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***Ergonomics for the Prevention of  
Musculoskeletal Disorders***

***Guidelines for Nursing Homes***

## Disclaimer

OSHA's *Guidelines for Nursing Homes* provides information to help employers identify ergonomic stressors (physical demands that have been associated with certain musculoskeletal disorders) in their workplaces and implement practical measures to control such stressors. To develop these guidelines, OSHA reviewed existing ergonomic practices and programs in the nursing home industry, as well as available scientific information regarding ergonomic stressors and control methods. OSHA also conducted one-on-one meetings with major stakeholder groups to gather the best available information on the stressors that are present in typical operations and on practices, programs, and processes that have been successfully used in the nursing home industry.

The Occupational Safety and Health Act of 1970 (OSH Act) mandates that, in addition to compliance with hazard-specific standards, all employers have a general duty to provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm. These guidelines are advisory in nature and informational in content. They are not a new standard or regulation and impose no new legal requirements. An employer's failure to implement these guidelines is not a violation of the OSH Act.

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## Introduction

### Nursing Homes: A Demanding Work Environment

Despite the efforts of nursing home employers and employees in recent years, workers in nursing homes are more than twice as likely as other workers to be injured on the job. According to the Bureau of Labor Statistics, employees in nursing and personal care facilities suffer over 200,000 work-related injuries and illnesses a year (1). Many of these are serious injuries—more than half require time away from work. Workers' compensation costs for the industry now amount to nearly \$1 billion per year (10).

Hazards encountered by nursing home workers may include exposure to bloodborne pathogens and other infectious agents, unsafe walking surfaces, hazardous chemicals, and the risk of workplace violence from combative residents. Perhaps the greatest factor contributing to the high number of injuries in nursing homes, however, is the physically demanding nature of nursing home work. Manual lifting, transferring, and repositioning of residents (referred to in this document as resident lifting or resident handling) are tasks that have been associated with an increased risk of pain and injury to caregivers, particularly to the back (3). These tasks can entail high physical demands due to the large amount of weight involved, awkward postures that may result from leaning over a bed or working in a confined area, shifting of weight or unexpected loading that may occur if a resident loses balance or strength while moving, and many other factors. These activities have been reported to account for the majority of injuries, lost and restricted workdays, and workers' compensation costs in nursing homes. (2).

Nursing home residents often require assistance to walk, bathe, or perform other normal daily activities; in some cases residents are totally dependent upon caregivers for mobility. Assistance is commonly provided by nursing assistants (e.g., nurse's aides, certified nursing assistants, and other employees who perform resident-handling tasks), but nurses and other staff members may be involved as well. Considerable physical demands may also be placed on other nursing home staff. Workers who receive, store, and distribute supplies, gather and process laundry, and provide food service to residents, for example, may also be exposed to various ergonomic stressors. The ergonomic stressors that workers in nursing homes face include:

- Force - the amount of physical effort required to perform a task (such as heavy lifting) or to maintain control of equipment or tools,
- Repetition - performing the same motion or series of motions continually or frequently,
- Awkward postures - assuming positions that place stress on the body, such as reaching above shoulder height, kneeling, squatting, leaning over a bed, or twisting the torso while lifting,
- Vibration - rapid oscillation of the body or part of the body, often caused by use of powered hand tools or equipment,
- Contact stress - pressing the body or part of the body against a hard or sharp edge, such

as using the hand as a hammer.

Exposure to these stressors in the workplace can result in a variety of disorders in affected workers, including muscle strains and tears, ligament sprains, joint and tendon inflammation, pinched nerves, herniated spinal discs, and other conditions (4, 5, 6). These conditions, collectively referred to as musculoskeletal disorders (MSDs), may develop gradually over time or may result from instantaneous events such as a single heavy lift. Pain, loss of work, and disability may result (4, 6). Although these conditions may be classified as either injuries or illnesses for Occupational Safety and Health Administration (OSHA) recordkeeping purposes, they are referred to as injuries in this document.

