

Implementation of Pressure Ulcer Prevention Protocol Interventions (PUPPI)

to Prevent Hospital-Acquired Pressure Ulcers

Amy Bradley, Trevor Mattarella, MiSuk Robinson, Kaylee Sullivan

Ferris State University

Abstract

The purpose of this paper is to review implementation of Pressure Ulcer Prevention Protocol Interventions (PUPPIs) that address preventing or reducing hospital-acquired pressure ulcers (PUs) to provide better patient outcomes. Hospital-acquired pressure ulcers are associated with increased length of hospitalization, rising healthcare cost, and higher mortality rate. Numerous research studies have contributed to the positive correlation associated with implementation of PUPPI and decrease in PU incidence. The references are from nursing journals, textbooks, and nationally accepted PUPPI guidelines from Agency for Health Care Policy and Research, Agency for Healthcare Research (AHRQ), Institute for Clinical Systems Improvement (ICSI), and the National Pressure Ulcer Advisory Panel (NPUAP). The goal of this paper is to present evidence-based research to answer the question “Does the implementation of PUPPI reduce or prevent hospital-acquired pressure ulcers?”

Keywords: evidence-based nursing practice, pressure ulcer (PU), pressure ulcer prevention protocol interventions (PUPPI), research review

Implementation of Pressure Ulcer Prevention Protocol Interventions (PUPPI)**To Prevent Hospital-Acquired Pressure Ulcers**

This paper focuses on implementation of PUPPI to reduce or prevent hospital-acquired PUs. According to Dibsie (2008) an estimated 2.5 million patients are treated for preventable PUs in the United States at a cost of \$11 billion dollars annually. We will examine the question “Does implementation of pressure ulcer prevention protocol interventions help reduce or eliminate hospital-acquired pressure ulcers?” Hospital-acquired PUs may contribute to extended hospitalization, sepsis, decrease mobility, and poor patient outcomes (Dibsie, 2008). Griffin et al. estimates that 60,000 acute care patients die from PU complications (2007). Nursing research and evidence-based nursing practice (EBNP) have led to numerous PUPPI to reduce hospital-acquired PUs. Treating PUs can be challenging especially in patients with multiple co-morbidities. The hypothesis is that successful implementation of PUPPI interventions prevent or reduce the incidence of hospital-acquired PUs.

Description of Article One:**Preventing Pressure Ulcers in Hospitals: A Systematic Review of Nurse-Focused Quality Improvement Interventions (Soban, Hempel, Munjas, Miles, & Rubenstein, 2011)****Purpose and problem**

The purpose of this article is to review the literature for evidence that PU protocols can be successfully implemented in hospitals through quality improvement (QI) process (Soban et al., 2011). There are many guidelines and protocols addressing PU prevention from government agencies, professional organizations, and healthcare facilities. However there is minimal information on how to determine the effectiveness of PUPPI being implemented from a QI process (Soban et al., 2011).

Review of literature

The authors conducted a literature search from six electronic databases for publications from January 1990 to present (Soban et al., 2011). They screened titles for relevance by hospital setting, experimental design study, testing of QI intervention to change the routine care of PUs, and presence of data for nursing process or patient outcome measures (Soban et al., 2011). They excluded research articles that just focused on educational interventions without the other relevant criteria. Articles on wound care and site-specific care such as heel care were also excluded from this review. Strategy for the database search was included with keywords and relevant criteria.

Theoretical model

A theoretical model is not clearly identified in this article. Findings indicate that PUPPI all incorporate best practice interventions (Soban et al., 2011). The conceptual framework implied is that a QI process is necessary to determine the effectiveness of PUPPI interventions.

Research design

Meta-analysis of the research regarding PU incidence and sample size was performed using the Stata 9.2 program (Stata Statistical Software). Research was categorized by country and hospital setting (single facility, multi-hospital research, single nursing unit, multiple nursing units). Majority of the studies utilized uncontrolled before-after design (Soban et al., 2011).

Study findings

From the literature review 39 studies met the inclusion criteria (Soban et al., 2011). The most common intervention was the development and implementation of PUPPI. Most of the research studies also incorporated staff education as a component of PUPPI. Risk assessment and performance audits were often included in the protocol. However

implementation of the protocol components varied considerably between the different research studies (Soban et al., 2011). Some hospitals employed a one time in-service training for staff while other facilities incorporated teaching rounds or included the information in new staff orientation process. Data collection varied from quarterly to annually among the different hospitals. The most common combination of interventions noted was a protocol change and implementation of a risk assessment tool. Performance monitoring was included in twenty of the studies but only nine of those studies also included staff feedback as a QI process. The research supported a positive effect on nursing process and patient health outcomes when implementing PUPPI (Soban et al., 2011)

Description of Article Two:

PUPPI: The Pressure Ulcer Prevention Protocol Interventions

(Catania, Huang, James, Madison, Moran, & Ohl, 2007)

Purpose and problem

The purpose of this research article is to encourage PUPPI implementation based on the evidence supported by literature review and clinical data obtained by the researchers. PUPPI include assessing risk, nutritional status, skin care, documentation, and referrals to WOCN (Catania et al., 2007). The national incidence of PU and high costs associated with hospital acquired PUs indicate the relevance of this research to nursing practice.

