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Hospital Acquired Pressure Injuries (HAPI) in Critical Care: A Quality Improvement Project

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Hospital Acquired Pressure Injuries in Critical Care: A Quality Improvement Project

By

Bonnie M. Fagan, MSN

Doctor of Nursing Practice Final Scholarly Project

In Partial Fulfillment of the Requirements for the Degree Doctor of Nursing Practice

Otterbein University

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DNP Final Scholarly Project Team:

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Executive Summary

In a large mid-western hospital, Hospital Acquired Pressure Injury (HAPI) rates are elevated in critical care units. Education sessions, a visual reminder, and skin rounds may increase use and documentation of 5-layer silicone dressings to prevent pressure injuries. The Plan-do-study-act (PDSA) method for quality improvement and Jean Watson's Theory of Human Caring were utilized as the theoretical framework for the project. The purpose of the project was to reduce the incidence of HAPI in Medical Intensive Care Unit (MICU) II. Project objectives included education on HAPI prevention and documentation, skin rounds, and the addition of a visual documentation cue on the nursing hand-off tool for 30 days.

Pre-implementation chart audits and concurrent chart audits were completed to assess documentation of preventative 5-layer silicone dressings. Pressure injuries were also tracked before, during, and after the project. Audit results indicate an increase in documentation with a visual prompt. Pressure injury rates indicate no change from preimplementation rates. Complete documentation of preventative measures may result in cost savings by demonstrating injuries are unavoidable despite preventative measures.

Introduction

Pressure injuries are a nurse sensitive quality indicator that impact more than 2.5 million people in the United States annually (Agency for Healthcare, Research, & Quality (AHRQ), 2014). Pressure ulcers can result in longer hospital stays, and an increase in morbidity and mortality (AHRQ, 2014). Critically ill patients develop Hospital Acquired Pressure Injuries (HAPI) despite efforts to decrease the incidence of injuries (Pittman et

al., 2019). The first step in prevention of pressure injury in critically ill patients is to determine possible causes of the injury.

In a large mid-western tertiary hospital, pressure injury risk is assessed in all hospitalized patients using the Braden Scale (Braden & Bergstrom, 1988). The Braden Scale is a tool for the assessment of sensory perception, moisture, activity, mobility, and nutrition. Patients are graded on a four-point scale. The numbers are tallied, and a composite score is given. The scores range from four to twenty. Lower scores indicate increased risk of skin breakdown (Braden & Bergstrom, 1988).

The hospital has a policy for pressure injury prevention. Safe Skin Guidelines are outlined in Appendix B of OhioHealth Policy "Wound Care Including Dressings, Negative Pressure Wound Therapy (NPWT), Removal of Drains, Packing, and Pressure Injury Care Including Prevention" (OhioHealth, 2018). Daily skin assessments, Braden Scale completion, positioning of patients, recommendations for pressure relief and moisture management, nutrition recommendations, and consultation of the wound care team are all included in the policy. A lack of documentation of the elements of the policy was noted in addition to an increased number of pressure injuries noted in critical care.

Significance of Clinical Problem to Nursing

Critical care patients are at increased risk of developing HAPI due to increased presence of medical devices, immobility, and alterations in tissue perfusion (Black, 2020). Nurses are the healthcare providers that provide direct care to patients. Skin assessment and care are vital to preventing complications. Complete and accurate documentation of skin integrity and nursing care in the Electronic Health Record (EHR)

is important because it reflects care and is used to assess outcomes and quality measures (Bagwell et al., 2017). In addition to typed documentation, nurses now can photograph wounds or areas of concern and upload the images to the patient chart.

The Bundled Payments for Care Improvement (BCPI) Advanced Model was designed by the Center for Medicare and Medicaid (CMS) Innovation Center to reward healthcare providers for providing coordinated, high quality, efficient care. The overarching goal of the model is to provide seamless, patient centered care (CMS, 2019). CMS links Medicare payments to hospitals to healthcare quality through the Hospital Acquired Condition Reduction Program (HACRP). The HACRP calls for the reduction in payments to hospitals that rank in the lowest 25% in relation to Healthcare Acquired Conditions (HAC) quality measures (CMS, 2019). Hospital acquired pressure injuries are Patient Safety Indicators (PSI) that can affect reimbursement. Prevention of complications can directly affect financial performance of the hospital system. Increased morbidity and mortality, increased pain and suffering, and diminished quality of life are also potential complications of pressure injuries (CMS, 2019).

