		
7.	Mäki-Turja-Rostedt, et al., 2020)	Quasi-experimental	Two long-term older adult care facilities. 141 registered nurses, and 112 practical nurses.	The researchers in this study justified that consistent practice based on international guidelines for pressure ulcer prevention can decrease incidents of pressure ulcers in long-term care patients. Using evidence-based clinical practice guidelines as it relates to skin assessment, repositioning, appropriate surface, and nutrition which are all elements of the SSKIN bundle can potentially	The intervention group had a higher mean in frequency of pressure ulcer prevention practice in nutrition ($P = 0.032$) and pressure-relieving devices ($P < 0.001$). In the comparison group, a statistically significant difference was seen in pressure-relieving device practices (mean difference: 0.17, 95% CI: −0.29 to − 0.06, $P = 0.003$). At the baseline measurement, practices in both groups were already well in line with international pressure ulcer	Changes in nursing staff during data collection may have had an impact on the results of the study.	Level II Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				reduce rates of pressure ulcer incidents in long-term care patients. Improvement in line with international guidelines was seen in the frequency of pressure ulcer prevention practices in risk assessment, nutrition, pressure-relieving devices, and documentation.	prevention guidelines in repositioning (mean: 3.46/ 3.40) and skin assessment and skincare (mean: 3.42/ 3.36).		
8.	Bergstrom, et al., 2014)	RCT	942 participants. Residents were from 20 United States and 7 Canadian LTC facilities.	This study was conducted to determine optimal frequency of repositioning in long-term care (LTC) facilities of residents at risk for pressure ulcers who are cared for on high-density foam mattresses.	Turning moderate- and high-risk residents at intervals of two, three, or four hours when they are cared for on high-density foam mattresses. Turning at three- and four-hour intervals is no worse than turning every two hours. There was no significant difference in	Types and ages of existing mattresses prior to turning and repositioning study may have affected outcome.	Level 1 Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				Interventions in this study are part of the elements of the SSKIN bundle. Participants were randomly allocated to one of three turning schedules (two-, three-, or four-hour intervals). The study continued for three weeks with weekly risk and skin assessment completed by assessors blinded to group allocation. Implementation of daily skin assessment, turning and repositioning, and appropriate surface are important elements of the SSKIN bundle that will be	pressure ulcer incidence ($P = 0.68$) between groups (two-hour, 8/321 (2.49%) ulcers/group; three-hour, 2/326 (0.61%); four-hour, 9/295 (3.05%).		

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				implemented in my proposed project.			
9.	Sardari et al., 2019)	RCT	66 nurses were randomized. n1=34 n2=32	The researchers utilized a checklist to review nurses' performance on prevention of pressure ulcers, which had 48 items that covered four areas including patients' skin care (20 items); back massage care (six items); nutritional care (12 items) and providing care for body position state, supportive levels, and mobility (10 items). They conducted an educational workshop for pressure ulcer	A significant difference was observed between the nurses' performance before and after training in the intervention group (P value < 0.001). Study results showed that training programs of pressure ulcer care can improve nurses' performance	Intensive care setting.	Level 1 Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				prevention program for nurses in the intervention group. The training program was conducted for two weeks in two 90-minute training sessions in groups of nine. The researcher used slideshow, learners' participation, and creation of opportunities for team learning and exchange of information and clinical experiences. This approach will be immensely helpful for this proposal for mode of nursing staff education on			

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				pressure ulcer prevention.			
10	Wogamon, (2016)	Pretest posttest QI study	33 CNAs employed in a care facility for residents age 55+ were invited to participate, 31 CNAs participated.	This study utilized a one-hour PowerPoint CNA education program about early identification, treatment, and prevention of pressure ulcers, knowledge, incidence, and prevention interventions, including skin checks. Pressure ulcer knowledge was assessed using the Pressure Ulcer Toolkit questionnaire before, immediately after, and three months following the	Reduction from five pressure ulcers to zero (12.3%) in the three-month pre-intervention to 0% in the three-month post-intervention. CNA reporting of skin breakdown increased by 68% from eight reports to 17. CNA training regarding pressure ulcer identification and prevention measures did not significantly improve knowledge scores, but the rate of pressure ulcer development was significantly lower and the number of documented skin	Small size study	Level IV Quality B

Article #	Author & Date	Evidence Type	Sample, Sample Size, Setting,	Study findings that help answer the EBP Question.	Observable measures	Limitations	Evidence Level & Quality
				educational intervention about pressure ulcer prevention. Nursing assistants are the caregiver who frequently identifies the first signs and symptoms of pressure ulcers in the long-term care setting and are an integral part of quality improvement effort. This proposed project will include nursing assistant training as they are first line caregivers and training them to recognize patients at risk can potentially help in decreasing the rate of pressure ulcers in long-term settings.	assessments and pressure ulcer interventions higher after the education program. Pressure ulcer incidence data were abstracted from monthly quality assurance reports for the three months pre-intervention and three months post intervention.		

Appendix D. Pressure Ulcer Prevention Project Timeline

Tasks	Start date	End date	Duration
Facility stakeholder approval meeting	2/5/21	2/5/21	1
Identify Pressure Ulcer Prevention Committee (PUPC) Members	2/15/21	2/15/21	1
Schedule first PUPC meeting	3/8/21	3/8/21	1
Determine frequency of meetings for PUPC: x1 monthly, 30 mins	3/8/21	3/8/21	1
Familiarize committee members with SSKIN bundle, appoint 2 leaders on each floor and assign roles	3/22/21	3/22/21	1
Gather baseline data on the past 2 months of long-term care patients with new pressure ulcers	6/1/21	6/1/21	1
Pre and post-survey on staff knowledge before and after one on one education on pressure ulcers	6/7/21	6/28/21	21
Assign roles, responsibilities, and task to PUPC and staff	7/5/21	7/5/21	1
Start Pressure Ulcer Prevention Intervention Bundle	9/6/21	12/17/21	90
Bi-weekly check-in	9/20/21	12/17/21	83
Weekly data collection	9/20/21	12/17/21	90
Finish Pressure ulcer prevention data collection	12/17/21	12/17/21	1
Evaluate outcomes and identify next steps	1/17/22	5/20/22	120
Report outcomes to stakeholders	1/17/22	5/20/22	120
Disseminate the findings	1/17/22	5/20/22	120

Appendix E. Data Collection Tool

Part 1: Demographic Data
Participant's ID #
Age: Incidence of pressure ulcer: Yes/ No
Stage and location of pressure ulcer

Date of Admission:

Part 2: Compliance Checklist

Participants	Documented skin assessment daily	Documented use of low air loss mattress over regular mattress (twice daily)	Documented patient turning every 2 hours	Documented incontinent care every shift	Documented nutritional consult
1	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse
2	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse
3	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse
4	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse	Yes No Staff Nurse

Appendix F. Pieper Pressure Ulcer Knowledge Test

Pre and Post Test

INSTRUCTIONS: PLEASE DO NOT PLACE YOUR NAME OR IDENTIFYING INFORMATION ON THIS DOCUMENT

Pieper Pressure Ulcer Knowledge Test

Question	True	False	Don't Know
1. Slough is yellow or cream-colored necrotic /devitalized tissue on a wound bed.			
2. A pressure injury/ulcer is a sterile wound.			
3. Foam dressings increase the pain in the wound.			
4. Hot water and soap may dry the skin and increase the risk for pressure injury/ulcers.			
5. Chair-bound persons should be fitted for a chair cushion.			
6. A Stage 3 pressure injury/ulcer is a partial thickness skin loss involving the epidermis and/or dermis.			
7. Hydrogel dressings should not be used on pressure injury/ulcers with granulation tissue.			
8. A person confined to bed should be repositioned based on the individual's risk factors and the support surface's characteristics.			
9. A pressure injury/ulcer scar will break down faster than unwounded skin.			
10. Pressure injury/ulcers progress in a linear fashion from Stage 1 to 2 to 3 to 4.			
11. Eschar is healthy tissue.			
12. Skin that doesn't blanch when pressed is a Stage 1 pressure injury/ulcer.			
13. The goal of palliative care is wound healing.			

14. A Stage 2 pressure injury/ulcer is a full thickness skin loss.			
15. Dragging the patient up in bed increases friction.			
16. Small position changes may need to be used for patients who cannot tolerate major shifts in body positioning.			
17. Honey dressings can sting when initially placed in a wound.			
18. An incontinent patient should have a toileting care plan.			
19. A pressure redistribution surface manages tissue load and the climate against the skin.			
20. A Stage 2 pressure injury/ulcer may have slough in its base.			
21. If necrotic tissue is present and if bone can be seen or palpated, the ulcer is a Stage 4.			
22. When possible, high-protein oral nutritional supplements should be used in addition to usual diet for patients at high risk for pressure injury/ulcers.			
23. The home care setting has unique considerations for support surface selection.			
24. When necrotic tissue is removed, an unstageable pressure injury/ulcer will be classified as a Stage 2 injury/ulcer.			
25. Donut devices/ring cushions help to prevent pressure injury/ulcers.			
26. A specialty bed should be used for all patients at high risk for pressure injury/ulcers.			
27. Foam dressing may be used on areas at risk for shear injury.			
28. Persons at risk for pressure injury/ulcers should be nutritionally assessed (i.e., weight, nutrition intake, blood work).			
29. Biofilms may develop in any type of wound.			
30. Critical care patients may need slow, gradual turning because of being hemodynamically unstable.			