Not all MSDs are related to work activities. Many MSDs are related to non-work activities, genetic causes, age, and other factors. MSDs may also result from accidents such as trips or falls. Finally, there is evidence that MSDs may result from certain psychosocial factors such as job dissatisfaction, monotonous work, and limited job control. However, these guidelines address only physical factors in the workplace; they do not specifically address slips, trips, falls, and other similar accidents, workplace violence, or psychosocial factors.

### **Ergonomics: An Effective Approach to Reducing the Number and Severity of Work-Related Injuries**

The number and severity of injuries resulting from physical demands in nursing homes—and associated costs—can be dramatically reduced. Ergonomics, the practice of designing equipment and work tasks to conform to the capability of the worker, provides a means for adjusting the work environment and work practices to prevent injuries before they occur.

OSHA recommends that manual lifting of residents should be minimized in all cases and eliminated when possible. Minimizing and, where possible, eliminating resident lifting is the primary goal of the ergonomics process in the nursing home setting and of these guidelines. However, the approach to controlling the hazards associated with manual handling of residents should take into account other factors such as:

- Resident rehabilitation needs,
- The need to restore functional abilities,
- Medical contraindications,
- Emergency situations, and
- Resident dignity and rights.

Addressing work-related pain and disability is one of the greatest challenges facing nursing homes today. Successfully meeting this challenge may also serve to alleviate another difficulty confronted by nursing homes—the recruitment and retention of qualified staff members. A recent national survey of nursing home employers found double-digit vacancy rates

for staff registered nurses, licensed practical nurses, and certified nurse assistants. Each of these groups also had annual turnover rates of more than 50% (7). Complaints of back pain are relatively common in nursing staff. Some evidence indicates that many trained, experienced staff members who leave their profession do so because of back pain (9).

Facilities that have implemented ergonomics-based injury prevention programs using effective engineering and work practice controls have achieved considerable success in reducing work-related injuries and workers' compensation costs. In addition, 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 programs in nursing homes. The following examples highlight some of the key aspects of successful ergonomics programs.

- Wyandot County Nursing Home in Upper Sandusky, Ohio, reported that staff had suffered back injuries, including a single injury that resulted in workers' compensation costs of \$240,000. The facility acquired 18 ceiling lifts, as well as portable total lifts, sit-to-stand lifts, a lift walker, and 58 electrically adjustable beds at a cost of approximately \$150,000. Since Wyandot 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 caregivers' 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 (12).
- At Citizens Memorial Health Care Facility in Bolivar, Missouri, concern about the number of injuries related to lifting and their economic impact led to the establishment of an ergonomics component in the existing safety and health program. The facility emphasized education and the use of assistive devices. In each of the four years after the program was established, the number of OSHA-recordable lifting-related injuries declined by at least 45% over previous levels, and the number of associated lost workdays declined by at least 55%. These reductions contributed to a direct savings of approximately \$150,000 in workers' compensation costs over a five year period (25).
- The Sisters of Charity Health System in Lewiston, Maine, established an ergonomics program including staff involvement through a number of committees and an ergonomics task force, purchase of 15 mechanical lifts, specialized ergonomics training, and provisions for medical management when injuries occur. Two years later, workers' compensation costs related to MSDs had declined by approximately 35%. The ergonomics program was also reported to have contributed to reduced turnover and absenteeism, increased efficiency and effectiveness, and improved morale among employees (92).

The nursing home industry has made substantial efforts in recent years to address work-related musculoskeletal disorders, and the results achieved by these facilities and others demonstrate that methods are available to better protect workers in nursing homes from the risk

of injury. These guidelines provide practical suggestions for employers to reduce the number and severity of workplace injuries in their facilities by identifying, evaluating, and controlling hazards using methods that have been found to be successful in the nursing home environment. The recommendations made here are based on discussions with and information from a number of sources, including trade and professional associations, labor organizations, the medical community, individual firms, published documents, OSHA records, and OSHA settlement agreements with employers. These voluntary guidelines are intended for nursing and personal care facilities only. Other employers with similar work environments, such as hospitals and home health care providers, may find the information provided useful. Care should be taken, however, to ensure that distinctive circumstances found in different work environments are taken into account in developing ergonomic solutions for specific workplaces.

