

Myths and Facts About Safe Patient Handling in Rehabilitation

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KEY WORDS

evidence-based practice
safe patient handling

As the incidence of injuries associated with patient-handling tasks remains high in the rehabilitation community, interdisciplinary discussions on optimal methods for preventing injuries and ensuring good care continue. A national task force consisting of representatives from the Association of Rehabilitation Nurses, the American Physical Therapy Association, and the Veterans Health Administration identified myths that have been promulgated on both sides of the discussion, focusing especially on rehabilitation practices. The purpose of this article is to dispel these myths by using evidence-based methods. Evidence should be applied in discussions of safe patient handling, and although concern about patient outcomes is critical, there is no evidence that the use of patient-handling technology undermines rehabilitation goals and strong evidence that these practices enhance the safety of rehabilitation care providers. Further research on the impact of safe patient-handling practices on rehabilitation goals and continued communication between rehabilitation providers are recommended.

The number and severity of occupational injuries associated with patient-handling tasks have remained high in the past three decades. This concern has led to reports recommending that patient-handling technologies be used in place of traditional manual lifting (Panel on Musculoskeletal Disorders and the Workplace, Commission on Behavioral and Social Sciences and Education, National Research Council, and Institute of Medicine, 2001; U.S. Department of Labor, Occupational Safety and Health Administration, 2002) and to other evidence-based approaches for reducing risk to patient care providers (Nelson & Baptiste, 2004).

Despite growing evidence that these solutions are effective (Collins, Wolf, Bell, & Evanoff, 2004; Evanoff, Wolf, Aton, Canos, & Collins, 2003; Li, Wolf, & Evanoff, 2004; Nelson et al., 2006; Yassi et al., 2001), an interdisciplinary debate has emerged between physical therapists (PTs) and rehabilitation nurses. Although few dispute that the solutions reduce risk to staff, concerns exist that mechanical lifting devices could have deleterious effects on patient functional status and independence.

In order to address these concerns, the Veterans Health Administration (VHA) convened a national task force consisting of representatives from the Association of Rehabilitation Nurses (ARN), the American Physical Therapy Association (APTA), and VHA. The purpose of this task force was to develop a position paper that balanced the needs of all three organizations in a workable solution. The position paper was recently published (Nelson et al., 2005), but the debate continues and is hindering efforts to promote safe patient handling across rehabilitation settings.

The next effort of this interdisciplinary task force was to identify the myths associated with safe patient handling in rehabilitation settings. The purpose of this article is to debunk eight common myths in rehabilitation that are impeding evidence-based approaches. Many myths are associated with safe patient handling. Several of these myths applicable to general nursing practice were discussed previously by one of the authors of this article (Nelson, Fragala, & Menzel, 2003). This article attempts to dispel common myths unique to practicing rehabilitation nurses and therapists. These myths were developed by the national task force and include the following:

- Myth 1: Therapists and nurses communicate well and speak the same language when making decisions about patient handling.
- Myth 2: If a patient can perform a function in therapy, he or she can do it anywhere, anytime.
- Myth 3: the use of patient-handling equipment interferes with the therapeutic value of therapy and can contribute to functional decline or loss of patient independence.
- Myth 4: The use of patient-handling equipment reduces functional status scores.
- Myth 5: Unlike nurses, who have one of the highest occupational injury rates in the country, therapists rarely sustain injuries during patient handling.
- Myth 6: The use of patient-handling equipment is impersonal.
- Myth 7: All patient-handling equipment is the same.
- Myth 8: Patient-handling equipment is too expensive for rehabilitation settings.

Myth 1: Therapists and nurses communicate well and speak the same language when making decisions about patient handling.