31. Blanching refers to whiteness when pressure is applied to a reddened area.			
32. A blister on the heel is nothing to worry about.			
33. Staff education alone may reduce the incidence of pressure injury/ulcers.			
34. Early changes associated with pressure injury/ulcer development may be missed in persons with darker skin tones.			
35. A footstool/footrest should not be used for an immobile patient whose feet do not reach the floor.			
36. Deep tissue injury (DTI) may be difficult to detect in individuals with dark skin tones.			
37. Bone, tendon, or muscle may be exposed in a Stage 3 pressure injury/ulcer.			
38. Eschar is good for wound healing.			
39. It may be difficult to distinguish between moisture associated skin damage and a pressure injury/ulcer.			
40. Wounds that become chronic are frequently stalled in the inflammatory phase of healing.			
41. Dry, adherent eschar on the heels should not be removed.			
42. Deep tissue injury is a localized area of purple or maroon discolored intact skin or a blood-filled blister.			
43. Massage of bony prominences is essential for quality skin care.			
44. Poor posture in a wheelchair may be the cause of a pressure injury/ulcer.			
45. For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.			
46. Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care.			

47. In large and deep pressure injury/ulcers, the number of dressings used needs to be counted and documented so that all dressings are removed at the next dressing change.			
48. A mucosal membrane pressure injury/ulcer is found on mucous membrane as the result of medical equipment used at that time on that location; this pressure injury is not staged.			
49. Pressure injury/ulcers can occur around the ears in a person using oxygen by nasal cannula.			
50. Persons, who are immobile and can be taught, should shift their weight every 30 minutes while sitting in a chair.			
51. Stage 1 pressure injury/ulcers are intact skin with non-blanchable erythema over a bony prominence.			
52. When the ulcer base is totally covered by slough, it cannot be staged.			
53. Selection of a support surface should only consider the person's level of pressure injury/ulcer risk.			
54. Shear injury is not a concern for a patient using a lateral-rotation bed.			
55. It is not necessary to have the patient with a spinal cord injury evaluated for seating.			
56. To help prevent pressure injury/ulcers, the head of the bed should be elevated at a 45-degree angle or higher.			
57. Urinary catheter tubing should be positioned under the leg.			
58. Pressure injury/ulcers may be avoided in patients who are obese with use of properly sized equipment.			
59. A dressing should keep the wound bed moist, but the surrounding skin dry.			
60. Hydrocolloid and film dressings must be carefully removed from fragile skin.			
61. Nurses should avoid turning a patient onto a reddened area.			

62. Skin tears are classified as Stage 2 pressure injury/ulcers.			
63. A Stage 3 pressure injury/ulcer may appear shallow if located on the ear, malleolus/ankle, or heel.			
64. Hydrocolloid dressings should be used on an infected wound.			
65. Pressure injury/ulcers are a lifelong concern for a person who is spinal cord injured.			
66. Pressure injury/ulcers can be cleansed with water that is suitable for drinking.			
67. Alginate dressings can be used for heavily draining pressure injury/ulcers or those with clinical evidence of infection.			
68. Deep tissue injury will not progress to another injury/ulcer stage.			
69. Film dressings absorb a lot of drainage.			
70. Non-sting skin prep should be used around a wound to protect surrounding tissue from moisture.			
71. A Stage 4 pressure injury/ulcer never has undermining.			
72. Bacteria can develop permanent immunity to silver dressings.			

Appendix G. AHRQ Pressure Ulcer Prevention Training Module

Module 3: Best Practices in Pressure Injury Prevention

Module Aim

The aim of this module is to support your efforts to use best practices as outlined in the *Preventing Pressure Ulcers in Hospitals* Toolkit in this hospital's Pressure Injury Prevention Program.

Module Goals

The goals of Module 3 are to have the Implementation Team identify opportunities for prevention improvement related to pressure injury practices:

Which pressure injury prevention practices to use

How to perform a comprehensive skin assessment

How to conduct a standardized assessment of pressure injury risk factors

How to incorporate risk factors into individualized care planning

Timing

This module will take 80 minutes to present.

Below is the estimated time needed to present each topic:

Slide numbers	Topic	Time in minutes
1–4	Introduction	5
5–14	Comprehensive Skin Assessment and Video	15
15–23	Pressure Injury Risk Assessment and Case Study	20
24–31	Pressure Injury Care Planning	15
32–38	Identifying Bundle of Best Practices	15
39–40	Action Plan and Summary	10

Learning Methodology Checklist

- ☐ Large group discussion
- ☐ PowerPoint slide presentation
- ☐ Video
- ☐ Case study

Additional Related Training Resources

- Conducting a Comprehensive Skin Assessment — AHRQ Pressure Injury Prevention Program Training Webinar
- Using Pressure Ulcer Risk Assessment Tools in Care Planning — AHRQ Pressure Injury Prevention Program Training Webinar
- Risk Factors for Pressure Injuries: Going Beyond Validated Instruments — AHRQ Pressure Injury Prevention Program Implementation Sharing Webinar
- Device-Related Pressure Injury — AHRQ Pressure Injury Prevention Program Implementation Sharing Webinar
- The Power of Nutrition for Pressure Ulcer Prevention — AHRQ Pressure Injury Prevention Program Implementation Sharing Webinar
- Putting the Nutrition Guidelines into Practice for Pressure Injury Prevention — AHRQ Pressure Injury Prevention Program Implementation Sharing Webinar
- National Pressure Ulcer Advisory Panel's (NPUAP's) best practices for preventing device-related pressure injuries http://www.npuap.org/resources/educational-and-clinical-resources/best-practices-for-prevention-of-medical-device-related-pressure-injuries/

Materials Checklist

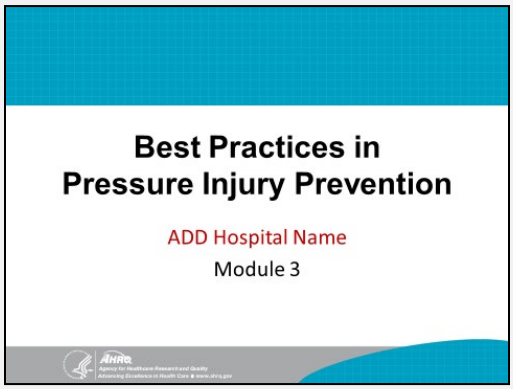
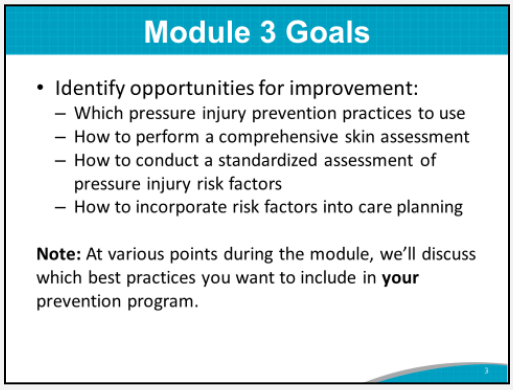
- LCD projector and laptop
- "Parking Lot" flip chart page (with tape or sticky band) and markers
- Flip chart page with the following chart on it:

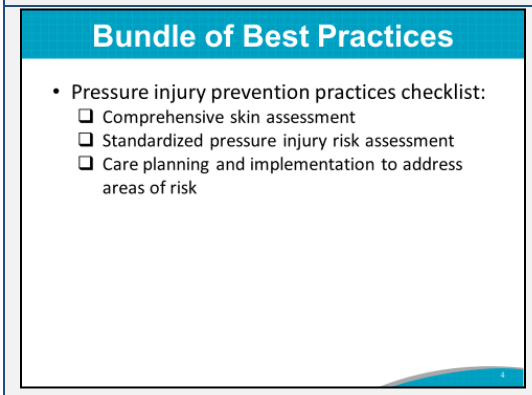
BEST PRACTICES DECISIONS	
Practice	**Decision**
Comprehensive skin assessment	When? How often?
Risk factor assessment	Which assessment tool? How often?
Care planning	Develop or modify existing?

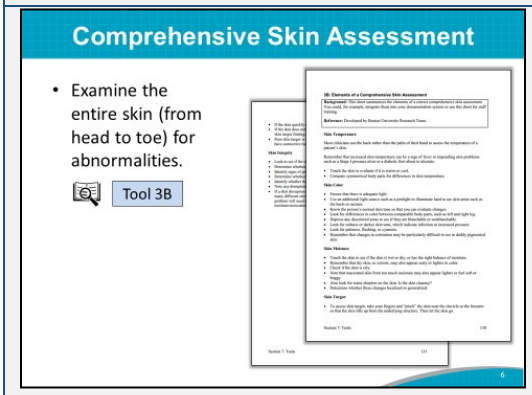
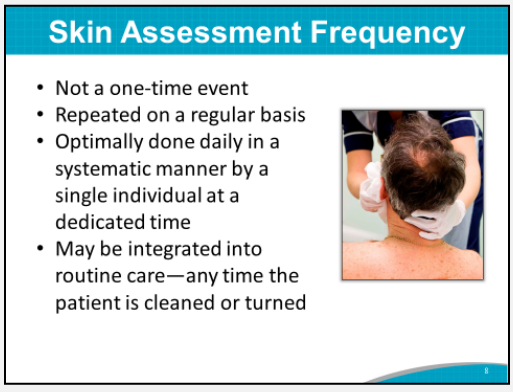
Instructor Preparation

- Add the specific hospital name to the first slide.
- Have the PowerPoint file *Module 3* cued on the computer and minimized.
- Participants should have Tool 2I: *Action Plan* available, as they will continually add to it in each module.
- Ask the Team Leader which pressure injury risk assessment tool the hospital uses. If the hospital is using an assessment scale other than the Braden or Norton Scale, ask the Team Leader(s) to be prepared to review the subscales of the risk assessment tool they use or plan to use. Then, consider deleting the next 5 slides on the Braden Scale and ask the Team Leader(s) to discuss how the assessment scale they are using is scored. Ask them to include an example of how to score using their risk assessment scale.
- Have a copy of the following materials for all participants:
    - Module 3 PowerPoint slide presentation handout, 3 slides to a page
        - Tool 3A: *Pressure Ulcer Prevention Pathway for Acute Care*
        - Tool 3B: *Elements of a Comprehensive Skin Assessment*
        - Tool 3C: *Pressure Ulcer Identification Pocket Pad*
        - Tool 3D: *The Braden Scale for Predicting Pressure Sore Risk*
        - *Mr. K Case Study*
        - Tool 3E: *Norton Scale*
        - Tool 3F: *Care Plan*
        - Tool 3G: *Patient and Family Education Booklet*
        - Tool 2I: *Action Plan*

