Implementing a Safe Patient Handling and Mobility Program

by

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Acknowledgments

I would like to acknowledge my husband for all the love and support he has given me during this process. He has always supported and encouraged me to keep striving to be my best.

Dedication

I would like to dedicate this project to my grandmother, Hannah Mackey who taught me the meaning of loving and caring for others. My grandmother's influence in my life led me to become a nurse.

Abstract

Safe Patient Handling and Mobility (SPHM) programs are proven to protect healthcare workers such as registered nurses (RNs), licensed practice nurses (LPNs) and nursing assistants (NAs) from work-related injury secondary to patient handling. Improving the safety of the rehabilitation staff was the purpose of implementing this evidence-based project. The objectives were to increase the knowledge and practice of SPHM principles by healthcare workers in the rehabilitation department and decrease work-related musculoskeletal disorders (WRMDs) the total claims, restricted work hours, and lost workdays. Findings included a 90% reduction in restricted work hours, and a 91% improvement lost days over the prior year (PY). Total worker's compensation claims resulted in a 33% reduction over the PY. Worker's compensation expense for FY 2020 was annualized to improve by a 95% reduction with the implementation of an SPHM program. Prior to staff training, a preassessment survey was administered, and the last three questions provide a baseline to evaluate weekly improvement in the adaptation to behavior changes and compliance with the SPHM program principles. The behavior change with SPHM program compliance was measured over a 12-week period; whereas, compliance with the principles of the SPHM program improved from 20% to 80% on weekly rounds.

Key words: Safe patient handling; mobility; workers compensation; implementation programs; and acute inpatient rehabilitation facility (IRF)

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Chapter One: Overview of the Problem of Interest

Nursing is a rewarding field of practice for many. It, at times, also can be dangerous. According to a study conducted by the United States Bureau of Labor Statistics (as cited in Fragala & Fragala, 2014), registered nurses (RNs) and nursing assistants/aides (NAs) were the highest among healthcare workers to consistently rank in the top ten professions sustaining non-fatal occupational injuries. Findings from an Occupational Safety Health Administration (OSHA) study indicated it is more hazardous to work in a hospital than on a construction site or in a manufacturing facility, in terms of lost time away from work due to work-related musculoskeletal disorders (WRMDs), such as carpal tunnel syndrome, epicondylitis, tendonitis, and back pain (Bhimani, 2016b). A study by Elnitsky, Powell-Cope, Besterman-Dahan, Rugs, and Ullrich (2015) suggested that manual lifting and transfer activities, such as moving a patient from bed to stretcher, from a bed to a wheelchair or from a wheelchair to a chair contributed to the highest rate of WRMDs. In order to prevent patient complications, turning and positioning of patients are fundamental nursing activities for achieving quality outcomes; however, these routine, daily work-related tasks increase the risk of overexertion associated with repeated manual lifting, transferring, and ambulating patients (C. Lee, Knight, Smith, Nagle, & DeVries, 2018).

Providing a culture of safety ensures that patients are safe but should also ensure the use of evidence-based safety principles to protect nursing personnel. As a way to establish a safe environment for nurses and to eliminate manual patient lifting, many nationally and internationally medical facilities have adopted safe patient handling and mobility (SPHM) programs (Hallmark, Mechan, & Shores, 2015). Members of the American Nurses Association (ANA), The Joint Commission (TJC), the National Institute for Occupational Safety and Health

(NIOSH), and the American College of Health Care Executives have all taken stands on safe patient handling, in particular caregiver safety. They also have endorsed evidenced-based practices (EBP) to solve the problem of nursing staff lost time away from work due to WRMDs. (American College of Healthcare Executives, 2019; ANA, 2013; Black, Salsbury, & Vollman, 2018; OSHA, 2013a).

Background Information

Improving the safety of healthcare staff is necessary to address time off from work due to WRMDs. In the United States, SPHM technology dates back to the mid to late twentieth century (Mechan & Wright, 2015). Currently, staff working in healthcare facilities utilize recognized methods and specialized devices and equipment to keep themselves safe when moving and lifting patients. However, the patient's medical acuity and obesity add to the physical demands of healthcare workers. Registered nurses rank fifth while nursing aides rank second in WRMDs (OSHA, 2013a). Teaching healthcare staff how to move patients correctly and training patients to be as independent as possible are two ways to improve patient and staff safe during mobility activities. These are two essential components of safe patient handling in an acute inpatient rehabilitation facility (IRF), where increasing patient independence in mobility is a primary goal.

Initially, patients in rehabilitation were overly dependent on healthcare staff and unsure of their physical abilities, which often put the healthcare staff at risk for WRMDs. Hospital administrators implemented individual safety initiatives that centered on patient safety and healthcare workers' safety but very seldom tie safety initiatives and programs together; however, it is the RNs moral obligation to protect the safety of the patient and self. Moreover, healthcare staff need organizational leadership to unite improvement initiatives, such as employee injury prevention, pressure injury prevention, fall prevention, and mobility; thus, SPHM programs help

to improve patient and healthcare workers' safety (Black et al., 2018). SPHM programs under a single safety program prevent silos intended to improve either patient or healthcare worker safety (Black et al., 2018). Healthcare administrators and senior practitioners representing national organizations have put forth national recommendations, such as the identification of work-related risk factors, the introduction of appropriate interventions, the extension of current knowledge, and the modification of various physical and psychosocial factors to decrease WRMDs of direct care staff and patients (Institute of Medicine (U.S.). Committee on Quality of Health Care in America, 2001). These organizations include the Secretary of Labor, Nurse and Healthcare Worker Protection Act of 2009, the NIOSN, and the ANA (Dickinson, Taylor, & Anton, 2018).

Patient safety initiatives, such as the prevention of hospital-acquired pressure injuries (HAPI) and falls are significant concerns for all involved in patients' and staffs' healthcare, especially in situations of compromised or limited mobility (Coleman et al., 2013). According to findings from a report by the Agency for Healthcare Research (AHRQ), hospital-acquired pressure injuries (HAPIs) have an impact on patents' length of stay (LOS), mortality/morbidity, patients' overall health and quality of life that cost medical institutions between $9.1-11.6 billion annually (Azuh et al., 2016). The goal of safety programs and initiatives is to increase safety during patient mobility and transfers as a means to reduce nursing staff injuries when lifting and moving patients and using safe practices to prevent falls.

Significance of Clinical Problem

Healthcare organizations are complex entities that are struggling due to reductions in reimbursement for services rendered and the billions of dollars paid to healthcare workers with lost time away from work due to WRMDs (Azuh et al., 2016; Bhimani, 2016a). An ANA study showed that 42% of nurses feel they are at significant risk of injury from moving patients and

heavy objects, and 53% of nurses say they experience musculoskeletal pain at work (Fragala & Fragala, 2014). Musculoskeletal pain and injuries are major reasons nurses leave their jobs (*Hospitals Fail To Protect Nursing Staff From Becoming Patients*, n.d.). Patient handling injuries not only impact the safety of staff and patients but they impact the hospital's bottom line because replacing one nurse can cost up to $103,000 ("Safe Patient Handling - Worker Safety in Hospitals | OSHA," n.d.). According to research, SPHM programs can save the hospital's workers compensation cost up to 85% and can reduce lost workdays by 76% (OSHA, 2013a). SPHM programs reduce staff and patient injuries while preventing debilitating musculoskeletal pain and career-ending injuries and improve the quality of care ("Safe Patient Handling "Worker Safety in Hospitals | Occupational Safety and Health Administration," n.d.). Leaders in healthcare must focus on strategies that create a culture of safety for its employees.

Hospital workers, specifically RNs and nursing aides, experience nearly twice the domestic average rate of illnesses and injuries when providing basic patient care (OSHA, 2013b). In 2011, nonfatal occupational injuries and illnesses per 100 full-time American workers of all industries combined at a rate of 3.0 compared to 6.8 for hospital nursing staff alone (Weiner et al., 2015). The incident rate of measuring days away from work for all industries and occupations nationwide was 1.2 (OSHA, 2013b). Amongst RNs, nursing aides, orderlies, and attendants across the healthcare industry, the rate was nearly four times that of other workers at 4.4 per 100 full-time workers (Dressner & Kissnger, 2018).

At an innovative not-for-profit healthcare system where nearly one and a half million people in 29 counties in rural eastern North Carolina are served, back-related injury claims accounted for 25% of the total cost of all claims in 2017, according to a report provided to the project lead (PL) from the health care system's occupational health department. In addition, there

were 568 back injuries over the previous five years that accounted for $10.4 million in total incurred costs according to data obtained from the organization's occupational health department. The data indicates that 50% of the nursing-related injuries are musculoskeletal disorders resulting from patient handling. On average, back injuries are costing the organization an estimated $18,330 per injury (B. J. Vaughn, personal communication, August 23, 2018), and the cost is higher than the previous quoted national average of $15,600 (Weiner et al., 2015). Therefore, the implementation of a minimal lift policy that incorporates educating and training of the healthcare workers about SPHM principles is beneficial to the employee's health and wellbeing and the organization's bottom line.

Question Guiding Inquiry (PICO)

The exploration and study of EBP start with a well-developed PICO question. The acronym PICO stands for the patient population, intervention or issue, comparison, and outcome and is a useful guide to developing research and study questions. Once the PL identifies a clinical problem, she can begin formulating PICO questions for clinical inquiries that yield the most relevant and best evidence utilizing the PICO format (Melnyk et al., 2009). The clinical question guiding this project is; "*In standard nursing practice, does implementing a SPHM program that incorporates a minimal lift policy, educating and training of nursing staff about the proper use of equipment, within an acute IRF, decrease total WRMDs, restricted work hours, and lost workdays, and workers compensation claims?"*

Population. The target populations for this EBP change project will consist of licensed practical nurses (LPNs), licensed RNs, and nurse aides working in a 75-bed IRF that incorporates three nursing units. The current average daily census of this rehabilitation department is 55 patients. The department is within a large academic medical center in eastern North Carolina.

Intervention. The targeted, evidence-based intervention will consist of implementing a minimal lift policy that will incorporate educating and training nursing staff about SPHM principles and the proper use of equipment. Teaching and training nursing staff are best practices when implementing a SPHM program (ANA, 2013). Policies that have clear expectations of patient handling are fundamental to a program's success. The ANA (2013) suggests no greater than 35 pounds push, pull, or lifting as to be the expectation for staff and maintaining patient safety.

Comparison. The comparison group will consist of a pre and post-assessment of hospital data from the occupational health department. The PL will gather retrospective data from the hospital occupational health department to determine the number of nursing staff who took time off from work due to WRMDs prior to the intervention. The PL will implement the new policy and incorporate the education and training of the nursing staff. The hospital occupational health department will provide post-intervention data of the number of nursing staff who took days off from work and who received workers' compensation due to WRMDs post the intervention. Weekly the PL huddled with RNs/LPNs and NAs to determine if lifting equipment was being used, if lifting equipment was readily available, and to determine how often the mobility tool used to guide safe handling practices. This comparison will assist in deciding if policy and more education and training would have a significant impact on reducing nursing staff time off from work due to WRMDs.

Outcomes. The primary outcome measures for the project was to decrease total WRMDs as measured by reported claims, decrease the restricted work hours, and lost workdays, decrease workers' compensation due to WRMDs as measured by the number of worker's compensation cases per the number of worked hours. Lastly, the RN/LPNs and NAs compliance with the

policy and patient mobility tool. These outcomes increased the safety and wellbeing of nursing staff and patients by creating a safer environment and will improve the rate of WRMDs suffered by staff.

Summary

Across the United States, nurses and other healthcare workers often suffer crippling career-ending injuries and other WRMDs from manually handling patients and heavy objects (Przybysz & Levin, 2017). Hospitals are seeking substantial differences in care delivery to maximize financial return. Hospital officials are looking to reduce costs by evaluating economic approaches to set healthcare institutions apart from the competition (Przybysz & Levin, 2017). Safe Patient Handling Mobility programs have the ability to influence the hospital's bottom-line adding value to organizations.

A SPHM program promises a significant return on investment (ROI) and can serve as a standard for implementing the standardized program across the healthcare organization and multiple organizations in larger systems. The ROI for this project is aligned with the literature that supports huge financial gains for institutions with formal SPHM programs. The incorporation of a new lift policy that integrates educating and training nursing staff about safe patient lifting and moving best practices and the proper use of equipment is aligned with the interest of decreasing nursing days away from work due to WRMDs.

Chapter Two: Review of the Literature

The goal of this chapter is to provide a comprehensive review of the literature on safe patient handling and mobility programs (SPHM) to prevent healthcare worker injuries while handling patients. Registered nurses (RNs), Licensed practical nurses (LPNs), and nurse aides/assistants (NAs) have the right to work injury-free. Hallmark, Mechan, and Shores (2015) indicated that nursing staff have a moral obligation to protect the safety of patients and themselves. Patient immobility poses the risk of injury to healthcare workers. Patient acuity levels increase as nurse workload and hospital length of stay rises. Patient dependency on nurses for assistance with mobility increases the risk of injury. This chapter outlines a literature appraisal for SPHM programs.

Literature Appraisal Methodology

Sampling strategies. A comprehensive literature search was completed using the following databases: PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Ovid. The keywords identified for the review include safe patient handling and mobility, workers compensation, implementation programs, and acute inpatient rehabilitation facility (IRF). The search yielded 569 articles. Consequently, the additional keyword work-related musculoskeletal disorders (WRMDs) was added to the search

PRISMA describes the process of identifying resources to conduct a project study (see Appendix A). Subsequently, to reviewing abstracts, six items were removed. Of the articles excluded, three took place outside the hospital setting, two didn't include workers' compensation findings, and one did not include information on mobility. Of the remaining articles, eight were applied to the project.

Evaluation criteria. To establish and efficiently evaluate articles from the literature search, a literature review matrix was used (see Appendix B). Only articles related to safe patient handling and mobility, workers compensation, implementation, programs, and acute inpatient rehabilitation were chosen and appraised for strengths and limitations. Criteria considered in reviewing the literature consisted of inclusion criteria, and study types such as case-control, case reports, and descriptive studies were included. The eight articles that most closely matched Mesh terms identified for the review include safe patient handling and mobility, workers compensation, implementation programs, and acute IRF and project application were included in the foundation for the DNP project.

Literature Review Findings

In a systematic review, Dennerlein et al. (2017) aimed to create a hospital-wide program that offered tactics for safe mobilization of patients and prevent staff injuries within an initiative that mobilizes patients early and regularly. The multicomponent program included fundamental mechanisms identified by previous systematic reviews, comprising an organizational policy designed for reducing injuries, investment in equipment, comprehensive training, and risk assessment. In the study, mobility occurrences increased by 10% and flattened to 40% at six months in the ICUs. In general care, compliance increased by 6% and at six months was measured as 37%. Overall, a trend toward increased compliance in all of the care units occurred. Findings pointed to safe patient handling programs directed at promoting earlier mobilization of patients in terms of reductions in worker injuries of importance. A distinct contribution of the study is that the intervention occurred in a distinct new context where the main focus was on improving patient care through the earlier and more frequent mobilization of patients. Healthcare

is a very fast pace, and the response change does not lend to the timely application of safety precautions and will likely increase risks to employee safety and health (Black et al., 2018).

Fragala and Fragala (2014) found overexertion from the basic handling of patients in bed by healthcare workers led to occupational injuries in nursing. Findings also suggest that back injuries second to patient handling are a major source of occupational injury. Fragala & Fragrala (2014) determined that four of the top five activities involved in injury causation are related to the repositioning of patients in bed. In their study, experienced healthcare professionals used two distinctive repositioning methods on two hundred and thirty-five-pound helper. There was a total of 23 repositioning trials performed with two healthcare professionals and 12 healthcare volunteers as participants. The Turning and Positioning System (TAP) was evaluated against traditional draw sheets. After the reposition task, caregiver participants reported perceived exertion on the validated Borg Scale. The results of the study concluded that shoulder exertion differed significantly between the usual draw sheet technique and the application of TAP.

Lee, Lee, and Gershon (2015) reports that amid those who worked in hospitals in a statewide random sample of California RNs that performed patient handling duties (n= 220), nearly three-quarters of the respondents reported WRMDs. Over half of the nurses reported low back pain. A little less than half of the nurses reported neck pain. The California RNs reported shoulder, hand, and wrists injuries, and each of the categories was less than 40%. Less than a quarter of the nurses reported a no-lift procedure. Of the RNs, fewer than 40% reported having a lift team, and those with lift teams reported decrease back pain. The largest majority of the nurses reported the availability of lifting equipment, and those with access to ceiling lifts were less likely to report shoulder pain than nurses without lifts. The California nurses reported the

awareness of the SPHM regulations, and less than 50% described adjustments in patient handling guidelines in organizations since the ruling began (Lee et al., 2015).

Lee, Lee, and Harrison (2019), in a cross-sectional survey conducted using random sampling with statewide California RNs in 2013 and 2016, found substantial progress in nurses' understanding of SPHM legislature on WRMDs prevention among hospital nurses. Lee et al. (2019) found that knowledge of the hospital's SPH policy improved by 87% in 2016 compared to data collected in 2013, and 73% of nurses received annual SPH training. Also, 80% of respondents noted improvements in the availability of equipment use to move patients, and 33% of nurses rated their hospital's courses in SPHM as excellent or very good. Findings support that SPH legislation in California had a significant role in the impact on SPH guidelines at the hospital level on musculoskeletal health outcomes at the worker level (Lee et al., 2019).

Bhimani (2016a) conducted the only studies found in this literature review on an inpatient acute rehabilitation unit. The purpose of the first study by this author was to understand barriers that contributed to nursing WRMDs and to distinguish objectives to decrease WRMDs for rehabilitation nursing staff. An anonymous survey was conducted with qualitative and quantitative responses. The response rate was 58 participants which included forty-nine RNs and nine certified nurse’s assistants (NAs)/LPNs). The closed-ended survey responses resulted in 48% of the participants reporting being injured and not reporting. Nurses reported self-treating minor injuries with measures such as analgesics and/or heat or ice. The majority reported low back injuries and followed by upper back injuries. Open-ended questions resulted in six themes: patient acuity, insufficient time, and help with efficiency and comfort of the work environment, body movement issues, and a deficit in awareness, and communication. Lack of time was described as competing to complete clinical care to have the patient ready for therapy and not

having enough NAs to help with tasks. Patient acuity was described as high, especially when the mix of patients included people with quadriplegia who were dependent on staff for care and transfers. Unexpected body movements of the patients were another theme. Nursing personnel described patients pulling on the nurse's neck or grabbing hold of the nurse due to fear of falling. The study captured multiple ergonomic concerns, such as an inadequate supply of lift sheets and transfer belts. Room and space designs were not conducive to safe handling tasks. The survey captured a knowledge deficit among nursing personnel regarding maximum weight restrictions, organizational guidelines, and hands on practice. Lastly, communication between nurses and nursing assistants (NAs) was identified as a barrier. These findings served to inform the next study by the author.

Bhimani's (2016b) second study aimed to reduce work-related musculoskeletal injuries for nursing staff by implementing a quality improvement and EBP project. After completing a needs assessment, the author determined that interdisciplinary collaboration, shift reports, independent study learning packets, and journal club sessions would be the interventions to address the survey results of a knowledge deficit and communication barrier. Sixty- two nursing staff members participated in this study. The results indicated that the implementation of the shift report helped perform patient-related handling tasks efficiently. Communication was rated positively, and more nursing staff reported feeling informed, and that communication helped staff perform patient-related tasks, in particular, patient transfers. Overall, musculoskeletal injury rates for rehabilitation nursing personnel was a fifty-seven percent, a reduction in injury rates over three months, and a cost savings of $90,000.