These *Guidelines for Nursing Homes* provide information and recommendations to address hazards related to forceful exertions, awkward postures, and other ergonomic stressors commonly found in nursing home settings. The information presented is organized into three sections. First, management commitment and employee participation, ergonomics training, occupational health management of MSDs, and methods of evaluating an ergonomics program are discussed in a *Management Practices* section. Second, methods of identifying and evaluating ergonomic stressors are discussed in a *Worksite Analysis* section. The third section, *Control Methods*, presents methods of controlling exposure to ergonomic stressors and gives many examples of controls that can be used in nursing home settings.

## **Management Practices**

### **Importance of Management Commitment and Employee Participation**

Management commitment and employee participation form the foundation for any effective ergonomics process. Addressing ergonomics requires a sustained effort, allocation of resources and frequent follow-up that can only be achieved through management commitment. Management should attempt to tailor the ergonomics process to their specific workplace conditions and assign responsibilities to individuals throughout the organization to effectively implement the program.

Employee involvement is also critical to success. In the nursing home environment where workers must work independently, employees must “buy into” the program to achieve results. Employee participation is important to ensure that workers have input into the decisions regarding the equipment they will use. Employee input will certainly increase worker acceptance of the ergonomics process and specific control methods. In addition, many workers have learned proper body mechanics as the preferred method for resident handling. Unfortunately, even when proper body mechanics are used, employees are exposed to ergonomic stressors. Proper body mechanics are certainly needed skills in many situations but should not be relied upon for routine resident handling operations. Shifting the emphasis from proper body mechanics to minimizing or eliminating manual lifting of residents may be difficult and is best accomplished when employees are involved in the ergonomics process, including worksite analysis, selection of equipment, and program evaluation.

### **Ergonomics Training**

To adequately identify and control ergonomic stressors and minimize the severity of workplace injuries, employees should receive training. Ergonomics training should enable employees at all levels of the organization—administrators, charge nurses, nursing assistants, maintenance workers, and equipment purchasers—to further the ergonomics program. People who work in nursing homes should be able to: (1) recognize the signs and symptoms of MSDs so that they can report them early and respond to them appropriately; (2) identify those jobs or tasks that have ergonomic stressors capable of causing MSDs; and (3) know how to control ergonomic stressors. Success of the ergonomics program depends to a great extent on the effectiveness of ergonomics training.

To be effective, training should be provided to all individuals in a nursing home who are at risk of incurring MSD injuries, as well as all employees who have responsibility for implementing ergonomics policies and procedures. Nursing home employers should consider training the following employees:

- Nursing assistants and other workers exposed to MSD stressors,
- Ergonomics program administrators,

- Charge nurses, supervisors, and those involved in receiving employee reports of injuries or symptoms,
- Other healthcare providers who are on staff or otherwise work at the nursing home,
- Maintenance and purchasing personnel (persons involved in selecting and procuring equipment),
- Management and human resources personnel.

Many sources of ergonomics training materials exist. OSHA intends to offer advice and training on the guidelines it develops through the Agency's website as well as through the 12 OSHA Education Centers nationwide. In addition, a free consultation service largely funded by OSHA provides assistance to small businesses in identifying available training resources, as well as with other ergonomics-related topics. The content of the training should be targeted to each specific employee group, as illustrated by the following examples.