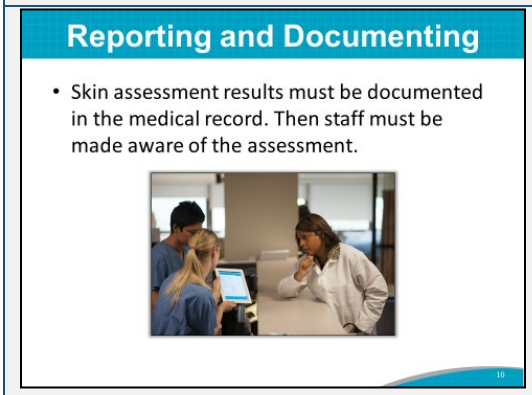
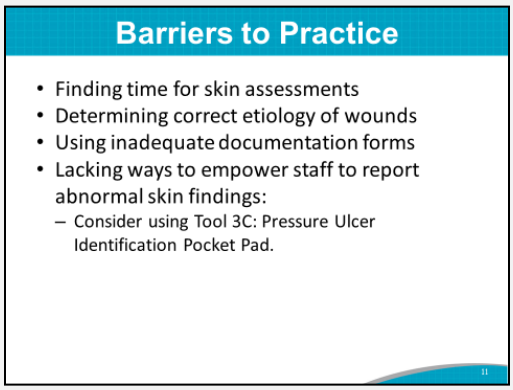
Module 3: Best Practices in Pressure Injury Prevention

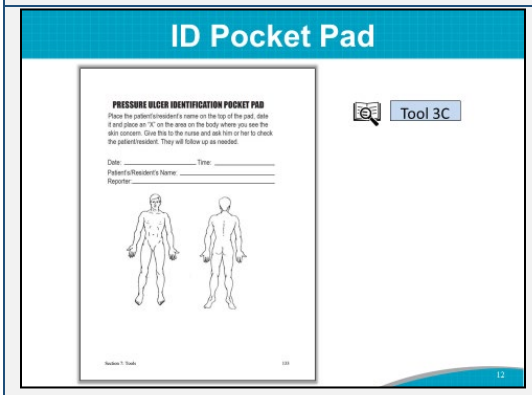
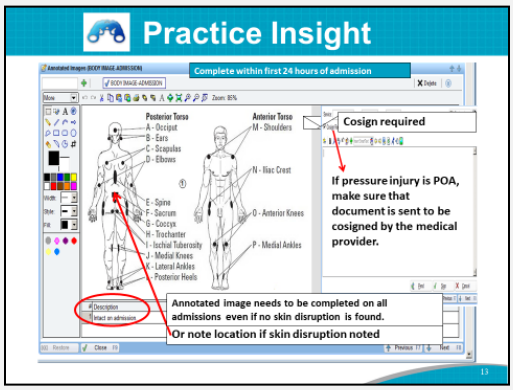
Slide	Script
Slide 1 	**SAY:** Module 3 introduces best practices and how to determine which pressure injury prevention practices you want to use in this hospital.
Slide 2 	**SAY:** For the purposes of this training, we define best practices as those care processes that, based on literature and expert opinion, represent the best ways we currently know of preventing pressure injuries in the hospital. **Instructor's Note:** Please see reference below. The AHRQ Patient Safety Network (PSNET) is a national Web-based resource for staying current on tested strategies and best practices for patient safety. Find current information on https://psnet.ahrq.gov/.
Slide 3 	**SAY:** The goals of the Module 3 training are to have the Implementation Team identify opportunities for prevention improvement related to pressure injury prevention practices. These include: • Which pressure injury prevention best practices to use at this hospital. • How to perform a comprehensive skin assessment. • How to conduct a standardized assessment of pressure injury risk factors. • How to incorporate risk factors into care planning.
Slide 4	**SAY:** Let's take a few minutes to reflect. Your current prevention program may include these best practices. We talked about your current practices in the last module. Most hospitals include skin assessments, risk assessments, and care planning to address areas of risk.

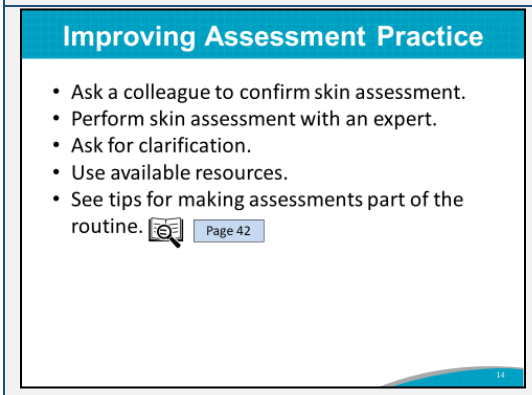
Slide	Script
	In this module, we will address best practices and opportunities for improvement in more detail.
Slide 5 	**SAY:** The first step in a clinical pathway to prevent pressure injuries is performing a comprehensive skin assessment. As we go through each section, please continue to jot down notes on opportunities for improvement that can later be considered for your organization's Action Plan. For example, think about the way skin and risk assessments are currently done. Is there room for improvement?
Slide 6	**SAY:** As you know, a comprehensive skin assessment is a process by which the entire skin of an individual is examined for abnormalities. It requires looking at and touching the skin from head to toe, with an emphasis on bony prominences. A comprehensive skin assessment (Tool 3B) is done to:

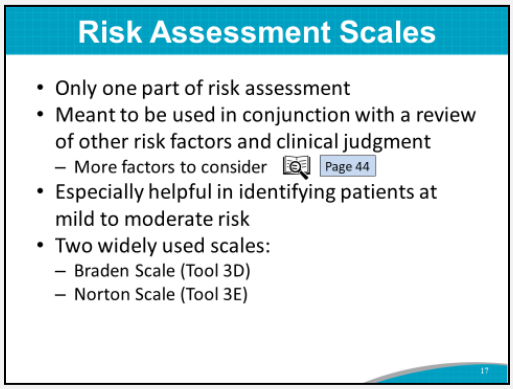
Slide	Script
	• Identify any pressure injuries that may be present. Any patient with an existing pressure injury is at risk for additional injuries. • Determine whether there are other lesions and skin-related factors that predispose the patient to pressure injury development, such as excessively dry skin or moisture-associated skin damage. • Identify other important skin conditions. • Provide the data necessary for calculating pressure injury incidence and prevalence.
Slide 7 	**SAY:** Let's watch a short video clip of an expert skin assessment. You might also consider using this short video clip as a tool to teach staff, and it could also be shared with frontline staff before implementing changes. **DO:** Play video clip. **ASK:** How did this skin assessment compare with those you have done? Do you think the skin assessment methods used in the video could be instituted in this hospital?
Slide 8 	**SAY:** A comprehensive skin assessment is not a one-time event limited to your patient's admission. It should be repeated on a regular basis to determine whether any changes in skin condition have occurred. In some settings, such as in a critical care unit, it may be done frequently. Optimally, the daily comprehensive skin assessment will be performed in a standardized manner by a single individual at a dedicated time. It may also be possible to integrate it into routine care, such as any time a patient is cleaned or turned. **ASK:** What would work best for your pilot units? **SAY:** Whatever you decide works best—in terms of skin assessment frequency—should be standardized for care planning.

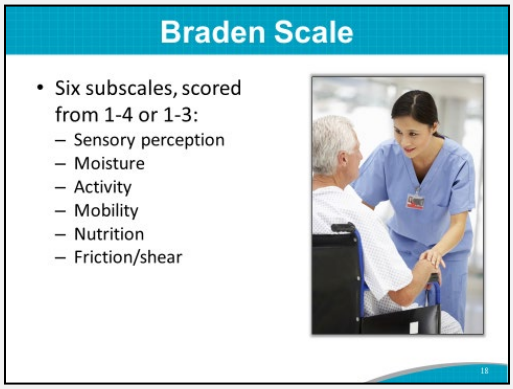
Slide	Script
Slide 9 	**SAY:** When performing a skin assessment or reassessment, pay careful attention to the skin beneath a medical device. In adults, 34.5 percent of facility-acquired pressure injuries were identified as medical device related in one study. Medical device-related pressure injuries result from the use of devices designed and applied for diagnostic or therapeutic purposes, such as face masks, nasal cannulas, feeding tubes, catheters, neck braces, and trach tubes. This slide shows best practices for preventing medical device-related pressure injuries. The best practices begin with a comprehensive assessment of the skin beneath the medical device. **ASK:** Does your facility have standardized prevention procedures and documentation for medical devices? **Instructor's Note:** Recommend that the Team Leaders consider viewing Device-Related Pressure Injury — AHRQ Pressure Injury Prevention Program Implementation Sharing Webinar and NPUAP's best practices for preventing device-related pressure injuries http://www.npuap.org/resources/educational-and-clinical-resources/best-practices-for-prevention-of-medical-device-related-pressure-injuries/. **Instructor's Note:** Please see reference below. Black JM, Cuddigan JE, Walko MA, et al. Medical device related pressure ulcers in hospitalized patients. Int Wound J 2010;7:358-65. PMID:20561094.
Slide 10	**SAY:** To make the skin assessment most useful to the patient and staff treating the patient, document the results, including skin under a medical device, in your patient's

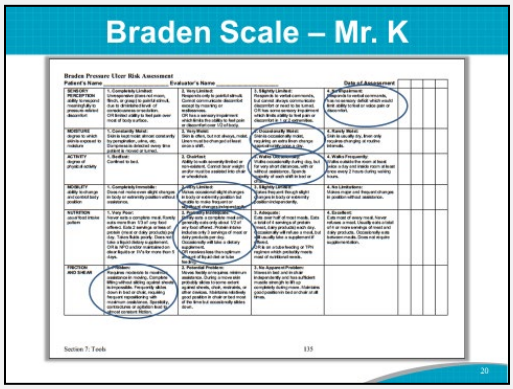
Slide	Script
	medical record. Also, be sure to communicate the results among staff. **ASK:** How do you review or audit documentation now?
Slide 11 	**SAY:** There are many challenges to performing skin assessments. It may be difficult to: • Find the time for an adequate skin assessment. As much as possible, integrate the skin exam into the normal workflow. • Determine the correct etiology of wounds. Many lesions may occur on the skin. If unsure, check with the Wound Care Team or other staff member who may be more knowledgeable. • Develop forms that will facilitate the recording of the skin assessment. • Empower staff—both nurses and nursing assistants—to report abnormal skin findings. Communication among nursing assistants, nurses, and managers is critical to success. Consider using Tool 3C: Pressure Ulcer Identification Pocket Pad (shown on the next slide) for communication among unit staff.
Slide 12	**SAY:** Here is Tool 3C. To use it, a nursing assistant or other discipline, such as a respiratory therapist, places an X on any suspicious lesion and gives the note to a nurse for follow up.

