



[Login](#) | [Register](#) | [Help](#)

- [SOLUTIONS](#)
- [ABOUT PREMIER](#)
- [NEWS/ADVOCACY](#)
- [EVENTS/EDUCATION](#)
- [CONTACT US](#)

You are here: [Home](#) > [Events & Education](#) > [Safety Institute](#) > [Safety topics A to Z](#)

- [Back injury prevention](#)
 - [Extent of the problem](#)
 - [Causes of back injuries](#)
 - [Cumulative trauma disorders](#)
 - [Equipment and prevention](#)
 - [Developing an injury prevention program](#)
 - [A plan of action](#)
 - [Conclusion](#)
- [Business partners](#)
- [Downloads](#)
- [Education and training](#)
- [Key documents](#)
- [Links](#)
- [Products and equipment](#)
- [Resources](#)
- [Sample procedures & tools](#)
- [Comments and feedback](#)

Preventing back injuries in patient care

- [Fall prevention resources](#)

Extent of the problem

Back injuries are cited as the most common reason for absenteeism in the general workforce after the common cold. About 80 percent of adults are estimated to experience a back injury in their lifetime, and about 10 percent will suffer a re-injury.

Organizations are taking steps to reduce back injury in the healthcare workplace, most prominently the U.S. Occupational Health and Safety Administration (OSHA). For example, [OSHA released final ergonomic guidelines](#) for nursing homes, offering guidance to workers when it comes to lifting home residents or other large objects. Additionally, OSHA entered into its first strategic alliance with a medical association – the [American Academy of Orthopaedic Surgeons](#) (AAOS). Both organizations plan to use their collective expertise

to reduce and prevent ergonomic injuries in the workplace

National healthcare statistics: In the United States, back disorders account for over 24 percent of all occupational injuries and illnesses involving days away from work, according to the National Institute of Occupational Safety and Health's (NIOSH) [Worker Health Chartbook, 2004](#). In healthcare, back injuries, frequently caused by overexertion, occur at a very high rate. Healthcare industry workers sustain 4.5 times more overexertion injuries than any other type of worker. (See the [U.S. Department of Labor, Bureau of Labor Statistics, 2000](#).) According to national statistics, six of the top 10 professions at greatest risk for back injury are: nurse's aides, licensed practical nurses, registered nurses, health aides, radiology technicians, and physical therapists. Greater than one third of back injuries among nurses are attributed to handling patients and the frequency with which they are required to manually move patients. From a worldwide perspective, back injuries to nurses have point prevalence of approximately 17 percent, an annual prevalence of 40–50 percent and a lifetime prevalence of 35-80 percent. (See [A Business Case for Patient Care Ergonomic Interventions, 2005](#).) As staggering as these statistics are, they still do not tell the whole story. According to Bernice Owen, RN, Ph.D., former professor at the University of Wisconsin-Madison School of Nursing, as many as one-third of nurses who sustain work-related back injuries do not even report them. (See [Caring for Ourselves](#), by Bernice Owen.)

Personal impact: About 80 percent of back injuries are short in duration, and workers are able get back to normal health. In the short-term, they may experience pain and reduced functioning. For some, the pain and suffering is long-term. And for a small percentage of people, it is lifelong. For employees with long-term, disabling musculoskeletal injuries, lifetime earnings may drop significantly. These employees may also suffer a loss of independence and a diminished quality of life.

National impact: With a critical nursing shortage, back injuries among nursing personnel can seriously diminish the nation's ability to provide quality care. The following recent resources describe the crisis:

- [Nursing workforce, General Accounting Office report](#),
- [Hospital nurse staffing and patient mortality](#) and
- [A white paper from the Joint Commission on Accreditation of Healthcare Organizations](#).

[Back to top](#)

Causes of back injuries

Organizational causes: Many factors affect back injuries among healthcare personnel: an aging workforce, sicker patients, staffing shortages, obesity in both patients and employees, gender, and stress due to organizational change.