Darragh, Shiyko, Margulis, and Campo (2014) found that patients receiving rehabilitation services with or without an SPHM program achieved at least modified independence in self-care

activities. The SPHM program comprised patient handling technologies, hospital policies, and an algorithm. Body mass index >35 with a preassessment required bariatric lift equipment. The organizational policy required that all staff, except occupational therapists (OT) and physical therapists (PT), use patient handling technologies for the movement and management of patients at all times, excluding patients requiring minimal directions, contact guard assistance, or in the event of an emergency. The sample comprised of 507 patients in the no-SPHM group and 785 patients in the SPHM. Groups were similar to baseline mobility scores from the Functional Independence Measures (FIM). Logistic regression was used to evaluate the probability that participants of the SPHM and no-SPHM groups would attain independence. Patients in the SPHM program had the highest percentage (61%) of high self-care FIM scores compared to the no-SPHM group, in which 55.8% had high self-care FIM scores.

These findings are significant because OT and PT have different training that RNs. SPHM programs in rehabilitation have been suggested to prevent patients from meeting their full level of independence while in rehab. Given that nurses rank high for a work-related injury, it is imperative of the need to implement SPHM programs. This study suggests that SPHM programs do not prevent patients from achieving the most from their rehabilitation program.

Dickinson, Taylor, and Anton (2018) found that implementing a standardized mobility protocol in the electronic medical record aided nurses in mobilizing patients. Early mobility has been found to improve patient care, decrease patient length of stay within the hospital, decrease mechanical ventilation, improve muscle strength, and functional independence. The mobility program was already clearly defined with next steps to integrate SPHM principles. Following the ANA standard on SPHM, the researchers integrated the use of assistive devices with ergonomic assessments, decision algorithms, patient safety equipment, and a no manual lift

policy. Initially, mobility episodes increased from 31% to 41% but then leveled off to 40% at six months in the ICUs. In general care, compliance went from 33% to 39% and at six months was measured as 37%. Overall, there was a trend toward increased compliance in all of the care units. The project took eight years to change the culture. The project started in the ICU; however, the article references other programs such as rehabilitation. Leadership is essential in ensuring a successful rollout of the program and ongoing support for sustainability, which is the long-term role of leaders when implementing SPHM programs.

Limitations of the Literature Review Process

Limitations to the studies in some cases were low response rates, statistical significance, and convenience sampling. Low response rates can be expected with surveys and may have restricted the representativeness of the sample. Non-response bias might have distorted the overall findings in some studies. These biases include, but are not limited to, results from a universal appeal, recall errors, knowledge, or undesirable affectivity.

Laboratory studies can offer information about the relative risk of injury. However, these studies do not establish an applied solution resulting in less injury. There were no studies that used clinical trials to determine the best equipment options to prevent injury in clinical settings. Nursing knowledge development and self-engagement are essential in reducing WRMDs. An evaluation of the literature suggests that injuries are multifaceted. Awareness and attitudes toward injury prevention form gaps in practice for the rehabilitation nursing staff about SPH. Only a few articles were found with examples of rehabilitation as models for SPHM principles. Further work is needed to describe SPHM in rehabilitation and to differentiate from other specialties.

Discussion

Conclusion of findings. Lee et al. (2019) report that ten states have passed regulations to protect nurses from a workplace injury. California's statewide study using random sampling found useful baseline information about how state law influences the seriousness of implementation strategies, and positions organizations may take when no law exists. Lee et al., (2019) study found profound support for advancement in SPHM strategies once laws were in place. Nurses reported a high prevalence of WRMDs among nurses but also showed that organizations were taking steps to implement SPHM programs. The nurse also reported awareness of the organization's SPHM programs, which suggested education was occurring in facilities across California.

In the Fragala and Fragala (2014) study in which TAP's were compared to draw sheets, outcomes from the pilot study showed that recurrent turning and positioning of patients in bed could be made safer and easier for caregivers. The caregiver's apparent physical exertion was associated with greater stress on musculoskeletal structures and intensified the risk for injury. The use of TAP's technology was found likely to increase compliance of turning patients and increase the quality of care of patients requiring pressure injury prevention. The study showed that effective solutions yield a better outcome for patients and caregivers.

Dennerlein et al. (2017) research suggest that hospitals should include safe patient handling and mobilization programs. Improvements were found in processes after the implementation of SPHM program. Also, there were significant support for early mobility with the program. Coordination of policies, staff education, and equipment utilization had a significant impact on patients and staff, as demonstrated in the article.

Advantages and disadvantages of findings. Advantages are clear that improvements are being made with SPHM and have been validated in studies for patients and caregivers. Safe Patient Handling policies and programs at the hospital level have shown to impact reductions in musculoskeletal disorders for healthcare workers. States that have laws to protect caregivers from injury have exhibited improvements that substantiated the need to implement strategies such as minimal lift polices, staff education, and equipment utilization (Lee et al., 2019). Improvements in quality care have also been shown in studies where patient care becomes less burdensome and when compliance with turns and pressure injury prevention occurs. Findings from studies point to value in programs aimed at early mobility and employee safety. Leadership involvement has been identified as important when coordination occurs across multiple departments and systemwide (Dennerlein et al., 2017). Positive outcomes offer support for deliberate and operational coordination of policies, programmers' and practices.

Disadvantages in the study findings included a lack of data to support types of equipment best suited to prevent employee harm. Lack of data on equipment suggests education and awareness about the dangers of handling patients could have significant influence on work place injuries alone; however, more studies are needed to test the claim (Fragala & Fragala, 2014). In addition, the lack of SPHM programs reported for rehabilitation programs is a limitation found is the literature.

Utilization of findings in practice. The proposed EBP intervention involved assessing the caregiver's baseline knowledge of SPHM principles and patient handling standards. Implementation of a minimal lift policy of no greater than 35 pounds push, pull, or lifting guided education in practice change for safe patient handling. Providing education and training for

nursing staff heightens safety awareness about SPHM principles and appropriate equipment use. Safe patient handling and mobility programs create a safer environment for staff and patients.

Summary

Healthcare is moving in a new direction, which, without appropriate safeguards, will likely increase the risks to employee safety and health. It is imperative for organizations to implement safe handling programs to reduce employee injuries when implementing early mobilization of patients. Findings suggest that in back injuries, patient handling is a major source of occupational strains and sprains. It has been reported that nurses who work for employers that used lift teams have remarkable less low back pain. Shoulder pain was reported less in departments with ceiling lifts than those with no access to ceiling lifts. The lack of time to complete clinical care to have the patient ready for therapy on time was a competing factor. In addition, not having enough NAs to help with tasks, contributed to employee injuries. Leadership support in implementing SPHM programs is essential to ensure a successful rollout of programs and ongoing support for sustainability.

Chapter Three: Theory and Concept Model for Evidence-Based Practice

Healthcare leaders are in pursuit of excellence and opportunities in quality improvements initiatives for staff's and patient's outcomes. Organizational change is important for vigorous and progressive healthcare systems in search of excellence in implementing best practice in improving healthcare outcomes. This chapter identifies the concepts, project and describe the theoretical framework and change theory guiding the evidence-based practice project. Clear understanding and recommendations of the meaning of the concepts used in the project are dependent on a well-defined description of the phenomenon's of interest (Chinn & Kramer, 2011).

Concept Analysis

Work-related musculoskeletal disorders (WRMDs). Work-related musculoskeletal disorders are several injuries to the musculoskeletal system that may include muscles, nerves, ligaments, tendons, joints, and structures that support limbs. These injuries or disorders occur due to conditions on the job in which the work-related task is repetitive, cause straining, and overuse of joints and ligaments (Black et al., 2018). In addition, overexertion causes back injuries that are a type of high frequency condition in healthcare that is associated with the patient handling tasks (Fragala & Fragala, 2014). There are other circumstances where the injury or illness are inclusive of pinched nerve; herniated disc; sprains or strains. These WRMDs can create pain, swelling, and numbness that may require treatment, time away from work, reduced hours, or in extreme cases the inability to return to work. Other injuries are created from the bodily reaction to joints that are repetitively rubbed, abraded, or jarred by vibration while doing job related task ("Bureau of Labor Statistics (BLS) Occupational Safety and Health (OSH) Definitions," n.d.)

Restricted work hours and lost worked hours. Cases that involve time away from work or activities that are reduced or restricted from the full scope of one's job due to injury or inability to execute the full duties of the job. The reduction in work is related to an injury while working. A restriction from work as a result of a work-related injury or when an organization's medical professional advises keeping a worker from doing a job function or from functioning in a full workday due to work related injury or illness (*BLS OSH Definitions*, n.d.).

Safe patient handling and mobility (SPHM) program. There is no universal definition for SPHM programs to be found; however, ANA describes the SPHM program as interprofessional national standards that address debilitating or sometime career ending injuries and WRMDs that occur from manually handling patients (ANA, 2013). The ANA acknowledges that manual handling of patients puts healthcare workers at risk for injury, musculoskeletal pain at work and impacts the safety of the worker and the patient. Manually handling of patients adds unnecessary cost to the healthcare system and may often result is healthcare workers leaving the workforce altogether (ANA, 2013).

Worker's compensation. Worker's compensation is a type of public social insurance that dates back to the twentieth century. The insurance is a type of "no fault" liability program enacted by the courts to address the growing incidence of injuries as Americans became industrialized (Hunt & Dillender, 2017). Workers that have an employment-related injury receive prompt medical care, rehabilitation, and two-thirds gross wage replacement as they recover (Hunt & Dillender, 2017). Employers collect data on the dollars spent toward work related injuries. In order to prevent organizational liability, organizations focus on injury prevention and worker's compensation reduction.

Theoretical Framework

The nursing theory offers a systematic way to examine a phenomenon and was established to guide practice through the interpretation of the nursing domain (Moran, Burson, & Conrad, 2020). A theoretical framework is a basic structure developed to organize several concepts that focused on a particular question (Meleis, 2018). The theoretical framework offers a way to explore a phenomenon of interest through various lens (Moran et al., 2020).

Pender Health Promotion Model was selected as the theoretical framework to guide the project, The model details three components: the individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes (Chinn & Kramer, 2011)(see Appendix C). The theory summarizes that each person has unique personal characteristics and experiences that affect subsequent actions. It is modifying the variables through nursing actions ("Pender's Health-Promotion Model," 2017). Health-promoting behavior is the desired behavioral outcome in Pender's Model. These behavioral actions result in improved health, enhanced functional ability, and better quality of life during the stages of development. The final behavioral claim influenced by the immediate competing demands and preferences can derail intended actions for promoting health (Polit & Beck, 2017).

The Health Promotion Model assumes the behavior is regulated by the individual's desires to adjust to circumstances. The individual constantly interacts with the environment to transform self and the supporting environment over time. The individual recognizes that the environment must adjust to sustain the change and allow individual transformation. Health professionals provide knowledge and input to support and influence the conversion through the life span. The self-directed change occurs through person-environment collaborations, and the arrangements become crucial to behavioral change (" Pender's Health-Promotion Model," 2017).

Application to practice change. When lifting, transferring, and repositioning patients manually, nurses and other healthcare providers suffer debilitating musculoskeletal injuries, and the health care industry recognizes that manual patient handling is not safe (OSHA, 2013a). Nursing employees suffer more devastating back and other bodily injuries than other occupations, and most of those injuries are caused by manually moving and handling of patients (Dressner & Kissnger, 2018). These injuries are part of behavior-specific cognitions and affect individual factors, experiences, and behavioral consequences. Each person has distinctive personal characteristics and experiences that affect subsequent actions and education. Training plays a part in raising awareness and offers decision points and options to minimize and or eliminate injury (Polit & Beck, 2017).

The Health Promotion Model focuses on the achievement of higher levels of well-being and self-actualization. Modifying factors incorporate behavioral and situational factors, relational influences, and environmental and demographic characteristics (Polit & Beck, 2017). The Pender Model addresses the pace and speed to complete the task and environmental time constraints. Supportive leadership is expected to allow change and adaption to occur and to improve safety for staff and patients. Behavioral factors explain the person's previous practices with a given action. The activity and related information learned before implementation may influence the person's self-efficacy in continuing to participate in the activity. Situational factors may affect behavior as it relates to the immediate environment (Polit & Beck, 2017). For example, if a person desires to use equipment to handle the patient safely but does not find equipment readily available, the healthcare worker will be challenged. Interpersonal influences relate to group support and expectations. Collegial support is often a source of inspiration or hindrance toward a change of behavior.

Consequently, leadership is needed to encourage staff to do the right things. Lastly, age, gender, and educational background included in the demographic characteristics associated with the model may affect the individual likelihood to participate and engage in the program (Galloway, 2003). Health-promoting behavior is the desired behavioral outcome in Pender's Model. The behavioral actions result in improved health, enhanced functional ability, and better quality of life for patients and staff.

EBP Change Theory

Evidence-based practice has gained acceptance and esteem. In the practice setting, there are challenges to provide precise, quantifiable care based on evidence at the highest quality. Nurses are to make decisions that are grounded in evidence (Moran et al., 2020). To promote quality care, a group of nurses developed The Iowa Model of EBP to guide clinicians in evaluating and incorporating research into practice. The Iowa Model was based on Roger's (1983) theory, Diffusion of Innovations, and was an extension of the Quality Assurance Model Using Research (Buckwalter et al., 2017). The widely use Iowa Model is a practical guide that has been revised to address the application research evolving into EBP that integrates the use of various levels of evidence and to reflect the expansion of infusing change in more detail (Buckwalter et al., 2017). The model provides a guide through a series of decision points as movement occurs in the evidence implementation process. The schematic resembles an algorithm of choices that offer a linear course of putting evidence into action (see Appendix D) (Hopp & Rittenmeyer, 2012). Nurses recognize that EBP advances the quality of patient outcomes while controlling the cost, but barriers still exist to applying EBP at the bedside (Brown, 2014).

Application to practice change. The Iowa Model helps nurses and other healthcare workers translate research findings into clinical practice while improving outcomes for patients. The first step in the Iowa Model determines either a problem-focused trigger or a knowledge-focused trigger where an EBP change might be necessary. The first step provided the opportunity to assess the organizational data and determine why the organization was losing money to the high number or worker's compensation claims. Those were identified through occupational health data and showed financial and risk management data exacerbated by the clinical problem of unsafe patient handling practices identified as the problem-focused triggers. Staff lack of knowledge of injury prevention was recognized through the pre-assessment and previous rehabilitation studies on SPHM illustrate rehabilitation nurses lack knowledge in handling unlike physical and occupational therapist (Brown, 2014).

The next step determines if the project is an organizational priority and classified as necessary at the departmental or unit level. Problems that have higher costs rank higher in priority and gain buy-in due to the associated return on the investment (ROI) for the project. If it is not a priority for the organization, the model recommends refocusing (Hopp & Rittenmeyer, 2012).

After the priority is determined, the next step is to form a team. Team members are responsible for developing, evaluating, and implementing the EBP change. The structure of the team is determined by that which is needed to address the identified problem. Interdisciplinary stakeholders should be of focus to capture the range of problems to address and should include team players outside of nursing (Brown, 2014).Once a team has been formed, a literature review should be done by asking questions in the PICOT format, searching the best evidence, appraising

the evidence, integrating the evidence with clinical expertise, evaluating the outcomes-based evidence, and disseminating EBP results (Melnyk et al., 2009).

The second decision point is there sufficient research available to implement a practice change. The team should consider several questions before progressing forward. Team members will consider the number of studies that exist to support the change, the viability of the study to the setting, and the relevance of the finding in practice before moving forward. If these questions cannot be answered, then an actual research study should be considered; otherwise, the team should consider progressing to the next step (Buckwalter et al., 2017).

The final step is to implement the intervention into a pilot practice change. Implementing a pilot change on a smaller scale first; ensures the change is feasible and will produce the best outcomes before full implementation. If the intervention is useful in the pilot, converting to a more substantial practice change can then occur. The team should continue to assess the practice change, watching for any divergence in practice or a reduction in outcomes (Brown, 2014).

Summary

Nurses are expected to base their professional practice on research evidence. EBP involves using the best evidence and clinical judgement in patient care decisions. Interventions grounded in theory with well-defined concepts help to guide patient care to deliver the best outcomes. The Health Promotion Model developed by Pender supports the theoretical structure of the project and is guided by the Iowa Model of EBP. The clinical question underpins and provides the purpose behind the project implementation process.

Chapter Four: Pre-implementation Planning

Preparation is an essential element of a quality improvement (QI) project. In this chapter, a synopsis of the pre-implementation stage of the project is provided. The components of this chapter include a summarized project purpose, a review of managing the project, an analysis of the cost of the project, the institutional review board (IRB) process, and an evaluation of the project plan.

Project Purpose

Improving he safety of the rehabilitation environment for patients and staff was the purpose of implementing this QI project. The plan encompassed a pre knowledge and post weekly huddle questionnaire, a minimal lift policy, staff education about safe patient handling and mobility (SPHM), and the proper use of the available technology to decrease staff and injuries. Subsequently, the crucial objectives were to increase the knowledge and practice of SPHM principles by healthcare workers in the rehabilitation department and decrease work-related musculoskeletal disorders (WRMDs), Days Away, restricted hours, and workers' compensation claims.

Project Management

Organizational readiness for change. The project site staff and QI team exhibited a readiness for change. One of the organizational goals is creating a safe environment for patients and staff, which is a daily focus at departmental and hospital safety huddles. Therefore, the Senior Vice President, Nurse Executive and the Vice President of Clinical Efficiency and Documentation both verbalized support of the project. The project also received support from the Director of Team Member Safety and indicated that the project plans align with work that is planned surrounding employee safety in the organization. Lastly, the Nurse Managers and

assistant Nurse Managers supported project plans and verbalized commitment to supporting the project.

Inter-professional collaboration. The project team members included multiple inter-professionals: Project Lead (PL), Faculty Lead, Site Champion, and the Director of Team Member Safety. The PL was responsible for conducting the literature assessment, development, implementation, and evaluation of the QI project. In addition, the PL was responsible for the pre and post knowledge assessment, education and training of staff on SPHM principles. The project was discussed with the Director of Team Member Safety and the unit's nursing leadership. The PL was responsible for all data collection and developed all data collection tools. The Faculty Lead supervised, provided direction throughout the project, and advance knowledge to guide student development and project completion. The Site Champion, who holds a PhD in nursing, provided project guidance and support through the implementation of the QI organizational change project. Lastly, the Director of Team Member Safety provided access to data outcomes, support for education, and available equipment. Managers from physical, occupational, and speech language therapy were briefed on the project plans and offered feedback on the SPHM tool and policy revisions.

Risk management assessment. The key to a successful project is identifying and alleviating risk. Minimal risk was projected for the program participants; however, a strengths, weaknesses, opportunities, and threats (SWOT) analysis was completed to evaluate possible risk during the development stage of the project plaining (see Appendix J). Internal and external characteristics of the project using the SWOT analysis were evaluated to determine next steps.

***Strengths*.** The SPHM program would provide a structured approach for employee safety as well as improve quality care for patients. The program is endorsed by American Nurses

Association (ANA), The Joint Commission (TJC), the National Institute for Occupational Safety and Health (NIOSH), and the American College of Health Care Executives which have all taken stands on safe patient handling. Moreover, the program recognizes evidenced-based practices (EBP) to solve the problems.

Weaknesses. Weaknesses included the potential of not reaching all intended staff for education due to the volume of nurses and nursing assistants in the three departments needing training. The targeted audience included approximately 150 to 200 nurses and nursing assistants. To mitigate the potential of not reaching all intended staff, the education plan included short 30-minute sessions offered various times of the day, night, and weekends. Staff buy in is critical to a successful implementation of the project. The organization was experiencing rapid change in equipment updates such as new glucometers, new specimen collection processes, and new defibrillators. All new equipment required staff to receive additional training that potentially may hinder staff willingness to participate in another initiative. To diminish these fears the PL rounded weekly to collect post assessment data and to make necessary changes to the project to progress the team toward sustainability.