#### **Nursing Assistants and Other Workers Exposed to MSD Stressors**

Nursing assistants, housekeepers, dietary workers, and other employees who are exposed to ergonomic stressors should receive ergonomics awareness training that enables them to identify, control, and report problems. These employees should know how to identify MSD symptoms, ergonomic stressors, and control measures. Learning objectives for this group should include:

- The nursing home's ergonomics program and employees' role in the program,
- The signs and symptoms of MSDs,
- The procedures for reporting potential problems,
- Existing ergonomic stressors and methods of control,
- The use of engineering, administrative, and work practice controls, particularly safe resident handling techniques,
- Techniques for informing a resident about the benefits of a lift assist.

Initial ergonomics training should be provided in several short sessions or included as part of routine safety and health training. All new employees should receive this training before they begin working with residents.

Training sessions should include case studies or demonstrations based on examples from the nursing home, with ample time for questions (13). Training should be provided in a manner that all employees can understand. The training should be updated and presented to employees

as changes occur in the workplace, equipment, facilities, procedures, or policies. Employees should be able to demonstrate an understanding of the stated objectives.

### **Ergonomics Program Administrators**

Every nursing home should have an individual or a group that is responsible for implementing, promoting, and maintaining the ergonomics process (14). This individual or group should receive training on the following:

- Fundamental ergonomic principles,
- Quantitative methods for task evaluation,
- Problem-solving,
- Control alternatives, including administrative controls,
- How to implement the ergonomics program,
- Signs and symptoms of MSDs,
- MSD reporting and responsibilities.

The training should consist of lectures and learning activities, such as examples of job evaluation protocols and how to use them, brainstorming, and case studies. Ample time should be provided for employee questions. Follow-up training through conferences and courses should be provided to keep the ergonomics program administrator current on ergonomic issues and tools.

### **Charge Nurses and Supervisors**

Charge nurses and supervisors are often the first to receive reports of injuries, and thus should be able to recognize early signs and symptoms of MSDs and know the procedures for responding to them. Nursing home administrators should hold supervisors accountable for the identification of ergonomic stressors and control of ergonomic hazards in their respective areas. Supervisors' training objectives should include:

- Understanding MSD reporting procedures,
- Understanding the ergonomics program, especially how to respond to reported MSDs,
- Recognizing MSD signs and symptoms,
- Identifying ergonomic stressors and control measures.

Training should include discussion of ergonomic problems in the nursing home and possible controls. Nursing home administrators should participate in this training to show their support of the ergonomics program.

### **Other Healthcare Providers and Maintenance and Purchasing Personnel**

Similar training should be provided for on-staff health care providers and maintenance and purchasing personnel, who are in a position to identify ergonomic stressors before an injury occurs. These employees are also often involved in suggesting controls. In addition, during their work in the nursing home they may use certain ergonomic controls. Training objectives for this group of employees include:

- Understanding the nursing home's ergonomics program,
- Identifying ergonomic stressors and appropriate controls,
- Becoming familiar with the use of controls.

Training should address nursing home policy, ergonomic stressors, and available controls.

### **Management and Human Resources Personnel**

In large nursing homes and organizations with multiple facilities, management should understand ergonomics issues to demonstrate support for the ergonomics program and encourage employee participation. Human resources personnel should be aware that an ergonomics program likely will increase reporting of injuries and signs and symptoms, as well as the number of workers' compensation cases in the short term. Cases will probably be less severe, however, and the number of workers' compensation cases should ultimately decrease. Training objectives for this group include:

- Understanding the nursing home's ergonomics program and its impact on the business,
- Appreciating the importance of management leadership and support for the ergonomics program,
- Knowing how to respond properly when reports of MSD signs and symptoms or problems are received.

These objectives can be met by addressing the role of management in a successful ergonomics program and how that program relates to business objectives.