Individual causes: Back pain and other work-related musculoskeletal injuries may be caused by:

- A single traumatic event, such as a slip and fall or a car accident.
- Other factors, such as genetics; age (older populations experience an increase in arthritis and disc degeneration); being out of shape or overweight; having poor posture; bending, standing, sitting, or lifting improperly; tension, emotional problems or personal stress; pregnancy; tobacco smoking; poor physical condition; and sports or hobbies.
- Cumulative trauma to the spine and related structures.

[Back to top](#)

Cumulative trauma disorders

Most work-related musculoskeletal injuries occur from cumulative injuries, and are therefore called “cumulative trauma disorders” (CTDs). For example, overexerting the spine - from lifting improperly or lifting patients that are too heavy for the worker’s back to support - may cause micro-tears in the spinal disks. Because these small injuries do not cause pain, the employee is usually not aware the disk has been damaged. If not allowed to heal, the damage may build up and result in a bulging or ruptured disk, creating a cumulative injury marked by pain. (See the Occupational Safety and Health Administration’s (OSHA’s) [Back Disorders and Injuries](#).)

Recognition of CTDs: While a serious injury may seem to be caused by a single, well-defined incident, the real cause is often the specific injury coupled with years of repetitive micro-trauma. Because of the slow and progressive onset of internal weakening and damage, the condition is often ignored until the symptoms become severe, and lead to a disabling injury. (See OSHA’s [Back Disorders and Injuries](#).)

To increase awareness of CTD, organizations must implement injury awareness prevention measures. Teaching caregivers to report signs and symptoms of musculoskeletal disorders to supervisory personnel immediately ensures that measures may be taken to reduce a subsequent increase in severity and cost, thus requiring education of supervisory personnel as well.

Impact of CTDs: The repetitive nature of tasks performed by caregivers increases the potential for CTDs. Working in a bent-over position is a recognized risk factor for CTD. Estimates indicate that caregivers work in this position for up to 90 percent of their work shifts.

Key cause of CTDs: The most common factor contributing to CTDs is the caregiver’s tendency to exceed one’s own safe lifting capacity when repositioning or transferring patients, putting excess force on the spine, which can lead to injury.

According to a recent [Ohio University study by Marras](#), “patient handling was found to be an extremely hazardous job that had substantial risk of causing a low back injury whether with one or two patient handlers.” This study found that of the following lifting techniques, all have a high probability of being in the high-risk [for caregiver injury] group and none would be considered safe to use in a hospital setting for either one or two-patient handlers.

Lifting techniques evaluated:

- Bed to wheelchair and wheelchair to bed transfer (both with and without wheelchair arms).
- Transfer from a commode chair to a hospital room chair, and vice versa.

These lifts were evaluated on a 110-pound subject, using the following:

- One-person hug, (caregiver wraps arms around the waist of the patient).
- Two-person hook and toss (“hooking” the patient under the arm and “tossing” to the new location).
- Two-person transfer using a gait belt.

In addition, patient repositioning was assessed, including:

- Manual one-person hook method, (one or two people, using their own arms, “hook” the patient under the patient's arm and pull the patient up in bed).
- Manual two-person hook method, a manual two-person draw sheet (two caregivers grasp the draw sheet,

- lift the patient up in bed, and place down).
- Manual two-person lifting under the thigh and shoulders.

[Back to top](#)

Equipment and prevention

Equipment solutions: Preventing serious back injuries must include the use of patient lifting and transfer equipment for most patients, but especially for obese (bariatric) patients. [A Patient Lift and Transfer Resources List](#) may be helpful in identifying companies, examples of equipment (including bariatric patient needs), and contact information. In addition, an organizational assessment will reveal the various types and numbers of equipment needed, which depends on the patient population and the type of care provided. A proposed [Injury Prevention Program](#) is described below in this module.

Special concerns — the bariatric patient: Lifting and transferring of bariatric patients has become a concern for many organizations and healthcare personnel. It is estimated that about five to 10 percent of the general population is obese. Due to their weight and size, special considerations can reduce the potential lifting hazard for caregivers. To determine obesity, one may refer to the [chart conversion](#).

When the BMI is greater than 38, there is a possible need for special bariatric equipment. If the BMI is greater than 39, the patient is considered morbidly obese. For example: a 5’8” tall, 255-pound person has a BMI of 39.