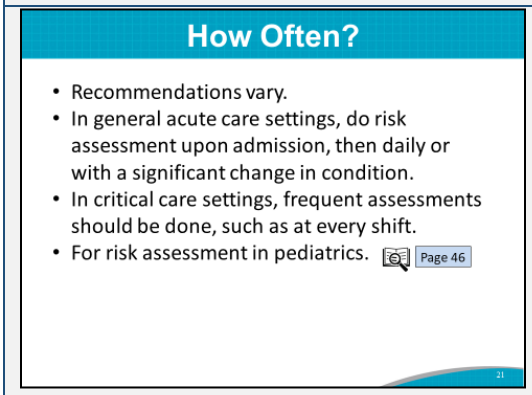
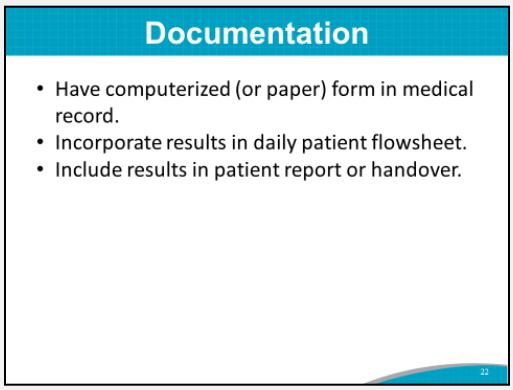
Slide	Script
	
Slide 13 	**Practice Insight** **SAY:** A large acute care hospital incorporated an annotated pocket pad image into its electronic health record (EHR) to aid in documenting pressure injuries upon admission. A problem was identified with inconsistent or absent documentation of present on admission (POA) skin integrity issues. With the implementation of the EHR, the Team identified inconsistencies in documenting skin integrity issues POA and describing the location of these POA skin issues. The failure to have clear admission documentation led to an increase in the documentation of hospital-acquired skin integrity issues. The hospital IT Team ensured the annotated image would automatically pop up for the nurse during the admission assessment. They also developed a process to transfer the image to the medical provider note for co-signature. The Implementation Team and IT educator provided housewide education to nursing staff. The wound nurses, Quality Department, and nurse managers audited the use of the annotated image.
Slide 14	**SAY:** Skin assessments require considerable skill, and ongoing efforts are needed to enhance skills. Take advantage of available resources. For instance: • Ask a colleague to confirm a skin assessment. Having a colleague evaluate the assessment provides immediate feedback

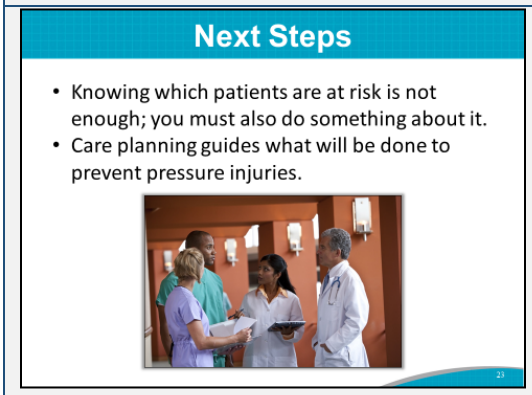
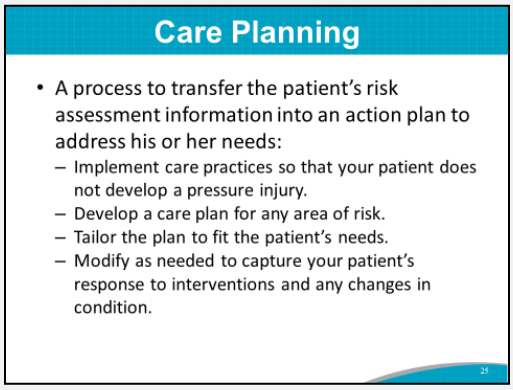
Slide	Script
	and lowers documentation errors. How often does that occur? • Consider having a wound care expert or nurse from another unit with wound expertise round with unit staff quarterly to confirm findings from the skin assessments. Is this something that might be possible? • Clarify when unsure of a lesion. Ask the Wound Care Team to weigh in on certain lesions. • Use available resources to practice the ability to differentiate etiology of skin and wound problems. • See tips for making assessments part of routine care on page 42 of the Toolkit.
Slide 15 	**SAY:** The skin assessment helps to identify visible changes in the skin that indicate increased risk for pressure injuries. Let's move on to other factors that must be assessed to identify patients at risk for pressure injuries. Step 2 in the clinical pathway of pressure injury prevention is completing a standardized pressure injury assessment. Again, continue to jot down notes on areas that might be opportunities for improvement.
Slide 16 	**SAY:** The goal of a pressure injury risk assessment is to identify patients at risk so that plans for preventive care can be implemented. Risk assessment is essential for many reasons: • It aids in clinical decision making. Use of a standardized risk assessment tool helps to direct the process by which clinicians identify those at risk and quantify the level of this risk.

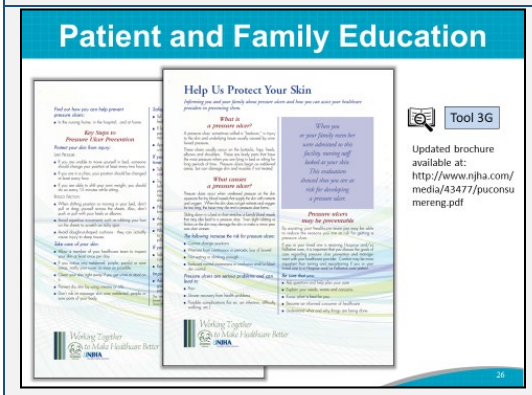
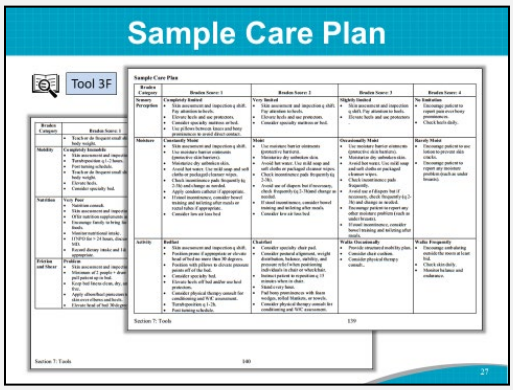
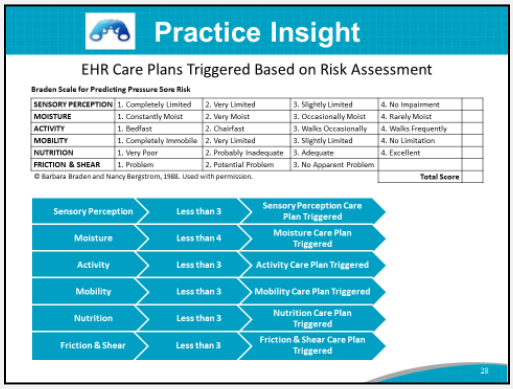
Slide	Script
	• It allows the selective targeting of preventive interventions. Prevention is resource intensive. Resources should be targeted toward those at greatest risk who would benefit most. • It facilitates care planning. Care plans focus on the specific dimensions that place patients at greatest risk. • It facilitates communication between health care workers and care settings. Workers have a common language by which they describe risk.
Slide 17 	**SAY:** It is important to realize that risk assessment scales are only part of a risk assessment. They are meant to be used in conjunction with a review of other risk factors and clinical judgment. See page 44 of the Toolkit for several additional factors to consider as part of the risk assessment process. The scales are especially helpful in identifying patients at mild to moderate risk. The two scales that are used most often and have established reliability and validity are: • The Braden Scale (Tool 3D). • The Norton Scale (Tool 3E). **DO:** Ask the Team Leader(s) to address the following questions: • Which pressure injury risk assessment tool does this hospital use?