The training matrix contained in Table 1 provides a summary of the training topics for the various groups of nursing home employees. This matrix illustrates the common topics among the various groups, which suggests that some of the topics can be efficiently presented to more than one group at a time. The ergonomics program administrator will have additional responsibilities that will require a more in-depth knowledge of hazard evaluation techniques,

Table 1: RECOMMENDED TRAINING MATRIX

<b>Training Topics</b>	Ergonomics program and employees role	Signs and symptoms of MSDs	Reporting procedures for ergonomic stressors and sign/symptoms	Existing ergonomic stressors and controls	The use of different types of controls and safe resident handling	Resident interaction	Additional ergonomic specific task (problem solving, controls, task evaluation)	MSD reporting and responsibilities	Leadership, business impact
<b>Employee Groups</b>									
Nursing assistants and other exposed employees	X	X	X	X	X	X			
Ergonomics program administrator <sup>1</sup>	X	X	X	X	X	X	X	X	
Charge nurses/supervisors	X	X	X	X	X	X	X	X	
Other healthcare providers	X	X	X	X	X	X			
Maintenance, purchasing, dietary, laundry	X	X	X	X					
Management and Human resources	X	X	X	X	X	X	X	X	X

<sup>1</sup> The training for ergonomics program administrators is a detailed, intense program because of the broad range of responsibilities necessitates a more in-depth knowledge of hazard evaluation techniques and control options. The ergonomics program administrators also may serve as the trainer for other employees.

control options, program implementation methods and problem solving methodologies. The ergonomics program administrators may be qualified, following their in-depth training, to train to other employee groups.

## **Occupational Health Management Of MSDs**

Even after an effective ergonomics program is implemented, work-related musculoskeletal injuries can still occur. Thus, an ergonomics program should include a process for addressing work-related injuries. Nursing home employers should develop an occupational health management process that ensures that workers receive prompt access to care for evaluation, treatment, and follow-up of MSD injuries related to workplace ergonomic stressors. Establishing such a process helps to identify problems and prevent the recurrence of MSDs.

Benefits of occupational health management include preventing injuries, minimizing time away from work, reducing severity of an injury, and decreasing associated medical costs. The following major components of occupational health management should be included in a facility's policies and procedures (13, 14, 114):

- A mechanism for employees to report MSDs and MSD signs and symptoms early,
- A procedure that allows trained health care professionals to address reports of MSDs effectively,
- Clear procedures for returning employees to work,
- Accurate recordkeeping and documentation suitable for evaluation purposes.

Employers should assign a person to be responsible for occupational health management and this person should have the proper training, authority, resources, and experience to carry it out effectively.

A system should be in place so an employee can report to the employer work-related signs or symptoms (e.g., pain, numbness) and injuries. Early reporting is essential to effective management of MSDs, allowing for timely and appropriate treatment and therefore should be encouraged (13, 14, 15). For example, at the Veterans Health Administration Hospital in Tampa, Florida, employees report MSDs or MSD signs or symptoms to their supervisors, who then refer the employees to the occupational health services. The supervisor retains a copy of the MSD report and maintains statistics for the specific unit (16). [Note: Employers should be aware of OSHA's recordkeeping rule (29 CFR 1904). Under this rule employers must record certain injuries including those related to workplace ergonomic stressors.]

In addition to establishing a good reporting system, employers should create a procedure that provides employees with prompt and appropriate assessment, treatment, and follow-up of an MSD by an appropriately trained and licensed health care professional (13, 14, 17). The health care professional should be familiar with the nursing home facility and the employee's job duties and hazards, work history, and personal factors that may contribute to the problem (15, 17).

Often such health care professionals can help identify any work-related factors that may contribute to a reported injury.

The health care professional, in consultation with the employer and the employee, should prepare return-to-work procedures that ensure that assigned restricted duties do not further injure the employee. When making recommendations to return an employee to work, the health care professional should first determine that the employee's physical capabilities match the work requirements. The employer should make sure the job assigned to the employee is appropriate considering the work restrictions. The employer and employee should follow any work restrictions designated by the health care professional.

Maintaining documentation of injury reports related to ergonomic stressors is critical to preventing their recurrence. In this process, the information in individual employees' health records should be kept confidential (8).