Special considerations are not only needed to meet quality of care standards for these high-risk patients, but to also prevent potential lift and transfer injuries to caregivers. Often, the lifting assistance available on site is not rated for use with bariatric patients.

A process for identifying equipment needs and a list of types of equipment to consider may be found in [“Bariatric Equipment Considerations,”](#) included in the [sample procedures and tools](#) section of this module.

[Back to top](#)

Developing an injury prevention program

Reducing back and other musculoskeletal injuries during patient care demands more than a “quick fix” or a singular solution such as more training or simply placing a life on a unit. Promoters of back injury prevention programs need to:

- Determine the extent and cost of injuries in their organization.
- Determine a reasonable goal for their organization.
- Develop a plan of action to prevent injuries.

Determine the extent and cost of the injuries: The extent and cost of the injuries in an organization are best determined through problem analysis. Organizations may gather data from national statistics and studies, OSHA 300 logs, internal incident reporting data, employee surveys, and employee interviews. Data should be coupled with onsite hazard reviews to determine what assistance is available and the environment in which it is used.

To further quantify the problem a number of tools from the State of Washington may be useful, such as [job](#)

[hazard analyses](#) for individual lifting scenarios. Related tools include:

- [Hazards zone checklist](#),
- [Caution zone checklist](#), and a
- [Calculator for analyzing lifting operations](#).

Determine a reasonable goal for the organization: Goal-setting is a critical step in creating successful, long-lasting improvements. First, the organization must know the results they expect once they implement a program to reduce musculoskeletal injuries. While it certainly is laudable to try to reduce work or non-work related back injuries to zero, more realistic, measurable goals need to be set. They can be based on the organization's size, patient mix, and the results of injury data analyses, surveys, and interviews. Once the goal is determined, a plan of action maps out how the goal is achieved.

[Back to top](#)

A plan of action

Identify potential solutions: Based on the data gathered, solutions to correct the problem may be formed. The plan should:

- Define the criteria to determine when assistance is needed.
- Determine the need for lifting equipment.
- Review affected policies and procedures to incorporate changes.
- Review training needs for both supervisory and patient care personnel.

Criteria: The final program combines work practices, equipment use, and body mechanics. How each is incorporated depends on the goals set by the organization. In OSHA's guideline, the goal is to "minimize manual lifting of [patients] in all cases and eliminate it when possible," (See [Ergonomics for the Prevention of Musculoskeletal Disorders: Guidelines for Nursing Homes](#)).

Determine need for lifting equipment: Organizations must first determine the need for patient transfer equipment, both for the majority of patients and for the obese. This will vary depending on the type of care provided and the patient population served. [Algorithms](#) describing what assistance to provide in various lifting situations may be helpful. Then, organizations must decide what types of equipment are needed. An [equipment criteria worksheet](#) and the previously mentioned [patient lift and transfer resources](#) may provide some direction at this stage. Finally, organizations must be clear on how frequently the equipment will be used.

Policies and procedures: Policies and protocols should be unique to each organization. In developing policies, organizations need to ensure consistency with their injury reporting process and return-to-work programs as related to back injuries. When lifting assistance is considered a critical part of the program, caregivers need clear direction on making decisions on assistance. Only then can they be held accountable for following the lifting requirements. A [sample policy](#) from the Veteran's Administration may suggest further ideas for consideration.

Training: Training needs should be identified and provided for all levels of personnel. This includes:

- Caregiver management, so they will support the use of safe lifting practices and equipment.
- Caregivers, so they understand the benefits and are comfortable using the equipment.
- Maintenance personnel, so they can complete preventative maintenance tasks.

Gain top management support: Perhaps the biggest initial hurdle program promoters face is getting management approval for implementing a program that, by its complex nature, necessitates a great deal of organizational commitment and resources to be successful.

Strategies to gain support: How do program promoters get upper management buy-in to program change? Most organizations have basic back injury prevention programs. However, most are either incomplete or not comprehensive as evidenced by statistics indicating injuries from lifting and transferring patients continue to occur and in fact, are increasing. Senior management may not see the need to add additional resources to support a more complete program.

