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Safe Patient Handling and Movement: A Literature Review

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Keywords

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Abstract

Purpose: Musculoskeletal disorders (MSD) as a result of patient handling tasks occur at high rates for nursing staff and other patient care providers. Patient care providers perform high-risk patient handling tasks including lifting, transferring, ambulating, and repositioning patients. Continuous performance of these tasks places a patient care provider at risk for development of a MSD. MSDs affect a healthcare organization financially and impact the core of a hospital—the health of the workforce. The purpose of this research was to study the impact of a safe patient handling and movement program on healthcare worker injury, costs and job satisfaction.

Methods: A critical review of the safe patient handling literature was conducted.

Findings: A safe patient handling and movement (SPHM) program decreases overall work injury costs and improves healthcare worker job satisfaction.

Conclusions and Clinical Relevance: Reduced work injuries, decreased injury costs, improved patient outcomes validated in research and employees feeling the support of their employer all contribute to a program that moves an organization toward a culture of safety.

Background of the Problem

Nursing aides, orderlies, and attendants had a 7% increase in incidence of musculoskeletal disorders (MSD) and ranked second in overall categories of injured employees requiring days away from work in 2010, according to the U.S. Department of Labor Bureau of Labor Statistics (2011). Registered nurses ranked fifth. Manual lifting and transferring of patients are among the most frequent causes of occupational injuries. One in ten serious work-related back injuries involve nursing personnel and about 12% leave the profession annually because of back injuries (Goldsmith, 2001; Owen, 1989). According to the American Nurses Association's 2011 Health

and Safety Survey, in which 4,600 RNs participated, 8 of 10 nurses reported working despite experiencing frequent musculoskeletal pain, 13% were injured three or more times on the job within a year, and 62% of RNs indicated that suffering a disabling musculoskeletal injury was one of their top three safety concerns.

The U.S. nursing workforce is aging, while at the same time patient acuity and obesity are rising. Recruitment, retention, and succession planning are all of major focus with the national nursing shortage. Today's hospital patient is more acutely ill, stays hospitalized for a shorter time period and is more dependent on others for physical assistance when discharged. Early patient mobilization has a positive impact on patient outcomes,

but it must be achieved in a way that is safe for both the care providers and patients who depend on them.

A comprehensive literature review of the Cumulative Index to Nursing and Allied Health Literature, Ovid MEDLINE and U.S. federal health agency sites was performed for the years 2000–2012 using keywords musculoskeletal disorders (MSD), patient handling work injuries, work injury costs, and safe patient handling and movement (SPHM) program.

Statement of the problem

In patient care, a number of high-risk patient handling tasks exist such as lifting, transferring, ambulating, and repositioning patients. Tasks such as feeding, bathing, dressing or toileting a patient often place caregivers in postures of stress with excessive time spent bent forward or with a twisted trunk. These tasks tend to have one or more of the following characteristics—heavy loads, sustained and awkward positions, activity involving bending, twisting, reaching, fatigue or stress or standing for prolonged time periods. In addition, patients may have physical disabilities, decreased cognitive function, varying levels of cooperation and fluctuations in their ability to participate and assist a caregiver. In many care settings, patient handling continues to be performed manually. Continuous and repeated performance of high-risk patient care tasks can place a patient care provider at risk for development of an MSD. Treating these injuries adds to the costs of a healthcare organization. It's estimated that the direct and indirect costs (adjusted for inflation) for healthcare worker back injuries in the United States are 7.4 billion dollars annually, in 2008 dollars (Collins, 2010).

Background

Musculoskeletal disorders are caused by overexertion when lifting excessive loads and by the cumulative effect of repeated high-risk patient handling tasks such as lifting, transferring, and repositioning patients over time. This creates biomechanical stress on a healthcare provider's spine, shoulders, hands, and wrists. The National Institute for Occupational Safety and Health (NIOSH) recommends a weight limit for patient lifting tasks of 35 pounds under ideal conditions (Waters, 2007). The weight limit is decreased if the lifting task is performed in awkward positions, such as, lifting a patient who is on the floor, in a restricted space or when the lifter is fatigued.