Review of literature

The literature review consists of 24 articles published from 1989-2007 (Catania et al., 2007). The authors presented a summary of four research articles that focused on cost of PU treatment and effectiveness of PUPPI (Catania et al., 2007). Majority of the articles are primary sources from nursing journals but many other sources such as textbooks and

national agency guidelines are included. Agencies including Agency for Health Care Policy and Research, NPUAP, and Cochrane Database are part of the literature review.

Theoretical model

A theoretical model or conceptual framework is not identified in this research study. A theoretical framework takes the propositional statement and relates it to the research question (Nieswiadomy, 2012). In this article the authors did not present a research question.

Research design

The authors did not explain the research design. This was not an experimental design since all patients admitted to the hospital were included in the study. Each unit was assigned a designated day of the week to assess patients for PU risk: Braden Scale score, albumin/pre-albumin levels, and skin assessment (Catania et al., 2007). Patients identified for risk of PU development based on assessment score, clinical judgment, diagnosis, treatment regimen, or comorbidities had a PUPPI ordered. The PUPPI care plan sheet was placed in the patient's bedside chart and a follow-up assessment completed later in the week by patient care associates (PCAs). The follow-up assessment included documentation of PUPPI performed and basic skin assessment. The PCAs were responsible for notifying a nurse if patients developed any redness or skin breakdown so that a complete PU risk assessment could be done. Weekly audits by Clinical Nurse Specialist tracked number of patients identified at risk for PU, incidence rate, prevalence rate, and compliance with documentation (Catania et al., 2007).

Study findings

More than 700 patients were evaluated with 30% being identified as at risk for developing PU in the first quarter. Weekly audits showed that nurses were 90% and PCAs 80% compliant with documentation. In 2004 the PU prevalence rate was 11.36%. After the

implementation of PUPPI the prevalence rate decreased to 4% for all PU and 2% for hospital-acquired PU (Catania et al., 2007, pp.46-47).

Description of Article Three:

Implementing Evidence-Based Practice to Prevent Skin Breakdown (Dibsie, 2008)

Purpose and Problem

The purpose of the article is to provide an analysis regarding implementation of nursing protocols to reduce PU incidence within hospital settings. Protocols were initiated at a multisite academic medical center to assess if EBNP would decrease PU incidence rate. PUs impact patient health outcome, cost of healthcare treatments, and length of hospitalization. According to Dibsie, "Depending on the extent of the tissue involvement, pressure ulcers are noted to require \$500 to \$40,000 to heal. A more recent view of cost estimates that a full-thickness wound now requires \$70,000 for associated care to heal." (2008, p. 142). The study showed that comprehensive wound care orders sets were in place but were not routinely used. There also was a lack of documentation regarding wound care treatment and interventions. Dibsie stated, "Although the overall prevalence of hospital-acquired pressure ulcers were lower than reported California benchmarks, specialty areas demonstrated prevalence rates significantly higher than unit-specific benchmarks, signifying a need for action." (2008, p. 141)

Review of Literature

The basis for this article was comprised of information collected from popular nursing journals, nursing textbooks, and medical databases such as Medline, CINAHL, and PubMed. The list of references is made up of 11 sources written between 1989 thru 2007. No obvious citation errors are noted. The article proposes PUPPI for pressure ulcer prevention, however there are no opposing viewpoints presented.

Theoretical Model

A specific theoretical model is not identified in the article. The article is based on nationally accepted interventions from WOCN. The interventions included effective positioning techniques, repositioning products, and standardized products. According to Dibsie, "Everything involving skin and wound care is now driven, or endorsed, by the WOCN staff and on the basis of national standards." (2008, p. 144). The nursing staff is encouraged to contact the WOCN nursing staff if they have any questions regarding the nursing protocols for reducing pressure ulcers and for new bedside consultations for patients at risk of future skin breakdown.

Research Design

The nursing staff was required to participate in quarterly data collection regarding pressure ulcer prevalence and ongoing implementation of the skin care protocols (Dibsie, 2008). There was no specific sample size mentioned but the information was collected through a multisite academic medical center. Management and CNS support was important to help nursing staff implement the new protocol and documentation. Another valid member of the research design was the Director of Nursing Performance Improvement.