[Back to top](#)

Suggestions to enlist leadership support for program change include:

- **Change the focus:** Many decision-makers grapple with the fact that money has been spent on back injury prevention programs before, yet back injuries continue to occur. Management may be even more reluctant to invest in another potentially unsuccessful program. To help overcome this hurdle, one group decided to change the **focus** of the program. Rather than preventing back injuries in patient care personnel, they promoted improving patient care. Even the program title was changed to reflect this approach: “Preventing Back Injuries in Nursing Care” became “Patient Handling and Movement.” Regardless of the term chosen, if the focus includes patient care, decision-makers may be more receptive to providing the extensive backing — and monies — required by a truly successful program.
- **Review the current legislative environment:** The Occupational Safety and Health Administration (OSHA) has listed ergonomics, especially in healthcare, as a top priority. (See [news release](#) “OSHA Announces Comprehensive Plan to Reduce Ergonomic Injuries, April 5, 2002.”) Additionally, OSHA's citable [general duty clause](#) states that a workplace should be “free from recognized hazards.” Overexertion injuries from lifting people have been formally recognized as workplace hazards, ever since OSHA ruled that overexertion injuries resulted from lifting and transferring of residents. (See [news release](#) Nursing Home Company Settles Case-Beverly Adopts Ergonomic Measures to Reduce Back Injuries, January 15, 2002).

JCAHO surveyors have also taken a greater interest in employee and patient safety issues related to lifting and transferring. For example, organizations report that surveyors have asked to see their OSHA 300 logs. The surveyors then asked about preventative measures taken for the most frequent and/or costly types of injury, many of which are musculoskeletal disorders.

- **Demonstrate success:** Data are critical to demonstrating proven injury-prevention systems. Facilities implementing ergonomics-based injury prevention programs with effective engineering and work practice controls have achieved considerable success in reducing worker-related injuries and workers' compensation costs. Some institutions have experienced additional benefits, including reduced staff turnover and associated training and administrative costs, reduced absenteeism, increased productivity improved morale, reduced resident injury and increased resident comfort. Many examples exist of effective ergonomics program in nursing homes. The following examples highlight some aspects of successful programs:
 - Citizens Memorial Health Care Facility in Bolivar, Missouri: In the four-year period following implementation of a program that combined the use of assistive devices and staff education OSHA-recordable lifting-related injuries were reduced by 45 percent annually with a direct savings of \$150,000 in worker's compensation costs.
 - Kennebec Health system, August, Maine: Following the implementation of an ergonomic management program that included the use of lifting devices, the system reduced lost workdays

from 1,097 to 48, and lowered its insurance premium from \$1.6 million to \$770,293.

- Surrey Memorial Hospital, British Columbia: After implementing an ergonomics-based program with a “no lift policy,” the hospital reduced injuries by 95 percent.
- Veterans Health Administration (VHA), Florida: A financial evaluation conducted two years after the implementation of a project aimed at reducing the number of injuries to nurses and nursing associates with direct patient handling, showed an annualized savings of greater than \$200,000 per year including medical care and associated employee costs. An 18 per cent decrease in missed work days due to work-related injuries was also demonstrated (See [A Business Case for Patient Care Ergonomic Interventions, 2005](#))

Other success stories may be found in:

- [California’s Back Injury Prevention Guide](#) and
 - A two-part Resource Guide from the Veteran’s Administration (VA) in Florida, [Part A - Safe Patient Handling Movement - Chapters 1-10](#) and [Part B - Safe Patient Handling Movement - Chapter 11 and Tools](#).
- **Demonstrate the cost savings:**

The cost to healthcare employers: Back injuries are an enormous cost for healthcare employers.