For as many organizations that provide rehabilitative care, probably just as many systems for interdisciplinary team communication are in place. Even in teams with an effective interdisciplinary process, communication, or lack of it, is a common complaint. Ineffective communication can have serious implications for patient outcomes. Knaus, Draper, Wagner, and Zimmerman (1986) reported on factors predicting patient outcomes in 13 hospital intensive care units. The single most important predictor of mortality rate was communication between nurses and physicians. In a similar study, Baggs and colleagues (1999) found that intensive care unit nurses' reports of physician-nurse collaboration had a direct correlation with patient outcomes. Strasser, Smits, Falconer, Herrin, and Bowen (2002) studied the influence of hospital culture on rehabilitation team functioning at 50 Veterans Administration (VA) hospitals. Team members (in medicine, nursing, occupational therapy, physical therapy, social work, and speech pathology) differed from administrators in their perceptions of hospital culture. In addition, team members gave higher team functioning ratings to hospitals they perceived to be more personal (e.g., resembling an extended family) or dynamic (i.e., being willing to take risks) than those described as bureaucratic or production oriented.

Regardless of research findings and any cost-benefit analysis on the use of patient-handling equipment, clinical opinion on the value of safe patient handling can vary within and between disciplines. Interdisciplinary teams that value the input of all team members and have a high level of collaboration will communicate effectively and seek to provide a safe work environment for all caregivers. Just as an interdisciplinary team works out its differences in approaches to the care of rehabilitation patients, so should they work together to ensure that no caregiver is injured while moving a patient.

Myth 2: If a patient can perform a function in therapy, he or she can do it anywhere, anytime.

The Uniform Data System Functional Independence Measures tool (FIM™) was developed to measure burden of care (Uniform Data System for Medical Rehabilitation, 1997). Clinicians trained in FIM™ scoring are instructed to use the most dependent score noted in a 24-hour period. For example, if a patient needs supervision to dress in the morning (FIM™ = 5) but needs moderate assistance to undress (FIM™ = 3) in the evening, the correct FIM™ score for dressing is 3. The FIM™ system is founded on

the assumption that function can vary. Many variables can influence function, including pain (Mossey, Gallagher, & Tirumalasetti, 2000; Won et al., 1999), behavior (Zawacki et al., 2002), sleep (Tractenberg, Singer, & Kaye, 2005), spasticity (Francis et al., 2004), and fatigue (Garber & Friedman, 2003).

All variables, including fluctuations in function, must be taken into consideration when determining the safest patient-handling method. Highest function in a given period should not dictate the patient-handling method for all times and circumstances. Rehabilitation nurses often find that although a patient performed a transfer independently during the morning therapy session, by evening, fatigue and the effect of medications may impede task performance. Likewise, the patient may not be able to easily generalize tasks learned in a clinical therapy room to different environments. Effective interdisciplinary communication and collaboration can facilitate selection of the appropriate handling equipment for all situations. Use of an algorithm (Nelson, 2005b; Nelson, Owen, et al., 2003) can help caregivers systematically decide what equipment, if any, is needed for safe patient handling even if those decisions vary under different circumstances. All interdisciplinary team members caring for rehabilitation patients must collaborate to plan safe care for patients and their caregivers.

Myth 3: The use of patient-handling equipment interferes with the therapeutic value of therapy and can contribute to functional decline or loss of patient independence.

Some rehabilitation staff members believe that the use of patient-handling equipment during rehabilitation will lead to a decline or even functional loss for the patient. Although anecdotal evidence has been promulgated on both sides of the issue, little evidence in the literature either supports or refutes this belief. The only evidence that exists supports the use of patient-handling equipment because of its unequivocal ability to reduce injury rates in healthcare practitioners (Collins et al., 2004; Evanoff et al., 2003; Li et al., 2004; Nelson & Baptiste, 2004; Nelson et al., 2006; Yassi et al., 2001). Therefore, the burden of proof lies on those opposed to using patient-handling equipment because it is widely accepted as an appropriate strategy for healthcare practitioner safety.