Study Findings

The findings corresponded to reduction in PUs and skin breakdown after the new protocols were initiated. Reports showed the peri-operative area improved in identifying and intervening with pressure reduction techniques. Prior to implementing the protocol the percentage of patients with hospital-acquired stage two or greater PU was nearly 17% in SICU and 7% within the other facility units. Two years after the implementation of these protocols, the percentages have decreased to 6% in SICU and 4% in other units (Dibsie, 2008, p. 148).

This reduction in hospital-acquired PUs saved the patients from extended hospitalization and reduced overall treatment costs. The study proved effectiveness of the protocol, decreased treatment costs, and more importantly improved patient outcome.

Article Four:

Methodological Issues in Studies of the Effectiveness of Pressure Ulcer Prevention

Interventions (Baumgarten, Shardell, & Rich, 2009)

Purpose and Problem

The purpose of this article is to increase understanding of different research methods that have yielded positive results regarding PU prevention. According to Baumgarten et al. the purpose is, "To enhance the wound care practitioner's understanding of research methods used to obtain information about the effectiveness of pressure ulcer interventions " (2009, p. 180). The extensive impact of PUs in hospitalized patients contributes to increasing healthcare costs to patients and treatment facilities

Review of Literature

The research study was presented in *Advances in Skin & Wound Care Journal*. The articles were published from 1979 to 2009 and are from reputable sources such as *Journal of Hospital Infections*, and *Ostomy Wound Management Journal*. NPUAP provided nationally accepted guidelines for developing the PUPPI.

Theoretical Model

The article did not present a specific theoretical or conceptual framework. According to Nieswiadomy, "Many nursing studies that are published today contain a clearly identified

theoretical or conceptual framework for the study. Other studies do not." (2012, p. 93). The article is reputable without a theoretical model since the references are credible and directly correlated with the PU interventions.

Research Design

The main research design used for this article analysis was randomized control trials (RCT). According to Baumgarten, "In an RCT trial, patients who agreed to take part in the study are randomized, that is, they are assigned at random, to the intervention group or to the comparison group. Both groups are followed for a specific period of time to determine if they develop a new pressure ulcer." (2009, p. 181). The RCT design is appropriate since the results of studies with randomization provide the strongest evidence that there is a positive correlation between intervention and outcome (Baumgarten et. al., 2009). The randomized study has been utilized for many years, but they also have some disadvantages. At many facilities it is simply not feasible to fund a randomized study since they can be expensive. Ethics is another important factor of this research design as beneficial treatment should not be withheld from the control group to prove a correlation within a study.

Study Findings

The focus of the study was to reduce PU incidence through the implementation of a skin care protocol. The existing skin care protocol was modified to include a body wash and perianal skin protectant to be applied after each episode of incontinence (Baumgarten, 2009). According to Baumgarten et al., "A significant decline in pressure ulcers was observed...from 32.7% before the intervention to 8.9% after the intervention." (2009, p. 184). It is difficult to perform a blind study because the PU prevention device or protocol cannot be concealed and the study group is aware of the treatment. According to Baumgarten et al., "Evidence-based practice requires that

decisions about health care be based on, among other things, findings from high quality research.” (2009, p.187). EBNP interventions incorporating a skin care protocol demonstrated to be effective in reducing the incidence and development of PUs in hospitalized patients.

Critical Appraisal Of The Evidence of Article One:

Preventing Pressure Ulcers in Hospitals: A Systematic Review of Nurse-Focused Quality Improvement Interventions (Soban et al., 2011)

Purpose and problem

The purpose is not clearly identified in the research or in the title of the article. The purpose of this research was to look at the current literature on various PUPPI being utilized. The primary focus centered on evaluation of reporting of nursing process change, patient outcomes, and the correlation of interventions and outcomes of PU prevention in the hospital setting (Soban et al., 2011). According to Nieswiadomy (2012) the authors should have used a correlational statement identifying the variables to clearly state the research purpose. This would also be considered a bivariate study as the authors are looking at the correlation between PUPPI and QI process on PU prevention outcomes. The authors did state the significance of this research to nursing practice and tools for data collection was included in case anyone wanted to replicate the study. This research met the guidelines for a quantitative study and empirical data was obtained such as PU prevalence rate, frequency of data collection, types of interventions being implemented, and patient outcome.

Review of literature

The literature review is comprehensive, relevant to the research study, and critically appraised. The authors established detailed inclusion criteria in reviewing the literature review. Majority of the articles are primary sources from nursing journals. All the articles were published

after 1990 (Soban et al., 2011). The reference page does not follow current APA (6th ed.) format of alphabetical listing, complete spelling of journal names, and author listing (APA, 2010). All the citations used in the article can be found in the reference page. The opposing theory is not presented.

