

Safe Patient Handling: Strategies, Solutions and Challenges for Success

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Introduction

Musculoskeletal injuries continue to be the leading cause of injury in healthcare. Nursing-related professions are consistently listed as one of the top ten occupations for work-related musculoskeletal disorders, with an incidence rate of 8.1 per 100 full-time equivalent (FTE) employees in hospitals, and 9.1 per 100 FTE in nursing and residential care facilities (Bureau of Labor Statistics, 2005). While other work-related injuries in and outside of healthcare have decreased over the past few years, nursing musculoskeletal injuries have been on the rise (Nelson and Baptiste, 2006). Studies have shown that every day in the United States, 9,000 healthcare workers sustain a disabling injury while performing work-related tasks (Brown, 2003). Due to the risk in this occupation, an estimated 12-18% of nurses will leave the profession due to chronic back pain, and another 12% will consider leaving the profession (Nelson and Baptiste, 2006). This statistic could be devastating to a profession that is already facing an estimated shortage of one million nurses by the year 2012 (Waters et al., 2006).

The unique and complex nature of healthcare makes implementing solutions challenging. There is rarely a single intervention that results in widespread success across multiple patient care units. According to Nelson (2006), comprehensive programs addressing specific risks and tasks within each setting are finding more success. Important pieces to these programs include technical systems such as patient handling equipment, no lift policies, and fundamental management skills and practices that provide management support by encouraging staff participation, monitoring processes and practices, and adjusting systems as needed. Research is becoming available that supports the use of both patient handling equipment and a no lift policy in effectively reducing risk and subsequent injuries (Nelson, 2006). Despite this evidence, implementing successful injury reduction programs continues to be a struggle for many healthcare institutions due to the multitude of challenges involved in providing safe, quality care for patients in a physical environment where barriers and obstacles exist. This paper identifies some of the barriers and obstacles associated with administrative systems, the physical environment, and the use of patient

handling equipment within a diverse patient population. Solutions to overcome these challenges are discussed along with strategies to assist facilities with a successful implementation of a minimal lift environment.

Administrative Barriers

Overcoming barriers in implementing a successful safe patient handling and minimal lift environment requires evaluating administrative systems to determine areas of improvement. Further evaluation of these areas will provide a baseline understanding of the variables involved and their potential impact on the use of patient handling equipment within your facility.

Administrative systems may include reviewing and evaluating some of the following areas:

- Level of administrative or managerial support
- Level of financial support or pressure to reduce financial spending
- Level of resistance by staff to change work practices
- Level of desire to reduce injuries and workers' compensation costs
- Organizational strategic priorities
- Patient safety priorities
- Regulatory requirements
- Organizational pressures to meet goals

Administrative Solutions

Overcoming administrative barriers is not easy but determining where the obstacles occur and taking steps to improve these issues can have long term positive results. Taking small steps and building on successes over time will not only improve support but minimize the feeling of trying to solve “world hunger”. Solutions and strategies to help overcome some of these barriers may include:

- Developing a committee or work group to assist in the process evaluation.
 - Evaluate patient handling methods used and past initiatives
 - Evaluate injury data for trends or areas with high risk
 - Determine what equipment is available and whether it is being used
 - Benchmark with other institutions
- Determining a baseline using the results of the evaluation
- Prioritizing areas needing improvement by risk and level of involvement
- Determining what areas can be developed, implemented, and controlled by the work group

In our facility a sub-group of the Nursing Safety Committee was formed. This sub-group was led by a Nurse Administrator and made up of various individuals including staff nurses and provided the initial support needed to begin this process. Within the first year, the group reviewed past patient handling efforts and their outcomes, evaluated injury data, conducted root cause analysis to determine tasks with high risks, reviewed literature and research articles, and evaluated what other healthcare facilities were doing related to safe patient handling. Based on the results found, five action items were identified by the workgroup and included:

- Patient assessments
- Patient education materials
- Staff education materials
- Development of a draft “Minimal Lift” policy
- Development of a proposal to install ceiling lifts

The patient assessments and patient and staff education materials were developed by members of the workgroup. The policy was drafted by the team and then submitted to the required committee process for approval. A few members of the workgroup started putting the information together for the installation proposal. Because both the proposal and financing for ceiling lifts needed to be approved by several internal committees, the proposal team worked collaboratively with individuals from Finance, Accounting, Materials Management, and several hospital directors and committee chairs to gain expertise and input.