Therapists sustain work-related injuries and (along with rehabilitation nurses) are considered to be among the high-risk populations for developing musculoskeletal disorders (MSDs), especially those related to patient handling. Studies of injured therapists have shown that changes in patient treatment methods and injury prevention strategies are commonly adopted.

All interdisciplinary team members caring for rehabilitation patients must collaborate to plan safe care for patients and their caregivers.

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Cromie, Robertson, and Best (2000) found that the majority of PTs (73.4%) who developed an MSD changed patient treatment at some time as a result of the MSD. In addition to using assistance from another provider and using or adjusting equipment (e.g., plinth adjustment, rolling stools), a significant proportion of injured PTs stopped patient treatment if it aggravated the symptoms, selected treatment techniques that would not aggravate or provoke discomfort, or administered treatment using another body part. Although these strategies may prevent further injury, one cannot assume that the strategies are always in the best interest of the patient. Therefore, a more effective ergonomic approach for the therapist and patient would prevent therapist injury while optimizing patient outcomes. Certainly the appropriate use or modification of equipment should be included in this process.

One unique study performed in the United Kingdom by Ruzala and Musa (2005) investigated whether equipment could replace the manually assisted rising component of the sit-to-stand activity in a patient group. In addition to determining the perceived rate of exertion, ease of use, and duration of the task, the authors measured patients' responses, therapists' opinions on how the activity replicated normal movement patterns, and the PTs' perceptions of the effectiveness of the devices as part of an active rehabilitation program. Although the study included only a small number of therapists, the authors concluded that using the equipment was preferable to incorrectly performing manual transfer techniques. In addition, the equipment, with modification, could be used effectively in treatment activities, thereby meeting both goals: reducing the risk of injury to therapists and providing therapy for the patient. In addition, the authors suggested a closer relationship between therapists and manufacturers to ensure that equipment is designed to address rehabilitation needs and minimize healthcare practitioner injury.

Myth 4: The use of patient-handling equipment reduces functional status scores.

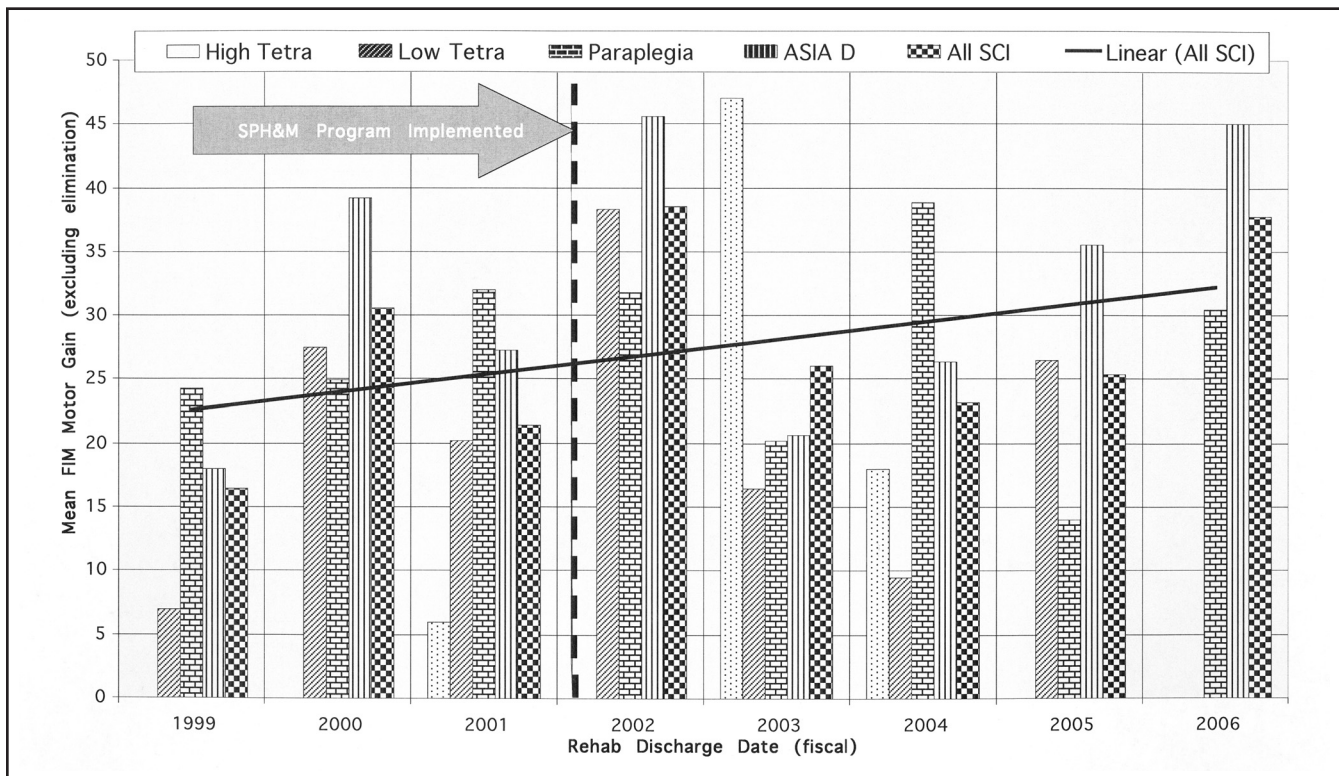
One of the most commonly cited reasons for not implementing a safe patient-handling program in rehabilitation settings is the fear that it will keep patients dependent and interfere with rehabilitation efforts to maximize the functional level of independence in transfer activities. Although no one is suggesting that every patient be lifted with a mechanical lifting device, the use of algorithms to make best-practice decisions regarding the appropriate level of equipment (e.g., progressing from full-sling mechanical lift, to stand-assist lift, to gait belt, to independent transfer) may improve safety for both the patient and the care