Theoretical model

A theoretical model is not identified in this research study. Soban et al. indicated that QI process is imperative to prove the efficacy of PUPPI implementation (2011). A middle-range theory would be appropriate for this study as the focus is narrowed to PU prevention in hospitalized patients (Nieswiadomy, 2012).

Research design

A random effects meta-analysis for systematic review of literature was the foundation of this research study. The authors searched PubMed with very specific screening guidelines for articles published after 1990. Electronic database search resulted in 1,646 documents in which 314 research studies met the inclusion criteria for further review. The second review resulted in 39 research studies that met the criteria using the two tools developed by the authors (Soban et al., 2011).

Sampling methods. Two independent reviewers screened the literature review of 314 studies published after 1990. Total of 39 studies met the inclusion criteria. The inclusion criteria included the following elements:

- Team assembled
- Guidelines/protocols implemented
- Risk assessment tool
- Plan-Do-Study-Act (PDSA) process

- Staff education
- Link/resource nurse
- Performance monitoring
- Feedback

(Soban et al., 2011).

Data collection methods. The authors performed random effects meta-analysis of studies that reported incidence or prevalence of PUs (Soban et al., 2011). Meta-analysis is a statistical method of analyzing data from different studies in determining if a pattern or correlation exists (Triola & Triola, 2006). In this article the authors combined the data from several different research studies that implemented different PUPPI to formulate a consistent assumption of the effects on PU incidence rate.

Instruments. The authors developed two tools to evaluate the research articles. The first tool defined the PUPPI component and frequencies of the component being implemented. The various components are:

- protocol developed/implemented: implementing protocol-based care
- staff education: written, didactic, or other means to increase staff understanding
- risk assessment tool: implementation of assessment tools such as the Braden Scale
- performance monitoring: collecting data at least three times during the study
- team assembled: formation of new team to plan implementation
- beds/support surfaces: process of using new equipment/mattress
- guideline implemented: interventions based on published guidelines
- feedback: process to increase awareness and monitor progress
- link/resource nurse: identification of nurse to provide information to staff

The second tool evaluated the quality of the studies. Eight elements were listed with definitions. Each element was assigned a quality score of 0 (low), 1 (medium), and 2 (high) (Soban et al., 2011).

Data analysis. The most common PUPPI components reported are the implementation of a protocol-based care (74%), staff education (72%), and risk assessment tools (54%). Only 51% of the studies incorporated performance monitoring. The use of feedback with performance monitoring was only present in 23% of the research. The reporting of process and patient outcome data occurred with high quality in only 15% of the research. The combined data analysis of PU incidence outcome from all the research studies was reported in a random effects model. The PU outcome incidence reporting indicates that overall PU incidence decreased slightly after implementation of any PUPPI protocols with a $p < .0001$ and a 95% confidence interval (Soban et al., 2011, pp. 247-248).

Study findings

Almost all the studies concluded that any PUPPI had a positive effect on nursing process and patient outcome (Soban et al., 2011). The authors noted “considerable heterogeneity across studies, so the pooled effect should be viewed with caution.” (Soban et al., 2011, p. 249). This is one of the known weaknesses of this type of research and that is why the random effects meta-analysis is an appropriate study design for this research. Placing greater emphasis on QI process when implementing PUPPI will help understand why some protocols are more successful than other interventions

Critical Appraisal of Article Two:

PUPPI: The Pressure Ulcer Prevention Interventions (Catania et al., 2007)

Purpose and problem

The problem identified is the incidence of PUs in hospitalized patients, associated cost of PU treatments, and morbidity related to PU complications (Catania et al., 2007). The purpose of the article is to provide evidence-based PUPPI implementation process based on literature review and data from the study. The authors clearly identified the significance to nursing practice by referencing data of PU related mortality rates. The feasibility of the study is evident as the tools and collection process of data are clearly outlined. The study was ethical as all patients were part of the study. This was a quantitative study and empirical data collected included the Braden Scale score, type of PUPPI intervention ordered, frequency of PUPPI interventions, laboratory values, and nutritional assessment (Catania et al., 2007). The population was all hospitalized patients. According to Nieswiadomy (2012) a purpose statement should be written in interrogative form, include specific population, identify variables, and be empirically testable. The authors did not identify this research as a multivariate study or provide a correlational statement of the research problem.

Review of literature

The literature review is comprehensive and concise listing only 24 articles published from 1987-2007. The older articles indicate the historical significance of this problem. The articles are from primary sources as they are mostly from nursing journals with a few from medical journals and government agencies. All citations used in the article appear in the reference page. Nieswiadomy recommends that supporting and opposing viewpoints should be

included in the literature review (2012). The research study did not present any opposing viewpoints that may affect successful implementation of PUPPI.