Opportunities. The opportunities begin with the development of a minimal lift policy and then to evaluate it. The success of the policy implementation would support the potential for a roll-out of the policy organization-wide. Secondly, developing staff confidence can be uplifting and rewarding. Staff feel valued and appreciated and are committed to their work and department when the organization invest in staff safety

***Threats*.** The potential threats of this project include: the inability to receive Restricted work hours, and lost workdays, WRMDs, and workers' compensation data promptly. In addition, there was no new equipment planned for purchase. With increased utilization of

equipment, a potential exists that more equipment would be needed. Staff may attempt to revert back to old handling practices; therefore, the minimal lift policy would be easily accessible to staff and the PL would huddle weekly with staff to evaluate staff's adaptation to change (see Appendix I and L). Weekly huddles occurred and the PL provided feedback on how well staff are overcoming weaknesses. An educational handout and decision aide were available to staff to reinforce safe patient handling (see Appendix E and M). Additional educational sessions were provided for staff unable to attend the initial education sessions. To address threats the PL communicated with the nurse managers weekly. Data was collected from the rehab nurse managers of any reported cases of WRMDs, worker's compensation issues, and restricted work hours, and lost workdays data (see Appendix I).

Organizational approval process. The project was originally presented to the Director of Team Member Safety. Once approved by the Director, the project was discussed with the Vice President of Education and Professional Development, who agreed to be the Site Champion. The project proposal was shared with the Chief Nursing Officer and the Vice President of Clinical Efficiency and Documentation. After receiving approval from all the stakeholders, the Site Champion provided a letter of support for the project (see Appendix F).

Information technology. Basic information technology (IT) was used in the project. To complete the literature appraisal a computer was used to access the university online library. Windows 10 with Microsoft Word and Excel was utilized for data input, data storage and data analysis. A data analyst from the project site provided monthly reports from occupational health. A computer, projector, and screen were used to provide staff education. Microsoft Word, Excel, and PowerPoint were used in the development of educational materials. Windows 10 with Excel was used to create charts, frequency tables and pie charts for dissemination of findings.

Cost Analysis of Materials Needed for Project

Minimal cost was associated with this project. The educational content was provided to staff in a notebook. Snacks and refreshments were provided for staff participants. The cost of paper, notebooks, printing cost and ink totaled $381.97. Light refreshments were provided during the educational sessions at cost $114.82 for 200 staff members (see Appendix G). A personal computer was used at no additional cost. The total budget was $496.79.

Safe patient handling investments pay for themselves and include portable lifts, transfer sheets and other equipment, training on equipment use and maintenance, and implementing a "minimal lift" policies that eliminates manual handling whenever possible. Hospitals with successful SPHM programs have found a significant reduction in the number of employee injuries and lost workdays from injuries not to mention the quality of life for healthcare workers who prevent life sustaining painful back and other musculoskeletal injuries. Cost benefit analysis estimations subtract the cost from the associated benefits to determine the return on the investments (Roberts, 2007).

Wage replacement for patient handling injuries are amongst the costliest hospital worker injuries. In 2011, a workers' compensation claims related to patient handling cost $15,600, and wage replacement accounted for the largest share of the cost at $12,000 (Lee, Knight, Smith, Nagle, & DeVries, 2018). Indirect cost included employee turnover, training, overtime, incident investigation time, productivity, and morale (Roberts, 2007).

The purchase of sit to stand and total lift based on the factory recommendations of one lift per ten beds for the return on investment (ROI) estimations for the project is displayed in Table 1. The overall ROI would be realized in as little as five months. These results support

implementing the program and illustrate positive results for future considerations of expanding the program throughout the institution.

Table 1

ROI calculations and direct benefits of implementing a SPMH program

Total Benefits Payback					
Project Year	1	2	3	4	5
Annual Project Cost	$ 50,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000
Cumulative Project Cost	$ 47,800	$ 49,800	$ 51,800	$ 53,800	$ 55,800
Total Annual Benefits		$ 121,300	$ 121,300	$ 121,300	$ 121,300
Total Cumulative Benefits	$ -	$ 121,300	$ 242,600	$ 363,900	$ 485,200
Total Benefits Payback			4.9	months	

Direct Benefits Payback					
Project Year	1	2	3	4	5
Annual Project Cost	$ 50,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000
Cumulative Project Cost	$ 50,000	$ 52,000	$ 54,000	$ 56,000	$ 58,000
Direct Annual Benefits	$ -	$ 18,300	$ 18,300	$ 18,300	$ 18,300
Direct Cumulative Benefits	$ -	$ 18,300	$ 36,600	$ 54,900	$ 73,200
Direct Benefits Payback	3	years,	2.0	months	

10%	Int.Rate

Financial Return Calculations

	Direct Benefits	All Benefits
ROI	-2%	550%
IRR	-1%	232%
NPV	$41,372	$274,232
Benefit to Cost	0.8	5.5
Payback Timing	3 years, 2 months	4.9 months

Note. The table represents the direct benefit of implementing a SPMH program. Cost associated with new equipment and ongoing annual competency validation over 5 years are included. The ROI calculations estimate that the return on investments would be realized as early as 5 months from the project's implementation.

Plans for Institutional Review Board Approval

The project site did not require a formal IRB review; therefore, the University IRB verification review process was completed. The first step was completing the IRB QI/Program Evaluation Self-Certification Tool to evaluate whether project met requirement for human subject research. Upon approval by the Faculty Lead, the tool was submitted online through IRB Qualtrics portal and response received that project did not require any further IRB review because it did not represent human research (see Appendix H).

Plan for Project Evaluation

Demographics. For this project, basic demographic data was gathered in a pre-assessment survey at the time of staff education (see Appendix I). Information collected included type of role (nurse or nursing assistant) there are less than five license practical nurses at the facility for the purpose of recognizing the mix (RN/LPN's) will be use. In addition, length of time worked in the role, years worked at the organization, and length of time in rehabilitation are questions in the preassessment. Data were summarized in using line charts to report change over time. In addition, participants were asked about their history of WRMDs and previous history of time away from work if any injury due to patient handling, body parts impacted if injury reported, and how often are patients moved during your shift.

Outcome measurement. The primary outcomes were to increase the safety and wellbeing of nurse and nursing assistants by creating a safer environment. Total WRMDs, restricted work hours, and lost workdays, and the number of worker's compensation cases were evaluated weekly and trended.

Evaluation tool. The evaluation tool used was an Excel spreadsheet that served as a data collection tool (see Appendix I). The PL collected data weekly from nurse manager huddles. Monthly, the PL received data from the Occupational Health Department. Data obtained included types of injury, the number of days from work due to the patient handling injury, and days the employee worked restricted hours. There was no patient or staff identifying information collected and all data was kept secure.

Data analysis. Basic column, pie, and stacked columns were used to analyze data for comparison over the previous year. Restricted hours, and lost days was compared in a column chart and analyzed in comparison to the prior year. Workers compensation was analyzed by cost

and total cases and compared to annualized data for 2020. Behavior change with the SPHM program compliance was tracked in a stacked column over 12 weeks to show progression overtime with the behavior changes.

Outcome measurement. The secondary outcome measure was the adaptation of the change in the use of policy and the decision tools to improve compliance and the evidence of utilization of the SPHM principles. Prior to training a preassessment survey was administered and the last three questions provide the baseline to evaluate weekly improvement in the adaptation to change based on the staff weekly response to the following three questions: (1) Do you use lifting and transfer equipment to help with the moving of patients? (2) Do you find equipment readily available? (3) Are you using the safe patient handling and mobility tool to guide safe practice (see Appendix L).

Evaluation tool. The preassessment tool was utilized to evaluate staff knowledge and use of safe patient handling strategies (see Appendix K). A weekly huddle questionnaire (see Appendix L) was used as a guide for the PL to evaluate improvement in staff utilization of patient safety handling strategies.

Data analysis. Compliance was tracked over 12 weeks adaptation to the change. The participants answered yes or no to weekly questions asked by the PL. Responses to these questions were graphed weekly. The data was compared pre and post assessment.

Data management. The PL obtained data from occupational health and nursing leaders and entered into an Excel spreadsheet for data analysis. Hard copies of the staff pre and post assessment were tallied and aggregated. All hard copies were then stored in a locked file cabinet. Data in the Excel spreadsheet was stored on password protected computer in a locked office. At

the conclusion of project all hard copies were shredded, and digital data were deleted from the computer.

Summary

Planning is vital to an organizational EBP project. The project's purpose was to improve the safety and wellbeing of caregivers in an inpatient rehabilitation facility (IRF). Prior to the project's implementation, the organization's occupational health data revealed high workers compensation claims across the system due to back injuries and WRMDs. Data specific to the rehabilitation facility were similar to the organizational data and signified a need for change was warranted. Claim cost for the rehabilitation facility were greater than six hundred thousand dollars between 2015 and 2018.

Organizational support to implement the cost reducing project that aimed to improve the quality of life for staff and patients in the rehabilitation department was key to the planning and implementation phase of the project. The Site Champion's buy-in and acknowledgement of the value provided initial support of the project. The Director of Team Member Safety's support for the project assured the project would not interfere with future staff safety plans. The project involved nurses and clinical staff and the Vice President of Clinical Efficiency provided the highest level of support in the organizational structure to implement a SPHM program.

A SWOT analysis was completed to assess project risk during the pre-planning of the QI project and minimal threats were identified. The analysis provided support for the project plan. Prior to the project there were no policy on minimal lifting and educational awareness of SPMH principles was very low based on the project leads role in the organization and membership on operational committees that identified that the lack of policies and a standardized program

contributed to the high number of workers compensation claims. Pre planning provided structure and was a guide toward project success.

Chapter Five: Implementation Process

The implementation of a quality improvement (QI) project describes a process to address a defined problem. Effective project implementation is a key element in evidence-based practices (EBP). This chapter provides and overview of the setting in which the project took place, participants, recruitment, the implementation process, and any variations from the initial project plan.

Setting

The project was conducted in a large not-for-profit academic medical center (AMC) serving 1.4 million people in 29 counties in rural eastern North Carolina. The AMC serves as the flagship for the 10-hospital system. The project setting is the 75-bed acute inpatient rehabilitation facility (IRF) within the AMC. The IRF has three nursing units. The largest unit has 43 beds and serves general rehabilitation and spinal cord injury patients. The neuroscience rehabilitation unit has 24-beds that includes a 12-bed locked brain injury unit. The neuroscience unit also serves stroke, multiple sclerosis, and Parkinson's diseases. The pediatric rehabilitation unit is an 8-bed unit. Patients admitted to the pediatric unit age ranges from 0 to 18 years of age and in school. The average daily census for the IRF is 55 patients. The IRF is the only acute rehabilitation facility in the system and receives 85% of its patients from the acute hospital units.

Participants

The participants for the EBP project were all registered nurses (RNs), licensed practical nurses (LPNs), and nursing assistants (NAs) employed by the IRF. The IRF has approximately 200 RN/LPNs and NAs that provide care to the rehab population. Physical therapy, occupational therapy, and any other staff employed to work in the IRF were excluded from the project.

Recruitment

All fulltime and part-time RN, LPN, and NA employed in IRF were expected to participate in in the project. The Project Lead (PL) posted flyers on each nursing unit announcing the upcoming education session. In addition, emails were sent to each RN, LPN, and NAs with specific information about the education session, location, and times. Staff were encouraged to contact the PL or the nurse manager if there were questions. The charge nurses were asked to review the flyer at daily huddles with staff and encouraged staff to check emails for information on upcoming education sessions and about the expectations surrounding participation. The PL provided a schedule that included a variety of time slots to accommodate days, nights, and weekends to the nurse managers. The nurse managers were asked to schedule each nurse and NA to participate in a 30-minute education session. Snacks were provided at each session to encourage participation.

Implementation Process

The evidence-based project was designed to implement a safe patient handling and mobility program in an inpatient rehabilitation department to improve staff and patient safety. The process included introducing a minimal lift policy with staff education and training about appropriate lifting equipment. Two vendors were asked to do retraining and education for staff. A pre-assessment was completed at the beginning of staff education to evaluate baseline knowledge of patient handling risks followed by weekly staff huddles. Weekly huddles were conducted to evaluate staff adaptation to the policy and use of the provided tools to improve patient handling. The PL used this information to apply to the model for improvement called Plan-Do-Study-Act (PDSA) to evaluate for improvement and to move staff to sustainable change.

Didactic sessions. Each nurse (RN & LPN) and NA were scheduled for a 60-minute educational session conducted by the PL. During the session an educational notebook was given to each staff. The content included the pre-assessment questionnaire, the minimal lift policy, a safe patient handling and mobility tool, and a *SPHM Understanding the Benefits of a Comprehensive SPHM Program* pamphlet (American Nurses Association [ANA], 2013). At the beginning of class, staff were asked to complete the pre-assessment and place in an envelope near the classroom's exit. Staff were asked to not include their names in order to maintain confidentiality.

Weekly huddles. The PL huddled with the available nurses and NAs weekly to evaluate and gather information on staff use of equipment, the availability of equipment, and the use of the safe patient handling and mobility tools to determine the safest handling technique. The information was recorded on the weekly huddle tool (see Appendix L). The PL summarized any staff reported barriers and additional feedback from the nursing staff weekly. A weekly review was conducted of the information to evaluate opportunities for improvements.

Nurse manager meetings. The PL met weekly with the nurse managers. During the meeting the PL gathered information about staff injury, locations, date and time of injuries, injury type, brief description of the event, actions taken, the number of days away from work, and the number of days staff were on restriction from work (see Appendix I). Managers were encouraged to share feedback on the project success and any concerns about barriers.

Application of model for improvement. The PL applied the PDSA Model for Improvement to in reviewing e information gathered weekly from managers and staff. The information was used by the PL to refine change (see Appendix O). The key to the PDSA was to

engage the team members closest to the process and brainstorming possibilities. The ability to develop test and implement change was essential to continuous improvement.

Evaluation method. Weekly, the PL huddled with staff and managers to evaluate staff adaptation to change. Monthly, the PL received and reviewed information from the occupational health department on total injuries, workers compensation claims, and days away from work, and restricted hours. The data was gathered from managers, staff, and occupational health for three months.

Plan Variation

Nine education sessions for all RNs and NAs were scheduled during the day, night, and weekends. Despite the number of sessions, additional times needed to be arranged to reach the majority of RNs and NAs. Also, five one to one sessions occurred to meet the needs and requests of the unit managers and staff. Ultimately 90% of the staff were educated.

A second variation occurred during the pre-assessment portion of the education sessions. The goal was to evaluate baseline knowledge of patient handling risks (see Appendix I). The pre-assessment was to be completed at the beginning of class. A few staff came late while the session was underway, and some of the answers to the questions were revealed, preventing the project lead from capturing accurate baseline data for those staff. It was too disruptive to stop the session and allow time to complete the pre-assessment for those entering the room late.

Lastly, the original plan was to receive information from the occupational health department on total injuries, worker's compensation claims, and restricted work hours, and lost workdays monthly. Due to staff shortages and department priorities, data was not available each month. When staff injury occurs, each manager has to sign an incident report before staff can be

seen in occupational health. The nurse managers were able to provide information at the weekly meetings.

Summary

The goal of the project was to improve the safety of employees and patients. The method used to achieve the goal was to implement SPHM principles as an evidence-based project. The principles included the adoption of a minimal lift policy and education and training of staff on safety measures in handling patients.

The SPHM project is endorsed by well-known organizations such as the ANA, The Joint Commission (TJC), the National Institute for Occupational Safety and Health (NIOSH), and the American College of Healthcare Executives (ACHE). These organizations recognize EBPs to solve the problem of nursing staff lost time away from work due to WRMDs (American College of Healthcare Executives, 2019; ANA, 2013; Black, Salsbury, & Vollman, 2018; Occupational Safety Health Administration [OSHA], 2013a). The program offers quality care for staff and patients. Patients benefit from increased mobility and staff benefit from patient satisfaction and increased quality of life. The organizational benefits are decreased worker compensation claims, a healthier workforce, and quality patient care. Implementation highlights for this project incorporated nurse and NA education that included an introduction to a minimal lift policy and staff training about safe patient lifting tactics. The operational changes occurred through the use of PDSA cycles to implement maintainable change.

Chapter Six: Evaluation of the Practice Change Initiative

Nursing staff was found among the highest healthcare workers to consistently rank in the top ten professions sustaining non-fatal occupational injuries, according to the United States Bureau of Labor Statistics (as cited in Fragala & Fragala, 2014). Evidence-based principles to protect nursing personnel and patients encourage a culture of safety. Safe patient handling and mobility (SPHM) programs aim to eliminate manual patient lifting. The program offers technological solutions such as (ceiling lifts and latest sling, patient positioning sheets, automatic and manual patient handling equipment), and awareness about individual injury risk. Nationally medical facilities have adopted SPHM programs to improve patient care and staff safety (Hallmark, Mechan, & Shores, 2015). This chapter outlines the findings regarding the implementation of an SPHM program in an inpatient acute rehabilitation unit.

Participant Demographics

The participating individuals in the quality improvement (QI) project were registered nurses (RNs), licensed practical nurses (LPNs), and nursing assistants (NAs). The facility has less than five LPNs, and from this point forward, RNs and LPNs are referred to as RNs/LPNs. The project location was a 75-bed acute inpatient rehabilitation facility (IRF) that is part of an academic medical center (AMC). The QI project participants were employed by the IRF and did not include any float or central staffing pool employees. The RNs/LPNs (N=114) and NAs (N= 46). Most of the RNs/LPNs (n = 44; 38.6%) had greater than ten years of healthcare experience, and of the NAs, all NAs have less than six years of healthcare experience (see Figure 2). A number of the RNs/LPNs worked in the hospital for more than two years, and of the NAs answering this question, most had worked in the hospital for ten years or less. The question did not consider those employees having worked in other roles before their current role. The most

significant amount of RNs/LPNs had worked in rehabilitation for up to 10 years, and the majority of the NAs had worked in rehabilitation for less than two years. When asked if the RNs/LPNs and NAs had previously had a work-related musculoskeletal disorder (WRMD), most NAs reported having a WRMD. The RNs/LPNs (n=53; 46.5%) and NAs (n=26; 56.5%) reported having spent time out of work, and the RNs/LPNs (n=51; 44.7%) and NAs (n=26; 56.5%) had hours reduced due to a previous WRMD. Both RNs/LPNs and NAs reported that they are moving patients greater than five times during their shift; however, a number of them report moving patients greater than ten times during the shift. Both RNs/LPNs and NAs reported when injured, WRMD involved their back, shoulder, or necks.

Table 2

Participants Demographics

	Years of healthcare experience		How long have your worked in your current role		How long have you work in this hospital		How long have you worked in rehabilitation		Have you had a previous WRMD			Have you had a previous WRMD: If yes, did you spend time out of work		Have you had a previous WRMD: If yes, Did you have to reduce hours	
	RNs/LPNs	NAs	RNs/LPNs	NAs	RNs/LPNs	NAs	RNs/LPNs	NAs		RNs/LPNs	NAs	RNs/LPNs	NAs	RNs/LPNs	NAs
<2	9	13	16	11	22	16	24	25	Yes	55	32	53	26	51	12
2 to 5	25	13	31	10	29	9	15	8	No	59	14				
6 to 10	34	6	23	11	34	15	52	7		114	46				
>10	46	14	44	10	28	5	23	6							
Total	114	46	114	42	113	45	114	46							

	How often do you move patients during your shift		If you have suffered a WRMD, what type(s)
	RNs/LPNs	NAs	Back, Shoulder, Neck
0-5 times	17	0	
5-10 times	43	24	
>10-times	52	22	
Total	112	46	

Note. The total represents the number of participants who answered the questions. Not all questions were answered by each RN/LPN or NA.

Intended Outcomes

The primary outcomes were to improve RNs/LPNs and NAs health and well-being by creating a safer environment when handling patients. The project included decreasing the total worker's compensation claims, reducing lost workdays, reducing restricted hours from work, and decreasing the dollars associated with worker's compensation cost. The secondary outcome measure was compliance with behavior changes and the adaptation to the SPHM program over 12 weeks (see Appendix L). Measuring the primary outcomes and secondary outcomes provided evidence of the successful implementation of the project.