provider (Nelson, 2005b; Nelson, Fragala, et al., 2003). The FIM™ is the most widely used tool for measuring functional independence. On the 1–7 FIM™ scale, any patient activity that entails the assistance of two people is scored as 1 (*dependent*). A dependent transfer by one person in which the patient provides less than 25% effort, a quad pivot (dependent) transfer, and a transfer done by one person with a lifting device would also be scored as 1. A score of 2 indicates 25%–50% patient effort, and a score of 3 indicates 51%–75% patient effort. Manual transfers in this range often require the assistant to lift or move more than 75 pounds (with adults), exceeding recommended safe maximums. For an FIM™ score of 4, the patient must perform more than 75% of the effort in the transfer. The caregiver may provide only contact guarding but still may be lifting or moving 50 pounds or more with an adult patient. For a score of 5, the caregiver provides supervision or cuing only, although he or she may assist in equipment setup. A patient who is totally independent would have an FIM™ score of 7, and a score of 6 reflects the independent use of adaptive equipment or techniques or the need for an unusual amount of time. Although some lifts can be used by a patient independently (FIM™ = 6), these are rarely found in the inpatient setting.

No empirical evidence exists that the use of safe patient-handling equipment will negatively affect FIM™ outcomes. In one unpublished study done at a VA spinal cord injury center, no significant difference was found between FIM™ motor score gains at discharge before and after implementation of a comprehensive safe patient-handling program ($N = 48$) (Figures 1 and 2). This analysis indicated that overall FIM™ motor scores (not including elimination scores) did not decrease after implementation of the safe patient-handling program, and in fact the trend of overall improvement from admission to discharge continued at the same or better rate after implementation. In addition, staff injuries significantly decreased in both number and severity, as did staff turnover after implementation. Patient satisfaction with the rehabilitation program remains high, and discharges to institutional settings are almost nonexistent. The trajectory of weekly FIM™ motor scores was found to be different, with the majority of FIM™ gain for transfers found in the last quarter of the patient's rehabilitation program for those with tetraplegic injuries and in the second quarter for those with paraplegic injuries.