Financial Barriers

Equally important to cultural and administrative support is the need for financial support. Due to the wide range of equipment available, costs can range from inexpensive patient handling aids such as friction reducing sheets, to very expensive custom designed patient handling ceiling lifts. Areas of concern regarding financial support include the ability to provide the funding needed for equipment. Many administrators and managers are not aware of the cost benefit of the equipment and may view it as a poor investment with a long payback period. However, Spiegel et al. (2002) estimated the payback period for direct costs associated with a ceiling lift program was less than four years. A shorter payback period of less than two years was estimated if indirect savings and the trend of rising compensation costs were also considered. In an additional study, the observed average costs for staff-related musculoskeletal injuries per 100,000 hours worked exceeded \$160,000, which was reduced to less than \$100,000 after the successful implementation of a safe patient handling program (Nelson et al., 2003).

Financial Solutions

Since misconceptions occur regarding the benefit versus the cost of equipment, a business proposal should be completed that includes a cost benefit analysis. This should compare the cost of the equipment with the direct costs of injuries and any indirect costs that can be captured. Facilities should include a budget plan for purchasing equipment and supplies in their overall budget. In order to properly budget for equipment costs, it is important to ensure all variables are considered. Understanding all of the costs up front can help the facility make an informed decision, as well as help to determine what resources they have in house that could be used to minimize additional costs. Areas to consider when receiving quotes for equipment include:

- Base cost of the equipment
- Installation costs
- Maintenance plan costs
- Cost for training staff or providing in-services
- Equipment accessory costs such as slings, additional pieces such as walking arms or seat straps, and weight scales

- Other miscellaneous costs such as extended warranties or other services if available
- Anticipated life cycle of the equipment

In our facility, individual nursing units normally budget for any portable lift equipment they wish to purchase. Although some units requested ceiling lifts each budget year, the requests frequently were not approved. Prior to a proposal for ceiling lifts in a neurology and orthopedic unit, a small pilot was conducted on the rehabilitation unit in order to identify costs as well as preferred equipment by staff and patients. This selected equipment was then used in a one-year pilot study on a neurology unit. It was not until the results of this pilot group proved the benefits of using ceiling lifts that the institutional clinical committee approved a multi-year plan for the installation and implementation of ceiling lifts for in-patient care units. The units that are to receive the ceiling lifts are based on patient care needs and risk of injury to staff. This approval came approximately five years after the identification and need for ceiling lifts was first proposed to the institution. Based on the unit pilot study, a cost savings of approximately \$150,000 per year was realized when the cost of the equipment, workers' compensation costs, and indirect costs, such as replacement staff and education were evaluated.

Physical Environment Challenges

In addition to administrative and financial barriers, several obstacles exist within the physical environment. According to the American Nurses Association (ANA), the physical environment can lead to restrictions on movement and positioning. Hospital furniture and equipment as well as the presence of other hospital staff can create barriers that force staff into awkward postures and movements (De Castro, 2006). Physical environment issues can include the following:

- Facility design, location, and access including structures such as ramps and elevators
- Patient care and procedure rooms
- Corridors, ramps, and floor materials
- Door sizes and locations
- Size and condition of storage rooms

Physical Environment Solutions

Physical barriers may not always be easy to solve as many issues are based on the facility structure and cannot be easily changed without extensive remodeling. However, some solutions to consider to minimize barriers may include:

- Minimize equipment in store rooms and patient rooms
- Minimize ramps if feasible; consider inserting vinyl flooring as a walkway to make moving carts and wheelchairs easier
- Widen doorways to accommodate various equipment sizes
- Use bed side commodes
- Evaluate and service equipment as needed

An example in our facility of a barrier in the physical environment relates to the size of doorways. Doors to patient care rooms or restrooms often between 36" and 42" and are not wide enough to

permit certain types of equipment to fit through the door. Prior to the availability of width adjustable beds, our facility had a 48" wide bed. This size bed had to be dismantled before putting it in a patient's room and then reassembled once it was brought in to the room. Not only did this create issues for caregivers, but maintenance personnel were at risk for injury as they handled this equipment several times.