Findings

Staff knowledge regarding SPHM principles was evaluated during preassessment questions 7-10 (see Appendix K). Registered nurses and LPN's 97% (n=110) and NAs 85% (n=39) knew what SPHM means. The question of the OSHA names healthcare as the most dangerous industry RNs/LPNs 91% (n=103), and 81% (n=37) noted the question correctly as true. Staff knowledge about the most occupation health claims filed by healthcare workers is related to handling patients' RNs/LPNs 97% (n=111) and NAs 57% (n=37). Lastly, the OSHA recommends never lift greater than 35 pounds was answered correctly by 51% RNs/LPNs (n= 58) and NAs 40% (n=17). However, the answer that was chosen second highest to the correct answer was 50 pounds. Overwhelmingly staff knew SPHM principles before implementation.

The data was collected January 13, 2020 through April 4, 2020. The fiscal year (FY) 2020 data were annualized to compare to FY 2019 data, and where more data was available. FY 2018, data was used to show comparison with intervention and without intervention. The organizations FY spans the dates of October 1 through September 30. Restricted hours for FY 2019 was 102 hours and annualized 2020 at eight hours. More than a 90% reduction over the

prior year (PY) was noted with restricted hours. Lost days due to patient handling injuries were 22 days in FY 2019 and annualized FY 2020 at two days. Lost days were 91% improvement over the PY (see Figure 1).

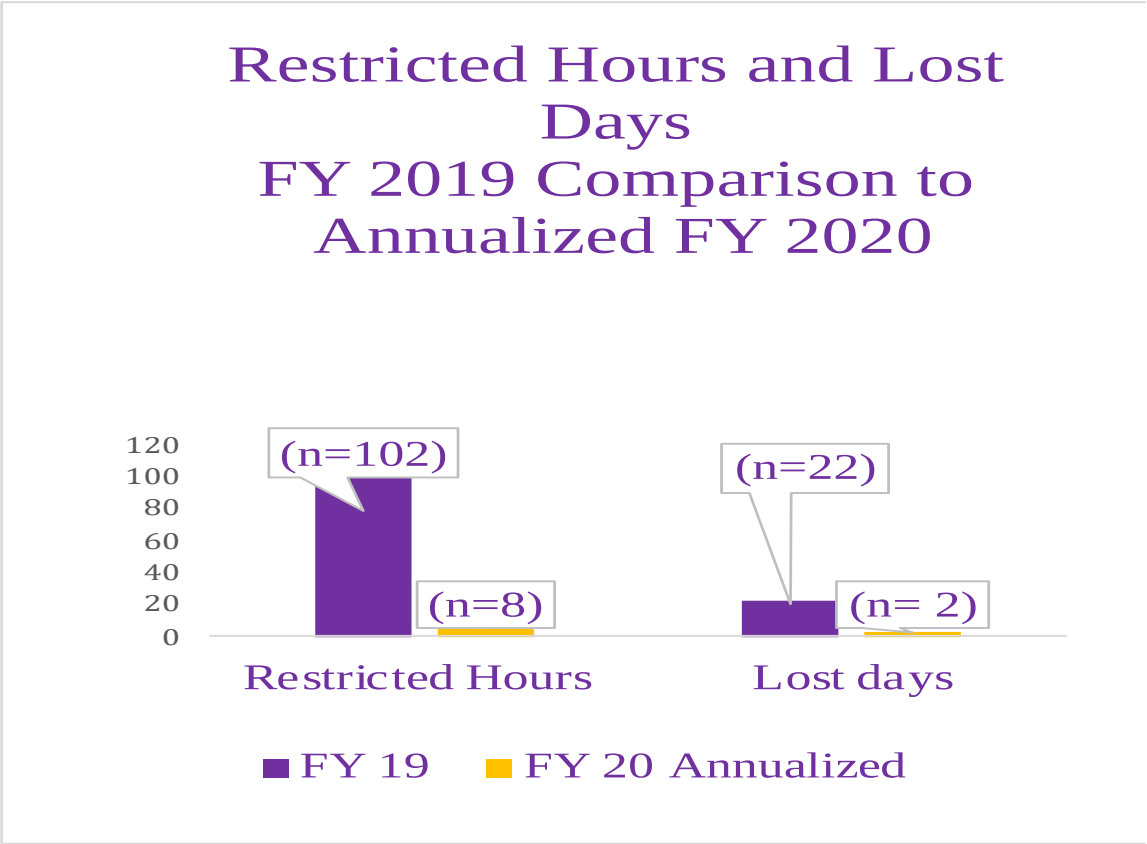

Figure 1. Staff identified with patient handling injuries that experienced restricted work hours and/or lost days. A 90% reduction in and restricted hour and 91% improvement lost days over the prior year (PY).

Total worker's compensation claims in FY 2019 was 12, and the annualized totals for FY 2020 is 8. Annualizing provides a projection based on the rate at a shorter period that is then converted to an annual rate. There was a 33% reduction over the previous year (see Figure 2).

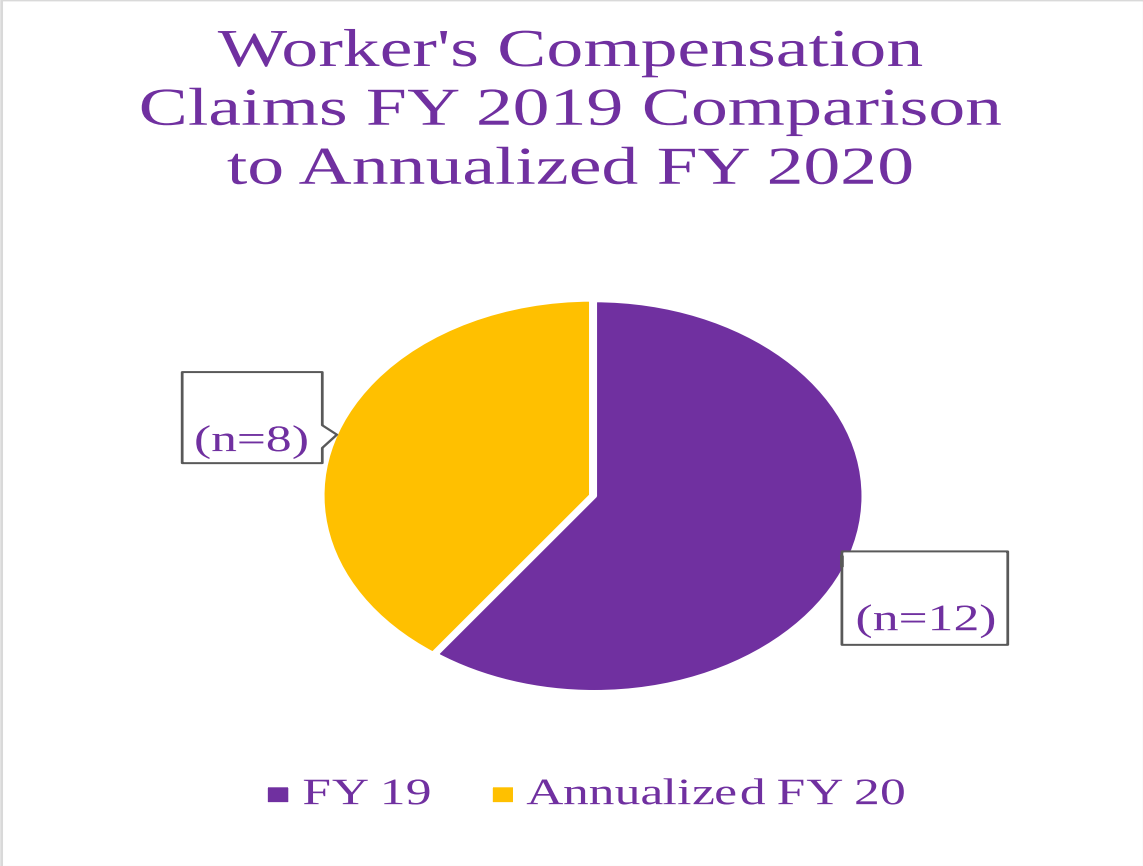

Figure 2. Total worker's compensation claims for 2019 compared to annualized 2020 is a 33% reduction over the PY.

Worker's compensation for FY 2018 was $5,216 compared to FY 2019 at the cost of $4,365, a 16% decrease without interventions. However, with the implementation of SPHM in FY 2020, compensation expense annualized at $95, which is a substantial reduction over the two prior years (see Figure 3).

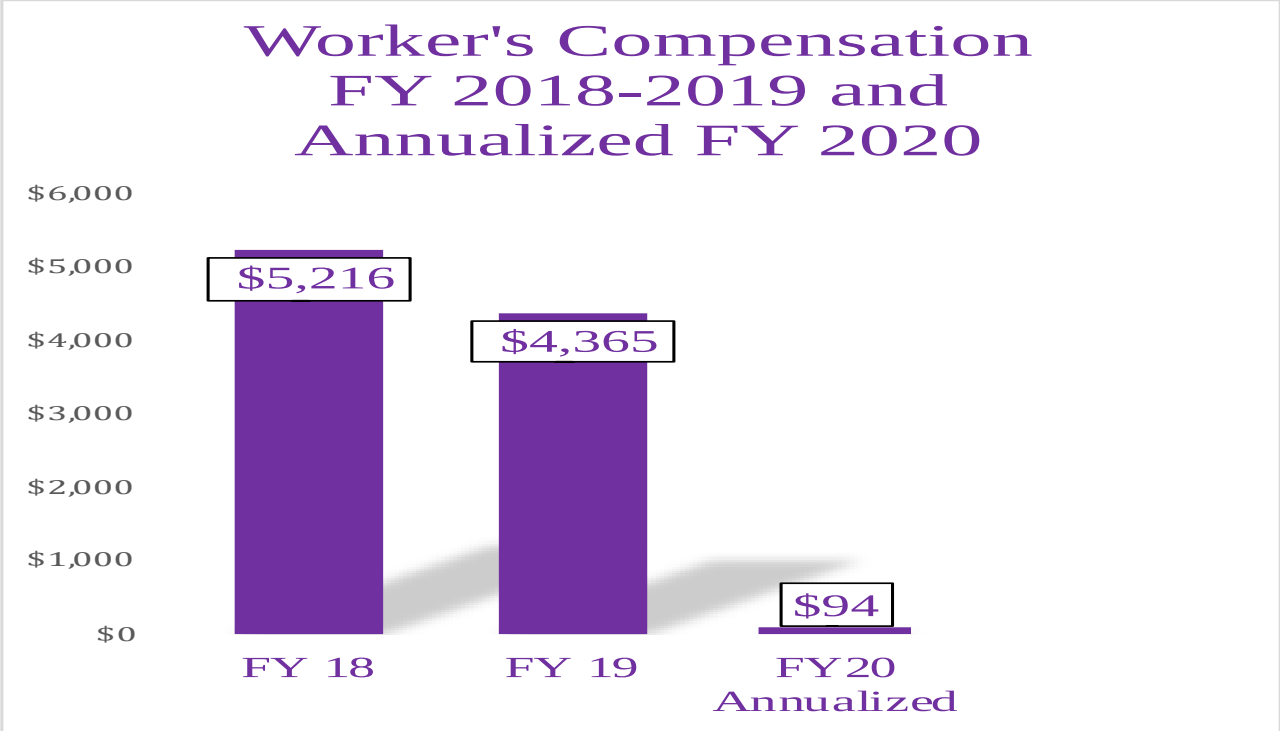

Figure 3. Worker's compensations expense fiscal 2018 & 2019 a 16% decrease without interventions, and comparison to annualized year FY 2020 was over 95% reduction with implementation of a SPHM program.

Before the scheduled didactic classroom sessions, a preassessment survey was administered (see Appendix K). The last three questions provided the baseline during the preassessment to evaluate weekly improvement in the adaptation to the new SPHM program. Based on the weekly staff response to the following three question. The use of SPHM equipment change from 20% to 75%. The availability and access to equipment changed from 50% to 80%. Lastly, the results of using the decision tool changed from 40% at preassessment to 75% at the end of 12 weeks (see Figure 4).

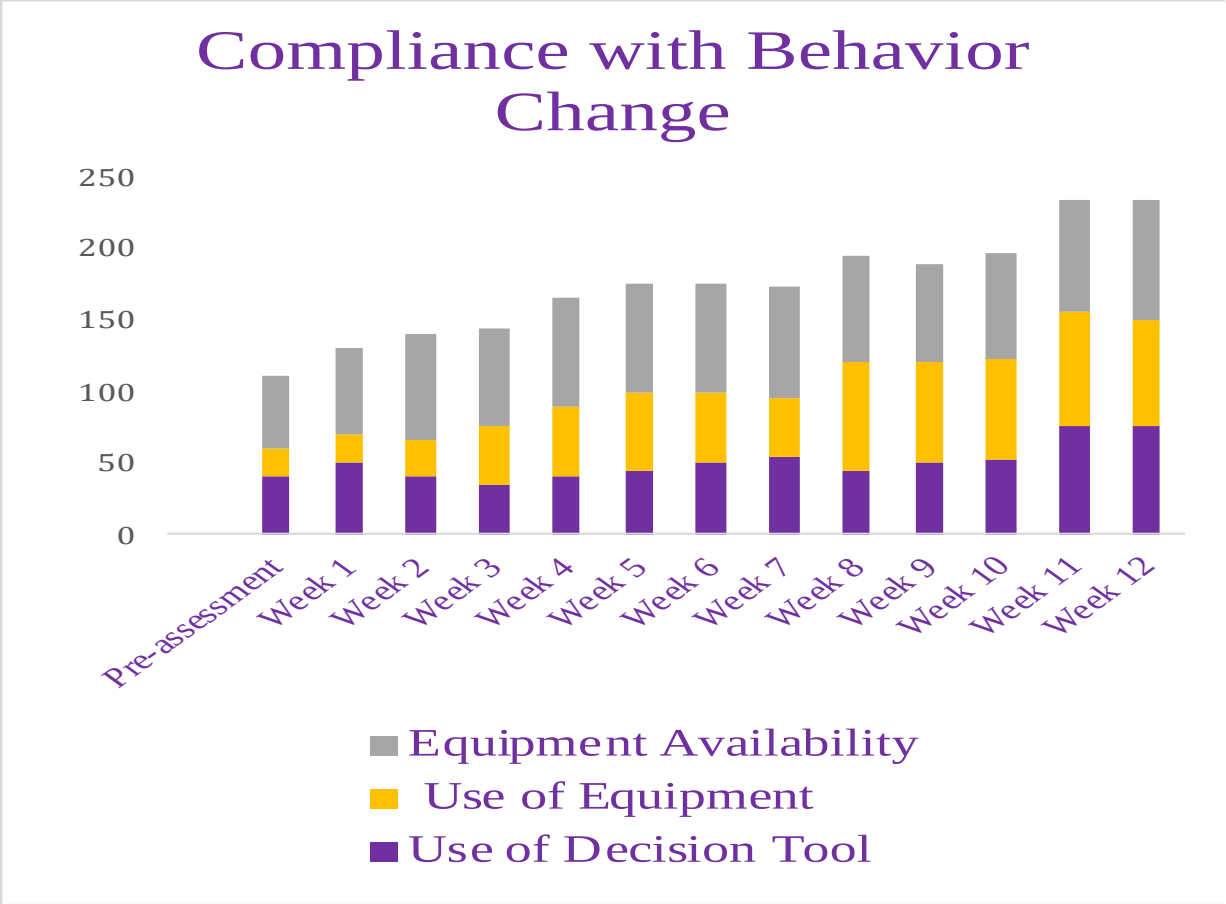

Figure 4. Behavior change with safe patient handling mobility (SPHM) program compliance: (1) use of SPHM decision tool changed from 40% to 75%; (2) equipment usage change from 20% to 75%; and (3) the availability of equipment changed from 50% to 80% on weekly rounds.

Summary

The proposed evidence-based SPHM program was successfully implemented and showed improvements in all targeted metrics. The program aim was to improve staff safety. The QIP resulted in reducing restricted hours, lost days, total worker's compensation claims, and compliance with behavior change with the newly implemented SPHM program. The primary goals were achieved by improving the health and well-being of nursing staff in an inpatient rehabilitation facility.

Chapter Seven: Implications for Nursing Practice

The Doctor of Nursing Practice (DNP) degree is a notable scholarly approach to expand nursing knowledge through specialized focused practice regarding translational science (American Association of College of Nursing [AACN], 2006). The immersion experience is a rigorous progression that prepares graduate nurses to apply evidenced-based quality care to an integrative practice experience (AACN, 2006). The Institution of Medicine (IOM), along with the Robert Wood Johnson Foundation (RWJF), encourages this practice to strengthen the nursing workforce to achieve the highest levels of education to become joint partners with healthcare professions in restructuring health care (Moran, Burson, & Conrad, 2020). Necessary for candidates of a DNP degree is completing the DNP evidence-based project. The project should incorporate the AACN *Essentials* to meet the objectives of the DNP education (Moran et al., 2020).

Practice Implications

All accredited DNP programs must include crucial curricular components. The *Essentials* of Doctoral Education of Advanced Practice registered nurses are required by the Commission of Collegiate Nursing Education and outlines competencies that are central to advanced practice (AACN, 2006). There are eight important principles for all students and a focused specialty curriculum grounded in the course of study required for all DNP graduate education (AACN, 2006). In this chapter, the *Essentials* are discussed within the context of significance to this DNP project.

Essential I: Scientific underpinnings for practice. Essential I applies the conceptual foundation using scientific methods to guide nursing practice (AACN, 2006). Advanced practice nurses interpret knowledge to guide the daily demands in the practice setting. DNP graduates are

sensitive to the evolving and new scientific discoveries to describe science-based actions and innovative strategies by which optimal changes in health status occur (AACN, 2006).

The scientific underpinning of the project occurred by carefully identifying a problem of increasing numbers of staff injuries while handling patients. The phenomenon of interest was assessed through a literature review to gain knowledge of the topic and to conclude the nature and consequences of the occurrence of staff injuries while handling patients. The United States Bureau of Labor Statistics (as cited in Fragala & Fragala, 2014) reported registered nurses (RNs) and nursing assistants/aides (NAs) were ranked highest among healthcare workers in the top ten professions sustaining non-fatal occupational injuries. In a literature review, Dennerlein et al. (2017) aimed to prevent staff injuries while mobilizing patients early and regularly. Evidence-based research has shown that in order to provide a safe culture to protect nurses, healthcare organizations have implemented safe patient handling and mobility (SPHM) programs (Hallmark, Mechan, & Shores, 2015). At the organization at which the project took place, back injuries were costing the institution more than $18,330 per injury (B. J. Vaughn, personal communication, August 23, 2018). Implementation of a minimal lift policy that incorporates educating and training of the healthcare workers about SPHM principles would prove beneficial to the employee's health and the organization's bottom line (American Nurses Association [ANA], 2013).

Pender's Health Promotion Model offers a way to assess the phenomenon and creates a guide to interpret the nursing domain as a structure to organize the concepts that focused on providing a safe culture to protect nurses (Moran et al., 2020). The Health Promotion Model accepts that the behavior is controlled by the person's needs to change to improved conditions. The individual continually interacts with the setting to alter the self and the supportive

environment over time. The individual acknowledges that the environment must adjust to withstand the change and allow individual transformation (Pender's Health-Promotion Model, 2017).

At the conclusion of the quality improvement project, having the right equipment, education and training, and tools prove essential to the success of lift program compliance. Each person has unique individual characteristics and experiences that affect subsequent actions and education. Training plays a key part in raising one's understanding and offers opportunities for resolutions to reduce and/or eliminate injury (Polit & Beck, 2017).

Essential II: Organization and systems leadership for quality improvement and systems thinking. Essential II is vital to improving organizational and system healthcare outcomes by utilizing comprehensive knowledge and skills to eradicate inequalities and promote patient safety and excellence in practice (AACN, 2006). Doctoral prepared nurses target populations within the current organizations using political, cultural, and economic perspectives to manage risk and influence practice policies (AACN, 2006). The DNP graduate implements quality improvement strategies and designs solutions to produce sustainable change using principles of economics and business tolerance (Moran et al., 2020).