Direct costs include workers’ compensation, medical treatment, and vocational rehabilitation. Estimates of the total cost of low back pain to society in 1990 were between \$50 billion and \$100 billion per year, with a significant share (about \$11 billion) borne by the workers' compensation system. ([National Occupational Research Agenda \(NORA\) Priority Research Areas: Low Back Disorders](#). April, 1996) The observed average costs per healthcare staff-related musculoskeletal injuries per 100,000 work hours are greater than \$160,000. ([A Business Case for Patient Care Ergonomic Interventions](#), 2005) Nationally, the estimated average cost per claim is \$24,000. If surgery is involved, the cost for claims increases significantly to \$40,000 per injury or higher. One recent back injury involving surgery totaled \$240,000.

The Wyandotte County Nursing Home in Upper Sandusky, Ohio, reported that staff had suffered back injuries, including a single injury that resulted in worker’s compensation costs of \$240,000. The facility acquired 18 ceiling lifts, as well as portable total lifts, a sit-to-stand lift, a lift walker, and 58 electrically adjustable beds at a cost of approximately \$150,000. Since Wyandotte implemented a policy of performing all assisted resident transfers with mechanical lifts or gait belts, back injuries from resident lifting have been eliminated. Increased efficiency has allowed staff members to spend more time with residents and caregiver’s attitudes and energy levels have reportedly improved. In addition, residents no longer complain of shoulder pain and bruises that had previously been associated with manual resident handling. (Source: OSHA draft guideline)

Indirect costs: Indirect costs, while much harder to quantify, have a significant impact on quality patient care. Many experts estimate that indirect costs are four to seven times higher than direct costs and may cause: decreased employee morale, continual employee hiring and training, use of replacement workers, overtime, medical management, incident reporting and other paperwork, the increased costs of workers' compensation insurance, and the increased costs of employee healthcare.

Many of the organizational costs of back and other musculoskeletal injuries can be quantified through use of a [cost benefit analysis](#) adapted from the VA guide.

The cost to the patient: Inadequate solutions for patient lifting and transferring also result in costs to the patient, both physical and psychological. For example, the manual lifting of patients can result in skin tears from being dragged across surfaces. Skin injury can also be caused from using pants instead of a gait belt for a handhold.

Another frequently used but dangerous manual lifting technique involves lifting a patient under the arm, in the sensitive axilla area, and then transferring them. Using this technique, often called “hook and toss,” patients are “hooked” under the arm and “tossed” to a new location. This transfer, used because of simplicity and speed of execution, is often painful for the patient. It may also result in subluxation (shoulder joint separation) or other shoulder and upper arm injuries.

There may be psychological distress to the patient as well. For example, when manual techniques are used for lifting, larger people often feel badly that a caregiver will have to lift their weight. As a result, some may not let their caregiver know that they have to use the restroom. Chronic delays in using the restroom can lead to bowel and urinary problems, such as constipation and urinary tract infection.

Many of the costs to the patient can also be measured and documented through use of the [Cost Benefit Analysis](#).

[Back to top](#)

Implement the solutions: Organizations should establish the program’s infrastructure before implementing any educational component. This includes acquiring the lifting and transferring equipment and a clear plan about when to use it. Implementation should be unique to each organization, as it depends on supplementing components already in place. Perhaps additional lifting equipment is required, policies and procedures need to be updated, or subsequent training and education need to be supplied.

Regardless of the improvements made, organizations are encouraged to include employee representation from all levels of the program to endure their needs are met and to gain valuable insight and buy-in.

Follow-through: The same measures gathered in the initial program goal development phase, should be used to determine the success of the program. It requires ongoing monitoring and evaluation and incorporation of findings into new prevention strategies. If measures are not producing the results identified in the goals according to the projected timeline, the program should be re-evaluated to determine appropriate corrective measures.

[Back to top](#)

Conclusion

Few people would disagree that back injuries and other musculoskeletal disorders are a common and serious occurrence in patient care personnel. However, many also believe it is not possible to prevent such injuries and that the cost of prevention is greater than the cost of the injuries. However, with the advent of new technology, our current regulatory landscape, the increasing cost of workers' compensation, and the nursing shortage, this mindset is beginning to change. Someday soon, it is hoped that caregivers will be taking care of other people with back injuries, and will no longer need to worry about their own.

[Back to top](#)

[Terms and Conditions](#)

© 2005 Premier, Inc. All rights reserved.