Clinical Needs Assessment

Critical care nurses are responsible for identifying, caring for, and documenting impaired skin integrity using Appendix B: Safe Skin Guideline in the Wound Care and Pressure Injury Care Including Prevention Policy (OhioHealth, 2018). The policy provides general guidance for skin care including Wound Care Team (WOC) Consults for concerns, presence of a stage 2 or greater pressure injury, turning every two hours if unable to reposition self, and utilization of pressure redistribution surfaces, as appropriate

(OhioHealth, 2018).

Tracking of pressure injuries begins with Wound and Ostomy Care Team (WOC) consults. The wound care nurse assesses the wound and sends a paper notification to the Quality Department for tracking purposes once a pressure injury is identified. The Quality Department changed the notification method to an email instead of paper tracking in July 2020. The number of patients with pressure injuries in July 2019 was 4. The number of patients with pressure injuries reported in July 2020 was 18. Thirty-two of the last forty-two patients with pressure injuries reported since July 1, 2020 were first identified while the patient was in a critical care or identified after a patient left a critical care unit.

An audit of the critical care patient charts that developed HAPI was conducted in October 2020. The chart audit examined charting in the three days leading up to identification of the HAPI. The HAPI were split evenly amongst Medical Intensive Care Unit I (MICU I), MICU II, Neuro Critical Care (NCC), and Surgical Intensive Care Unit (SICU). Seventy-five percent of the injuries were noted on the sacrum, coccyx, or buttocks. Turning of patients and position change was not documented at least 50% of the time, in 60% of the charts. Barrier cream was not documented at least once per day 90% of the time. Use of a 5-layer soft silicone dressing was not documented 86% of the time.

According to the AHRQ guide to preventing pressure ulcers in hospitals, qualified individuals should perform a comprehensive skin assessment on every patient every three months (AHRQ, 2014). Prevalence and Incidence of pressure injury at a large midwestern hospital is currently measured and benchmarked with National Database of Nursing Quality Indicators (NDNQI). The NDNQI benchmark is 5.96 per 1000

discharges. On one designated day each quarter, assessment of all patients admitted to the hospital is submitted to AHRQ. The most recent data submitted to NDNQI for the hospital demonstrated a prevalence of HAPI of 20.96 per 1000 discharges. The daily data over the past two months may not be captured on the day of the quarterly assessment. Addressing the increase in critical care HAPI now with quality improvement measures will benefit the patients overall.

Critical care nurses do not currently receive regular yearly education on comprehensive pressure injury prevention and treatment. Prior to the SARS-CoV-2 pandemic, every nurse attended a "Skills Day" yearly that encompassed many different topics. At times a medical vendor representative would have a station to talk about skin care products, negative pressure wound therapy systems, or another aspect of skin care. While Skills Day may provide information, it does not promote deliberate practice that can lead to new knowledge acquisition and application (Brabeck et al., 2010). Skills Day will not be held in 2021 due to continued pandemic concerns.

Problem Statement

In patients admitted to or transferred from MICU II at a large mid-western hospital, what interventions to prevent pressure injuries will affect development of HAPI while in MICU II or identification upon transfer to a lower level of care unit?

Background and Significance of the Problem

Literature Search & Synthesis

A search of the literature was completed using CINAHL Plus with Full Text, the Cochrane Central Register of Control Register of Controlled Trials, and MEDLINE. Key terms used were hospital-acquired pressure injury, critical care or intensive care or ICU, prevention or intervention, treatment, or protocol. The results were 1317 articles. 415 articles remained after duplicates were removed. 383 articles were not applicable to the project. 18 articles were selected after review for relevance to the project. The Cochrane Central Register was searched using the term and returned 59 trials. None of the trials were applicable to this project proposal.

The Agency for Healthcare Research and Quality (AHRQ) Toolkit for Preventing Pressure Ulcers in Hospitals includes steps to achieve and sustain active pressure ulcer prevention (AHRQ, 2014). Ongoing pressure injury prevention strategies include facility management to ensure adequate supplies, education for new staff, and refresher training for current staff. The use of a dedicate staff nurse as the Unit Skin Care Champion in collaboration with a wound care team will help to sustain efforts to prevent pressure injuries (AHRQ, 2014).