Manual handling of patients has organizational risk management and financial implications. SPHM programs support staff safety and excellence in practice. During the implementation of this project, the organization's cost per back injury was nearly $3,000 more than the national annual cost (Weiner, Alperovitch-Najenson, Ribak, & Kalichman, 2015). An SPHM program promises a substantial return on investment (ROI), and it can serve as a standard for implementing the standardized program across the healthcare organization and multiple organizations in larger systems (Przybysz & Levin, 2017).

Essential III: Clinical scholarship and analytical methods for EBP. Essential III focuses on scholarship and knowledge translation, with the emphasis on interpreting, the application, and the evaluation of science to improve outcomes (AACN, 2006). In the case of the DNP project, leadership is provided through evidence-based practice (EBP) and engagement in advanced nursing comprehension and scholarship to improve the reliability of healthcare practice outcomes is distinct. The principal activities of the DNP graduate are integration and dissemination of applied knowledge and the emergence of new understanding (AACN, 2006).

Planning is vital to an organizational EBP change project. The project's purpose was to improve the safety and wellbeing of caregivers. The project setting was a 75-bed acute inpatient rehabilitation facility (IRF) within the academic medical center (AMC). The participants for the EBP project were RN, licensed practical nurses (LPN), and NAs employed by the IRF. The Project Lead (PL) posted flyers on each nursing unit, emails were sent to all the RN, LPN, and NAs, and charge nurses and nurse managers were asked to announce the upcoming education session during safety huddles. The implementation phase included introducing a minimal lift policy and staff education and training about appropriate lifting equipment, and the staff was trained on the advancements in lifting technology. The PL applied weekly the Model for Improvement called Plan-Do-Study-Act (PDSA) to evaluate for improvement and to move staff to sustainable change.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare. Essential IV regards the use of information systems and technology to manage information and to evaluate programs of care. Relevant to the DNP graduate is managing aggregate and individual-level data regarding the knowledge and skills of systems or technology to support and improve patient care (AACN, 2006). Graduates of

a DNP program can evaluate the effectiveness of care technology and make substantial contributions to outcomes of care.

The goal of the project was to improve the safety of employees and patients. The method used to achieve the goal was to implement SPHM principles as an evidence-based project. The principles included the adoption of a minimal lift policy with education and training of staff on safety measures in handling patients. Improving the safety of healthcare staff is necessary to tackle time off from work due to work-related musculoskeletal disorders (WRMDs). In the United States, SPHM technology dates back to the mid to late twentieth century (Mechan & Wright, 2015). One of the major goals for the project is the proper use of the available technology to decrease staff injuries and to create a safe care environment for staff and patients.

Essential V: Healthcare policy for advocacy in healthcare. Essential V highlights influencing healthcare policy at multiple levels, including the organizational level and up to the highest forms of government (AACN, 2006). Policy advocacy is central to the DNP graduates, and proficiency must be demonstrated in the execution and critical analysis of factors to design, competently engage, and implement policy at various levels (AACN, 2006). DNP prepared leaders are in a unique position through training to influence institutional decision making, create standard procedures through effective policy formulating (Moran et al., 2020). The development of an effective policy is evident through practical research and adaptation of EBP that is proven through the transformation of healthcare delivery and professional nursing practice that influences quality outcomes (AACN, 2006).

A risk analysis was part of the pre-planning of the quality improvement project. Minimal threats were identified with the analysis providing support for the defined project plan. Before the project, there was no policy on minimal lifting, and educational awareness of SPMH

principles was deficient. A minimal lift policy was drafted for implementation in coordination with the most recent EBPs. The secondary outcome measure was knowledge of policy, and evidence of utilization of the SPHM principles. Weekly huddles were conducted to evaluate staff adaptation to the policy and use of the provided tools to improve patient handling. The PL used the information to apply to the PDSA model for improvement to evaluate implementation effectiveness and to move staff to sustainable change.

Essential VI: Interprofessional collaboration for improving patient and population health outcomes. Essential VI denotes skills healthcare professionals need to collaborate in the complex order of healthcare systems to effectively address quality of care concerns (AACN, 2006). Exclusively positioned, the DNP graduate establishes, facilitates, and leads effective collaborative inter-professional teams. Intra-professional and inter-professional teams effectively communicate, analyze data, and create change to improve quality, provide cost-effective care that improves outcomes (AACN, 2006). Collaborative teams enrich care with distinctive educational backgrounds and overlapping of knowledge, skills, and abilities that focus on common goals that transform healthcare (Moran et al., 2020).

ANA (2013) describes the SPHM program as inter-professional national standards that addresses debilitating or sometimes career-ending injuries and WRMDs that occur from manually handling patients. The project team members included multiple inter-professionals: the PL, Faculty Lead, Site Champion, and the Director of Team Member Safety. Managers from physical and occupational therapy collaborated on policy, patient handling techniques, and SPHM tools to ensure an effective multi-disciplinary model was designed to meet the complex mobility needs of patients.

Essential VII: Clinical prevention and population health for improving the nation's health. Essential VII emphasizes health promotion, risk reduction, and illness prevention in groups or individuals with shared characteristics that are central to achieving national health goals (AACN, 2006). DNP graduates contribute leadership to evidence-based preventive methods to promote health by evaluating occupational and environmental data and implementing care delivery models to improve care (AACN, 2006). Healthy People 2010 is responsible for supporting the change in clinical education to include competencies in health promotion and prevention and is vital to the application of the DNP project (AACN, 2006).

This DNP project looked at RN, LPN and NA predisposition to injury by doing daily routines. The DNP graduate's role in health promotion and risk reduction, also called clinical prevention, is paramount to the achievement of national goals. The PL considered Healthy People 2020 list occupational safety and health as a topic worth considering for this project. Healthy People 2020 provides links to the United States Department of Labor where disturbing statistics can be found about hazardous work conditions of Nurses (Healthy People 2020, 2020). At the project site, work-related nonfatal injuries were much higher at 12.7 per 100 Full Time Equivalent (FTE's; B. J. Vaughn, personal communication, August 23, 2018). Healthy People 2020 targeted rate for all industries is 3.8 per 100 FTEs. These data provide evidence to substantiate the need for conducting this EBP change project.

Essential VIII: Advanced nursing practice. Essential VIII denotes advancement in care delivery through organizational discernment and critical conclusions to direct and improve care outcomes (AACN, 2006). The DNP graduate with a concentration in leadership is able to analyze systems, design programs, and facilitate reasonable economic care delivery models. DNP prepared leaders in executive or administrative roles are called upon to recognize emerging

problems and to propose comprehensive health interventions at the organizational level (AACN, 2006).

The SPHM project was made possible by the PL evaluating critical data from the organization's occupational health department that identified high levels of workers compensation claims across the system due to back injuries and WRMDs. It was determined that the data specific to the rehabilitation facility were similar to the organizational data and indicated a need for change. The organizational benefits were decreased worker compensation claims, a healthier workforce, and quality patient care. The project influenced the hospital's bottom-line and added value to the quality of care. In this project, the doctoral preparation made possible by DNP education provided the tools necessary to implement a credible project based on sound evidence that could save valuable workforce staff from injury and suffering.

Summary

The achievement of this EBP change project is central to the completion of doctoral education. The focus of this project was on the establishment of quality care, healthcare management structures, and optimal patient care results for nurses in handling patients. The project incorporated eight standards of "*The Essentials of Doctoral Education of Advanced Practice Nurses*" to meet the objectives of the DNP education (AACN, 2006). Healthcare is complex and requires advanced skills to achieve notable change that transforms healthcare to achieve effective, efficient, quality care outcomes.

Chapter Eight: Final Conclusions

Basic body mechanics alone have not kept clinical staff from harm and injury when providing essential patient care (Occupational Safety and Health Administration [OSHA], 2014). Even though there are significant endorsements of safe patient handling and mobility (SPHM) programs, issues with patient handling still exist. Healthcare leaders should monitor workers compensation claims and national statistics and enacted programs to improve the safety and wellbeing of the healthcare worker (American College of Healthcare Executives, 2019; American Nurses Association [ANA], 2013; Black, Salsbury, & Vollman, 2018; OSHA, 2013a). The National Labor Statistics show that healthcare leaders should be alarmed of data that indicate healthcare worker's such as registered nurses (RNs), licensed practical nurses (LPNs), and nursing assistants (NAs) are at risk for injury due to patient handling (Dressner & Kissnger, 2018). Projections for shortages of RNs, due to the aging population and increased demand for RNs in the future can be impacted by nursing staff impacted by work-related injuries. Attention needs to be focused on minimizing the number of nurses unable to return to work due to patient handling injury. Work-related musculoskeletal disorders and other staff injuries that cause restricted work hours and lost workdays. The most egregious is the inability to return to work due to career-limiting work-related musculoskeletal disorders. This chapter captures the summary of the findings, strengths, benefits, limitations, and recommendations for the practice of implementing a SPHM project.

Significance of Findings

The project was successfully implemented with the aim to reach RNs/LPNs, NA's in the inpatient rehabilitation facility (IRF), to change practice behaviors and have staff understand the SPHM program is to improve safety, while providing the essential duties of care. Staff identified

with patient handling injuries that experienced restricted work hours experienced a 90% reduction in restricted hours and 91% improvement of lost days over the prior year PY 2019.

Total worker's compensation claims showed a 33% reduction over the FY 2019. Worker's compensations cost from fiscal year (FY) 2018 to FY 2019 decreased by16% without intervention compared to post-program implementation for FY 2020 resulted in $95 annualized reduction with implementation of an SPHM program.

Behavior change with the SPHM program was measured weekly for 12-weeks during huddles with staff behaviors showing to improvement. The use of SPHM decision tools changed from 40% to 75%. The use of the available safety equipment changed from 20% to 75%. The availability of equipment changed from 50% to 80% on weekly rounds. These data showed a positive adaptive trend to the SPHM program.

Project Strength and Limitations

The SPHM program offered a systematic approach that incorporates patient handling technology, education, policy, and decision guidance. The implementation of the SPHM program in an IRF was successful. Nursing staff in the acute IRF move patients often to promote the highest level of independence. The rigorous therapy schedule carries over to nursing for reinforcement and patient and family education. Facility data indicated that RNs/LPNs and NAs were at the highest risk for injury in the IRF (B. J. Vaughn, personal communication, August 23, 2018). Changing behaviors were marked by progressive change noted at weekly staffing huddles.

Limitations to the project included a limited data collection period. Data was collected over three months; however, comparison data was collected over 12-month periods. Annualized data provides the best projection for the years' performance; however, the Hawthorne Theory can be applied to the project's success, as noted in similar studies (Bhimani, 2016b). The Hawthorne

Theory notes that employees improved production with the awareness of being evaluated. In this project, there was heightened awareness through education, and weekly huddles focused on the SPHM program; which could explain the overwhelming improvements.

Project Benefits

The SPHM program heightened awareness of risk for injury and was based on an evidenced-based program endorsed by the ANA (2013). The benefit of the SPHM program was the reduction of staff injury, organizational costs, and the nursing staff's longevity at the bedside. Through interactive vendor demonstrations and trials, staff had access to several advancements in technology such as ceiling lifts and latest sling, patient positioning sheets, automatic and manual patient handling equipment to improve patient handling.

Recommendations for Practice

Dissemination is essential to the support of programs such as SPMH and the benefit to healthcare workers. Sharing the findings of the project with other IRFs with similar problems with staff injury is an essential next step. Therefore, presenting at national conferences such as the Association for Rehabilitation Nurses (ARN) would expose rehabilitation to leaders to the result of the project. The result of the literature review was shared at a poster presentation at National SPMH in Florida in March 2019. Presenting the project results would be significant to leaders who have a similar interest in the topic. A secondary analysis of the data at the end of FY 2020 would validate or confirm the Hawthorne Theory's possible effect on the project.

As a member of the ANA, there is a position statement on manual patient handling to prevent work-related musculoskeletal disorder (WRMD) exist (ANA, 2020). Healthcare professionals are stakeholders that should use evidence-based practice (EBP) to influence political change through problem-solving and clinical expertise to address or improve quality of

life (Ellison & Clack, 2021). Using the project data and evidence can drive policymaking, motivate others for change, and address concerns. Healthcare professionals are in a unique position to influence healthcare policy at multiple levels, including organizational, local, and at the highest forms of government (American Association of Colleges of Nursing [AACN], 2006). The development of effective policy is manifested through practical research and adaptation of EBP. Political change at the local level is demonstrated through the transformation of healthcare delivery and the healthcare professional's practice that influences quality outcomes (AACN, 2006). The use the data from this project can be a focus to support ANA's effort to improve workforce safety for nursing staff.

Final Summary

Safe Patient Handling Mobility programs have the power to impact hospitals bottom-line adding value to organizations. A SPHM program potentially has significant return on investment (ROI) and can aid as a standard for implementing the standardized program across the healthcare organization and multiple organizations in larger systems. Healthcare is moving in a new direction, which without appropriate safeguards, will likely increase the risks to employee safety and health. It is imperative for organizations to implement safe handling programs to reduce employee injuries. Nurses are expected to base their professional practice on research evidence. EBP involves using the best evidence and clinical judgement in patient care decisions. Interventions grounded in theory with well-defined concepts help to guide patient care to deliver the best outcomes. Organizational support to implement this cost reducing project that aimed to improve the quality of life for staff and patients in the rehabilitation department was key to the planning and implementation the project.

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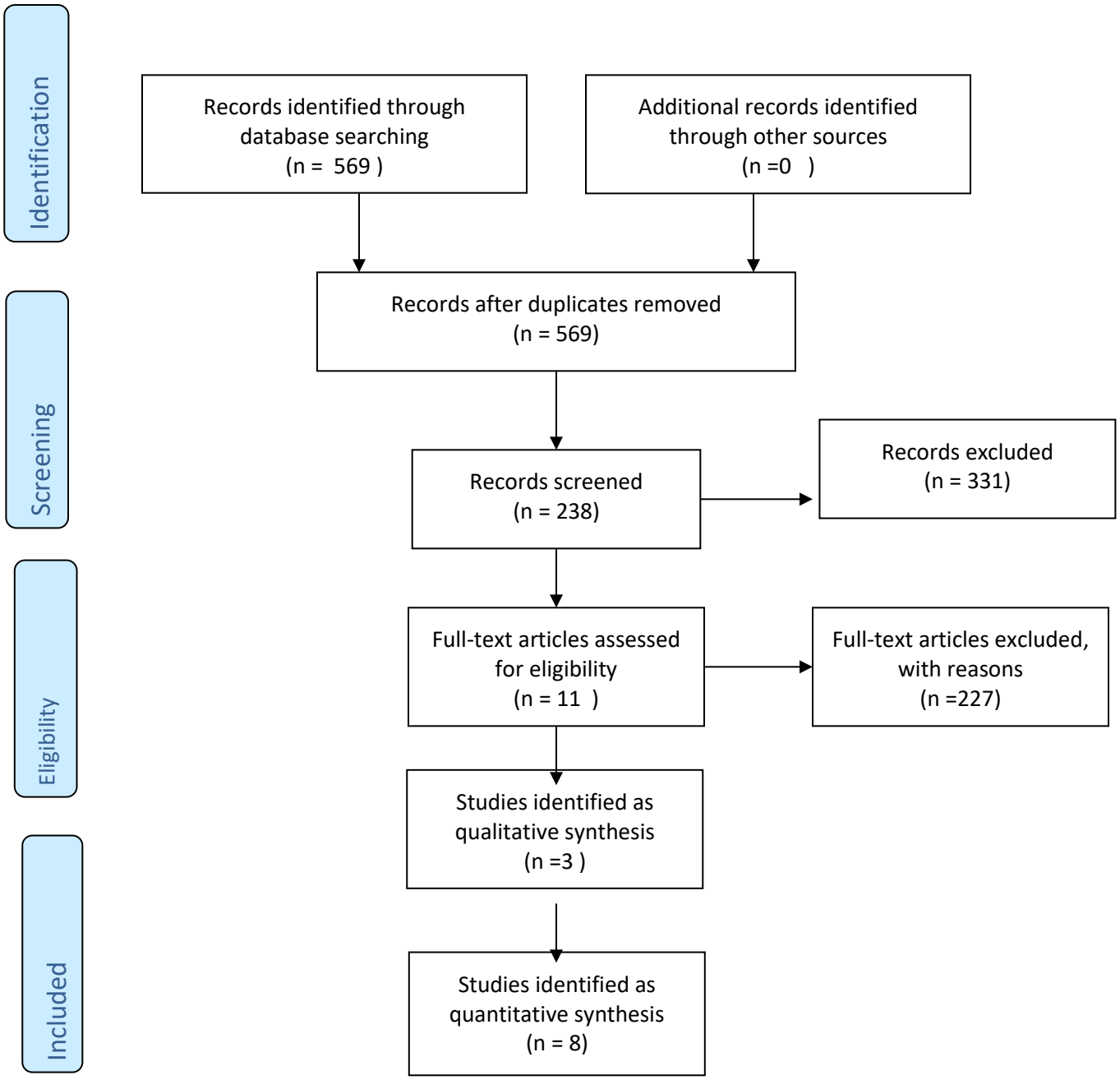
Appendix A

PRISMA 2009 Flow Diagram

Literature Review: Implementing a Safe Patient Handling Program



(PRISMA, 2015)

Appendix B

Literature Review Matrix

Article (APA Citation)	**Level of Evidence (I to VII)**	**Data/ Evidence Finding**	**Conclusion**	**Use of Evidence in EBP Project Plan**
Bhimani, R. (2016a). Prevention of work-related musculoskeletal injuries in rehabilitation nursing. *Rehabilitation Nursing*, 41(6), 326–335. https://doi.org/10.1002/rnj.185	Level VI	The study demonstrated reduction although not statistically significant, indicated over a 50%reduction in work-related musculoskeletal nursing injuries. Self-engagement and the Hawthorne effect are thought to have contributed to this decline in injury rates	There are multiple ways of addressing nursing injuries. These results suggest that self-engagement and education play an important role in reducing work-related musculoskeletal injury. The interactional nature of communication and interdisciplinary collaboration require further scrutiny to understand their role in the prevention of work-related musculoskeletal nursing injuries. The continuous quality improvement method could decrease nursing injuries. Pragmatism in clinical practice requires an evidence-based	The study is done in an acute inpatient rehabilitation nursing unit. NIOSH recommended guidelines of 35 pounds. Question surrounding is the recommendations feasible since 35 lbs is based on static load while nursing activities are dynamic. Gap better recommendations regarding repetitious movement. Intervention focus on communication and knowledge and effects on work-related musculoskeletal injury.

			team approach with support from nurses, leadership, and other stakeholders who are the ultimate beneficiaries	
Bhimani, R. (2016b). Understanding work-related musculoskeletal injuries in rehabilitation from a nursing perspective. *Rehabilitation Nursing*, 41(2), 91–100. https://doi.org/10.1002/rnj.187	Level VI	Six themes emerged: lack of time and help, patient acuity, ergonomics, body movement issues, knowledge deficit, and communication. Cross-sectional Descriptive Design	Nursing injuries are complex and have multiple determinates. Solutions will need to vary. Interdisciplinary collaboration is needed to prevent injuries. Nursing input is critical in understanding and reducing context-specific work-related musculoskeletal injuries. Further research that includes nursing voices is advocated.	The study is done in an acute inpatient rehabilitation nursing unit. Knowledge regarding nursing work-related musculoskeletal injuries identified as a gap. One modality such as ceiling lifts will not address all work-related musculoskeletal disorders (WRMD). The study addresses Nursing staff. Nonprofit tertiary-care hospital, Commission on Accreditation of Rehabilitation Facilities (CARF). Ratio of 1:4 RNs to patients and 2 nursing assistance for 31 patients.
Darragh, A. R., Shiyko, M., Margulis, H., &	Level IV	Patients who received	Study done by occupational	OT has different