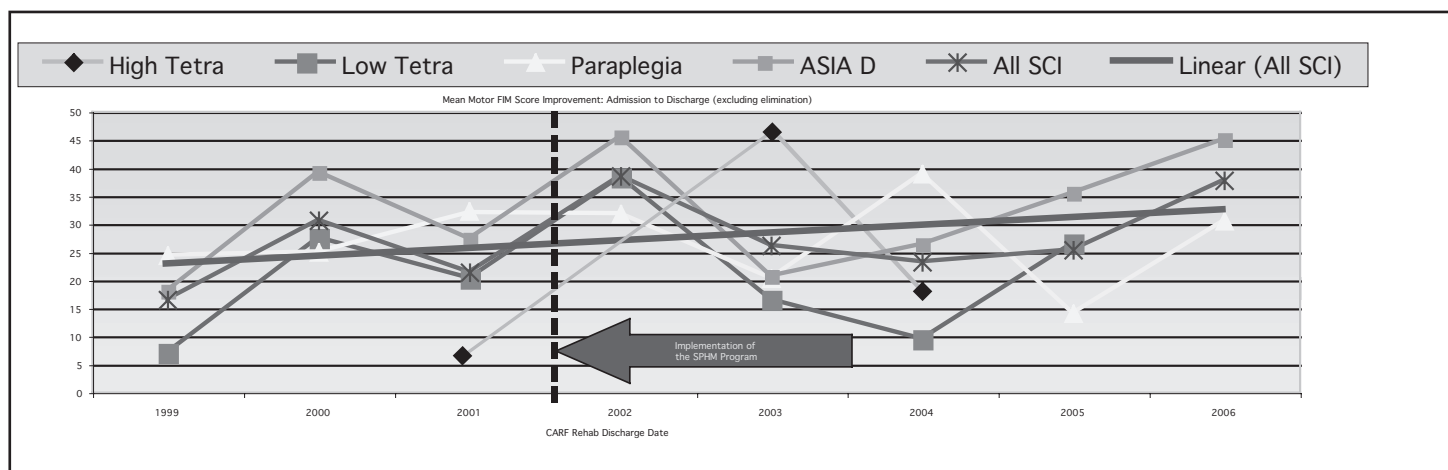
More studies are needed in this area. The additional impact of maintaining long-term experienced staff to provide rehabilitation skill training must not be underestimated.

Figure 1. Impact of Safe Patient-Handling and Movement Program—Acute Rehabilitation Patient Admission to Discharge FIM™ Gain



Source: Veterans Affairs San Diego Healthcare System, Spinal Cord Injury Center. Reprinted with permission.
 Note: SPH&M = Safe Patient-Handling and Movement; Tetra = tetraplegia; ASIA D = American Spinal Injury Association, AIS category D; SCI = spinal cord injuries.

Figure 2. Impact of Safe Patient-Handling and Movement Program—Acute Rehabilitation Patient Motor FIM™ Score Change from Admission to Discharge



Source: Veterans Affairs San Diego Healthcare System, Spinal Cord Injury Center. Reprinted with permission.
 Note: SPH&M = Safe Patient-Handling and Movement; Tetra = tetraplegia; ASIA D = American Spinal Injury Association, AIS category D; SCI = spinal cord injuries.

Myth 5: Unlike nurses, who have one of the highest occupational injury rates in the country, therapists rarely sustain injuries during patient handling.