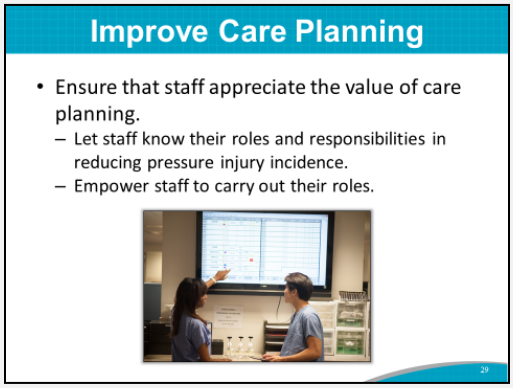
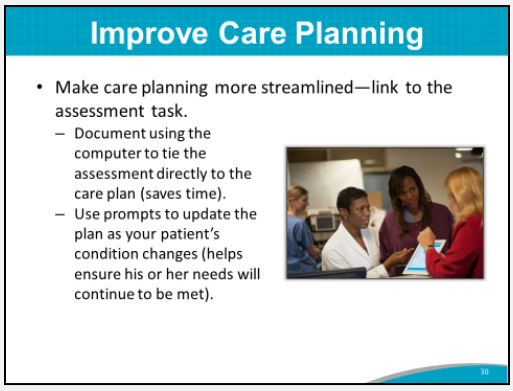
Slide	Script
	• When and how is the initial risk assessment completed? • When is a reassessment of risk completed? **Instructor's Note:** If the hospital is using an assessment scale other than the Braden or Norton Scale, ask the Team Leader(s) to review the subscales of the risk assessment tool they use or plan to use. Consider deleting the next 5 slides and ask the Team Leader(s) to discuss how the assessment scale they are using is scored. Include an example of how to score using their scale.
Slide 18 	**SAY:** The Braden Scale is made up of six subscales, scored from 1 to 4, or 1 to 3. The subscales are: • Sensory perception. • Moisture. • Activity. • Mobility. • Nutrition. • Friction/shear. Add the subscales together for a total score that ranges from 6 to 23. A lower score indicates higher levels of risk for pressure injury development. A score of 18 or less generally indicates at-risk status.
Slide 19 	**SAY:** Let's assess pressure injury risk via a short case study using the Braden Scale. **DO:** Pass out the Pressure Injury Risk Assessment Case Study – Mr. K (included at the end of this document). Read the case study aloud, and ask participants to pair up and use the Braden Scale to score this patient. Have two or three participant pairs say what risk assessment score they would give this patient upon admission. **Instructor's Note:** The answers may vary somewhat. There may need to be additional probing questions, such as,

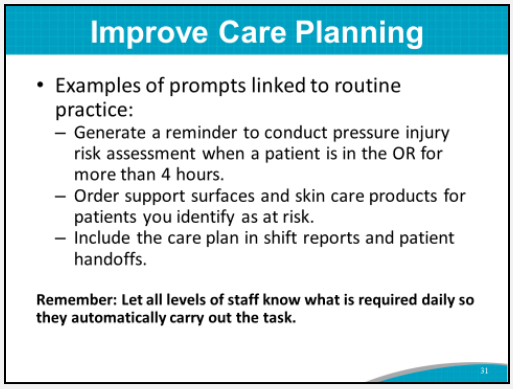
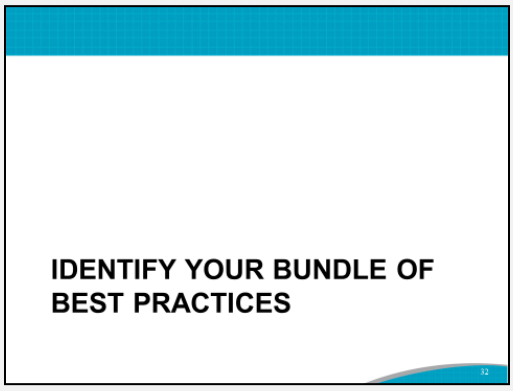
Slide	Script
	"What did you eat this morning?" to help determine appetite and if intake is adequate.
Slide 20 	**Mr. K's risk score: 15 (a score of 18 or less indicates at-risk status)** **ASK:** How long did it take to come up with a risk assessment score? What element in the case study requires additional clinical judgment? **SAY:** The answer is the wound or ostomy nurse consult revealed a slightly pink coccyx. This clinical issue heightens the risk to a much higher level. It doesn't affect the actual risk score, but a professional's clinical judgment would reveal that this patient needs a comprehensive care plan that involves: • Frequent skin assessment. • Frequent repositioning. • Special equipment (such as a pressure-relieving mattress). • Skin hygiene (and so on). This patient is at high risk for a pressure injury. You might even assess this patient as having a Stage 1 pressure injury. Staging of pressure injuries is discussed in Module 5. **ASK:** What current hospital policy or procedure would this assessment trigger?
Slide 21	**SAY:** How often is a risk assessment done? Recommendations vary for frequency of risk assessment.

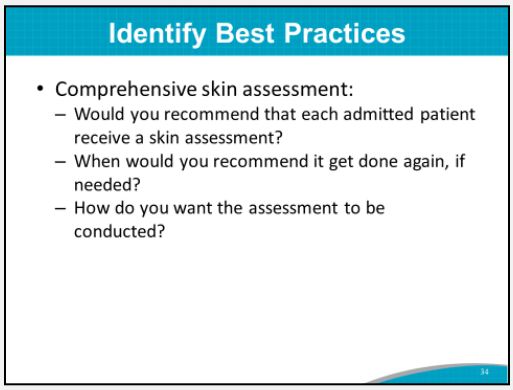
Slide	Script
	In general, acute care settings consider performing a risk assessment on admission and daily or with a significant change in condition. In critical care settings, the assessment should be done frequently, such as at every shift. See page 46 of the Toolkit for risk assessment recommendations for special populations, such as pediatric patients. **ASK:** How often do you currently conduct a skin assessment on a patient?
Slide 22 	**SAY:** Documenting pressure injury risk is essential to ensure that staff know a patient's risk status. In addition to documentation in the medical record, here are some other ways to ensure that staff know the level of risk: • Have a dedicated (computerized or paper) form in the medical record. • Incorporate results into the daily patient flowsheet. • Include results as part of shift change. Remember that in documenting pressure injury risk, you want to incorporate not only the score and subscale scores of the risk assessment tool, but also other factors placing the patient at risk. Communicate risk status orally at shift change or by review of written notes. **ASK:** How do you indicate your patients' risk status? How is risk identified at shift handoff?
Slide 23	**SAY:** Knowing which patients are at risk for a pressure injury is not enough; you must also do something about it. Care planning provides the guide for what you will do to prevent pressure injuries. Once risk assessment has helped identify patient risk factors, it is important to match care planning to those needs.

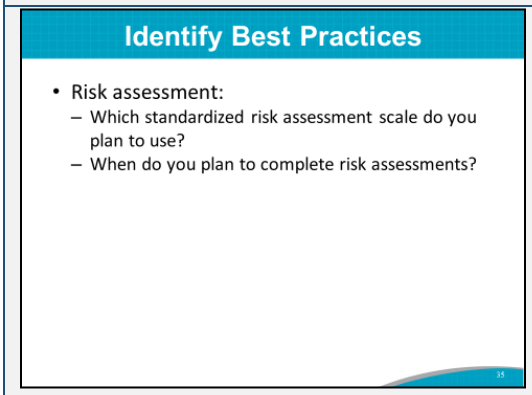
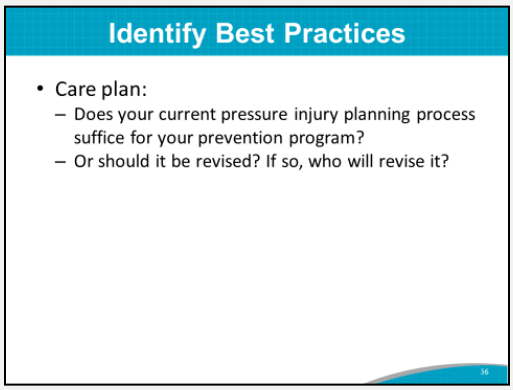
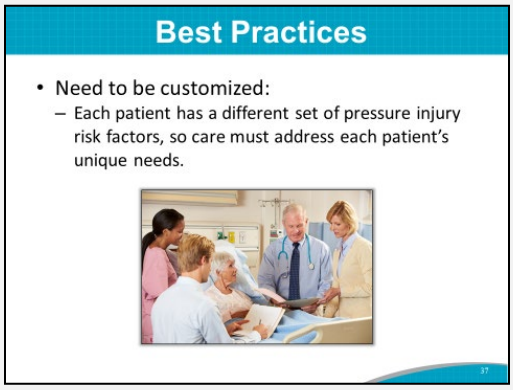
Slide	Script
	
Slide 24 	**SAY:** The third step in the clinical pathway to prevent pressure injuries is to create a care plan that is responsive to the patient's pressure injury risks.
Slide 25 	**SAY:** Pressure injury care planning is the process by which the patient's risk assessment information is translated into an Action Plan to address the identified patient needs. Its specific purpose, in this case, is to implement care practices so that the patient does not develop a pressure injury during hospitalization. All care planning needs to be individualized to fit the patient's needs. Any area of risk should have a corresponding care plan regardless of the overall risk assessment scale score. The care plan is an active document. It incorporates the patient's response to the interventions and any changes in his or her condition.
Slide 26	**SAY:** Each patient should understand his or her pressure injury risk and how a care plan addresses this risk. The patient's family should know, too. Identify some aspects of the care plan that patients and families can help implement. Use an educational resource,