According to National Pressure Injury Advisory Panel (NPIAP) (2019), Implementing Best Practice In Clinical Settings includes recommendations 20.10: "At a professional level, provide education in pressure injury prevention and treatment as part of a quality improvement plan to reduce the incidence of pressure injuries." and 20.9: "Provide clinical leadership in pressure injury prevention and treatment as part of a quality improvement plan to reduce pressure injuries." One of the Quality Indicators (QI) in the International Clinical Practice Guidelines is QI4: "Health professionals receive

regular education in pressure injury prevention and treatment." (NPIAP, 2019). Meeting the indicator of regular education in pressure injury prevention and treatment can take on many forms.

Pittman et al. (2019) used the Pressure Ulcer Prevention Inventory (PUPI) tool to determine if pressure injuries were avoidable or unavoidable. Unavoidable HAPI were defined as those that developed despite consistent documentation of evidence-based preventive interventions. Patients with Congestive Heart Failure (CHF), chemical sedation, systolic blood pressure less than 90mmHg or vasopressor use were more likely to lack sufficient preventative measures. The authors questioned if nurses' perceptions of instability led to decrease in preventative measures. Current literature suggests that slow, gradual turning allows sufficient time for stabilization of blood pressure and oxygen saturation and should be considered (Pittman et al., 2019).

A systematic review of effectiveness of pressure ulcer prevention strategies for adult patients in intensive care units found that evidence supporting nutrition, skin care regimen, positioning and repositioning schedule, support surfaces, and the role of education had limited evidence. Use of silicone foam dressings in reducing HAPI was statistically significant (Tayyib & Coyer, 2016). The use of single interventions was not found to be effective.

A review of the literature evaluating the effectiveness on HAPI identified eight domains of pressure ulcer prevention: support surface, multiple intervention programs (bundles), repositioning and early mobilization, risk-assessment tools, prophylactic dressings, education, skin care, and reminder systems (Gaspar et al., 2019). The review noted that consistent adherence to evidence-based guidelines remains a major nursing

practice issue. Single interventions were not found to be as effective as a multiple intervention program that follows wound care guidelines (Gaspar et al., 2019). This comprehensive approach is consistent with recommendations and good practice statements from the National Pressure Injury Advisory Panel (NPIAP) (2019). A comprehensive approach to pressure injury prevention entails appropriate assessment of risk, skin and tissue assessment, use of preventative measures, and appropriate care when pressure injuries occur (NPIAP, 2019). An example of a comprehensive approach is the SKIN (Surface, Keep moving, Incontinence management, and Nutrition) bundle. It is a simple approach to ensure all patients receive appropriate care to prevent HAPI. Kalowes et al. (2016) found that using the SKIN bundle resulted in a significant decrease of HAPI when used in conjunction with the application of a fiv- layer soft silicone foam dressing to prevent pressure injury to the sacrum within 24 hours of admission to critical care.

Semi-weekly WOC nurse skin rounds with a primary focus on eliminating sources of pressure was effective in decreasing device-related pressure injuries. The presence of the WOC nurse improved communication and allowed for staff coaching (Anderson et al., 2015). Quality improvement projects with peer-to-peer rounds directed by Skin Champions and assisted by WOC nurses have also shown a decrease in HAPI (Kelleher et al., 2012).

Swafford et al., (2016) decreased incidence of Hospital Acquired Pressure Ulcers in an intensive care unit by revising a skin care protocol to be more proactive and providing face to face education for staff using the teach-back method. Weekly skin audits with real-time feedback were provided, which encouraged staff participation. Frontline staff engagement directly influences the success of pressure injury prevention

programs (Black & Maegley, 2019). Standardization and streamlining inpatient documentation requirements related to pressure injury assessment, prevention, and treatment make it easier for staff to document their assessment and interventions (Jacobson et al., 2016).

Project Implementation and Measures

Project Framework

The framework for the project includes the Plan-do-study-act (PDSA) method for quality improvement and Jean Watson's Theory of Human Caring (Watson, 2008). The PDSA cycle can be used for problem solving, continuous development, and process trials (Finkelman, 2018). As a part of the planning phase of the PDSA cycle, a retrospective chart audit was used to identify the exact issues, identify the reason for the issues, and develop a plan to reduce or eliminate the issues causing the increased incidence of HAPI (Finkelman, 2018). A plan to address the issues, evaluate the results, and acting upon them will complete the cycle of PDSA.