It is widely held that occupational therapists (OTs) and PTs rarely, if ever, are injured when performing

work-related tasks such as patient handling and lifting. This belief is maintained for a variety of reasons, including the extensive background in biomechanics, kinesiology, ergonomics, and body awareness that is included in the entry-level educational programs for both professions; the role that therapists play in safety and musculoskeletal risk-reduction programs

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Table 1. Prevalence Rates for Musculoskeletal Disorders in Physical Therapists

Author	Lifetime Prevalence (%)	Annual Prevalence (%)	Country Studied
Bork et al. (1996)	61	—	United States
Cromie, Robertson, & Best (2000)	91	80	Australia
Glover, McGregor, Sullivan, & Hague (2005)	68*	58	United Kingdom
Holder et al. (1999)	—	32	United States
Salik & Ozcan (2004)	85	—	Turkey
Scholey & Hair (1989)	57	38	United Kingdom
West & Gardner (2001)	55	40	Australia

*Career prevalence reported.

throughout health care and industry; and the impression that the educated clinician can safely perform all handling techniques on clients, regardless of their size, dependency level, or cognitive status. Unfortunately, the evidence suggests that therapists are injured performing work-related tasks, and the rates of injury may be as high as in many known at-risk healthcare professions such as nursing. The continued acceptance of this myth may lead to needless work-related injuries and associated pain and suffering.

Existing literature debunks this common myth. A number of studies have investigated injury rates and the concomitant factors associated with work-related MSDs in PTs. It is interesting to note that a thorough literature review and personal communication with the American Occupational Therapy Association revealed no publication on OT injury rates to date. Because the risk factors for developing MSDs are similar in both professions, for the purposes of this article we assume that both professions have similar injury rates, although we highly recommend further study.

Table 1 summarizes published lifetime and annual prevalence rates for MSDs in PTs. The recorded lifetime prevalence rates for MSDs in PTs range from 55% (West & Gardner, 2001) to 91% (Cromie et al., 2000). Annual prevalence rates range from 32% (Holder et al., 1999) to 80% (Cromie et al.). The significant variations noted in the prevalence rates result from the different operational definitions of MSDs in the surveys and the variations in sample characteristics (e.g., setting, practice area, country of origin) and study design and methods. Regardless of the variations noted, the prevalence rates recorded are similar to, if not greater than, those recorded for other healthcare practitioners considered at high risk for MSD.

PTs report the lower back as the most common body region to be affected by an MSD. Cromie and colleagues (2000) surveyed 824 randomly selected

physical therapists in Victoria, Australia, for work-related MSDs, perceived job-related factors, and strategies used to minimize the effects of work-related MSDs. The authors reported that 48% of the most serious MSD symptoms were in the lower back, followed by the neck and upper back. Similarly, West and Gardner (2001) surveyed 217 PTs in Queensland, Australia, for work-related injury or pain lasting more than 3 days that was perceived to be caused by work. The authors reported that the lower back was the most common area for MSD symptoms (35%), followed by hand (25%) and finally neck (24%) symptoms. Holder and colleagues (1999) surveyed 667 PTs and PT assistants throughout the United States for the prevalence, perceived cause, and response to MSDs. The lower back was the most commonly reported MSD for both PTs (62%) and PT assistants (56%), followed by wrist, hand, and upper back (23%) for the PTs and the upper back (28%) for the PT assistants. In addition, all studies reported that PTs 30 years and younger and in their first 5 years of practice had the highest prevalence of MSDs (Cromie et al., 2000; Glover, McGregor, Sullivan, & Hague, 2005; Holder et al., 1999; Mierzejewski & Kumar, 1997).

Specific tasks and practice settings have also been associated with the occurrence of MSDs. Cromie and colleagues (2000) found a number of activities, postures, positions, and workload issues that were related to the onset of MSD symptoms in PTs. For subjects reporting lower back pain, lifting or transferring patients who were heavy and dependent on therapists for transfer was a major contributor to lower back pain symptoms (odds ratio 2.4, 95% confidence interval 1.4–4.1). In addition, working in awkward and sustained postures, bending and twisting, and performing manipulation or mobilization techniques were associated with higher risk for lower back pain. West and Gardner (2001) found