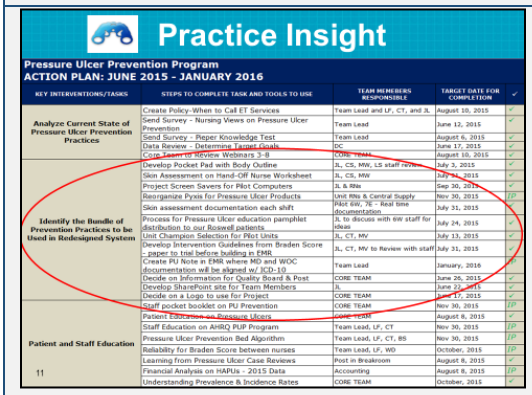
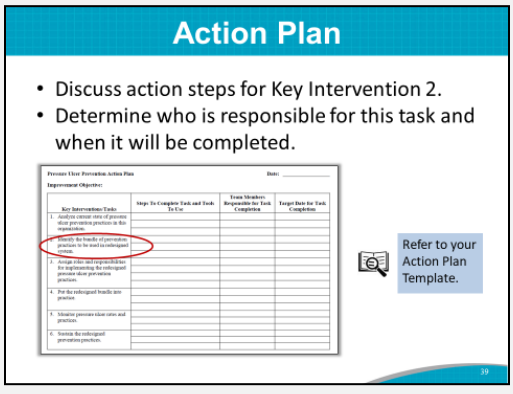
Slide	Script
	such as Tool 3G: Help Us Protect Your Skin, to augment instruction. **Instructor's Note:** An updated version of this tool is available at: http://www.njha.com/media/43477/puconsumereng.pdf.
Slide 27 	**SAY:** Tool 3F is a sample care plan based on the Braden Scale assessment. It can be modified for a specific patient.
Slide 28 	**Practice Insight** **SAY:** After the in-person training, the implementation group in an acute care hospital began to work with their IT Department to integrate care plans into the EHR. Previously, the Braden Scale categories for patients were assessed only at the following levels of risk: very high, high, moderate, low, and very low. This type of risk communication did not adequately tell staff about the most at-risk areas of the Braden Scale for the patient. The Core Implementation Team decided on the specific interventions for each Braden subscale area. The EHR was modified so that when a patient is scored less than a certain number in the Braden subscale (that is, sensory perception, moisture, activity, mobility, nutrition, and friction

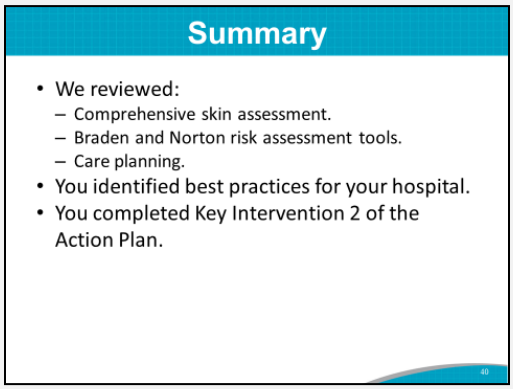
Slide	Script
	and shear), a pop-up appears and asks the nurse whether a care plan should be started to address the low Braden subscale score; after the nurse begins the care plan, the EHR provides various recommendations for the patient. These care plans are also added to the nurse's action list, which will remind the nurse to complete the care plan. Previously, care plans could be created, but there would be no reminders that they needed to be completed. The nurse can complete the care plan items after they have been added to the action list. A documentation screen appears when the nurse completes the action list items that provides a date and time stamp.
Slide 29 	**SAY:** Planning care is essential to quality. Here are some ways to ensure that staff appreciate the value of care planning: • Make sure all staff understand what portion of the care they are responsible for and the value they bring to the overall care of the patient. • Empower all levels of staff to carry out their roles.
Slide 30 	**SAY:** Make care planning more streamlined by linking it to the assessment task. • Computer documentation that ties assessment directly to the care plan saves time. • Having prompts to update the plan as the patient's condition changes helps ensure the patient's needs will continue to be met. **ASK:** Do you currently electronically link the assessment risk factors to the care plan in the health record? How does that work?

Slide	Script
Slide 31  	**SAY:** Here are some examples of prompts: • A patient who is in the OR for more than 4 hours generates a reminder to the staff to do a pressure injury risk assessment. **ASK:** Does the OR use the same EHR as the rest of the hospital? If not, how does the information transfer into the hospital EHR? **SAY:** • Patients who are identified as at risk generate an automatic order for support surfaces and skin care products. • Link the care plan to routine practice. The care plan should be routinely included in shift reports and patient handoffs. All levels of staff should know what is required daily and automatically do it.
Slide 32  	**SAY:** Now it is time to decide how to enhance the comprehensiveness and completeness of your specific bundle of best practices for this hospital.

Slide	Script
Slide 33 	**SAY:** The three best practices that are advocated for a Pressure Injury Prevention Program are: 1. A comprehensive skin assessment. 2. A standardized pressure injury risk assessment. While the Braden Scale is widely used and has established reliability and validity, you may decide to use other valid scales, such as the Norton or Waterlow pressure injury risk assessment tools. Validity means that research studies showed the tool accurately identified patients at increased risk. 3. Care planning based on identified risk.
Slide 34 	**DO:** Show the slide, then move to the flip chart. **ASK:** Let's start with a comprehensive skin assessment. Would you recommend that each admitted patient receive a skin assessment? When would you recommend the assessment be done again, if needed? How do you want the assessment done? **DO:** Write the Team's responses on the flip chart page.
Slide 35	**ASK:** Which standardized risk assessment scale do you plan to use? When do you plan to complete risk assessments? **DO:** Write the Team's responses on the flip chart page.

Slide	Script
	
Slide 36 	**ASK:** Does your current pressure injury prevention care planning process suffice for your prevention program? Should it be revised? If so, who will revise it? **DO:** Write the Team's responses on the flip chart page. **SAY:** We now have an idea of what revisions and upgrades should be done to your bundle of best practices for this hospital's prevention program. Good job on your decisions!
Slide 37 	**SAY:** These best practices also need to be customized for individual patients. You will want to address these issues during your staff training.
Slide 38	**Practice Insight** **SAY:** This slide shows an example of an action plan that was developed by the same hospital Prevention Team we looked at in Module 2.

Slide	Script
	Let's look at Key Intervention 2, which is to identify the bundle of prevention practices to be used in your redesigned system. This hospital Team identified many best practices they wanted to institute or improve in their hospital. Look at the tasks they are working on. Note that they have a person or persons responsible to make each task happen by a certain date. **DO:** Read the key intervention tasks from the slide.
Slide 39 	**DO:** Start a discussion of prioritized opportunities for change for Key Intervention 2. **SAY:** Please take out partially completed Tool 2I. We discussed the opportunities for change for Key Intervention 1. Now we can move on to Key Intervention 2: identify the bundle of prevention practices to be used in your redesigned system. Look at the example for steps to complete this task. **ASK:** What are the steps to complete Key Intervention 2? **DO:** Write the steps as participants present them. **SAY:** Who is responsible for these tasks? What is a draft target date for completion of these tasks?

Slide	Script
	DO: Write the Team member responsible and the target date for completion on the form. **SAY:** Keep Tool 2I available in your packet of information, as we will fill out Key Interventions 3 to 5 in the upcoming modules. **Instructor's Note:** If the group can't complete Key Intervention 2 during this training, continue this task at later meetings, and complete Action Plan Step 2 within the next couple of weeks with the Team.
Slide 40 	**SAY:** In summary, we reviewed skin assessment practices, looked at the Braden risk assessment tool, and reviewed optimal care planning practices for pressure injury prevention. Then you identified areas in this hospital's bundle of best practices that should be revised and updated for this hospital's prevention program. And you began the process of identifying opportunities for change in the Key Intervention 2 area of your Action Plan. This was a very productive training workshop session. Determining where the opportunities for change are in this hospital's bundle of best practices is a major step in implementing a Pressure Injury Prevention Program.

PRESSURE INJURY RISK ASSESSMENT CASE STUDY – Mr. K

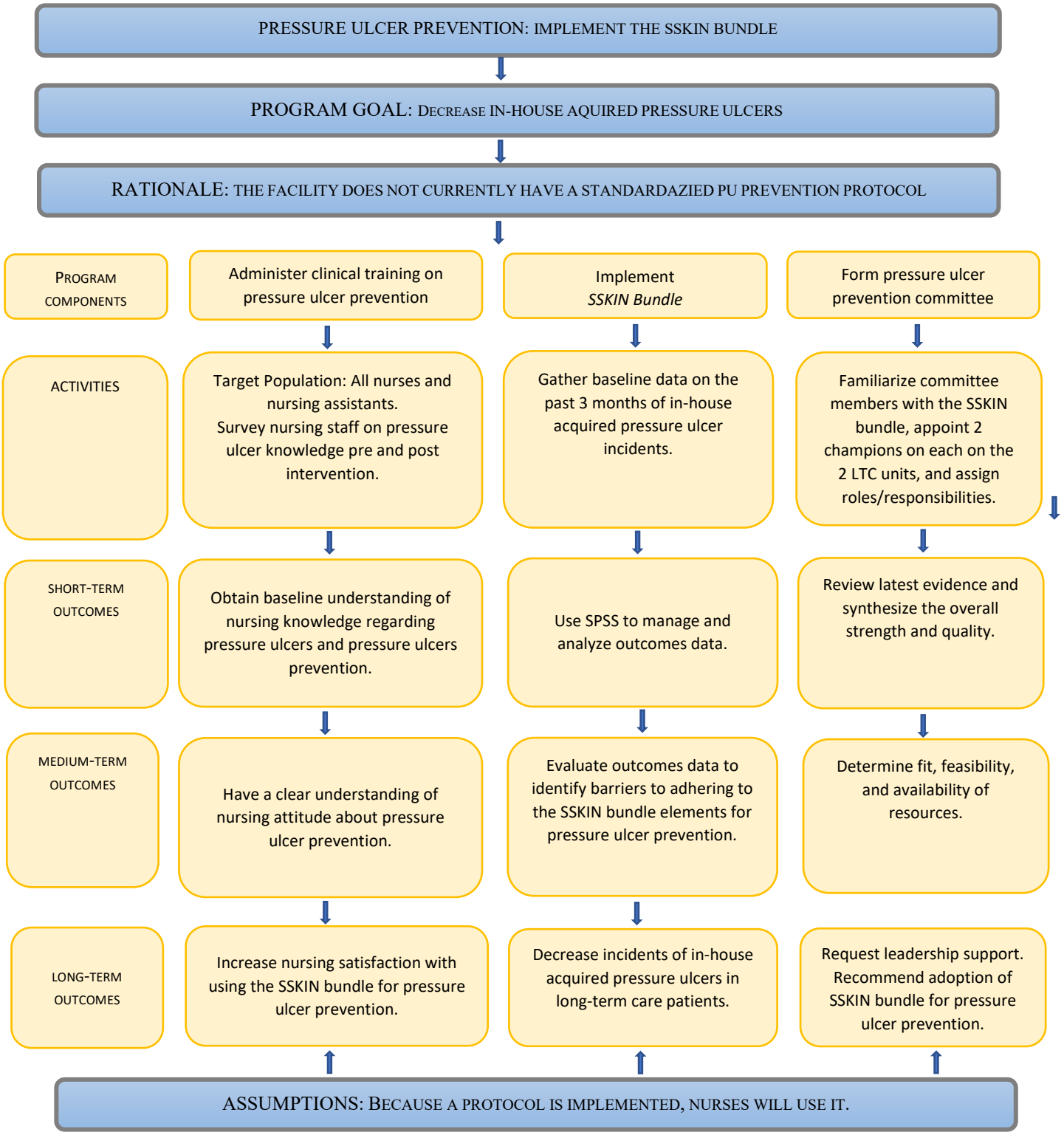
Mr. K was admitted to the hospital for ongoing complex medical care and a need for management of advanced Parkinson's disease, dysphagia, and failure to thrive. He developed difficulty swallowing after his usual Parkinson's medication schedule was inadvertently altered at rehab 1 month ago. He is now designated as nothing by mouth (NPO) and has trouble with secretions. Mr. K is alert and oriented, but speech and sensory motor function are not smooth and symmetric.