Information gained from work-related MSD reports can be used to make the workplace safer. An analysis of such reports can identify areas of the nursing home that need focused worksite analysis and prevention. Reports can also help determine if injury trends are emerging that should be addressed.

## **Ergonomics Program Evaluation**

To be effective, an ergonomics program should have procedures and mechanisms in place to evaluate the program's implementation and monitor its progress. These procedures should ensure that the principles outlined in these guidelines are followed and the program is accomplishing measurable goals. Evaluating a program involves more than inspecting or auditing a workplace; employers should determine whether the management system it establishes adequately addresses ergonomic stressors.

### **Leading and Trailing Indicators**

Effective evaluation requires the use of both leading and trailing indicators. Leading indicators seek to measure processes or events that can prevent injuries, and accidents from occurring.

Leading indicators measure how well an employer is following the guidelines. Leading measures can include the number and quality of worksite analyses; frequency of ergonomic interventions; extent of management commitment to reducing injuries related to ergonomic stressors; adherence to reporting mechanisms; the effectiveness of training programs; and the extent of employee involvement. Although leading indicators can often be difficult to measure, employers should recognize the benefits of leading indicators and use them when appropriate.

Trailing indicators measure historical results (e.g., number of injuries that occurred). The most commonly used trailing indicators are OSHA recordable injury rates, the total incidence rate, the lost-time incidence rate, and the workers' compensation experience modifier rate. Large worksites may find the analyses to be more useful than smaller worksites.

The manner in which these indicators are examined is at least as important as the indicators themselves. While the specific programs will vary from site to site, the basic tools used for evaluation should remain consistent. These tools include document reviews, employee interviews (including interviews of managers, supervisors, and front-line employees), employee surveys, and reviews and observations of workplace conditions.

### **Adherence to the Principles of the Ergonomic Guidelines for Nursing Homes**

The employer, with employee assistance, should periodically evaluate whether its system for identifying problems related to exposure to ergonomic stressors is functioning effectively. While trailing indicators such as injury rates provide useful information toward accomplishing this goal, the inquiry should not stop there. The employer should ensure that reports of problems are being filed, their contents evaluated, and decisions made regarding their disposition.

Once control measures are introduced as the result of worksite analysis, the employer should ensure that the controls are effective. Trailing indicators can provide useful empirical data at this stage, as can other techniques such as employee interviews. For example, after introducing a new lift at a nursing home, the employer should follow-up by talking with employees to ensure that the problem has been adequately addressed. In addition, interviews provide a mechanism for ensuring that the control is not only in place, but is being used properly. Employers should combine their worksite assessments with their evaluation of control methods to achieve the most comprehensive picture of how the program is functioning.

In examining the occupational health management program, employers should ensure that a system exists for reporting injuries related to ergonomic stressors and responding to employee medical needs. Reviewing OSHA logs or other empirical data may provide an incomplete picture of the facility's occupational health management program. Thus, employees should be interviewed, or surveyed anonymously, to ensure that they are reporting injuries and receiving follow-up care.

An effective training program should have clear goals for developing employees' ergonomic awareness. When evaluating a training program, the employer should examine the content and frequency of training sessions. Does the training curriculum reflect the needs of the facility's ergonomics program? Does the frequency of training sessions allow for prompt training of new employees and follow-up training for veteran staff? Also, the training is effective only if the material is understood and integrated into practice. Thus when conducting an evaluation, employers should observe trained employees to ensure that they are adhering to the work practices and ergonomic principles discussed in training sessions. Employers should ensure that employees follow the program through such actions as:

- Reviewing the program and training to make sure that employees are fully informed of their responsibilities,
- Evaluating the workplace culture to ensure that poor performance is not rewarded,

- Ensuring that employees have the needed tools and equipment to accomplish their jobs safely, and
- Establishing policies that address employee compliance with program procedures.