that working in the same positions for long periods (58%), maintaining static postures of the spine (51%), continuing to work while injured (51%), and lifting and transferring patients (35%) were among the most common problems associated with PTs' occupational injuries. In addition, the authors found that a significant percentage of PTs who reported an occupational injury were practicing in a hospital setting at the time of the injury. Holder and colleagues (1999) reported that PTs working in rehabilitation centers had the highest prevalence of lower back pain (75%), followed by those in outpatient (64%) and hospital (63%) settings. The three most prevalent activities at the time of injury were transferring patients, lifting, and responding to unanticipated or sudden movement by a patient. Finally, Mierzejewski and Kumar (1997) reported that PTs practicing in hospitals and private settings had the highest prevalence of lower back pain, and patient handling was the major activity that precipitated the pain.

Myth 6: The use of patient-handling equipment is impersonal.

Some practitioners argue that use of patient-handling equipment is "high tech, low touch." The belief that patient-handling equipment is impersonal is based more on the technique one uses than on the equipment itself. In fact, one could easily perform a manual transfer technique in an impersonal or demeaning way. Any patient transfer or handling activity should incorporate the professional values of respect, dignity, and caring and provide a safe environment for the patient and healthcare provider. In a study of ceiling lifts, patients reported that the equipment was more dignified because only one person was needed to perform the task, compared with a manual lift that required two or three people grunting and groping the patient from multiple directions (Tiesman, Nelson, Charney, Siddharthan, & Fragala, 2003).

Today's equipment has been designed to more easily incorporate these values during patient-handling maneuvers. Slings that can be easily donned or removed, devices that can be adjusted to allow good eye and hand contact and do not invade a patient's personal space, and hand-held controllers that allow the patient to become actively involved in the transfer all demonstrate sensitivity to the patient while increasing the overall safety and efficiency of the technique. Certainly, additional equipment development and modification are necessary to ensure patient and healthcare provider safety during all patient-handling activities. Greater communication between the therapist and equipment manufacturers will support the realization of these goals.

Myth 7: All patient-handling equipment is the same.

Patient-handling equipment is as varied as the patient movements needed. Although much of the focus of safe patient handling is on patient transfer techniques, injuries also occur during ambulation, repositioning, and all activities of daily living. The Veterans Integrated Service Network 8 Patient Safety Center of Inquiry in Tampa, FL, lists the following categories of handling equipment in its *Technology Resource Guide* (www.visn8.med.va.gov/visn8/patientsafetycenter/safePtHandling/default.asp):

- air-assisted lateral transfer aids
- dependency on geri chairs
- gait belts with handles
- mechanical lateral aids
- ceiling lifts
- sliding boards
- standing assist aids
- repositioning devices
- equipment for bed improvement
- friction-reducing lateral aids
- general lifts
- floor-based lifts
- powered standing lifts
- transfer chairs
- other mobility aids
- slings.

Although the appropriate selection of equipment can seem daunting, the Patient Safety Center provides excellent resources, including two patient care ergonomics resource guides (*Ergo Guide*, Part I and Part II) that can assist in the selection of equipment and the development a comprehensive program of safe patient handling and movement. The *Ergo Guide* includes an assessment form to assist in the use of six patient movement algorithms for people with a body mass index less than 50 and seven patient movement algorithms for people with a body mass index greater than 50. These clinical tools have also been published in a reference book (Nelson, 2005b).

The Patient Safety Center does not endorse products but makes information available to users. The *Ergo Guide* helps identify high-risk patient movements and the categories of equipment to consider. Specific equipment listings describe the features and benefits of the various products. In addition, the *Ergo Guide* provides product feature rating surveys to help make decisions about purchases. A separate and specific tool exists for sling equipment selection. The guide stresses the importance of having potential users participate in the selection of equipment. Staff input will better ensure that the appropriate equipment is selected and used.