Currently he is being fed Ensure Plus via a feeding tube. A nutrition consult has been ordered. He is usually unable to walk and has difficulty talking. He requires total care for bathing, toileting, dressing, and feeding. At least two nurses or nurse aides are required to move him. He is occasionally incontinent.

A wound or ostomy nurse consult revealed he has a slightly pink coccyx (the base of his spinal column).

Appendix H. Logic Model

DNP PROJECT LOGIC MODEL FOR PRESSURE ULCER PREVENTION



Appendix I. Project Cost

Nursing staff education hours cost	$1,064.00
Educational materials printing	$30.99
Ink cost	$90.00
Total cost	**$1,184.99**

Appendix J. DNP Team Signature Sheet

Full Title of DNP Project: Implementation of SSKIN Bundle for Pressure Ulcer Prevention in Long-term Care facility: A Quality Improvement Project.

Name of Team Members

Student: Funmilayo Oni
DNP Project Primary Advisor: Dr. Mercedes Echevarria
DNP Secondary Advisor: Geraldine Ambahe, DNP

DNP Team Member:

_____

Guidelines for DNP Project Proposal

Cover Page, Table of Contents, Abstract (< 250 words), and general formatting meet APA requirements and GWSON instructions.
Introduction: Basic overview of project and describes the contribution it will make to **change practice** and **impact outcomes.**
Background & Significance: The problem or gap between current practice and current best evidence is clearly identified. **Description of the problem/gap** includes the population affected, what is currently happening, why the reader should care, what we currently know, and what we need to find out. The significance is explained in detail to include the impact/status of the problem/practice gap on population, cost, policy, leadership, healthcare systems, and beyond.
Needs Assessment: The need, feasibility, and resources available are discussed. Congruence of the project to the organization's mission and strategic plan is evident. The student describes logically the contextual/organizational environment. Discusses previous attempts or possible solutions to the problem based on evidence and experience. Was a specific process used? Ex: SWOT, Community Assessment, etc.
Problem/Purpose Statement: Problem/Purpose is clearly stated and summarized. Scope of project is realistic and appropriate to DNP Scholarship.
Practice Question: The student frames an answerable practice question related to the problem/practice gap.
Aims & Objectives: All aims are supported by objectives that are specific, measurable, achievable, realistic, and time bound.
Review of Literature: Directly relates to answering the posed Practice Question. Databases used, key terms, and search strategy are described. Evidence is appraised and synthesized into a narrative and an Evidence Table using the instructions by Dearholt & Dang (2018). The student integrates and synthesizes the evidence and articulates a written summary of the findings and does not simply regurgitate information.
EBP Translation Model: The EBP Translation Model for the project is described and applicable to operationalizing the project.
Methodology:

The overall design of the project correlates to the Aims & Objectives. The student clearly communicates the: Setting, Participants/Population, and Recruitment Strategy, the Consent Procedure, Risk/Harms to Participants, and Cost/Compensation. The project implementation is described in detail. Progress Indicators/Outcomes to be measured are relevant to the project. Tools/Instruments are appropriate. A project timeline and budget/resource list is presented.
Evaluation Plan: An evaluation plan for the DNP Project Process is included. Evaluation measures, tools, instruments, and measures match the Aims/Objectives and Project Type.
IRB: IRB approval at the practice site occurs first. If no IRB is available at the practice site, then a Determination of Human Subjects Research can be submitted to SONResearch@gwu.edu. If indicated, all GW SON IRB requirements are met. If the project is suitable for IRB submission, all IRB forms have been completed and approved by the DNP Primary Project Advisor. All organizational IRB requirements are met.
Letter of Cooperation is included.
Writing of DNP Project: Scholarly writing exhibited, appropriate grammar, spelling, organization, and flow.
Turn-It-In Originality Report is included.

Comments_____

Describe Corrective Actions if Revisions Required (Use additional paper if necessary)

_____

Select the Outcome of the proposal:

☐ Approved as presented ☐ Approved with minor revisions ☐ Reject proposal

Student Signature_____

DNP Project Primary Advisor Signature Mercedes Echavarria

DNP Project Secondary Advisor Signature DNP-FNP-

DNP Project Team Member Signature_____

Date_____

HUMAN SUBJECTS

RESEARCH DETERMINATION FORM

GW SCHOOL OF NURSING

The purpose of this form is to determine whether projects, research, or other activities require review by the GW IRB. If you have determined that your project *does* require GW IRB review, then you do not

School of Nursing nursing@gwthedu
THE GEORGE WASHINGTON UNIVERSITY 202-994-7901 j nursing.gwu.edu

Letter of Cooperation
Date: *06/29/2021*
Re: Letter of Cooperation for ManorCare Silver Spring Dear *Dr. Echevarria,*
This letter confirms that that I, as an authorized representative of *ManorCare Silver Spring,* allow the DNP student access to conduct project related activities at the listed site, as discussed with the DNP student and briefly outlined below, and which may commence when the DNP student provides evidence of IRB approval for the proposed project.

- **DNP Project Site(s):** *ManorCare Silver Spring, 2501 Musgrove Road, Silver Spring, Maryland, 20904.*
- **Project Purpose:** *The aim of this scholarly project is to implement an evidence-based intervention to improve health outcomes and reduce the incidence of pressure ulcers at a skilled nursing facility. The primary objective is to decrease the number of pressure ulcers at two LTC facility units by 50% within a three-month period. Secondary objectives are to achieve 100% compliance with completion of the mandatory staff education module, 100% on the posttest questionnaire after completing the education module, and 100% compliance with mandatory staff documentation every shift as instructed by the SSKIN protocol.*
- **Project Activities:** *The activities will include an assessment of pre-intervention data and mandatory educational training for all nursing staff, dietician, and therapists. Pre-intervention data on in-house acquired pressure ulcers will be pulled directly from the facility's electronic medical records (EMR) with the assistance of the quality improvement manager. Pre-intervention surveys will be given to staff to assess their understanding of pressure ulcer prevention. Staff will be required to complete mandatory educational training that will occur in small groups and one-on-one PowerPoint presentations. Staff will also complete a post-intervention survey to assess their understanding of pressure ulcer prevention.*
- **Participant Enrollment:** *Participants will include all long-term care residents at the facility. The sample will be the same as the patient population given the use of convenience sampling. Sample size will be calculated by looking at the number of admitted patients to the two units within the skilled nursing facility over a three-month timeframe. The sample size will be an estimate based on the number of beds in the units and how often the units remain at capacity over the three-month timeframe. Current estimates suggest about 103 beds total will be included.*
- **Site Support:** *The project site agrees to provide space to conduct project activities, authorize site employees to identify persons who might qualify for project, distribute pre and post surveys, and retrieval of patient data from EMR.*

- **Data Management:** *Data on pressure ulcer rates will be collected, data will be de-identified. The DNP student will be responsible for the maintenance and security of all data related to this project. All data will be locked and secured in the quality improvement manager's office.*
- **Anticipated End Date:** *The anticipated date that the project will be concluded is between 1/17/22-5/20/22*

Appendix K. Pieper Pressure Ulcer Knowledge Test: Answer Key

Question	Answer	
1. Slough is yellow or cream-colored necrotic /devitalized tissue on a wound bed.	**True**	
2. A pressure injury/ulcer is a sterile wound.		**False**
3. Foam dressings increase the pain in the wound.		**False**
4. Hot water and soap may dry the skin and increase the risk for pressure injury/ulcers.	**True**	
5. Chair-bound persons should be fitted for a chair cushion.	**True**	
6. A Stage 3 pressure injury/ulcer is a partial thickness skin loss involving the epidermis and/or dermis.		**False**
7. Hydrogel dressings should not be used on pressure injury/ulcers with granulation tissue.		**False**
8. A person confined to bed should be repositioned based on the individual's risk factors and the support surface's characteristics.	**True**	
9. A pressure injury/ulcer scar will break down faster than unwounded skin.	**True**	
10. Pressure injury/ulcers progress in a linear fashion from Stage 1 to 2 to 3 to 4.		**False**
11. Eschar is healthy tissue.		**False**
12. Skin that doesn't blanch when pressed is a Stage 1 pressure injury/ulcer.	**True**	
13. The goal of palliative care is wound healing.		**False**
14. A Stage 2 pressure injury/ulcer is a full thickness skin loss.		**False**
15. Dragging the patient up in bed increases friction.	**True**	
16. Small position changes may need to be used for patients who cannot tolerate major shifts in body positioning.	**True**	