Theoretical model

A theoretical model or conceptual framework is not presented in this study. A quantitative study should be based on theoretical or conceptual framework (Nieswiadomy, 2012). A propositional statement based on a specific theory delineates the hypotheses and relates the research question to the framework of the study.

Research design

The research design is not clearly described in this study. A QI team was formed that developed a PUPPI based on the literature review of guidelines from WOCN Society, AHRQ, and NPUAP (Catania et al., 2007). An assessment tool was developed and data collected weekly. Staff education was a major component that included training in the Braden Scale, standardized skin assessment, computer order entry, documentation, critical thinking exercises, and mentoring (Catania et al., 2007).

Sampling methods. All patients admitted to the hospital participated in the study. Hospitalized patients assessed to be at risk for PU were identified and monitored for data collection. Nieswiadomy recommends that researchers address sampling methods, identify the demographics of the sample, dropout rate from the study, and possible sampling bias (2012). This study did not include any other information than the number of the sample size and that they were all hospitalized patients at risk for PUs.

Data collection methods. Data was collected twice a week by chart audits. The researchers looked at the number of patients identified as at risk, percentage of documented interventions, and compliance with staff completing the audit forms (Catania et al., 2012)

Instruments. The QI team developed a PUPPI based on nationally accepted guidelines from AHRQ, NPUAP, and WOCN Society. The Braden Scale assessment tool was incorporated in the PUPPI. However, tools for data collection was not included in the article. An audit form is mentioned but not explained or discussed. According to Nieswiadomy data-collection instruments should be clearly identified and described since this will affect the reliability of the data being collected (2012). The characteristics of the data-collection tools may affect the validity of the research and cause barriers in replication of the study.

Data analysis. Data reported to the National Database of Nursing Quality Indicators (NDNQI) in 2003 prior to PUPPI implementation demonstrated 19.47% PU incidence rate and 12.39% hospital-acquired PU prevalence rate that was almost 50% higher than the NDNQI benchmark for PU (Catania et al., 2007). In the first quarter of the study nursing compliance with completing the audits was 90% and 80% among the PCA. After implementation of PUPPI the PU incidence rate decreased to 4% and 2% for PU prevalence that is well below the NDNQI benchmark (Catania et al., 2007). The authors did not provide adequate descriptive statistics in this research. There is no information on the sample characteristics other than all hospitalized patients. There was no breakdown of central tendency, variability, or relationships of the data collected.

Study findings

The authors noted that continuous monitoring and evaluation of PUPPI provided data to sustain practice changes based on evidence-based research. Staff education, communication, and administrative support were critical for successful implementation of PUPPI. However, the authors did not provide necessary information on research design to replicate this study.

Instrumentation for data collection was not comprehensive, theoretical or conceptual framework was not included, and a focused research problem or statement was missing.

Critical Appraisal of Article Three:

Implementing Evidence-Based Practice to Prevent Skin Breakdown (Dibsie, 2008)

Purpose and problem

The article by Laura Dibsie focused on implementing EBNP to prevent skin breakdown and reduce PU incidence. The research question presented is “Does the implementation of evidence-based nursing practice prevent skin breakdown?” The author does not list a particular hypothesis but the study focus about PU prevention is a clearly identified.

Review of literature

This article is based on information from a collection of nursing journals, textbooks, and databases concerning PUPPI. The reference list contains eleven sources between the years of 1989 thru 2007. No obvious errors are noted in the reference citations. The authors do not present any opposing viewpoints.

Theoretical model

The article would have been more effective with a theoretical model identified. National standards endorsed by WOCN is the foundation for all skin and wound care (Dibsie, 2008). This information will contribute to new national standards for better patient outcomes.

Research design

There is no specific research design mentioned in the study, however it focused on methods to ensure compliance with standardized products and protocols. The study was based on information presented by WOCN increasing the credibility of the information.

Sampling methods. The sampling methods are briefly outlined, however they are not clearly identified in the article. The study focused on patients within a 54 bed critical care unit. According to Nieswiadomy, "Generally speaking, quantitative studies seek to obtain sample sizes large enough to talk about the population of interest." (2008, p. 155).

Data collection methods. The source of data collection in the analysis was found in periodic PU prevalence data collection. According to Dibsie, "Participation in quarterly prevalence pressure ulcer data collection was the method chosen to monitor the impact of the implementation and ongoing utilization of the skin protocol" (2008, p.143).

Instruments. The new skin care protocol was implemented through nursing staff education regarding standardized product lines. These product lines were initiated through careful in-services on proper application. The instruments and wound care supplies were all endorsed by WOCN.