Other strategies used included providing a list of suggested building items and the item location, i.e. placement of sharps needle boxes, to the Building and Remodeling Committee. Suggestions included the expansion of door widths and the placement of sharps containers and other items in locations that do not interfere with using equipment. The facility continues to evaluate different types of equipment for adjustability and flexibility.

In the newly remodeled neurology unit, the patient rooms were designed using three zones. The first zone was the patient zone and it included the bed, chair and other medical equipment. To the back of the room was the family zone, with a pull out couch and storage for small items. The third zone was the hygiene zone and included the bathroom and room sink. By designing the rooms into zones, trip hazards were minimized and it ensured enough room was available in the patient zone to move equipment or conduct necessary medical care.

Storage rooms are another problem, usually storing large amounts of equipment and material and making it difficult to retrieve equipment and supplies when needed. A walk-through was conducted to evaluate storage rooms and determine what storage was needed. Many of the storage areas contained obsolete equipment or other non-used items. An example of an outcome from the walk-through included an equipment storage room cluttered with PCA pumps and IV poles. A long narrow storage closet was found and it is now utilized to store the IV poles and pumps, making access to both easier and more efficient. On other units, small alcoves were built into the wall to store smaller items or equipment, such as stand assists.

Patient Handling Equipment Challenges

Not only is the physical environment challenging, but challenges also occur with the use of patient handling equipment. Garg et al. (1992) indicated that special restrictions in the work environment may make the use of patient handling equipment cumbersome with other equipment. For example, the patient handling equipment may not be compatible with the bed design, which would not allow the legs of the equipment to be pushed far enough under the bed. Based on the size of the room and equipment, use of patient handling equipment could force healthcare staff into awkward positions and increase the risk of injury. Height and distance limitations have also been encountered with the use of equipment. The ANA recommends that facility or unit specific evaluation and selection of equipment includes front line users to help ensure proper and diligent use, as the level of quality, durability, availability, and the appropriateness or effectiveness for patient conditions does vary across all product lines and manufacturers (De Castro, 2006).

Assistive patient handling equipment and devices control these hazards by technologically engineering out the energy/force from the job task experienced by the nurse (De Castro, 2006). Patient handling technology has elevated the level of quality nursing care delivered. Increased safety, comfort, and dignity have been identified as the primary benefits for patients. Assistive equipment and devices provide a more secure process for lifting, transferring, or repositioning tasks reducing the potential for patient injury, such as falls, skin tears, and shoulder injuries. Studies conducted by Zhuang et al. (1999); Zhuang et al. (2000) showed mechanical lifts reduced the compressive forces placed on the nursing assistant's back by an estimated 60%, removed two-

thirds of the lifting activities per transfer, and increased the resident's perceptions of comfort and security when compared with being manually lifted.

Patient handling equipment, whether portable or fixed (ceiling lifts), needs to be able to integrate with other specialty equipment, such as specialty beds. Two NIOSH studies indicated that although floor-based lifts are portable and can be moved from room to room, they require significantly higher forces to push, pull, or rotate the patient into position for transfer during the lift than overhead track-mounted lifts (Waters et al., 2006). As stated in a CDC/NIOSH commentary, new equipment technologies have been developed to minimize the hazards but have not been employed uniformly (Kwapniewski, 2007). This is an important point; in order to achieve a minimal or no lift work environment, agreement and consistency on what equipment is used and when to use it needs to be implemented and shared in all areas.

Patient Handling Equipment Solutions

Possible solutions in dealing with equipment barriers include:

- Evaluate and trial equipment to meet needs of patients and physical environment
- Consider functionality and flexibility in equipment over a single task use
- Segregate and label equipment with weight capacities
- Keep equipment readily available by considering alternate storage solutions