Audrey Nelson, Ph.D., R.N., FAAN, a pioneer in SPHM and Department of Veterans Affairs (VA) medical researcher, and her colleagues almost 30 years ago identified common tasks that contributed to musculoskeletal injuries and evaluated ways to redesign tasks or to use alternatives such as mechanical lifts and transfer devices. Nelson and Baptiste (2004) proposed three ergonomic solution types for SPHM: engineering based, administrative, and behavioral. Engineering controls are modifications to the work environment or layout, tools, or equipment used in the workplace to prevent work-related musculoskeletal injuries. This may also include work redesign. Ceiling lifts that allow for the vertical transfer of a patient from bed to chair without manually lifting a patient is another example of an engineering control. Establishment of patient handling procedures, patient assessment protocols, and training to identify, reduce or prevent exposures to ergonomic risk factors are examples of administrative controls. Behavioral or work practice controls involve educating and training care providers in use of safe patient handling equipment, and use of clinical tools for assessment and decision making algorithms.

The clinical case for an SPHM program

Nelson et al. (2006) evaluated the 2001 Veterans Health Administration (VHA) Patient Safety Center project that focused on reducing the number of injuries to nurses engaged in patient handling in 23 high-risk VA patient care units in Tampa, Florida. The hypotheses were that an SPHM program that integrates evidence-based practice, technology, and safety improvement will result in increased: job satisfaction, self-reported unsafe patient handling acts, level of support for the program, staff and patient acceptance, program effectiveness, cost savings, and return on investment. In addition, there would be decreased injury rates and fewer lost or modified work days. A pre/post design without a control group was used. The variables were compared for a 9-month period pre and post intervention. The intervention included six program elements: (a) Ergonomic Assessment Protocol, (b) Patient Handling Assessment Criteria and Decision Algorithms, (c) Peer Leader role, "Back Injury Resource Nurses," (d) patient handling and moving equipment, (e) After Action Reviews, and (f) a No Manual Lift Policy. The measurement tools used included surveys, injury logs, cost logs, and focus groups. The hypotheses were supported with statistical significance in seven of eight outcomes. Changes in injury rates and self-reported

unsafe patient handling and lifting practices were statistically significant. Job satisfaction, perceived support for the program and perceived effectiveness of program elements improved post intervention. Workers' compensation costs and cost of lost productivity decreased post intervention. The injury rate before the intervention was 24.0 per 100 workers per year, and 16.9 per 100 workers per year post intervention. Post intervention, workers compensation costs decreased 74%. There was an 18% improvement in lost workdays or absenteeism. The mean time to recuperate decreased 26%. Lost time costs due to sick leave dropped 22%. There was also improvement in costs of lost productivity due to a 94% improvement in decreased number of days in restricted duty.

One hospital described their SPHM program journey (Cadmus, Brigley, & Pearson, 2011) that included interdisciplinary team SPHM evidence-based education, a hospital-wide assessment of current equipment, historical injury data review, and a staff perception evaluation on SPHM knowledge. Each patient care unit evaluated and determined equipment that best suited their unit and the team developed metrics to measure program outcomes. A SPHM plan included (a) committee roles and responsibilities, (b) patient rights, (c) procedures for equipment, (d) equipment storage, (e) infection control recommendations, (f) laundering procedures, (g) compliance expectations, (h) remediation procedures, (i) documentation requirements, and (j) reporting mechanisms of injuries/incidents. Transfer mobility coaches and RN staff super users were identified on each unit. Lift equipment was purchased and education, competency validation tools, and ongoing support were provided. The effectiveness of the program was measured using workplace injury data, reduction in lost days, employee satisfaction, and use of lift equipment over time. Over a 2-year period, there was a 90.5% reduction in lost days, and a 57.1% reduction in workplace injuries. RN satisfaction improved 6%. The authors concluded that it wasn't the quantity or purchase of lift equipment but commitment by everyone to a comprehensive plan that moves an organization to a culture of SPHM.