Data analysis. The data analysis showed positive results after the initiation of standardized skin care protocols. The methods to reduce skin breakdown were initiated in the ICU and demonstrated success through prevention of any stage three or stage four wounds since the protocol was implemented. Percentage of patients with hospital-acquired stage two or greater PUs were almost 17% in SICU and 7% in other units prior to initiating the skin care protocol. Nearly two years after the study the percentages have decreased to 6% in SICU and 4 % in other units (Dibsie, 2008, Figure 3).

Study findings

The percentages of PUs decreased dramatically after the protocol began. This was a strong correlational study but could have been improved by adding a hypothesis and explaining the research design. The standardized training of staff proved to be effective and gave nurses an

opportunity to obtain continuing education credits. Decreased incidence of PUs contributed to positive patient outcomes.

Critical Appraisal of Article Four:

Methodological Issues in Studies of the Effectiveness of Pressure Ulcer Prevention Interventions (Baumgarten et al., 2009)

Purpose and problem

The purpose is clearly identified in the abstract to increase understanding of the research methods to evaluate the effectiveness of PUPPI (Baumgarten et al., 2009). The authors do not state the hypothesis but it is implied in the objectives listed in the abstract. The hypothesis is that healthcare practitioners who understand the different research methods for evaluating PUPPI will be able to make informed decisions regarding the implementation of effective PU protocols.

Review of literature

The literature review is comprehensive with 29 references dating from 1989 to 2007 (Baumgarten et al., 2009). Five of the references are textbooks on research and statistical analysis. Nursing and medical journals are cited and noted to be primary sources. Data is reported from government agencies and Cochrane Library. All citations in text are on the reference list. The author does identify the database for the literature review. No opposing viewpoints were presented.

Theoretical model

A theoretical or conceptual framework is not identified in the article. According to Nieswiadomy this article is an example of inductive reasoning of a middle-range theory (2008). The authors are focused on a very specific area of research and have taken data to

make generalizations about how to determine the effectiveness of PUPPI being implemented.

Research design

The article explains the four research designs commonly used for EBNP. Randomized control trials (RCT) provide the best evidence of correlation between variables. RCT is categorized as a true experimental design (Nieswiadomy, 2012). Studies with a historical comparison group implements a protocol but compares the results with data of PU incidence from the past prior to protocol intervention (Baumgarten et al., 2009). Nonrandomized comparison group is similar to RCT study except the population is not randomly placed in the control group (no intervention) or treatment group (intervention implemented).

Sampling methods. Randomized sampling offers the strongest evidence for correlation between interventions and results. Sample bias is minimized and internal validity maintained. Historical comparison group needs to make sure the population is clearly defined from when the data was collected and when the study was actually done to prevent internal validity errors. Nonrandomized comparison studies also need to make sure the population is very homogenous between the control and treatment groups. Having adequate sample size is important regardless of the research design. Having too small of a sample size may distort the research results.

Data collection methods. The article does not address data collection. Some common methods for collecting data include: observation, interviews, questionnaires, and chart audits (Nieswiadomy, 2012). Combining several methods for collecting quantitative data ensures that WWWWH (who, when, where, what, how) are answered (Nieswiadomy, 2012).

Instruments. The authors do not address instruments for data collection. Effective instruments for data collection are determined by the data being collected. Nurses may utilize

existing instruments published for use that have proven reliability for measuring outcomes (Nieswiadomy, 2012).

Data analysis. Baumgarten et al. states the sample size should be large enough to provide 80%-90% probability of true effect from intervention implementation (2012). The major component of data analysis is understanding the difference between PU incidence and prevalence rate. Incidence rate describes the population at risk for developing PUs and therefore is the data reflecting hospital acquired PUs. Prevalence rate is the total number of new and ongoing PUs.

Study findings

PU incidence rate is the preferred measure of PU frequency in studying PUPPI effectiveness. Mortality and people dropping out of a study affect the validity of research findings. Risk factors need to be identified and clearly defined to minimize errors in data collection and sample characteristics. Inferential statistics should show significant difference between the control and study groups or show significant correlation between identified variables (Nieswiadomy, 2012).

How the Evidence is Affected By Your Personal Experiences

Many interventions are utilized to reduce or prevent PUs in hospitalized patients. The most common nursing intervention is the manual repositioning of patients every two hours (ICSI, 2007, p.17). TAPS (Turning and Positioning System) was implemented at Covenant Healthcare. This system utilizes nylon material and foam wedges for turning and positioning obese patients, patients who are unable to reposition themselves, and patients who have signs of skin breakdown. TAPS has been well received by patients and staff. The system is designed to reduce shearing forces that may occur in turning patients and to decrease pressure on bony areas of the

body. The system is very easy to use for staff and increases compliance with repositioning patients frequently.