Finally, an ergonomics program that exists only on paper is unlikely to realize any health and safety benefits. Determining whether employees are accepting the program is often a difficult outcome to measure. Anonymous surveys of employees, as well as employee interviews, can be effective tools for gauging employee buy-in to the ergonomics program.

### **Evaluating Injury Data**

While it should not be the sole indicator of the effectiveness of an ergonomics program, the role of empirical data should not be understated. OSHA 300 logs can be particularly useful in this effort because they include a description of the incident, time and date of incident, unit where the incident occurred, body parts affected, and days of work lost. Incident reports or OSHA 301 forms may provide more detailed information for assessing the effectiveness of an ergonomics program. Other useful records may include reports of workers' compensation claims, accident and near-miss investigation reports, and insurance company reports.

### **Implementing and Following Up on Evaluations**

Program evaluations can be conducted by those responsible for implementing the ergonomics program, but evaluations performed by persons who are not involved in the day-to-day operation of the program are often even more valuable. These employees bring a fresh perspective to the task and can identify program weaknesses that those routinely involved in the program implementation fail to see.

The frequency of evaluations will vary by the size and complexity of the facility, but a nursing home should evaluate its ergonomics program at least every three years, and more frequently if it has reason to believe that the program is ineffective. Management should revise the program promptly in response to any identified deficiencies and communicate the results of the program evaluation and program revisions to the employees.

## Worksite Analysis

Analysis of ergonomic stressors in a job is the process of identifying where and how job requirements exceed the physical capabilities of workers. Worksite analysis is the centerpiece of any program addressing injuries in the workplace because it identifies the conditions of the job and aspects of work activities that result in increased risk to employees. Without proper analysis and assessment, any corrective actions taken may not only be ineffective, but may worsen existing hazards or introduce new hazards into the workplace.

Worksite analysis involves examining workplace conditions and individual tasks or elements of a job to distinguish factors that may result in an increased risk of injury. Information about the job and any associated problems can be obtained from a variety of sources. Once information is obtained, it can be used to identify and evaluate elements of a job that are associated with problems. Suitable options can then be selected to address any problems found.

Assessment of the worksite begins with the identification of tasks that require analysis. Job activities are candidates for analysis if reason exists to believe that they pose a risk to employees. Review of injury and illness logs, workers' compensation records, reports of problems, discussions with employees, or general observation of the workplace can all be used to identify tasks that warrant analysis.

The assessment of work tasks involves an examination of the duration, frequency, and magnitude of exposure to ergonomic stressors - force, repetition, awkward postures, vibration, and contact stress - to determine if employees are at risk of pain or injury. In many cases the relevant stressors are apparent after observation of the job and discussions with employees. In other cases, causes of pain and injury may not be readily apparent. This is because many activities involve exposure to a combination of stressors. For example, lifting a 30 pound box in front of the body from knuckle height to shoulder height (force) may not create a problem. However, if such a lift is performed frequently during the work shift (repetition), or if the worker must twist the torso while lifting the box (awkward posture), an increased risk of injury may result (19).

A variety of methods can be used to analyze exposure to ergonomic stressors. Procedures may be simple and informal, consisting of observation of the job and discussions with affected employees. A more formalized process, such as a breakdown of the tasks performed in a job, videotaping or photographing employees performing the job, employee questionnaires, checklists, or quantitative measurements may also be used. A number of protocols and checklists have been developed that can be used in performing these evaluations (16, 18, 19, 20, 21, 22, 23, 24).

The process of assessing job requirements in nursing homes is complicated by considerations that should be taken into account when examining resident handling tasks. Resident handling tasks can be variable, dynamic, and unpredictable in nature. In addition, factors such as resident safety and medical contraindications should be taken into account. As a result, different techniques are used for assessing resident handling tasks than are used for other nursing home activities.