Lift team model—an alternative

Given the U.S. nursing turnover rate average of 14%, the 6-week average amount of time it takes to orient a new RN, and the time that incumbent RNs spend in annual clinical education and training (KPMG Healthcare & Pharmaceutical Institute, 2011), organizations may con-

sider alternative SPHM models such as lift teams. An organization can maintain high-level proficiency with a focused lift team with lower training costs than training all patient care providers. A lift team or patient transfer team is defined (Meittunen, Matzke, McCormack, & Sobczak, 1999) as two physically fit people that are competent in lifting techniques and work together to perform high-risk patient transfers.

Lift team studies (Charney, 1997, 2003; Donaldson, 2000 & Shea & Short, 2011) describe the importance of specially trained lift teams. Their foundation is that lifting is a specialized skill for focused, trained lift team technicians and that physical characteristics, abilities, fatigue levels, stress levels, training, compliance and attitudes of hundreds of patient care providers are too many variables to control. Post-lift team implementation data showed between 55% and 62% reduction in patient handling back injuries, double-digit percentage decreases in work injury costs associated with the injuries and a reduction in lost work days. A survey study (Bentas, Bossman, Docken, Hefti, & Schaefer, 2003) indicated that 64% of patient caregivers felt the lift team significantly reduced the amount of required patient lifting and 73% indicated that the lift team enhanced their job satisfaction. Common themes in the studies were organizational support, lift team leadership, proper lift team practices that include use of ergonomic equipment (e.g., mechanical lifts) and methods with skill check off competencies, patient care staff educated and trained to the role and accountability of the lift team, and metrics to measure and evaluate the effectiveness of the lift team.

Physical therapists, occupational therapists and rehabilitation

SPHM literature has focused on nurses as they make up the largest percentage of caregivers and spend the most time with patients. Fewer SPHM studies have looked at other professionals such as physical and occupational therapists (PT and OT).

Darragh, Huddleston, and King (2009) summarized research indicating that OTs and PTs are at risk for musculoskeletal injuries during patient handling. They found the annual injury incidence rate of OTs was 16.5 injuries and PTs 16.9 injuries per 100 full-time workers. In addition, they found therapists to be poor self-reporters of injuries and while they recognize early signs and symptoms of musculoskeletal injury, therapists will self-treat rather than seek treatment. The study found that therapists may perceive injury as a negative reflection on their

part when they are viewed as experts, role models and educators in physical mobility and patient handling. The fact that PTs and OTs consider changing their patient care focus to working with patient populations that are less medically acute and physically challenging was also identified. This has the potential to create future therapist imbalances or shortages in the workforce in areas such as acute rehabilitation units and hospitals.

Campo, Weiser, Koenig, and Nordin (2008) found the 1-year incidence rate of PT work-related musculoskeletal disorders was 20.7% among a nationally randomly selected sample of 882 PTs. Repetitive patient transfers, repositioning patients, soft tissue or joint mobilization while in awkward bent or twisted postures, and job strain were factors found to increase the risk of work-related musculoskeletal disorders.

The underreporting and altruistic behavior on the part of therapists suggest that PTs and OTs are at risk for work-related musculoskeletal injuries and must integrate SPHM devices into the treatment plan.

Comprehensive and acute rehabilitation services of rehabilitation nursing, physical therapy, occupational therapy and speech therapy assist patients in achieving their highest possible level of function and ideally to return to their prior living arrangement. Therapists and nurses on rehabilitation units facilitate patient mobility (for example, moving around in bed, moving from sitting to standing, walking), and functional independence in activities of daily living (for example, bathing, dressing, feeding and toileting). This therapeutic model encourages patients to do as much of the functional activity as they can for themselves, so it has been a challenge for rehabilitation clinicians to accept the use of mechanical lift equipment to move patients from one surface to another.