Critically ill patients are unable to meet their most basic needs. The care team is tasked with finding ways to meet those needs. Jean Watson's Theory of Human Caring (Watson, 2008) will align the project with organizational values. Nurses infuse their practice with human caring by providing care to prevent hospital-acquired injuries. Healthcare has become so complex that nurses can lose their focus of caring in all of the tasks that nurses are required to do. The Theory of Human Caring (Watson, 2008) can help refocus the nurse at the bedside to provide comfort, healing, and caring while performing basic nursing tasks. Pressure ulcer prevention requires careful skin inspection, knowledge of preventative treatments, and treatments to promote healing. **Purpose**

The purpose of the project is to reduce the incidence of HAPI in MICU II.

Objectives

The first objective was to educate nurses on MICU II on HAPI prevention methods and documentation of preventative 5-layer silicone dressings in the EHR.

The second objective was to conduct skin rounds every other week on MICU II with the Skin Care Champion.

The third objective was to implement the addition of preventative 5-layer silicone dressings to the "to do" portion of the nursing hand-off tool.

Project Scope

All adult patients admitted or transferred to MICU II at a large mid-western hospital January 1 through February 14, 2021 were included in the change project.

Implementation

As part of the "planning" phase, chart audits revealed gaps in documentation of preventative measures including turning patients every two hours, use of barrier cream, and use of 5-layer silicone dressings on coccyx, heels, and other bony prominences. The change project consisted of education sessions, semi-weekly rounds by skin champions, clinical leads, and WOC nurses, and the addition of "preventative 5-layer silicone dressing in place" to the nursing "hand-off" tool.

The first step of the "doing" phase of the change project was focused 10- minute education sessions utilizing the teach-back method. The sessions were held on the unit with nurses on both shifts, over the course of two weeks. The education content was designed in collaboration with the WOC nurses. Sessions were taught by the skin

champion and the author. An email with all of the information in the education session was also sent to the staff of MICU II for reference. Ninety percent of the nurses on MICU II participated in the education process.

Barrier cream use, Air Tap™ (Stryker, 2021) with wedge use, and preventative 5layer silicone dressing use, and documentation was reviewed in the education sessions. NPIAP (2019) recommendations were included in the sessions to encourage nurses to monitor perfusion, circulation, and nutrition as part of pressure injury prevention.

The second step of the "doing" phase was semi-weekly skin rounds conducted on Thursday at 2pm, for a 6-week period. Participants in the skin rounds included unit skin champions, clinical leaders, WOC nurses, and bedside staff members. Due to staffing crises related to pandemic surge, the rounds were unable to be led by clinical leaders as originally planned. The unit educator participated in rounds one week. WOC nurses were available for consultation and questions. During rounds, documentation was reviewed, and appropriate use of skin prevention was assessed. Presence of preventative 5-layer silicone dressings was noted, and documentation was assessed to determine if the dressings were documented correctly. Any knowledge gaps with staff nurses were addressed during rounds. There was persistent confusion about where to document preventative 5-layer silicone dressings in the EHR. The current documentation guideline is to make a comment in the Integumentary section of the Assessment Flowsheet. All staff nurses who participated in rounds requested a dedicated field to document preventative 5-layer silicone dressings.

The third step of the "doing" phase was a visual prompt added to the nursing hand-off tool that nurses complete every shift and use during shift-to-shift report. The

presence of the visual prompt served as a reminder for all nurses on the care team to utilize preventative 5-layer silicone dressings.

The "study" phase of the change project consisted of concurrent audits of handoffs for preventative 5-layer silicone dressing documentation each day for a 30-day period. The charge nurse or designee conducted audits. The auditor conducted chart audits randomly by starting the audits at random room numbers every day to protect patient privacy. Reminders and audit results were announced in safety huddle at the start of every shift and updated weekly.

The number of HAPI identified during the project will determine the "act" phase of the project. When the WOC team received consults and identified a pressure injury, an email is to the Quality Specialist. Recommendations will be made for next steps based on results.