Campo, M. (2014). Effects of a safe patient handling and mobility program on patient self-care outcomes. *The American Journal of Occupational Therapy*: Official Publication of the American Occupational Therapy Association, 68(5), 589–596. https://doi.org/10.5014/ajot.2014.011205		inpatient rehabilitation services with an SPHM program were as likely to achieve at least modified independence in self-care as those who received inpatient rehabilitation services without an SPHM program	Therapy. Significant because collaboration with nursing is essential to success of the programs. Patients who received inpatient rehabilitation services with an SPHM program were as likely to achieve at least modified independence in self-care as those who received inpatient rehabilitation services without an SPHM program	training that RNs. SPHM program in rehab have been suggested to prevent patients from meeting their full level of independence. Given that nurses rank high for work related injury. It is incumbent to implement SPHM programs. This study suggests SPHM programs don't prevent patient from getting the most from their rehab program.
Dennerlein, J. T., O'Day, E. (Tucker), Mulloy, D. F., Somerville, J., Stoddard, A. M., Kenwood, C., … Hashimoto, D. (2017). Lifting and exertion injuries decrease after implementation of an integrated hospital-wide safe patient handling and mobilization program. *Occupational and Environmental Medicine*, 74(5), 336–343.	Level IV	The findings point to a significant value added to safe patient handling programs directed at promoting earlier mobilization of patients in terms of reductions in worker injuries. A unique contribution of the study is that this intervention occurred in the special and new context where the primary	This research suggest that hospitals should include safe patient handling and mobilization programs as part of early patient mobilization programs and prescribe safe patient equipment and practices into the specific and individualized care plan for each patient.	The goals for the hospital-wide program were to provide staff strategies for safe mobilization of patients to prevent associated worker injuries within an initiative to mobilize patients early and frequently. Key components identified by previous

		focus was on improving patient care through earlier and more frequent mobilization of patients. Healthcare is moving in this new direction, which without appropriate safeguards will likely increase the risks to employee safety and health. With the increasing focus on improving patient care through earlier mobilization of patients, these findings highlight an important benefit derived from integrating employee safety interventions into patient mobilization efforts.		systematic reviews, including an organizational policy aimed at reducing injuries, the investment in equipment, broad-based training within the context of providing tools and risk assessment. this integration process necessitated a broader engagement of leadership, coordination across multiple departments and a system-wide communication effort. In the end, the program succeeded in integrating worker safety practices within the occupational culture of providing quality care for patient.
Dickinson, S., Taylor, S., & Anton, P. (2018). Integrating a standardized mobility program and safe patient handling. *Critical Care Nursing Quarterly*, 41(3), 240–252.	Level VI	The goal to measure completed mobility tasks. A task was added to the EMR to remind nurses about mobility.	Initially, mobility episodes increased from 31% to 41% and leveled off to 40% at 6 months in the	Project took 8 years to change the culture. The project occurred in the ICU. However, the article references other

https://doi.org/10.1097/CNQ.0000000000000202		To assess baseline data for general. Data were measured again at three months postimplementation for the same care units. Finally, data were measured at 6 months postimplementation.	ICUs. In general care, compliance went from 33% to 39% and at 6 months was measured as 37%. Overall, saw a trend toward increased compliance in all of the care units initially, mobility episodes increased from 31% to 41% and leveled off to 40% at 6 months in the ICUs. In general care, compliance went from 33% to 39% and at 6 months was measured as 37%. Overall, saw a trend toward increased compliance in all of the care units	programs such as rehab. Leadership is essential in ensuring a successful rollout of the program. initially, mobility episodes increased from 31% to 41% and leveled off to 40% at 6 months in the ICUs. In general care, compliance went from 33% to 39% and at 6 months was measured as 37%. Overall, we saw a trend toward increased compliance in all of the care units
Lee, S., Lee, J. H., & Harrison, R. (2019). Impact of California's safe patient handling legislation on musculoskeletal injury prevention among nurses. American Journal of Industrial Medicine, 62(1), 50–58.	Level IV	In 2016, there were significant improvements in nurses' knowledge of a SPH policy in their hospital (87%), receipt of annual SPH training (73%), and availability	The findings indicate the significant role of SPH legislation with positive impacts on SPH policies and programs at the hospital level and on musculoskeletal	

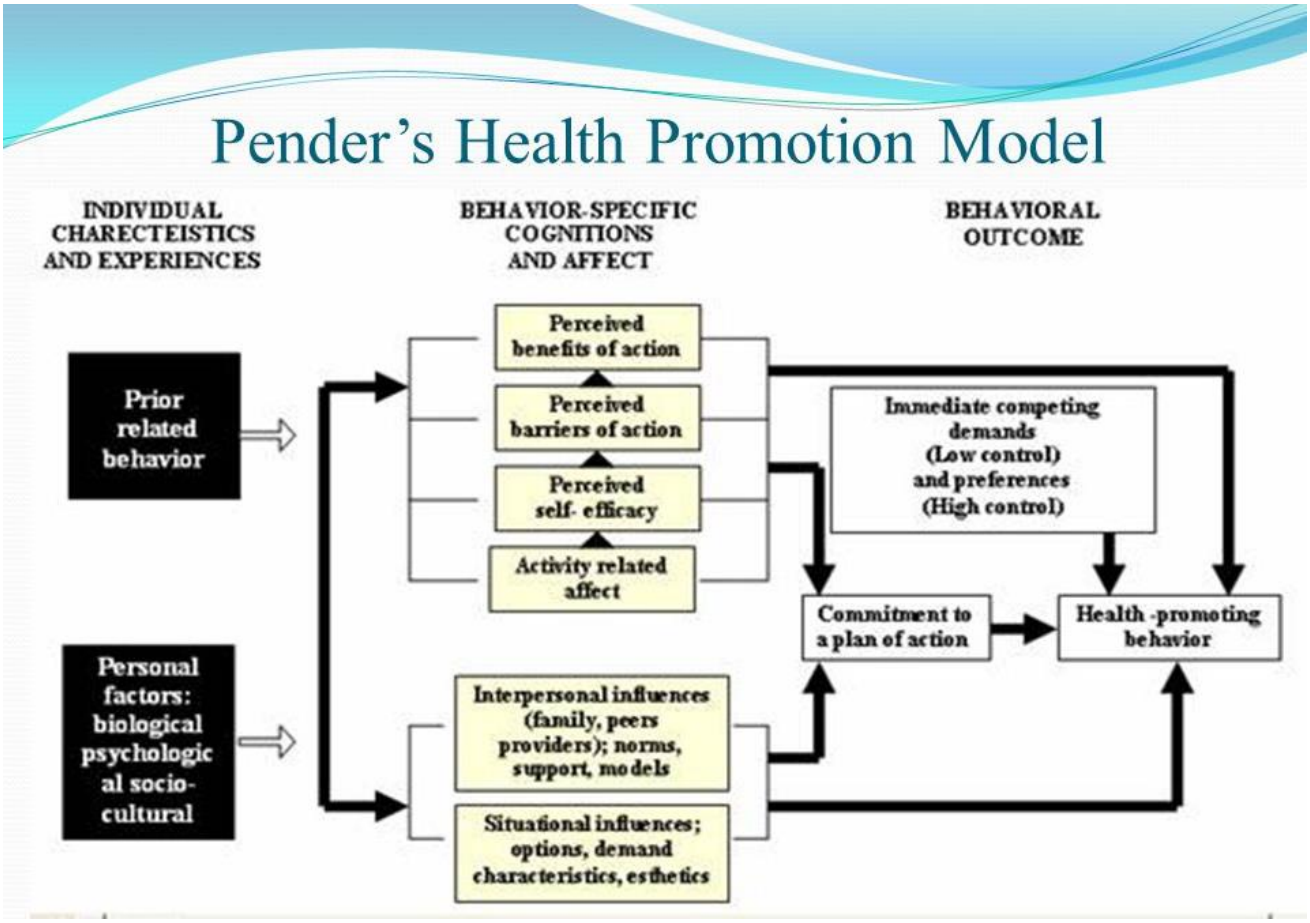
https://doi.org/10.1002/ajim.22923		of lift equipment (80%); 33% perceived their hospital's SPH programs as excellent or very good. Significant prevalence reduction was observed for work-related musculoskeletal symptoms (61% vs 52%.	health outcomes at the worker level	
Lee, S., Lee, J. H., & Gershon, R. M. (2015). Musculoskeletal symptoms in nurses in the early implementation phase of California's safe patient handling legislation. Research in Nursing & Health, 38(3), 183–193. https://doi.org/10.1002/nur.21657	Level IV	To assess the early phase of this legislation, we conducted an epidemiological assessment of organizational SPH practices, musculoskeletal symptoms, and perceptions in a random sample of 396 registered nurses. Among those who worked in hospitals and had patient handling duties the 12-month prevalence of work-related musculoskeletal symptoms was 69% (lower back 54%, neck 41%, shoulders 34%, and hands/wrists 26%). Twenty-two percent	Roughly 60% of respondents were aware of the SPH law, and 33% reported changes in their hospital's patient handling policies or programs since the law went into effect. Hospital SPH practices reported by the nurses in our sample were generally sub-optimal, but our findings suggest positive effects of elements a by SPH legislation. These data will serve as the baseline for future evaluation of the impact of	No laws currently exist in North Carolina. However currently there is proposed legislation supported and advocated by NC ANA. Recommendation to support based on the positive change noted in the study in California

		of the nurses reported that their hospitals had a “no-lift” policy, 37% reported that their hospitals had lift teams, and 61% reported the availability of mechanical lift equipment such as floor or ceiling lifts. Nurses whose facilities employed lift teams were significantly less likely to report low back pain	this law in California	
Fragala, G., & Fragala, M. (2014). Improving the safety of patient turning and repositioning tasks for caregivers. Workplace Health and Safety, 62(7), 268–273. https://doi.org/10.3928/21650799-20140617-01	Level IV	Comparing mean perceived exertion reported by caregivers when turning and positioning patients in bed using a traditional draw sheet method versus the TAP yielded shoulder exertion differed significantly between the traditional draw sheet and application of TAP, The perceived exertion using he traditional draw sheet method was greater	Results from this pilot study indicated that through the application of the TAP frequent turning and positioning of patients in bed can be made safer and easier.	The study supports a different modality (TAP) as an additional modality for injury prevention for nursing staff

		compared to the TAP method.		

Appendix C

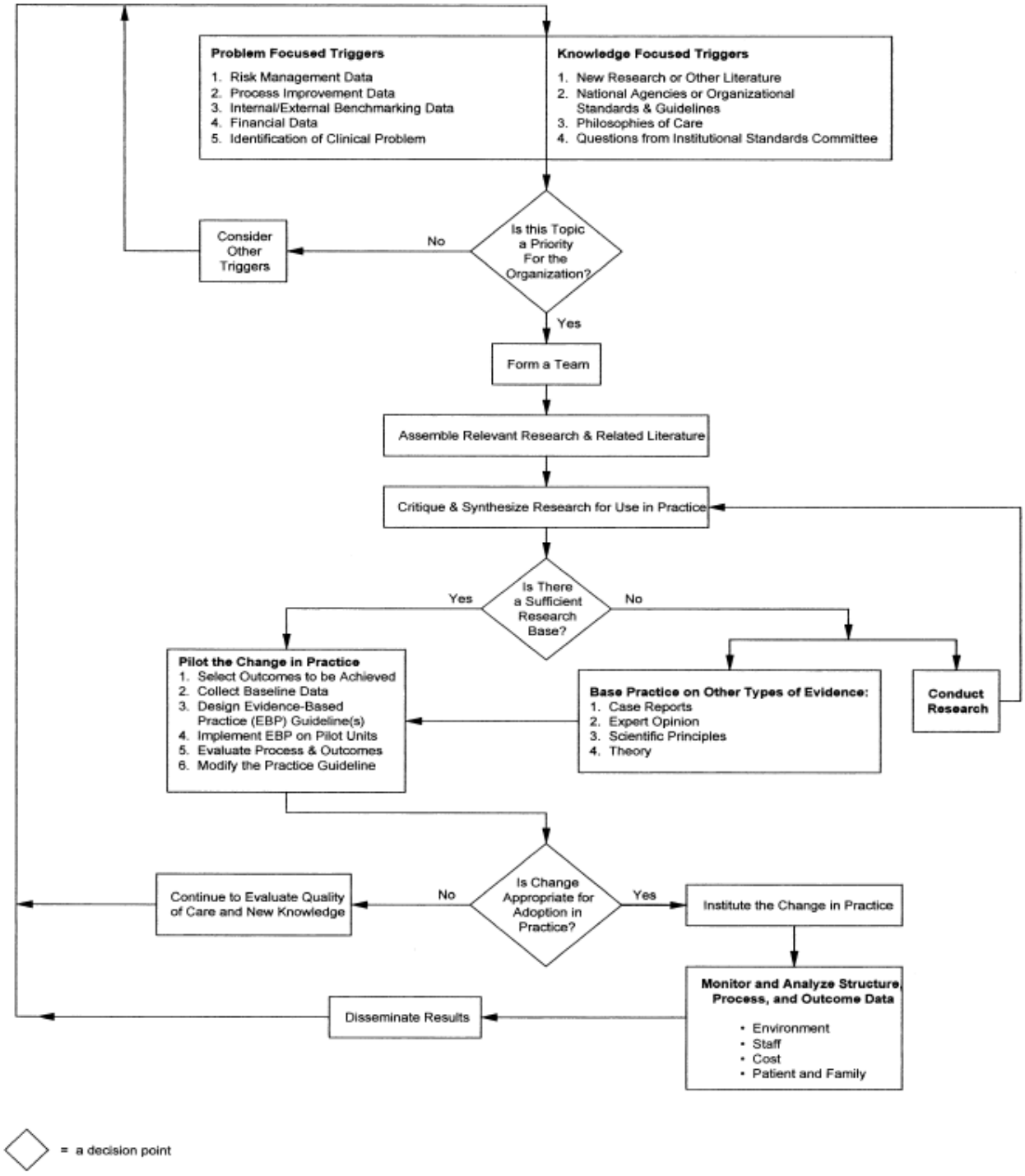
Pender's Health Promotion Model



"Pender's Health-Promotion Model—Google Search," n.d.

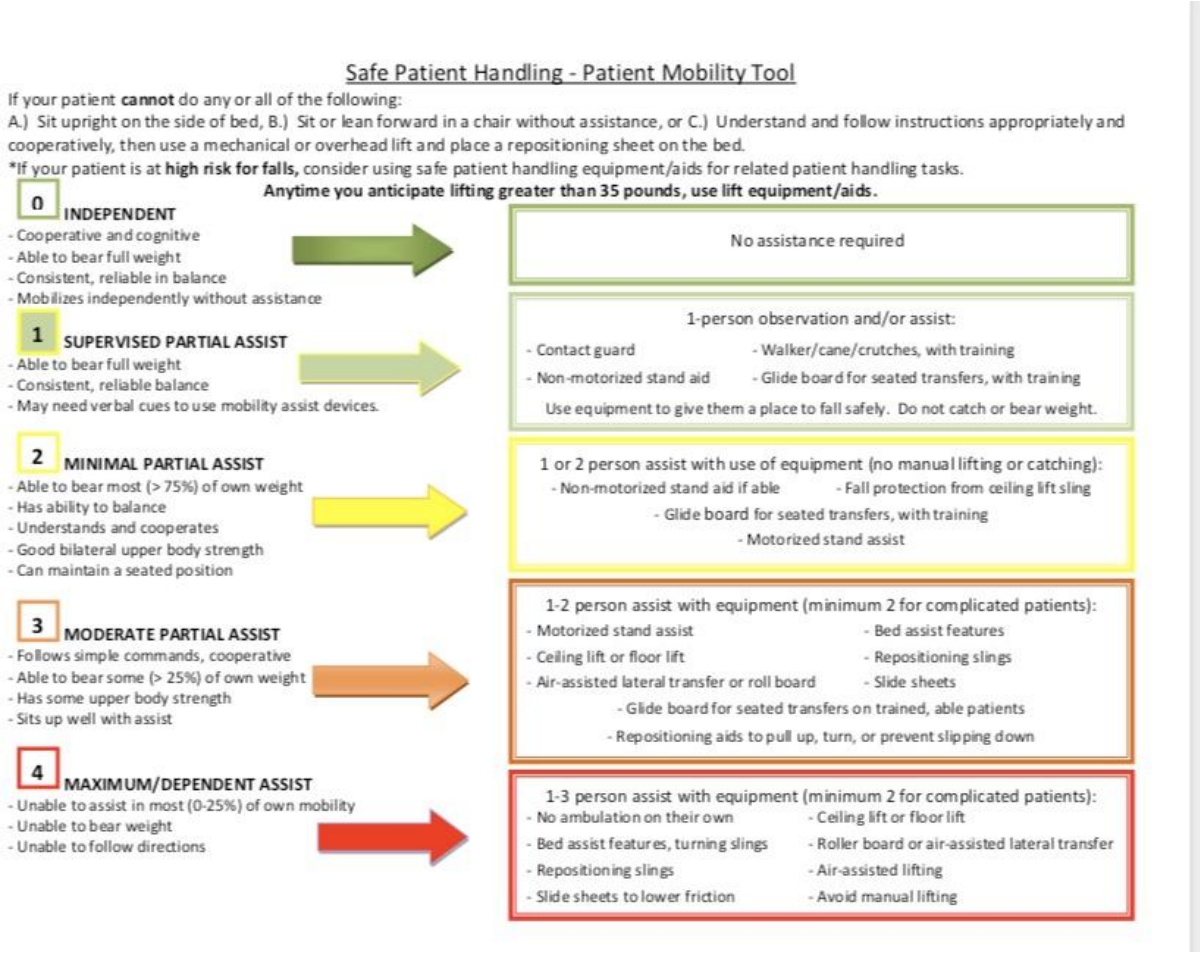
Appendix D

The Iowa Model of Evidence Based Practice



(Iowa Model Collaborative, 2017)

Appendix E



Safe Patient Handling - Patient Mobility Tool

If your patient **cannot** do any or all of the following:
A.) Sit upright on the side of bed, B.) Sit or lean forward in a chair without assistance, or C.) Understand and follow instructions appropriately and cooperatively, then use a mechanical or overhead lift and place a repositioning sheet on the bed.
*If your patient is at **high risk for falls,** consider using safe patient handling equipment/aids for related patient handling tasks.

Anytime you anticipate lifting greater than 35 pounds, use lift equipment/aids.

0 INDEPENDENT
- Cooperative and cognitive
- Able to bear full weight
- Consistent, reliable in balance
- Mobilizes independently without assistance

No assistance required

1 SUPERVISED PARTIAL ASSIST
- Able to bear full weight
- Consistent, reliable balance
- May need verbal cues to use mobility assist devices.

1-person observation and/or assist:
- Contact guard
- Walker/cane/crutches, with training
- Non-motorized stand aid
- Glide board for seated transfers, with training

Use equipment to give them a place to fall safely. Do not catch or bear weight.