Mepilex dressings are protocol for any patients admitted to the ICU at Spectrum Health. Mepilex is a silicone dressing that not only decreases pressure on the coccyx but also keep the skin dry. Mepilex can be used on any bony prominence. Since the implementation of this protocol there have been no documented cases of hospital-acquired PUs.

In the operating room pressure applied to bony prominences during surgical procedures may cause redness and skin breakdown resulting in hospital-acquired PU during post-operative recovery phase. Utilization of foam pads, memory foam mattress pads, and addressing positioning needs as part of our Universal Time Out before the start of surgery decreases the risk of PUs developing.

In CCU the nurse will complete a head-to-toe skin assessment and PU risk assessment upon admission then daily thereafter. The Braden Scale is included in this assessment. If there are identified risk factors, such as immobility, the nurse uses her judgment to implement interventions and obtain orders from the doctor if needed. Interventions include: repositioning at least every two hours, floating the heels, keep the head of the bed less than 30 degrees when possible, using pillows to reduce pressure over bony prominences, use lift devices to assist with moving and repositioning the patient, assess nutrition and hydration status and educate the patient and the family about the importance of complying with the interventions.

Personal nursing care practices have shown that any intervention implemented correctly can decrease or prevent hospital acquired PUs. Prevention of PUs in hospitalized patients starts with basic nursing care such as positioning and hygiene care. Hospital-acquired PUs are often associated with negligent nursing care. Negligence is defined as failure to follow

standards of care, failure to document, failure to assess and monitor, or failure to be a patient advocate (Chitty & Black, 2011).

Make Recommendations

There are many interventions to prevent or reduce hospital-acquired PUs. Several factors need to be considered in determining the effectiveness of PUPPI. Understanding the research design and knowing how to evaluate data is important for evidence-based practice change. Recognizing if you are interested in PU incidence or prevalence rate will determine what type of research to look for or to replicate. Utilize a PU risk assessment tool such as the Braden Scale. Implementing a QI process will validate and sustain the effectiveness of practice change. Staff education and clinical support through WOCN or specialty teams improves compliance and accuracy of documentation.

Conclusion

The literature review provides evidence that implementation of PUPPI positively correlates in reducing or preventing hospital acquired PUs. PUPPI encompasses numerous interventions that follow the nationally accepted guidelines from AHRQ, NPUAP, WOCN Society, and ICSI. The most common interventions include the implementation of a protocol and an assessment tool (Soban et al., 2007). Staff education is an important component for successful implementation of PUPPI. Sharing research with staff increases awareness of the impact of PUs on patient outcomes, increase cost of healthcare, and increase risk of mortality from PU complications (Catania et al., 2007, Dibsie, 2009). Clear understanding of the research problem, data collection instruments, and documentation increases compliance. Administrative and nursing leadership support is important for adequate resources for training, supplies, or equipment (Dibsie, 2009). A team approach comprised of WOCN or designated staff member

acting as mentors or resource person also increases compliance and consistency of implementing PUPPI (Catania, 2007, Dibsie, 2008). Complete and accurate documentation is necessary for data collection and QI monitoring.

Nurses need to be aware of the impact of PU incidence and prevalence rates as our healthcare industry undergo changes related to reimbursement associated with quality measures. Research reviews have shown that implementation of any PUPPI will reduce or prevent the incidence and prevalence of PUs in hospitalized patients. However, there are some patients who may develop hospital-acquired PUs in spite of the best PUPPI implemented. This may be related to many factors including multiple comorbidities, admitting diagnosis, treatments, and altered metabolic conditions (Wallis, 2010). Implementing PUPPI based on evidence-based research and utilizing a QI process will increase the success of reducing or preventing PUs in all hospitalized patients. Baumgarten et.al. stated, "In light of the growing recognition of pressure ulcers as an important contributor to patient suffering and the cost of health care, there is an urgent need for the design, implementation, and evaluation of interventions to prevent pressure ulcers in a variety of settings." (2009, p. 181).

Continued nursing research is needed to build the evidence for effective implementation of PUPPI to prevent or reduce the incidence of hospital-acquired PUs. One area that seems to be consistently lacking in the current literature review is the identification of a theoretical or conceptual framework for the research. Not one of the four research articles we reviewed clearly identified a theoretical or conceptual model. Researchers also need to explain the research design so that readers are able to easily determine the validity of the research. Only two of the four research papers identified and explained the research design utilized in the study.

Nursing profession demands that patient care be safe and effective. Incorporating knowledge of nursing theory with nationally accepted standards for patient care, data from personal or collective research, recognizing socio-cultural values, and commitment to lifelong learning is necessary to address healthcare challenges facing our nation (ANA, 2010). EBNP is all about excellence in nursing care and improving patient outcomes based on evidence from nursing or scientific research.