Campo, Shiyko, Margulis, and Darragh (2013) conducted the first study that evaluates the effect of an SPHM program on functional mobility outcomes across a full range of rehabilitation diagnoses. It was a retrospective cohort study of rehabilitation patient outcomes before and after implementation of an SPHM program. Data collected over a 1-year period, looked at several facilities with a total of 507 patients without an SPHM program and 784 patients with an SPHM program. One Massachusetts rehabilitation unit SPHM program included administrative policies and advanced handling technologies that utilized floor and ceiling mounted lifts, sit to stand assists, ambulation aides, friction-reducing devices, motorized hospital beds and shower chairs, and multihandled gait belts. Mobility monitors of the (FIM™)

Functional Independence Measures (Centers for Medicare & Medicaid Services, 2004) were used to measure outcome. There were significant results with patients with a 15.1 or higher FIM initial evaluation mobility score. Controlled for initial mobility, FIM score, age, length of stay and diagnosis, the analyses showed that these patients performed better with the SPHM program. The authors concluded that SPHM programs do not appear to inhibit recovery and therapists' fears that the use of equipment would lead to dependence were not supported. Perceptions that SPHM technologies promoted only passive participation in transfers or mobility were disproved. Instead, therapists noted advantages of using SPHM equipment, including increased participation of patients in their therapeutic activities and earlier opportunities to begin the rehabilitation process of mobilizing bariatric and medically complex patients. A finding that comparable functional outcomes for the SPHM group may have been achieved in a shorter length of hospital stay was unanticipated and the researchers believe that more research should be conducted to evaluate the potential impact of SPHM programs on length of stay. This study has positive implications for rehabilitation clinical practice and rehabilitation patient outcome.

Advances in SPHM

Equipment advancements and state safety regulations contribute to increased acceptance of SPHM programs. Improvements in design of motorized lift equipment (Morse et al., 2008) make it easier for care providers to use and more comfortable to the patient. Equipment options include: vertical and horizontal transfer lifts for moving patients from sitting to standing or from a bed to a gurney, ceiling mounted lifts to move patients throughout the room on the ceiling tracks, and equipment that allows a nurse or PT to support a patient as they walk.

Washington was one of the first states to pass an SPHM law. Results from a 2011 study found that patient handling injuries decreased more than 33% (Silverstein & Schurke, 2011) after the law went into effect. SPHM legislation has passed in 11 states, but unfortunately, lack of funding provision, penalties or consequences have made compliance difficult. (Monaghan, 2012).

Integrating safe patient handling curricula

Creating a safe patient handling culture requires a paradigm change that must begin in professional healthcare

program curricula and training. Education of patient care providers is central to the development of a SPHM program. The American Nursing Association partnered with NIOSH and the Tampa Veterans Administration Patient Safety Center of Inquiry in 2004 to develop and introduce SPHM concepts in nursing school curriculums. Toolkits of curriculum modules are available nationwide. Today, more and more nursing and other allied professional programs are incorporating SPHM in their curricula.

Current SPHM work

The American Nurses Association formed a multidisciplinary working group of SPHM experts to develop national interdisciplinary safe patient handling and mobility standards that are evidence-based and outcomes-focused (American Nurses Association, 2012a,b). The Safe Patient Handling and Mobility Interprofessional National Standards were released on June 25, 2013 (American Nurses Association, 2013).

Congress appropriated funds to the VHA for a 4-year safe patient handling national initiative in 2008. This research was discussed at the 12th Annual Safe Patient Handling Conference (Powell-Cope, 2012). Positive SPHM program outcomes resulted from: deployment of ceiling lifts, effective SPHM leaders, linking an SPHM facility champion with an organization's safety committee, annual staff SPHM competencies completion, the amount of peer leader training, and including SPHM education in new employee orientation. VHA programs adopted SPHM policies, procedures, and protocols that match evidence-based VHA program elements.