Timeline

The Otterbein University Institutional Review Board (IRB) application was submitted to the Otterbein University IRB on 09/23/2020 for the original chart audit. IRB returned a decision on 09/24/2020 that review was not required to proceed with the chart audit (Appendix A). On 12/11/2020, the education portion and an updated application was submitted to Otterbein IRB. The decision was returned on 12/15/2020 that review was not required to proceed with the project (Appendix B). Approval from the OhioHealth Nursing Evidence-Based Practice Review Committee as a quality improvement project was obtained on December 11, 2020.

The education sessions occurred the first two weeks of January 2021 and semi-weekly rounds began the first week of January and continued through the second week of February. This project required a significant time investment. Chart audits were conducted to monitor success and then ongoing after implementation of the intervention to evaluate effectiveness of the interventions. Collaboration with the Quality Specialist occurred biweekly throughout the course of the project (December 2020– February 2021).

Analysis and Outcome Evaluation

Results

The change project success was measured by a change of monthly rates of HAPI identified in patients in MICU II after implementation of recommendations. Compliance of 5-layer silicone dressing application and documentation in the EHR and on the handoff tool were also reported as a process measure of project success. Patients were tracked when the Quality Specialist received email notification of a pressure injury from the WOC team.

The WOC nurses via the email system reported the occurrence of pressure injuries. Two pressure injuries were identified on MICU II in the month of January 2021 during the implementation phase of the project. The pressure injuries were staged as stage II and Deep Tissue Injury (DTI). Two DTI pressure injuries were identified in the month of February. The occurrence of pressure injuries of two per month is unchanged from the three-month period prior to the implementation of the project. Prevalence and Incidence will be assessed on March 25, 2021 as part of the hospital wide assessment for NDNQI. Rates of HAPI will be made available after the data is submitted.

Pre-implementation documentation audit of preventative 5-layer silicone dressing in the EHR and on the hand-off tool revealed 0% of 336 charts were completed (Appendix D). Documentation audits of preventative 5-layer silicone dressings during 30 days of project implementation demonstrated a mean=48.3% and median=52.5% completion rate (Appendix E). Documentation audits on the hand-off tool revealed a mean=75.46% and median=78.5% completed (Appendix F). The project results are consistent with a potential improvement in documentation with the addition of a visual reminder. Documentation was higher on the hand-off tool, which had a designated place for documentation of preventative 5-layer silicone dressings.

Budget Analysis

Direct and indirect costs are included in the project budget (Moran, Burson, & Conrad, 2017, p. 297). Salaries of staff nurses and clinical leaders will be net even because the project will occur during the workday. Supplies for pressure injury prevention are stocked on the unit and included in the cost of the room. The supplies are part of a usual course of treatment in MICU II. If utilization of supplies increases, the cost of supplies will be an added expense.

Indirect cost savings will be realized through prevention of HAPI. The use of preventative measures that were in place prior to the project can save an average of $10,000 for every pressure injury that is prevented.

Financial Implications

Pressure ulcers require additional treatment with associated costs. HAPI increase Length Of Stay (LOS) and average of 2.2 days compared to all other hospitalized patients. The presence of a HAPI increases the average cost per patient by $10, 807.

Stage 3 and 4 pressure injuries account for 58% of total cost of care for HAPI patients (Padula & Delarmente, 2019).

Litigation is an additional expense to healthcare organizations when pressure ulcers occur. The average settlement in a malpractice suit for a pressure injury is $250,000. Settlements in favor of patients occur more than 80% of the time. Pressure ulcers are a source of increased morbidity and mortality in addition to physiological and psychological effects (Padula & Delarmente, 2019).

Associated cost for the change project will be the cost of paying the Skin Care Champion four hours of pay every two weeks for a total of eight hours per month (approximately $300/month). The cost of the WOC nurse and Clinical Leaders is built into their regular workday. Any supplies or equipment is already present on the unit.

Increased use of 5-layer silicone dressings will increase supply costs for the nursing unit. Dressings for heels cost $.96/each. Dressings for sacrum cost $.58/each (D. Pence, BSN, RN, EMT-P, personal communication, March 20, 2021). A 52% increase in documentation may reflect a 52% increase in usage of 5-layer silicone dressings. Providing education and support with turn during skin rounds may increase satisfaction of staff on the unit while contributing to care.

Barriers and Limitations

Barriers for the project include staff buy in and time to complete interventions. The pandemic surge and staff absences for quarantine and vaccine related absence and nurse attrition led to staffing shortages and staffing substitutions with system float nurses.