References

- Agency for Healthcare Research and Quality (AHRQ). (2008). Patient safety and quality: an evidence-based handbook for nurses. Author. Retrieved from:
www.ahrq.gov/qual/nurseshdbk/
- Agency for Healthcare Research and Quality (AHRQ). (2011). *Preventing pressure ulcers in hospitals: a toolkit for improving quality of care*. Retrieved from:
<http://www.ahrq.gov/research/ltc/pressureulcertoolkit>
- American Nurses Association (ANA). (2010). *Nursing: Scope and standards of practice* (2nd ed.). Silver Springs, MD: Author
- American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.
- Baumgarten, M., Shardell, M., & Rich, S. (2009). Methodological issues in studies of the effectiveness of pressure ulcer prevention interventions. *Advanced Skin Wound Care*, 22(4), 180-190. doi: 10.1097/01.ASW.0000305462.3200.7b
- Catania, K., Huang, C., James, P., Madison, M., Moran, M., & Ohr, M. (2007). PUPPI: The pressure ulcer prevention protocol interventions. *American Journal of Nursing*, 107(4), 44-52. doi: 10.1097/01.NAJ.0000271182.90068.a1
- Chitty, K.K. & Black, B.P. (2011). *Professional nursing concepts & challenges* (6th ed.). Maryland Heights, MO: Saunders.
- Clarkson, A. (2007). Are pressure ulcers an act of nursing negligence? *Wounds UK*, 3(2), 78-84.
Retrieved from: www.wounds-uk.com/pdf.content_9134.pdf
- The Cochrane Collaboration. (2012). *Diversity and heterogeneity*. Retrieved from:
<http://www.cochrane-net.org>

Dibsie, L.G. (2008). Implementing evidence-based practice to prevent skin breakdown.

Critical Care Nursing Quarterly, 31(2), 140-149.

Griffins, B., Cooper, H., Horack, C., Klyber, M., & Schimmelpfenning, D. (2007). Best-practice protocols: Reducing harm from pressure ulcers. *Nursing Management*. Retrieved from: www.nursingmanagement.com

Institute for Clinical Systems Improvement (ICSI). (2007). *Skin safety protocol: Risk assessment and prevention of pressure ulcers* (2nd ed.). Retrieved from: www.icsi.org

L. Rau, L.A., & Brady, S. (2008). Developing a skin care protocol across the continuum of care: 2306. *Journal of Wound, Ostomy & Continence Nursing*, 35(3), S32.

Molnlycke Health Care. (2012). *Pressure ulcer prevention*. Retrieved from: <http://molnlycke.com>

National Pressure Ulcer Advisory Panel (NPUAP). (2012). Retrieved from: <http://www.npuap.org/>

Nieswiadomy, R.M. (2012). *Foundations of nursing research* (6th ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Soban, L.M., Hempel, S., Munjas, B.A., Miles, J., & Rubenstein, L.V. (2011). Preventing pressure ulcers in hospitals: a systematic review of nurse-focused quality improvement interventions. *Joint Commission Journal on Quality and Patient Safety*, 37(6), 245-52.

Triola, M.M., & Triola, M.F. (2006). *Biostatistics for the biological and health sciences*. Boston, MA: Pearson Education Inc.

Wallis, L. (2010). Some pressure ulcers are unavoidable. *American Journal of Nursing*, 110(9), 16. doi: 10.1097/01.NAJ.0000388251.03686.a2

Wound, Continence and Ostomy Nurses Society. (2012). Retrieved from: <http://www.wocn>

Paper #1 Evidence-Based Group Project Paper

Grading Criteria

30% of grade for paper can be deducted for APA errors including Spelling and grammar after paper graded.

<u>Headings</u>	<u>Possible points</u>	<u>Points Earned</u>	<u>Comments</u>
Abstract and Title Page	10		
Introduction (What is the problem or question; Provide support for relevance of the question; Clearly describe the aim of the project & paper)	10		
A descriptive summary of the most relevant & best evidence to answer the research question (there is not analysis here, just a description of what you found in the literature)	20		
An analysis of the evidence (this is a critical appraisal of the evidence and what you feel as a group the evidence suggests and whether there is strong or weak evidence to support the suggested findings)	20		
Describe how the evidence is affected by your experiences as nurses, patient preferences, nursing's or other's values <u>and</u> how these factors would influence your decision to utilize the evidence in practice	20		
Make a recommendation as to whether or not to utilize the evidence (support your recommendation with rationale)	20		
APA spelling and Grammar Deductions			
Total points	100		