Summary

The outcomes of an SPHM program in preventing MSD as a result of moving and lifting patients, decreased patient handling work injuries and associated work compensation costs as well as improved employee satisfaction are well documented.

Elements of an effective SPHM program include active involvement of patient care providers, administrative support, patient assessment tools, and use of patient lift equipment and assistive devices to reduce or eliminate injury risk. In addition, ongoing safe work practice staff education, competency-based training and SPHM policies and procedures are important to build and maintain the program.

Key Practice Points

- Patient care providers regularly perform patient handling tasks including lifting, transferring, ambulating, and repositioning patients placing them at high risk for musculoskeletal disorders (MSD).
- A safe patient handling and movement (SPHM) program can lead to a decrease in healthcare worker injuries, improved job satisfaction, and decrease employers' overall work injury costs, which has potential long-term implications for RN retention, satisfaction, and recruitment.
- Elements of an effective SPHM program include active involvement of patient care providers, administrative support, patient assessment tools, resource options of patient lift equipment, and assistive devices to reduce or eliminate injury risk coupled with ongoing safe work practice staff education, competency-based training, and SPHM policies and procedures to build and maintain the program.
- Rehabilitation therapists perceptions that SPHM technologies promoted only passive participation in transfers and mobility were disproved, and in fact, physical therapists and occupational therapists noted advantages of using SPHM equipment, including increased participation of patients in their therapeutic activities and opportunities to begin earlier mobilization.

Lift teams are a positive addition to traditional SPHM programs but as a stand-alone option limits the number of skilled staff to move and lift patients.

The literature review demonstrates that there may be differences in SPHM perceptions with different disciplines. The physical and occupational therapy research indicates improved acceptance of SPHM when therapists see the benefit of SPHM technology to earlier mobilization of rehab patients.

Conclusion

The days of nurses and other healthcare providers manually lifting their patients to get them from the hospital bed to the wheelchair need to end. SPHM is not optional for patient care providers or their organizations whose commitment to their patient's health includes their own health and safety. The impact of an SPHM program contributes to a healthcare organization's long-term sustainability through increased recruitment and retention and less staff who experience career-ending injuries. Decreased work injuries, reduced injury costs, safer patient caregiver interactions, and employees

feeling the support of their employer all become the centerpiece for an SPHM program that contributes to moving a healthcare organization toward a culture of safety. This translates to higher quality patient care and outcomes, which improves an organization's reputation. A healthy and satisfied workforce helps drive an organization's mission to serve the healthcare needs of the community and more.