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Myth 8: Patient-handling equipment is too expensive for rehabilitation settings.

Expense can be measured only through a cost-benefit analysis. Research findings indicate that the investment in handling equipment is offset by reduced workers' compensation claims and costs (Collins et al., 2004; Fragala, 1993; Siddharthan, Nelson, Tiesman, & Chen, 2004; Spiegel et al., 2002). Spiegel and colleagues described the savings achieved through a ceiling-mounted lift system in a long-term care setting that resulted in a 58% decrease in lift and transfer-related injuries and a 69% decrease in costs per 100,000 hours worked. Twenty-three VHA nursing homes and spinal cord injury units installed patient-handling equipment and realized an injury rate decrease of 31%, an absenteeism decline of 18%, and a decline in workers' compensation costs from \$173,763 to \$35,200 (Siddharthan et al.). The initial investment was recouped in 2.86 years. In a best-practice intervention of mechanical lifts, repositioning aids, a zero-lift policy, and employee training in six nursing homes, after controlling for the nursing home, age of employee, job tenure, gender, and work status, Collins and colleagues reported a significant reduction in handling injury claim rates.

In addition to the economic benefit of handling equipment, anecdotal evidence illustrates some of the difficult-to-measure benefits to both individuals and organizations. A patient-handling injury has a physical and psychological impact on a worker, and a severe injury can end a career. Any worker who is unable to work or has a light-duty assignment affects staffing and sometimes the workload of others. The cost of patient-handling equipment pales in comparison to the measurable and immeasurable costs of musculoskeletal injuries.

Conclusions

The high level of risk associated with patient-handling tasks is a critical problem. Rehabilitation professionals must abandon patient-handling practices that are based largely on tradition in favor of those that are based on the available evidence. Despite concern about patient outcomes, no evidence exists that use of patient-handling technology undermines rehabilitation goals, and there is strong evidence that these practices enhance the safety of rehabilitation care providers. Nurses and therapists must recognize these important findings and begin to collaborate on practical safe patient-handling solutions in their specific environments. The shortage of skilled and experienced rehabilitation staff of all disciplines means that we must make every effort to maintain the health of these providers. Injured

workers are not available to provide care, and these injuries can end careers.

An additional challenge is to adapt the concepts of safe patient handling and movement to the home setting. Family members and attendants must be provided the means to prevent injuries when caring for people in the home. Family-centered rehabilitation care requires that we attend to the health and safety of the caregivers who allow our clients to remain in noninstitutional settings. Advocacy for funding for such equipment in the home setting and training of family members and attendants in safe patient handling and movement techniques becomes a responsibility for all rehabilitation team members.

Changing practice is never easy. In the past decade, numerous evidence-based approaches to safe patient handling have emerged (Nelson & Baptiste, 2004). Technology has advanced significantly, with a wide array of equipment and devices designed to promote safety for the patient and the caregiver. It is time for a paradigm shift in the way rehabilitation nurses and therapists approach patient-handling tasks. As rehabilitation professionals, we are in a unique position to provide leadership in refining best practices and shaping technology design to promote patient function and independence without sacrificing the safety of care providers. By increasing collaboration between healthcare providers, using evidence-based decision making, using available resources on equipment selection, and communicating with manufacturers of safe patient-handling devices, we can find practical solutions for immediate practice change.

Further research is needed on the safe patient handling of people with disabilities, including the impact on rehabilitation goals. This research must be conducted across rehabilitation settings, such as acute rehabilitation, long-term care, and home care settings. The partnership between the VHA, APTA, and ARN to address these critical issues is an important first step in asking the right questions, identifying myths, and supporting research to build the evidence base.

In conclusion, we hope that by debunking common myths associated with safe patient handling promulgated by rehabilitation healthcare providers, we can move more rehabilitation settings toward evidence-based safe patient-handling practices. Furthermore, the collaboration between ARN and APTA lends strength to the conclusions advanced here.

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