There are a number of physical barriers that limit the use of some of our patient handling equipment. We have learned to be creative when using some of this equipment. For example, a portable lift used with a stretcher sling has been used for lateral transfers, repositioning patients and turning patients. Using the lift for turning a patient was readily received on one of the nursing units when they had a patient that needed frequent turning. In one of our outpatient procedure rooms, the procedure table does not allow a lift or stand assist's legs to go under the base. However, it was determined that the legs of the lift fit around the end of the base allowing staff to sit a patient at the end of the procedure table. Once seated, patients were able to adjust themselves to the proper position needed. To ensure availability of slings and harnesses, we trialed a prototype harness that could be used in isolation areas. The material was made of vinyl so it could easily be disinfected between patients. Now the harness is used because it is easily available and the unit does not need to worry about the availability of harnesses due to the laundry process. Another example used to minimize the time in gathering patient handling aids was to have staff set up each patient bed with friction reducing boards and sheets. When the patient arrives, the staff have the necessary equipment to laterally move the patient, resulting in saving time for both staff and patient while reducing the risk of injury.

Patient Population Challenges

Challenges can also occur in diverse patient populations. Patient handling and movement tasks are physically demanding, performed under unfavorable conditions, and are often unpredictable in nature (Nelson, 2006). Patients offer multiple challenges including:

- Variations in size, physical disabilities, cognitive function, level of cooperation, and fluctuations in condition
- Factors such as the patient's weight, transfer distance, confined workspace, unpredictable patient behavior, and awkward positions
- Patients have higher levels of acuity
- A growing elderly population and an increase in bariatric patients (Thomason, 2003)
- Special circumstances, such as significant skin issues, abdominal wounds, contractures, or the presence of tubes, are also likely to affect transfer or repositioning (Nelson, 2003)
- Physician orders or physical therapy recommendations may affect patient handling and movement
- Patient refusal to use equipment
- Use of patient handling equipment with specialized beds
- Slings and harnesses that don't fit well based on the patient's size, type or ability

Patient Population Solutions

Understanding these variables can help anticipate needs and provide care givers with necessary information for using the right equipment that is most helpful to the patient. A few solutions include:

- Evaluating equipment thoroughly and trialing it to ensure it meets the majority of needs for both patient and integration with existing equipment
- Using equipment creatively to meet the needs of the patient
- Minimizing multiple transfers by transferring bariatric patients directly to expanded capacity beds in the operating room
- Guidelines and labeling of equipment for staff reference
- Encourage staff to practice using the equipment on each other to become familiar with it

Within our facility, we have encountered some unique situations in patient transfers. One patient needed to become more mobile before leaving the facility. Their medical issues had resolved, however mobility was still an issue. In getting the patient to stand, both a lift and a stand assist were used. Due to the patient's size, the patient could not sit up without assistance. A stand assist harness was positioned first, then the lift sling. The lift was used to move the patient to the side of the bed and provide support with sitting. Once the patient was in a seated position, the sling was unhooked and the harness attached to the stand assist. The patient was able to stand briefly. Although the coordination of equipment took some time, this would have been a difficult task for care givers to do manually without someone being injured. In the ICU, nursing staff worked with physicians to minimize transferring patients from the bed to a chair by utilizing the chair mode. Based on injury data, a number of injuries were occurring to staff when assisting patients back to bed after sitting up or using the commode. Discussions with Physical Therapy and Nursing resulted in therapists assisting patients to walk to the chair. After the patient had been up for a while, nurses would use a stand assist to transfer the patient back to bed. This occurred until the patient gained enough strength to do this with minimal assistance. Other recommendations encouraged staff to use patient handling equipment, which included asking staff to start with one piece of equipment for one particular task until they are comfortable with

using it, as well as having staff use equipment on small patients prior to using on larger or bariatric patients.

Conclusion

Patient handling is a complex and physically demanding task that puts healthcare workers at significant risk for musculoskeletal injuries. Healthcare organizations need to address these risks by providing the administrative and financial support to injury reduction efforts. Because of the complexities of this issue, it is important to implement a multi-faceted approach that involves representatives from departments throughout the institution. While there is not a specific approach that can guarantee success in patient handling issues, chances of success increase when multiple areas are evaluated and addressed. This paper has outlined many of the challenges faced during this process, as well as some of the solutions that were effective at this particular organization. These suggestions may be helpful to other organizations that face similar issues. Collaboration within the industry may help to successfully lower the risk at a national level and help to achieve the goal of keeping healthcare personnel safer and more comfortable in the workplace.

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