References

- American Nurses Association. (2012a). 2011 RN health and safety survey. Silver Spring, MD: American Nurses Association.
- American Nurses Association. (2012b). Safe patient handling and mobility national standards draft. Silver Spring, MD: American Nurses Association.
- American Nurses Association. (2013) ANA unveils national standards for safe patient handling and mobility to spur commitment to culture of safety [press release]. Retrieved June 25, 2013, from <http://www.nursingworld.org/SPHM-Standards-PR>
- Bentas, R., Bossman, R., Docken, R.J., Hefti, K.S., & Schaefer, J. (2003). Back injury prevention: a lift team success story. *American Association of Occupational Health Nurses Journal*, 51(6), 246–251.
- Cadmus, E., Brigley, P., & Pearson, M. (2011). Safe patient handling: is your facility ready for a culture change? *Nursing Management*, 42(11), 12–15. doi:10.1097/01.NUMA.0000406571.96461.53
- Campo, M., Shiyko, M.P., Margulis, H.I., & Darragh, A.R. (2013). The effect of a safe patient handling program on rehabilitation outcomes. *Archives of Physical Medicine and Rehabilitation*, 94(1), 17–22.
- Campo, M., Weiser, S., Koenig, K., & Nordin, M. (2008). Work-related musculoskeletal disorders in physical therapists: a prospective cohort study with 1-year follow-up. *Physical Therapy Journal of the American Physical Therapy Association*, 88(2), 608–619.
- Centers for Medicare & Medicaid Services. (2004). Inpatient rehabilitation facility-patient assessment instrument training. Retrieved July 29, 2013, from <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/InpatientRehabFacPPS/Downloads/irfpai-manual040104.pdf>
- Charney, W. (1997). The lift team method for reducing back injuries. A 10 hospital study. *American Association of Occupational Health Nurses*, 45(6), 300–304.
- Charney, W. (2003). Preventing back injuries to healthcare workers using lift teams: data for 18 hospitals. *Journal for Healthcare Safety*, 1(2), 21–29.
- Collins, J. (2010). Safe patient handling lifting standards for a safer American workforce. *CDC Congressional Testimony*. Retrieved November 15, 2012, from <http://www.cdc.gov/washington/testimony/2010/t20100511.htm>
- Darragh, A., Huddleston, W., & King, P. (2009). Work-related musculoskeletal disorders and injuries: differences among older and younger occupational and physical therapists. *Journal of Occupational Rehabilitation*, 19(3), 274–283.
- Donaldson, A.W. (2000). Lift team intervention: a six-year picture. *Journal of Healthcare Safety, Compliance & Infection Control*, 4(2), 65–68.
- Goldsmith, C. (2001). Watch your back. Retrieved October 23, 2012, from <http://www.nurseweek.com/news/features/01-01/back.asp>
- KPMG Healthcare & Pharmaceutical Institute. (2011). KPMG's 2011 U.S. hospital nursing labor costs study. Retrieved November 15, 2012, from http://natho.org/pdfs/KPMG_2011_Nursing_LaborCostStudy.pdf
- Meittunen, E.J., Matzke, K., McCormack, H., & Sobczak, S.C. (1999). The effect of focusing ergonomic risk factors on a patient transfer team to reduce incidents among nurses associated with patient care. *Journal of Healthcare Safety, Compliance and Infection Control*, 3(7), 306–312.
- Monaghan, H.M. (2012). Safe patient handling & movement around the world: United States of America-past, present and future. *American Journal of Safe Patient Handling & Movement*, 2(2), 58–60.
- Morse, T., Alexander, D., Fekieta, R., Rubenstein, H., Warren, N., & Wawzyniecki, P. (2008). Doing the heavy lifting: health care workers take back their backs. *New Solutions*, 18(2), 207–219.
- Nelson, A., & Baptiste, A. (2004). Evidenced-based practices for safe patient handling and movement. *Online Journal of Issues in Nursing*, 9(3). Retrieved October 23, 2012, from www.nursingworld.org/ojin/topics25/tpc25_3.htm
- Nelson, A., Chen, F., Fragala, G., Lloyd, J., Matz, M., & Siddharthan, K. (2006). Development and evaluation of a multifaceted ergonomics program to prevent injuries associated with patient handling tasks. *International Journal of Nursing Studies*, 43(6), 717–733. doi:10.1016/j.ijnurstu.2005.09.004
- Owen, B.D. (1989). The magnitude of low-back problem in nursing. *Western Journal of Nursing Research*, 11(2), 234–242.
- Powell-Cope, G. (2012). Implementation works! Outcomes of the V.A. safe patient handling initiative. Presentation at the 4th Annual Safe Patient Handling West Conference, San Diego, CA.
- Shea, J., & Short, M. (2011). Lift teams: an effective strategy in safe patient handling. *American Journal of Safe Patient Handling and Movement*, 1(1), 36–41.
- Silverstein, B., & Schurke, J. (2011). Implementation of safe patient handling in Washington state hospitals. Report to

Washington State Department of Labor and Industries,
January 21, 2011.

U.S. Department of Labor Bureau of Labor Statistics. (2011).
Nonfatal occupational injuries and illnesses requiring days
away from work, 2010. Retrieved October 23, 2012, from
www.bls.gov/opub/ted/2011/ted_20111117.htm

Waters, T.R. (2007). When is it safe to manually lift a patient?
American Journal of Nursing, 107(8), 53–58.

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