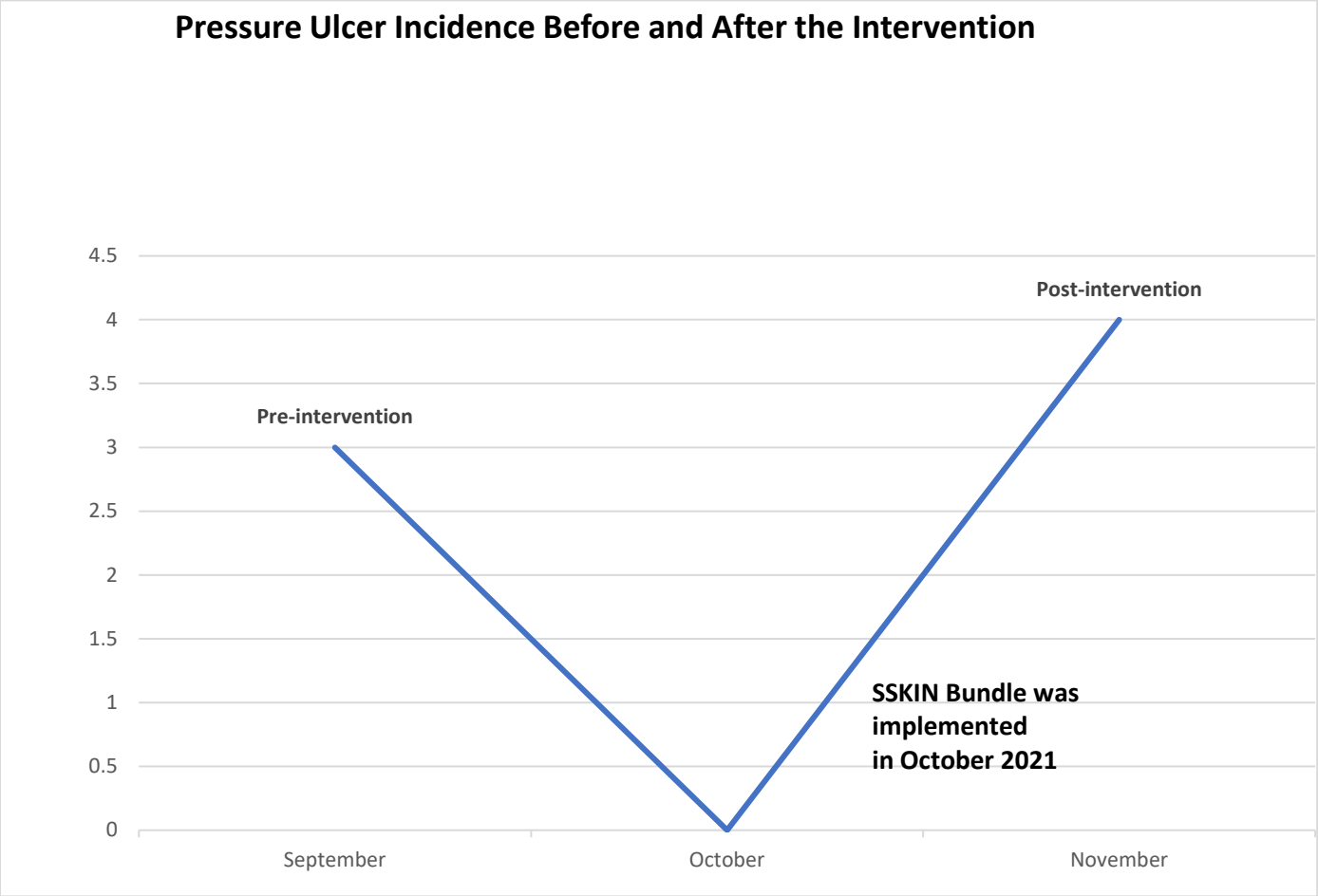
17. Honey dressings can sting when initially placed in a wound.	**True**	
18. An incontinent patient should have a toileting care plan.	**True**	
19. A pressure redistribution surface manages tissue load and the climate against the skin.	**True**	
20. A Stage 2 pressure injury/ulcer may have slough in its base.		**False**
21. If necrotic tissue is present and if bone can be seen or palpated, the ulcer is a Stage 4.	**True**	
22. When possible, high-protein oral nutritional supplements should be used in addition to usual diet for patients at high risk for pressure injury/ulcers.	**True**	
23. The home care setting has unique considerations for support surface selection.	**True**	
24. When necrotic tissue is removed, an unstageable pressure injury/ulcer will be classified as a Stage 2 injury/ulcer.		**False**
25. Donut devices/ring cushions help to prevent pressure injury/ulcers.		**False**
26. A specialty bed should be used for all patients at high risk for pressure injury/ulcers.		**False**
27. Foam dressing may be used on areas at risk for shear injury.	**True**	
28. Persons at risk for pressure injury/ulcers should be nutritionally assessed (i.e., weight, nutrition intake, blood work).	**True**	
29. Biofilms may develop in any type of wound.	**True**	
30. Critical care patients may need slow, gradual turning because of being hemodynamically unstable.	**True**	
31. Blanching refers to whiteness when pressure is applied to a reddened area.	**True**	
32. A blister on the heel is nothing to worry about.		**False**
33. Staff education alone may reduce the incidence of pressure injury/ulcers.		**False**

34. Early changes associated with pressure injury/ulcer development may be missed in persons with darker skin tones.	**True**	
35. A footstool/footrest should not be used for an immobile patient whose feet do not reach the floor.		**False**
36. Deep tissue injury (DTI) may be difficult to detect in individuals with dark skin tones.	**True**	
37. Bone, tendon, or muscle may be exposed in a Stage 3 pressure injury/ulcer.		**False**
38. Eschar is good for wound healing.		**False**
39. It may be difficult to distinguish between moisture associated skin damage and a pressure injury/ulcer.	**True**	
40. Wounds that become chronic are frequently stalled in the inflammatory phase of healing.	**True**	
41. Dry, adherent eschar on the heels should not be removed.	**True**	
42. Deep tissue injury is a localized area of purple or maroon discolored intact skin or a blood-filled blister.	**True**	
43. Massage of bony prominences is essential for quality skin care.		**False**
44. Poor posture in a wheelchair may be the cause of a pressure injury/ulcer.	**True**	
45. For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.	**True**	
46. Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care.	**True**	
47. In large and deep pressure injury/ulcers, the number of dressings used needs to be counted and documented so that all dressings are removed at the next dressing change.	**True**	
48. A mucosal membrane pressure injury/ulcer is found on mucous membrane as the result of medical equipment used at that time on that location; this pressure injury is not staged.	**True**	

49. Pressure injury/ulcers can occur around the ears in a person using oxygen by nasal cannula.	**True**	
50. Persons, who are immobile and can be taught, should shift their weight every 30 minutes while sitting in a chair.		**False**
51. Stage 1 pressure injury/ulcers are intact skin with non-blanchable erythema over a bony prominence.	**True**	
52. When the ulcer base is totally covered by slough, it cannot be staged.	**True**	
53. Selection of a support surface should only consider the person's level of pressure injury/ulcer risk.		**False**
54. Shear injury is not a concern for a patient using a lateral-rotation bed.		**False**
55. It is not necessary to have the patient with a spinal cord injury evaluated for seating.		**False**
56. To help prevent pressure injury/ulcers, the head of the bed should be elevated at a 45-degree angle or higher.		**False**
57. Urinary catheter tubing should be positioned under the leg.		**False**
58. Pressure injury/ulcers may be avoided in patients who are obese with use of properly sized equipment.	**True**	
59. A dressing should keep the wound bed moist, but the surrounding skin dry.	**True**	
60. Hydrocolloid and film dressings must be carefully removed from fragile skin.	**True**	
61. Nurses should avoid turning a patient onto a reddened area.	**True**	
62. Skin tears are classified as Stage 2 pressure injury/ulcers.		**False**
63. A Stage 3 pressure injury/ulcer may appear shallow if located on the ear, malleolus/ankle, or heel.	**True**	
64. Hydrocolloid dressings should be used on an infected wound.		**False**
65. Pressure injury/ulcers are a lifelong concern for a person who is spinal cord injured.	**True**	

66. Pressure injury/ulcers can be cleansed with water that is suitable for drinking.	**True**	
67. Alginate dressings can be used for heavily draining pressure injury/ulcers or those with clinical evidence of infection.	**True**	
68. Deep tissue injury will not progress to another injury/ulcer stage.		**False**
69. Film dressings absorb a lot of drainage.		**False**
70. Non-sting skin prep should be used around a wound to protect surrounding tissue from moisture.	**True**	
71. A Stage 4 pressure injury/ulcer never has undermining.		**False**
72. Bacteria can develop permanent immunity to silver dressings.		**False**

Appendix L. Run Chart Comparing PU Incidence Before and After the Intervention



Note: The analysis showed the incidence of in-house acquired pressure ulcers was not statistically significant ($p = 0.62$).

Appendix M.

Demographics of SSKIN Bundle Participants and Staff Survey (n= 32)	
Characteristics	Value
Patients (n=32)	
Gender	
Female	24.0
Male	8.0
Staff Survey n=22	
Nurs_dri	22.0 (Very satisfied)
Patient_TP	22.0 (Very satisfied)
Patient_Nutr	15.0 (Very satisfied)
	7.0 (Satisfied)
Patient_inc	22.0 (Very satisfied)
Nurs_ease	22.0 (Very satisfied)