2 MINIMAL PARTIAL ASSIST
- Able to bear most (> 75%) of own weight
- Has ability to balance
- Understands and cooperates
- Good bilateral upper body strength
- Can maintain a seated position

1 or 2 person assist with use of equipment (no manual lifting or catching):
- Non-motorized stand aid if able
- Fall protection from ceiling lift sling
- Glide board for seated transfers, with training
- Motorized stand assist

3 MODERATE PARTIAL ASSIST
- Follows simple commands, cooperative
- Able to bear some (> 25%) of own weight
- Has some upper body strength
- Sits up well with assist

1-2 person assist with equipment (minimum 2 for complicated patients):
- Motorized stand assist
- Bed assist features
- Ceiling lift or floor lift
- Repositioning slings
- Air-assisted lateral transfer or roll board
- Slide sheets
- Glide board for seated transfers on trained, able patients
- Repositioning aids to pull up, turn, or prevent slipping down

4 MAXIMUM/DEPENDENT ASSIST
- Unable to assist in most (0-25%) of own mobility
- Unable to bear weight
- Unable to follow directions

1-3 person assist with equipment (minimum 2 for complicated patients):
- No ambulation on their own
- Ceiling lift or floor lift
- Bed assist features, turning slings
- Roller board or air-assisted lateral transfer
- Repositioning slings
- Air-assisted lifting
- Slide sheets to lower friction
- Avoid manual lifting

(U.S. Department of Veterans Affairs, 2019)

Appendix F

Letter of Support

Date: 7-21-19

To East Carolina University College of Nursing:

We at [redacted] have reviewed Felicia Collins' DNP Project Proposal ***"Implementing Safe Handling and Mobility Program"*** Ms. Felicia Collins has organizational support and approval to conduct their Doctor of Nursing Practice student project within our institution(s). Our organization's liaison, or project champion, for the project is Dr. Daphne Brewington, ***Vice President Education and Professional Development.***

We understand that the timeframe for this project is from the date of this letter through August 1, 2020. Implementation at the project site will occur January 2020 through April 2020, unless otherwise negotiated. We understand that for Ms. ***Collins*** to achieve completion of the DNP program, dissemination of the project is required by the University and will include a public presentation related to the project and submission to the ECU digital repository, The ScholarShip. In addition, we understand that ECU College of Nursing encourages students completing exemplary scholarship to develop a manuscript for publication, but that is not a requirement. Our organization understands and agrees that the student will not use our organization's name in the formal project paper or any subsequent posters, presentations, or publications.

Our organization has deemed this project as a ***quality improvement initiative***. Our organization is aware that this project will be processed first through our organizational approval process and then through the ECU College of Nursing process, which may include a formal review through University and Medical Center Institutional Review Board of East Carolina University (UMCIRB), if needed. Our organization ***does not*** have an Institutional Review Board (IRB). We are aware that in the absence of an organizational IRB, the project will be submitted through the ECU College of Nursing review process which may include UMCIRB review if needed.

Thank you,

Vice President Education and Professional Development

Note: Must be the organization's executive/director or designee (someone with organizational authority)

Appendix G

Supply Budget

Item	Quantity	Unit Cost	Total
Supplies			
Hammermill Paper 8.5 x11	2	$36.99	$73.98
Paper notebooks	200	$1.25	$250.00
Ink for HP printer	1	$57.99	$57.99
Refreshments			
Popcorn bags individual 40ct	5	$14.98	$74.90
8-0z water bottles	4	$9.98	$39.92
Total			$496.79

Appendix H

IRB Approval

Below is a summary of your responses. Download PDF

Quality Improvement/Program Evaluation Self-Certification Tool

Purpose:
Projects that do not meet the federal definition of human research pursuant to 45 CFR 46 do not require IRB review. This tool was developed to assist in the determination of when a project falls outside of the IRB's purview.

Instructions:
Please complete the requested project information, as this document may be used for documentation that IRB review is not required. Select the appropriate answers to each question in the order they appear below. Additional questions may appear based on your answers. If you do not receive a STOP HERE message, the form may be printed as certification that the project is "not research" and does not require IRB review. The IRB will not review your responses as part of the self-certification process.

Name of Project Leader:

Felicia Collins

Project Title:

Implementing a Safe Patient Handling and Mobility Program

Brief description of Project/Goals:

The purpose of this evidence-based project is to implement a Safe Patient Handling and Mobility (SPHM) program intended to create and maintain a safe environment for nurses, nursing assistants, and patients. The program is established on the American Nurses Association (ANA) standards published in 2013 and the Association of Rehabilitation Nurses (ARN's) position statements for

implementing an SPHM program. The project will take place at a 75-bed inpatient rehabilitation department at Vidant Medical Center. Vidant Medical Center is a 900-bed academic medical center, Level I Trauma Center in a rural Magnet hospital in the southwestern United States. The project goals and outcomes include: • Administering a caregiver safety assessment • Creating a minimal lift policy/guideline • Education and training (caregiver safe handling techniques, policy/ guidelines, and equipment and lifting technology) • Reduce Worker Compensation claims (work-related musculoskeletal disorders (WRMD)) • Reduce Days Away, Restricted or Transferred (DART) rate Weekly, data will be collected on WRMD and DART rates over 12 weeks. Data will be provided by the Occupational Health Office at Vidant Medical Center.

Will the project involve testing an experimental drug, device (including medical software or assays), or biologic?
- ○ Yes
- ● No

Has the project received funding (e.g. federal, industry) to be conducted as a human subject research study?
- ○ Yes
- ● No

Is this a multi-site project (e.g. there is a coordinating or lead center, more than one site participating, and/or a study-wide protocol)?
- ○ Yes
- ● No

Is this a systematic investigation designed with the intent to contribute to generalizable knowledge (e.g. testing a hypothesis; randomization of subjects; comparison of case vs. control; observational research; comparative effectiveness research; or comparable criteria in alternative research paradigms)?
- ○ Yes
- ● No

Will the results of the project be published, presented or disseminated outside of the institution or program conducting it?
- ● Yes
- ○ No

Would the project occur regardless of whether individuals conducting it may benefit professionally from it?
- ● Yes
- ○ No

Does the project involve "no more than minimal risk" procedures (meaning the probability and magnitude of harm or discomfort anticipated are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests)?
- ● Yes
- ○ No

Is the project intended to improve or evaluate the practice or process within a particular institution or a specific program, and falls under well-accepted care practices/guidelines?
- ● Yes
- ○ No

Based on your responses, the project appears to constitute QI and/or Program Evaluation and IRB review is not required because, in accordance with federal regulations, your project does not constitute research as defined under 45 CFR 46.102(d). If the project results are disseminated, they should be characterized as QI and/or Program Evaluation findings. Finally, if the project changes in any way that might affect the intent or design, please complete this self-certification again to ensure that IRB review is still not required. Click the button below to view a printable version of this form to save with your files, as it serves as documentation that IRB review is not required for this project. 11/3/2019

Powered by Qualtrics

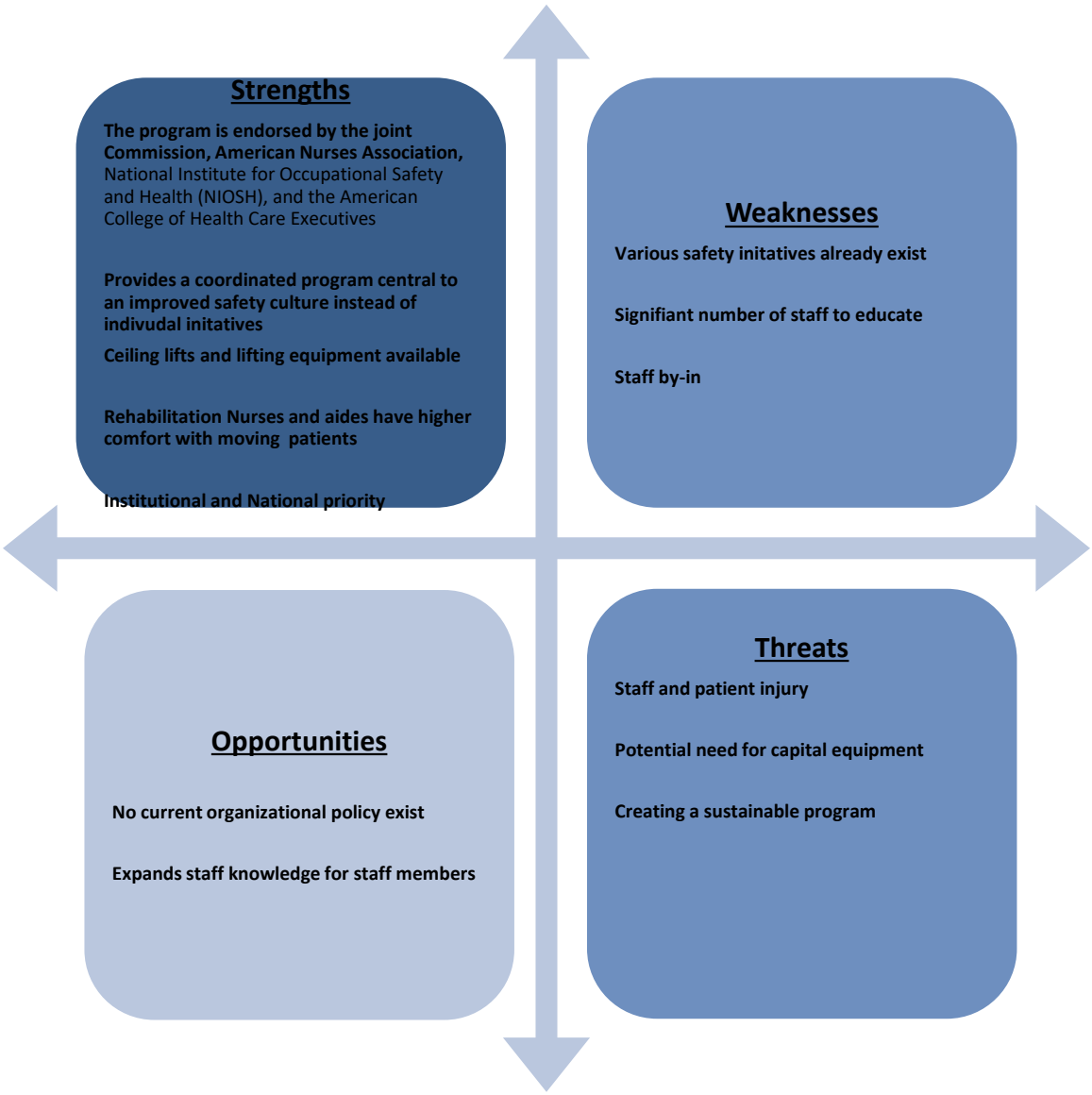
Appendix I

Injury Data Collection Tool

Case	Location	Service	Date	Time	Injury type	Body part	Cause category	Description	Corrective Action	Supervisor	Days Awa	Days Restricted
(Example: 2008-00***)	(Inpatient Room, NHCU, Etc.)											

Appendix J

SWOT Analysis



Appendix K

Pre-Assessment Tool

Please take a few minutes to complete the following short survey. The purpose of gathering this information is to collect general demographic information and to assess your understanding of employee injury prevention. The information is anonymous and will be viewed in aggregate and used to customize didactic training. Please leave your response to this survey in the box in the back of the room label "Assessment."

Pre-Assessment

1. Are you a RN/LPN or nursing assistant?

2. How long have you worked in this role?

   < 2 yrs._____ 2-5 yrs., _____ 6 to 10 yrs._____ > 10 years_____

3. How long have you been with the company?

   < 2 yrs._____ 2-5 yrs., _____ 6 to 10 yrs._____ > 10 years_____

4. How long have you worked in the rehabilitation department?

   < 2 yrs._____ 2-5 yrs., _____ 6 to 10 yrs._____ > 10 years_____

5. Have you ever had a work-related injury i.e. back injury, pain, strain or sprain to any body part?

   Please circle your response. yes or no

   a. If yes, did you spend time
      out of work ___ or reduced hours___ to recuperate? Check all that apply.

b. If you previously had a work-related injury i.e. back injury, pain, strain or sprain to any body part, which body part? Please list all that apply.

_____

6. How often do you move patients that have limited mobility from the wheelchair, from the commode, from the bed to a chair, turn or move the patient in the bed during your shift?

Check all that apply. 0-5 times____, 5-10 times___, greater than 10 times_____

7. What does SPHM stand for? Please circle your response.

a. Sitting Positioning Handling & Movement

b. Safe Patient Handling and Mobility

8. Do you know that The Occupational Safety and Health Administration (OSHA) names healthcare the most dangerous industry? Please circle your response. true or false

9. More worker's compensation claims are filed by healthcare workers than any other industry in the U.S. and many of those claims are directly related to which of the following. Please circle your response.

a. Injuries received while handling patients

b. Needle sticks

c. Falls

10. OSHA recommends never lifting more than _____in order to protect yourself, and your patient, from serious injuries? Please circle your response.

    a. 35 Lbs.

    b. 50 Lbs.

    c. 100 Lbs.

11. Do you use lifting and transfer equipment to help with moving patient? Please circle your response.

    Yes No

12. Do you find equipment readily available for safe movement of patients? Please circle your response.

    Yes No

13. How often are you using the safe patient handling and mobility tool to guide safe practices? Please circle your response.

    Yes No

Appendix L

Weekly Huddle Questions

The following questions will be asked of the RNs/LPNs or nursing assistant by the project lead.

1. Do you use lifting and transfer equipment to help with moving patient? Please circle your response.

   Yes No

2. Do you find equipment readily available for safe movement of patients? Please circle your response.

   Yes No

3. How often are you using the safe patient handling and mobility tool to guide safe practices? Please circle your response.

   Yes No

   1. Barriers to project success:
   2. Additional staff feedback:

Appendix M

SPHM Educational Tool

SAFE PATIENT HANDLING AND MOBILITY

Manual patient handling is hazardous for both health care workers and patients. The most common patient-related tasks that lead to injury are lifting, repositioning and transferring.[2]

Comprehensive safe patient handling and mobility (SPHM) programs drastically reduce the risk of injury for health care workers and patients while improving the quality of care. The use of technology, especially lifting devices, is critical to the success of these programs.

Lifting | Repositioning | Transferring

THE BENEFITS OF SPHM

The Facility Guidelines Institute outlines these benefits of SPHM in "Patient Handling and Movement Assessments: A White Paper":[3]

- Improved quality of care
- Improved patient mobility
- Fewer patient falls and pressure ulcers
- Increased patient satisfaction
- Increased health care worker satisfaction
- Savings due to reductions in workers' compensation, patient falls and pressure ulcers, and employee turnover

www.anasphm.org

AMERICAN NURSES ASSOCIATION

www.NursingWorld.org

The American Nurses Association (ANA) is the only full-service professional organization representing the interests of the nation's 4 million registered nurses through its constituent and state nurses associations and its organizational affiliates. The ANA advances the nursing profession by fostering high standards of nursing practice, promoting the rights of nurses in the workplace, projecting a positive and realistic view of nursing, and by lobbying the Congress and regulatory agencies on health care issues affecting nurses and the public.

ADDITIONAL RESOURCES

- The Association of Safe Patient Handling Professionals (ASPHP)
- American Association for Safe Patient Handling & Movement (AASPHM)
- Facilities Guidelines Institute—Patient Handling and Movement Assessments: A White Paper
- International Organization for Standardization—Ergonomics: Manual Handling of People in the Healthcare Sector
- Joint Commission—Improving Patient and Worker Safety: Opportunities for Synergy, Collaboration and Innovation
- U.S. Department of Veterans Affairs—Safe Patient Handling and Movement Resource Page

[1] American Nurses Association. Health and Safety Survey. 2011.
[2] Nelson, A., Baptiste, A. Sept. 30, 2004. Evidence-Based Practices for Safe Patient Handling and Movement. *Online Journal of Issues in Nursing*. Volume 9, No. 3, Manuscript 3.
[3] The Facility Guidelines Institute. Patient Handling and Movement Assessments: A White Paper. 2012.
[4] *Safe Patient Handling and Mobility Interprofessional National Standards*. American Nurses Association, 2014.

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AMERICAN NURSES ASSOCIATION

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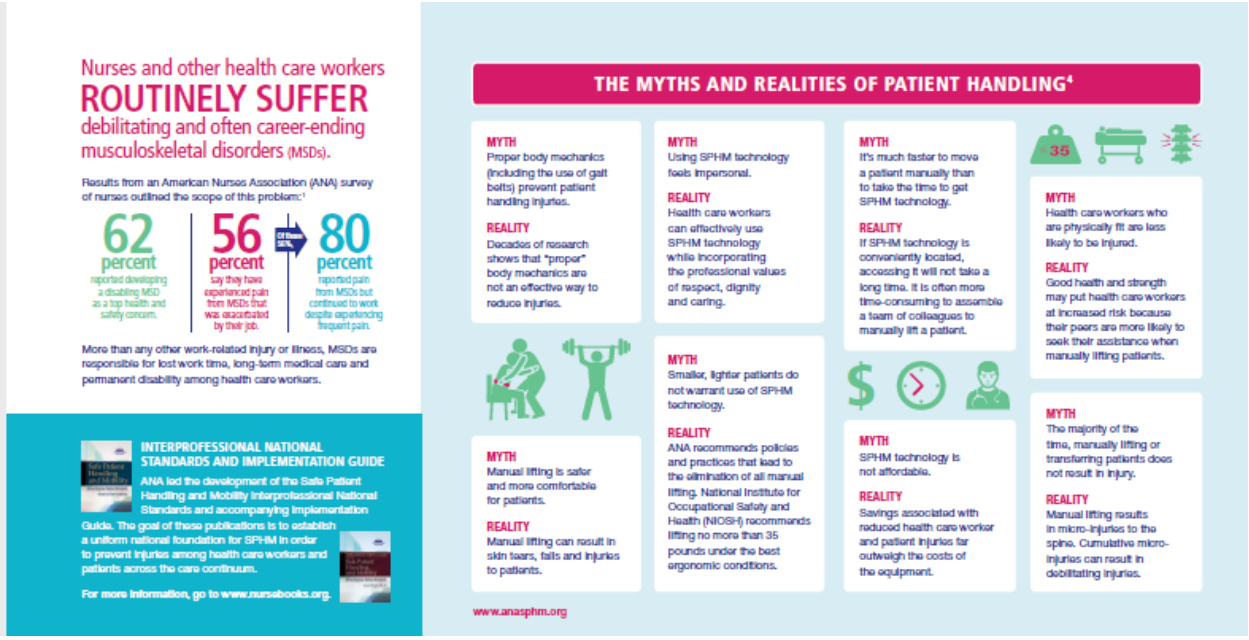
SAFE PATIENT HANDLING & MOBILITY

Understanding the benefits of a comprehensive SPHM program



Nurses and other health care workers ROUTINELY SUFFER debilitating and often career-ending musculoskeletal disorders (MSDs).

Results from an American Nurses Association (ANA) survey of nurses outlined the scope of this problem:[1]

62 percent reported developing a disabling MSD as a top health and safety concern.

56 percent say they have experienced pain from MSDs that was exacerbated by their job.

Of those 56%, 80 percent reported pain from MSDs but continued to work despite experiencing frequent pain.

More than any other work-related injury or illness, MSDs are responsible for lost work time, long-term medical care and permanent disability among health care workers.

INTERPROFESSIONAL NATIONAL STANDARDS AND IMPLEMENTATION GUIDE

ANA led the development of the Safe Patient Handling and Mobility Interprofessional National Standards and accompanying Implementation Guide. The goal of these publications is to establish a uniform national foundation for SPHM in order to prevent injuries among health care workers and patients across the care continuum.

For more information, go to www.nursebooks.org.

THE MYTHS AND REALITIES OF PATIENT HANDLING[4]

MYTH Proper body mechanics (including the use of gait belts) prevent patient handling injuries.

REALITY Decades of research shows that "proper" body mechanics are not an effective way to reduce injuries.

MYTH Manual lifting is safer and more comfortable for patients.

REALITY Manual lifting can result in skin tears, falls and injuries to patients.

MYTH Using SPHM technology feels impersonal.

REALITY Health care workers can effectively use SPHM technology while incorporating the professional values of respect, dignity and caring.

MYTH Smaller, lighter patients do not warrant use of SPHM technology.

REALITY ANA recommends policies and practices that lead to the elimination of all manual lifting. National Institute for Occupational Safety and Health (NIOSH) recommends lifting no more than 35 pounds under the best ergonomic conditions.

MYTH It's much faster to move a patient manually than to take the time to get SPHM technology.

REALITY If SPHM technology is conveniently located, accessing it will not take a long time. It is often more time-consuming to assemble a team of colleagues to manually lift a patient.

MYTH SPHM technology is not affordable.

REALITY Savings associated with reduced health care worker and patient injuries far outweigh the costs of the equipment.