Twenty-four new staff nurses were in orientation on MICU II in December 2020 through February 2021. The combination of new nurses in orientation and float nurses led to challenges in compliance in documentation.

Nurses verbalized confusion around documentation of preventative 5-layer silicone dressings in the EHR. Current documentation drop-down menus in the Hygiene section of the Daily Care/Safety Flowsheet have protective barrier as a choice. The activity section of the Daily Care/Safety Flowsheet has a drop-down option of heel protectors. Lack of definition of the options led nurses to document preventative 5-layer silicone dressings in those two locations. Current recommendation by the hospital is to make a comment in the Integument section of the Assessment Flowsheet for preventative 5-layer silicone dressings.

Supply of 5-layer silicone dressings was also a barrier of the project. Inability to obtain the dressings resulted in nurses using other measures to prevention pressure injuries. Offloading boots and the use of pillows were used in place of heel preventative 5-layer silicone dressings. Barrier cream was used in place of sacrum/coccyx preventative dressings.

Facilitators

Facilitators for this project are WOC nurses, unit skin care champions, bedside nurses on critical care units, nurse educators, clinical leaders, and nurse managers. Additional facilitators are the director of nursing for MICU II.

Conclusions and Recommendations

During education sessions, nurses noted that they applied preventative 5-layer silicone dressings to the sacrum and heels for patients with a Braden score of less than 18

but did not document in the EHR because there is not a dedicated place to document preventative dressings. The addition of a specific field in the Braden Assessment or Skin Assessment section of the Flowsheet with drop-down menus will allow for the seamless integration of preventative 5-layer silicone dressing documentation into the nursing workflow.

Documentation of preventative 5-layer silicone dressing will be added as a Key Performance Indicator (KPI) measure for MICU II in the month of May to assess sustainability and reinforce documentation as part of unit-based performance improvement.

The addition of a dedicated documentation field for preventative dressings will be addressed as a "new idea" process through submission to the Business Cage for Change at the OhioHealth system level. Once the approval process is complete and the documentation change made in the EHR, chart audits will be performed to evaluate the effectiveness of the documentation change.

Summary

A comprehensive approach to pressure injury prevention is the most effective way to reduce injuries. Utilizing and documenting preventative 5-layer silicone dressings as part of the comprehensive approach may contribute to a reduction in patient injury, reduce costs and improve overall patient outcomes. IRB approval was obtained from Otterbein University and NEBPRC approval was obtained from OhioHealth. Education sessions, semiweekly skin rounds, and adding preventative 5-

layer silicone dressings to the hand-off tool were implemented on MICU II. Charts and hand-offs were audited daily and results were announced in safety huddles. Audits continued for 30 days with weekly updates announced regarding audit results.

References

Agency for Healthcare Research and Quality (AHRQ). (2014). Preventing Pressure Ulcers in Hospitals. Retrieved from https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu3.html#32

Anderson, M., Finch Guthrie, P., Kraft, W., Reicks, P., Skay, C., & Beal, A. (2015). Universal pressure ulcer prevention bundle with WOC nurse support. *Journal Of Wound Ostomy Continence Nursing, 42*(3), 217-225.

Bagwell, M., Bushy, A., & Oritz, J. (2017). Accountable care organization Implementation experiences and rural participation. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5144923/pdf/nihms-821754.pdf

Black, J. (2020). The Pursuit of HAPI-less: Feeling the Pressure. https://mobilityismedicine.org/videos/the-pursuit-of-hapi-less-feeling-thepressure/

Black, J. & Maegley, J. (2019). Help-U prevent HAPI: A change project to attain zero HAPIs. *MEDSURG Nursing, 28*(1), 31-34.

Brabeck, M., Jeffrey, J., & Fry, S. (2010). *Practice for knowledge acquisition (not drill and kill.* American Psychological Association.

https://www.apa.org/education/k12/practice-acquisition

Braden, B. & Bergstrom, N. (1988). Braden Scale for Predicting Pressure Sore Risk. Retrieved from https://www.in.gov/isdh/files/Braden_Scale.pdf

Center for Medicare and Medicaid(CMS). (2019). Quality Measures Fact Sheet. Retrieved from https://innovation.cms.gov/files/fact-sheet/bpciadvanced-fs-psi90.pdf

Finkelman, A. (Ed.). (2018). *Quality improvement: A guide for integration in nursing.* Jones & Bartlett Learning.

Gaspar, S., Peralta, M, Marques, A., Budri, A., & Gaspar de Matos, M. (2019). Effectiveness on hospital-acquired pressure ulcers prevention: A systematic Review. *International Wound Journal, 16,* 1087-1102. Doi: 10.1111/iwj.13147

Jacobson, T.M., Thompson, S.L., Halvorson, A.M., and Zeitler, K. (2016). Enhancing Documentation of pressure ulcer prevention interventions: A quality improvement strategy to reduce pressure ulcers. *Journal of Nursing Care Quality, 31*(3), 207-214. Doi: 10.1097/NCQ.0000000000000175.

Kahn, M. & Jonusas, E. (2019). Turn teams: How do you prevent pressure injuries? *MEDSURG Nursing, 28*(4), 257-261.

Kalowes, P., Messina, V., and Li, M. (2016). Five-layered soft silicone foam dressing to Prevent pressure ulcers in the intensive care unit. *American Journal of Critical Care, 25*(6), e108-e119. Doi: http://dx.doi.org/10.4037/ajcc2016875.

Kelleher A., Moorer A., & Makic, (2012). Peer-to-peer nursing rounds and hospital-acquired pressure ulcer prevalence in a surgical intensive care unit: a quality improvement project. *Journal of Wound Ostomy Continence in Nursing. 39*(2),

152157. doi: 10.1097/WON.0b013e3182435409. PMID: 22415120. Moran, K., Burson, R., & Conrad, D. (2017). *The doctor of nursing practice scholarly project: A framework for success* (2nd ed.). Jones & Bartlett Learning.

National Pressure Injury Advisory Panel (NPIAP) (2019). Prevention and Treatment of Pressure Ulcers/Injuries: Quick Reference Guide 2019.

OhioHealth (2018). Safe Skin Guidelines Appendix B OhioHealth Policy Wound Care Including Dressings, Negative Pressure Wound Therapy (NPWT), Removal of Drains, Packing, and Pressure Injury Care Including Prevention.

Padula, W. & Delarmente, D. (2019). The national cost of hospital-acquired Pressure injuries in the United States. *International Wound Journal, 16*(3), 634 640. Doi: https://doi.org/10.1111/iwj.13071

Pittman, J., Beeson, T., Dillon, J., Yang, Z., & Cuddigan, J. (2019). Hospital-acquired pressure injuries in critical and progressive care: avoidable versus unavoidable. *American Journal of Critical Care,* 28(5), 338-350.

Swafford, K., Culpepper, R., & Dunn C. (2016). Use of a comprehensive program to Reduce the incidence of hospital-acquired pressure ulcers in an intensive care unit. *American Journal of Critical Care, 25*(2), 152-154. Doi: http://dx.doi.org/10.4037/ajcc2016963.

Tayyib, N. & Coyer, F. (2016). Effectiveness of pressure ulcer prevention strategies for adult patients in intensive care units: a systematic review. *Worldviews on evidence-based nursing, 13*:6, 432-444. Doi: 10.IIII/wvn.12177/wvn2016;13:432-444

Watson, J. (2008). *Nursing: The philosophy and science of nursing* (2nd edition).

University Press of Colorado.

Appendix A

Re: IRB application

irb <irb@otterbein.edu>
Thu 9/24/2020 12:09 PM To:

- Butz, Susan <sbutz@otterbein.edu>

Cc:

- Fagan, Bonnie <bfagan@otterbein.edu>;
- Haverkamp, Jacqueline <jhaverkamp@otterbein.edu>

Dear Dr. Butz,

In reviewing your IRB application, *Hospital acquired pressure injuries in critical care*, the IRB has made the determination that this project is not human subjects research, as the researchers are not interacting with the participants, nor are they obtaining, using, generating, or analyzing any identifiable private information or biospecimens. As such 45 CFR part 46 does not apply, and IRB review is not required for this project.
Regards,

Meredith C. Frey, Ph.D.
IRB@Otterbein.edu

From: "Fagan, Bonnie" <bfagan@otterbein.edu>
Date: Wednesday, September 23, 2020 at 8:18 PM
To: irb <irb@otterbein.edu>
Cc: "Butz, Susan" <sbutz@otterbein.edu>, "Haverkamp, Jacqueline" <jhaverkamp@otterbein.edu> **Subject:** IRB application