35

MYTH Health care workers who are physically fit are less likely to be injured.

REALITY Good health and strength may put health care workers at increased risk because their peers are more likely to seek their assistance when manually lifting patients.

MYTH The majority of the time, manually lifting or transferring patients does not result in injury.

REALITY Manual lifting results in micro-injuries to the spine. Cumulative micro-injuries can result in debilitating injuries.

www.anasphm.org

(American Nurses Association, 2015)

Appendix N

Safe Patient Handling and Mobility Policy Guide

Adopted from

Patient Care Ergonomics Resource Guide: Safe Patient Handling and Movement (2005), Patient Safety Center of Inquiry (Tampa, FL), Veterans Health Administration and Department of Defense

1. **PURPOSE:** Provide policy and the framework for the adoption and implementation of the Safe Patient Handling and Mobility (SPHM) Program.

   The SPHM Policy provides procedures and responsibility for implementation and maintenance of a multifaceted SPHM Program. The SPHM Program integrates evidence-based practice and technology to minimize both the human and capital expenses associated with patient handling. The objectives of this program are to improve safety, protect caregivers from musculoskeletal disorders (MSDs) and reduce the incidence of injuries from acute and/or cumulative trauma related to patient handling.

2. **POLICY:** [ ] Rehabilitation is proactive in its efforts to ensure that patients are cared for safely, while maintaining a safe work environment for employees. To accomplish this, an SPHM Program will be implemented in order to ensure that required infrastructure is in place to comply with components of this SPHM policy. This infrastructure includes use of a patient care ergonomic workplace assessment or similar needs evaluation to determine SPHM technology requirements, SPHM technology, employee education and training, facility and clinical area/unit leadership, and knowledge transfer mechanisms such as Safety Huddles. SPHM patient assessment or SPHM screening tools are also knowledge transfer strategies that determine the appropriate method and technology prior to performing the task or movement and that ensure hand-off as needed. Finally, utilization of a culture of safety approach to safety in the work environment facilitates successful SPHM Programs. Caregivers will not manually lift more than 35 pounds of patient weight and will decrease that quantity when circumstances such as those in Section 3.B. are present. Manual patient handling must be avoided except when absolutely necessary, such as in a medical emergency.

3. **PROCEDURES:**

   A. Compliance:

   - It is the responsibility of employees to take care of their own health and safety, as well as that of their co-workers and their patients during patient handling activities by following this policy.

- It is the duty of management and the organization to procure the necessary equipment and support SPHM initiatives to sustain the program.

B. Safe Patient Handling and Mobility Requirements:

- Avoid unsafe manual patient handling, movement, and mobilization tasks. If unavoidable, assess them carefully prior to completion. There is no safe way to manually lift, reposition, push, or pull a patient. Based upon the National Institute for Occupational Safety and Health (NIOSH) Revised Lifting Equation, Waters (2007) determined that the maximum amount of patient weight a health care worker may manually lift or handle should not exceed 35 pounds. However, the weight limit should be significantly lower based upon duration of the task or when anterior, posterior, and lateral shear forces are elevated due to awkward positioning. If a patient is combative, has tubes/lines, or other restrictive items, the maximum lifting weight allowed will decrease. For these reasons, and at all times other than in the exception below, caregivers should not lift more than 35 pounds of patient weight and will decrease that quantity when circumstances as those above are present.

- Use approved SPHM technology for all patient handling, movement, and mobilization tasks except when absolutely necessary, such as in a medical emergency.

- Use approved SPHM technology in accordance with manufacturer's instructions and training.

- Use SPHM patient assessment, scoring, or other systems to ensure that staff utilizes the appropriate patient handling and mobility techniques and equipment for each individual patient.

C. Training and Education:

- Leadership will support training and education initiatives for all clinical staff (registered nurses (RNs), licensed practical nurses (LPN), and nursing assistants (NA/NA I)

- Caregivers who move, handle, and mobilize patients demonstrate competency regarding SPHM technology and techniques and SPHM patient assessment/screening.

- Clinical staff will complete initial and ongoing SPHM training as determined by unit supervisors. Additional training and support will be provided for employees showing non-compliance with SPHM policy.

D. SPHM Technology:

- SPHM technology shall be stored in a convenient, safe, and accessible location.
- SPHM technology shall be kept in proper working order and shall have regularly scheduled preventive maintenance per facility policy and as required by the manufacturer.

E. SPHM Program Elements:

- SPHM technology
- SPHM patient assessment, screening tool, or other method to identify SPHM technology and methods for each patient
- Knowledge transfer and change strategies, such as Safety Huddles, algorithms, hand-off communication, mentors, preceptors etc.

F. Reporting of Injuries/Incidents:

- Staff shall report all incidents/injuries resulting from patient handling, movement, and mobilization to their supervisor and to Employee Occupational Health Service.
- .

4. DEFINITIONS:

A. High-Risk Manual Patient Handling Tasks: Those manual patient handling tasks that have a risk of musculoskeletal injury for staff performing the tasks and/or injury risk for patients. These include, but are not limited to, transferring, lifting, repositioning, bathing patients in bed, making occupied beds, ambulating patients, dressing patients, turning patients in bed, tasks with long durations, standing for long periods of time, handling bariatric patients, and other patient handling tasks. Specific SPHM criteria follow.

1) Tasks that require lifting more than 35 pounds (Waters, 2007) of a patient's weight (body, head, limbs) are considered high-risk tasks under the best of circumstances. If a patient is combative or has tubes/lines or other restrictive items, the maximum lifting weight allowed will decrease.

2) Catching a falling patient requires greater forces than lifting.

3) Operations performed in low, high, or awkward positions require more force than operations performed at ideal heights and/or using good body posture.

4) Patients who resist or shift their weight while being moved or handled result in greater force for any task.

5) Pushing/pulling task acceptability depends on peak force, sustained force, and frequency/duration. Guidelines may be found in the ergonomic tool for wheeled equipment within the Association of Operating Room Nurses (AORN) Ergonomic Tools (Waters, Lloyd, Hernandez, & Nelson, 2011).

6) Wheeled equipment can require excessive force to push or steer based on design, equipment, patient weight, equipment condition, flooring surface, obstructions, or space in a room.

B. Manual Lifting: Lifting, transferring, repositioning, and moving patients (to include extremities) using a caregiver's body strength without the use of SPHM technology that reduce forces on the worker's musculoskeletal system.

C. SPHM Technology: Decreases the risk of injury related to patient handling activities and includes, but is not limited to, the following:

1) **Full-Body Patient Lifts**, including ceiling-mounted, wall-mounted, portable, and floor-based designs and their accompanying slings, function to assist in lifting and transferring patients, ambulating patients, repositioning patients, and other patient handling and mobilizing tasks. Overhead lifts are preferred for areas with substantial lifting requirements because their use requires less time and space, and spinal forces are greater on caregivers.

2) **Powered Standing Assistive Devices** help patients to stand using a sling and a motor, allowing them to retain and rebuild the ability to stand while providing dignity and allowing use of toilets with privacy. Some designs allow supported ambulation.

3) **Non-Powered Standing Aids** protect patients from falls and staff from injury while helping patients test their mobility or stand to transfer between seated positions, including exam tables, toilets, and vehicles.

4) **Lateral Transfer Devices** provide assistance in moving patients horizontally from one surface to another (e.g., transfers from bed to stretcher) and include air-assisted, mechanical, and friction-reducing types.

5) **Friction-Reducing Devices** provide a slippery surface to aid in repositioning, transfer, or application of slings when patients cannot help.

6) **Transfer Chairs** convert from chair to flat position, some of which have tools meant to move the patient to or from a second flat surface.

7) **Specific Beds** provide assistance with patient handling and mobilization tasks, such as: lateral rotation therapy, transportation, percussion, bringing patients to sitting or standing positions, repositioning toward the head of the bed, etc.

8) **Motorized Stretchers, Beds, or Wheelchairs** provide assistance with patient-handling tasks, such as transporting patients over long distances, slopes, or bumps.

9) **Hydraulic or Electric Stretchers** lift patients from near the floor to high working position and allow easy positioning of patients on stretchers without manual exertion. Some ambulance stretchers also aid in loading and unloading.

10) **Air-Assisted Lifting Devices** use an air pump to lift patients from the floor in a flat or seated position.

11) **Repositioning Aids** provide assistance in turning patients and pulling patients up to the head of the bed and up in chairs.

12) **One-Way Slide Chair Cushions** and other devices prevent a patient from slipping down into chairs and beds.

13) **Transport Assistive Devices** assist caregivers in pushing heavy equipment and patients, including bed movers or wheelchair movers.

14) **Powered Height-Adjustable Exam Tables** assist in the transfer of patients onto exam tables, bringing patients to sitting positions and raising the table surface to a more ergonomically-safe working level.

15) **Ergonomic Shower Chairs** are electrically height-adjustable and have reclining and/or thigh-elevating features to more easily and safely clean patients.

16) **Ergonomic Shower Trolleys** adjust with powered controls to more easily and safely transfer, turn, and clean patients.

17) **Patient or Resident Transfer Aids** assist patients in moving and transferring independently.

D. Culture of Safety: The collective attitude of employees taking shared responsibility for safety in the work environment and as a result provides a safe environment of care for themselves, co-workers, and patients/residents.

E. SPHM Patient Assessment and Screening Tools: Assist staff in selecting and communicating the safest equipment, techniques, and number of staff required to complete specific high-risk patient handling tasks with specific patients. These assessments are subject to clinical judgment.

F. Patient Care Ergonomic Workplace Assessments: Are conducted by trained staff in all clinical areas/units where patient handling occurs. They include risk

identification; risk analysis; and generation of equipment, procedure, and policy recommendations.

G. Safety Huddle/After Action Review (AAR) Process: This is an optional but powerful program element. Use of Safety Huddles is an effective method of sharing knowledge between staff by incorporating staff into the problem-solving process. Safety Huddles are held after an injury, near-miss/close-call incident, or a safety concern to decrease the chance of recurrence.

5. DELEGATION OF AUTHORITY AND RESPONSIBILITY:

A. Facility Director shall:

1) Support the maintenance of this policy and sustainability of this program.

2) Designate and support an SPHM FC position at a level adequate to fulfill FC responsibilities.

3) Facilitate and support the attainment of a culture of safety within the medical center.

4) Procure sufficient SPHM technology to allow staff to use them when required.

5) Ensure that adequate storage locations are available for SPHM technology.

6) Ensure that equipment receives routine and preventive maintenance.

7) Ensure that staffing levels are adequate and support a culture of safety for staff and patients.

8) Support SPHM Program leadership on the facility and clinical unit/area levels.

B. Supervisors shall:

1) Support the maintenance of this policy and sustainability of this program.

a) Ensure that staff completes initial and ongoing SPHM assessments, screenings, or other similar evaluations prior to engaging in movement, handling, and mobilization tasks. Patient-specific handling techniques should be conveyed to all caregivers via the care plan, hand-off communication, or any other methods of transferring information identified by the nursing unit or facility.

b) Ensure that patient handling tasks are completed safely using appropriate techniques, and, when required, using SPHM technology.

c) Ensure that SPHM technology is available, easily accessible, maintained regularly, in proper working order, and stored conveniently.

d) Ensure that employees complete and document SPHM training/competencies, initially and ongoing, as required to correct improper use/understanding of safe patient handling, movement, and mobilization techniques, and as required if employees show non-compliance with equipment use.

e) Report all patient handling injuries to Employee Occupational Health Service immediately or as soon as possible after the injury occurs.

f) Maintain accident reports and supplemental injury statistics as required by the facility.

2) Facilitate and support the attainment of a culture of safety within the facility through demonstrative support of the SPHM Program.

C. Employees and/or Direct Care Providers shall:

1) Take reasonable care of their own health and safety, as well as that of their co-workers and their health care recipients during patient handling activities by complying with this policy.

2) Avoid performing high-risk manual patient handling tasks.

3) Complete initial and ongoing SPH assessments, screenings, or other similar evaluations prior to engaging in movement, handling, and mobilization tasks. Patient-specific handling techniques should be conveyed to all caregivers via the care plan, hand-off communication, or any other methods of transferring information identified by the nursing unit or facility.

4) Use proper techniques and SPHM technology during performance of patient handling, movement, and mobilization tasks when required.

5) Notify supervisor of any injury sustained while performing patient handling tasks.

6) Notify supervisor of need for re-training in use of mechanical lifting devices, other SPHM technology, and lifting/moving techniques.

7) Notify supervisor of SPHM technology, especially mechanical lifting devices in need of repair and take them out of service until repaired.

8) Facilitate and support the attainment of a culture of safety within the facility by taking a proactive approach in modeling proper use of the SPHM technology.

D. Engineering Service shall:

1) Maintain SPHM equipment in proper working order. Engineering/Biomedical Service will be responsible for maintaining SPHM equipment in proper working order and ensuring that repaired SPHM equipment is returned to service in a timely manner.

E. Program Manager:

1) Provide expertise and be responsible for implementing, maintaining, and evaluating the facility Safe Patient Handling and Mobility Program.

2) Offer SPHM education for all staff .

3) Maintain open lines of communication with leadership regarding the status of the program.

4) Investigate, review, and track patient handling injuries to staff and patients in order to make suitable recommendations to decrease risk of injury.

5) Report on SPHM injury trends, action plans, and program metrics to the committee(s) overseeing SPHM.

6) Generate SPHM technology recommendations based on patient care ergonomic evaluations and facilitate the purchase of recommended items.

7) Collaborate with infection control to ensure that infection control measures are in place for safe patient handling equipment.

8) Collaborate with contracting, engineering, end users, and other applicable services regarding equipment selection, installation, maintenance, and remediation of equipment issues.

9) Provide facility SPHM Program information/data to and collaborate with the Office of Public Health (OPH) as requested.

F. Center for Learning and Performance shall:

1) Act as clinical unit/area SPHM resource for patient care ergonomics, equipment use, and SPHM techniques for managers/supervisors, peers, patients, and families. Problem-solve patient handling issues and motivate/coach peers, encouraging co-workers to use SPHM equipment and comply with all aspects of the SPHM Program.

2) Train peers/managers/patients/families by conducting staff in-services/training on SPHM issues, equipment, etc. Orient new employees to SPHM Program and UPL role on their designated units. Assist the SPHM coordinator in new employee orientation training. Train/re-train co-workers on new and existing equipment, and complete or assist in completion of equipment competency assessments. Assist co-workers in patient/family training when needed.

G. Safety Office shall: Provide employee injury data to SPHM FCs and assist in tracking, investigating and trending patient handling injuries.

H. Infection Control shall: Ensure that infection control measures are in place for SPHM technology.

I. Physical Medicine and Rehabilitation Service Therapists shall: Complete consultations and make recommendations for the way patients are mobilized.

J. Fall Program and Injury Prevention Programs shall: Collaborate with the SPHM Program, since some SPHM-related injuries are directly related to falling patients.

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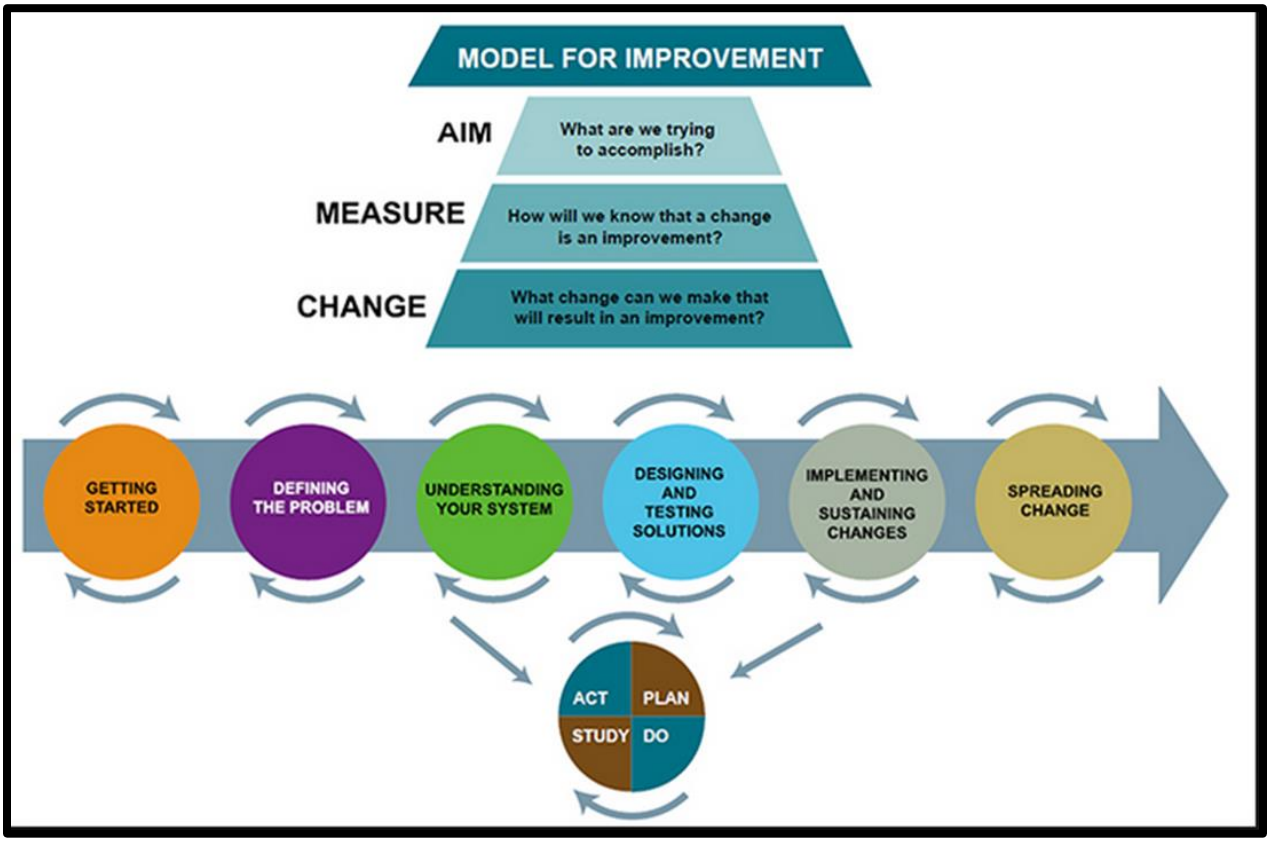
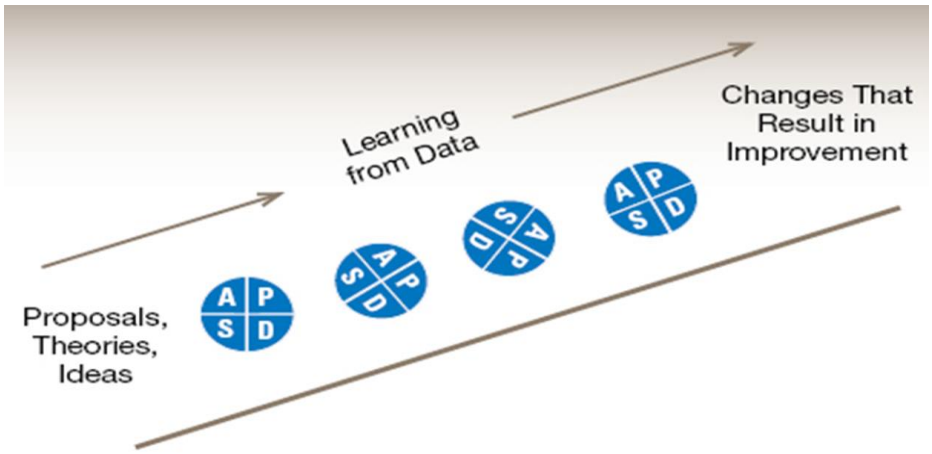
(Tampa Veterans Administration: Research and Education Foundation, 2005)

Appendix O

The Model for Improvement: Plan-Do-Study-Act (PDSA)





(Institute for Healthcare Improvement, 2020)