Good evening,
Attached is my IRB application for my DNP project. Please don't hesitate to reach out with any questions. Thank you for your consideration.
Respectfully,
Bonnie Fagan

Appendix B

Re: DNP project proposal

Butz, Susan <sbutz@otterbein.edu> Tue 12/15/2020 2:18 PM To:

- irb <irb@otterbein.edu>

Cc:

- Fagan, Bonnie <bfagan@otterbein.edu>

Thank you very much, Meredith, for the speedy response to Bonnie Fagan. It is appreciated!
Happy Holidays,
Sue

From: irb <irb@otterbein.edu>
Sent: Tuesday, December 15, 2020 3:15 PM
To: Butz, Susan <sbutz@otterbein.edu>
Cc: Fagan, Bonnie <bfagan@otterbein.edu>
Subject: Re: DNP project proposal

Dear Dr. Butz,
In reviewing your revisions to the IRB application, *Hospital acquired pressure injuries in critical care*, the IRB has made the determination that the revised project is not human subjects research, as the researchers are not interacting with the participants, nor are they obtaining, using, generating, or analyzing any identifiable private information or biospecimens. As such 45 CFR part 46 does not apply, and IRB review is not required for this project. Regards,

Meredith C. Frey, Ph.D.
IRB@Otterbein.edu

From: "Fagan, Bonnie" <bfagan@otterbein.edu>
Date: Tuesday, December 15, 2020 at 3:08 PM
To: irb <irb@otterbein.edu>
Subject: Re: DNP project proposal

I do not plan to track participants as the education will be part of the normal work day. Thank you,
Bonnie

Get Outlook for iOS

Appendix C

Bonnie M. Fagan Otterbein University

December 11, 2020

RE: Hospital Acquired Pressure Injuries in Critical Care: A Quality Improvement Project

Dear Ms. Fagan:

The Nursing Evidence-Based Practice Review Committee (NEBPRC) has reviewed the proposal referenced above. Clear evidence was submitted to justify both the need for the practice change and that evidence supports the proposed plan. You have adequately addressed all concerns from the pre-review and the revisions are accepted.

The NEBPRC has determine that the project proposal you submitted does not meet the Federal definition of research as cited in CFR 45-46:102. According to the Federal Code, research is defined as:

You have permission to implement the evidenced-based practice change as written proving that the unit manager at the intended intervention site is in agreement. Upon completion of the project and before dissemination (poster or manuscript), you must submit the results so that the OhioHealth can review the presentation to ensure Health Insurance Portability and Accountability Act (HIPAA) compliance.

Congratulations on your progress towards this worthy endeavor.

Teresa Wood PhD, RN NEA-BC Program Manager, Nursing Research

(l) *Research* means a systematic investigation, including research development,

testing, and evaluation, designed to develop or contribute to generalizable knowledge.

Activities that meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program that is considered research for other purposes.

Appendix D

	Pre-Implementation Chart Audit Results			
Number of days Audited	Number of patient charts included	Mode of monitored days	Median of monitored days	Mean of monitored days
14	336	0%	**0%**	**0%**

Appendix E

Post-Implementation Chart Audit/ Hand-off Audit Results					
	Number of days Audited	Number of patient charts included	Mode of monitored days %	Median of monitored days %	Mean of monitored days %
Chart Audit	30	660	35, 42, 55, 57	**52.5**	**48.53**
Handoff Audit	30	660	81, 88	**78.5**	**75.46**

Appendix F

	Percentage of Charts with Documentation Complete	Percentage of Charts with Hand-off Complete
Day 1	0%	0%
Day2	37%	70%
Day 3	42%	81%
Day 4	23%	81%
Day 5	72%	80%
Day 6	71%	76%
Day 7	62%	62%
Day 8	76%	67%
Day 9	53%	81%
Day 10	44%	89%

Day 11	20%	70%
Day 12	55%	75%
Day 13	60%	85%
Day 14	57%	81%
Day 15	52%	86%
Day 16	67%	88%
Day 17	50%	88%
Day 18	61%	92%
Day 19	46%	88%
Day 20	42%	90%
Day 21	55%	65%
Day 22	25%	65%
Day 23	35%	70%
Day 24	16%	79%
Day 25	56%	78%
Day 26	81%	88%
Day 27	31%	69%

Day 28	75%	69%
Day 29	35%	75%
Day 30	57%	76%