## Assessment of Resident Handling Tasks

An analysis of any resident handling task involves an assessment of the needs and abilities of the resident involved. This assessment allows staff members to account for these characteristics in determining the safest methods for performing the task, within the context of a care plan that provides for appropriate care and services for the resident, including consideration of resident safety, dignity and other rights, and the need for maintenance or restoration of a resident's functional abilities. The resident assessment should include examination of factors such as:

- The size and weight of the resident,
- The level of assistance the resident requires,
- The ability and willingness of the resident to cooperate,
- Any medical conditions that may influence the choice of methods for transfer or repositioning.

These factors are critically important in determining appropriate control measures for resident handling tasks. The size and weight of the patient will, in some situations, determine what equipment is needed and how many caregivers are required to provide assistance. The physical and mental abilities of the resident also play an important role in selecting appropriate control methods. For example, a resident who is able and willing to partially support their own weight may be able to move from their bed to a chair using a standing assist device, while a mechanical sling lift may be more appropriate for those residents who are unable to support their own weight. Other factors related to resident condition may need to be taken into account as well. For instance, a resident who has recently undergone hip replacement surgery may require specialized equipment for assistance in order to avoid placing stress on the affected area.

A number of individuals in nursing homes can contribute to resident assessment and the determination of appropriate methods for assisting in transfer or repositioning. Staff nurses, nursing supervisors, physical therapists, physicians, and the resident or his/her representative may all be involved. Of critical importance is the involvement of employees directly responsible for resident care and assistance, as the needs and abilities of residents may vary considerably over a short period of time, and the employees responsible for providing assistance are in the best position to be aware of and accommodate such changes.

A number of protocols have been developed for systematically examining resident needs and abilities with regard to transfer and repositioning, and for recommending procedures and equipment to be used for performing tasks (13, 14, 16, 17). Figure 1 provides an example of one set of assessment criteria that has been developed. These assessment criteria can assist in planning for safe lifting, transfer, and repositioning of residents and can be useful when incorporated into the assessment process. Figures 2 through 7 show examples of algorithms that can be used as guides when planning lifting, transfer, and repositioning tasks. Algorithms can

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provide useful guidance in planning resident handling tasks, but do not substitute for professional judgment needed to assure the safety of residents and caregivers.

### FIGURE 1. Assessment Criteria and Care Plan for Safe Patient Handling and Movement

**I. Patient’s Level of Assistance:**

- Independent – Patient performs tasks safely, with or without assistive devices.
- Partial Assist – Patient requires no more help than stand-by, cueing, or coaxing, or no more than 50% physical assistance by the nurse.
- Dependent – Patient requires more than 50% assistance by nurse, or is unpredictable in the amount of assistance offered.

*An assessment should be made prior to each task if the patient has varying level of ability to assist due to medical reasons, fatigue, medications, etc. When in doubt, assume the patient cannot assist in the transfer/repositioning.*

**II. Can the patient bear weight?**

- Yes, Full
- Yes, Partial
- No

**III. Does the patient have upper extremity strength needed to support his/her weight during transfers?**

- Yes
- No

**IV. Patient’s level of cooperation and comprehension:**

- Cooperative – may need prompting; able to follow simple commands.
- Unpredictable or varies (patient whose behavior changes frequently should be considered as “unpredictable”), not cooperative, or unable to follow simple commands.

**V. Patient’s weight:** \_\_\_\_\_ **height:** \_\_\_\_\_

*The presence of the following conditions are likely to affect the transfer/repositioning process and should be considered when identifying equipment and technique needed to move the patient.*

**VI. Check applicable conditions likely to affect transfer/repositioning techniques.**

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Abdominal Surgery Wounds | <input type="checkbox"/> Hip/Knee Replacements               | <input type="checkbox"/> Postural Hypotension |
| <input type="checkbox"/> Bilateral Amputation     | <input type="checkbox"/> History of Falls                    | <input type="checkbox"/> Severe Osteoporosis  |
| <input type="checkbox"/> Colostomy                | <input type="checkbox"/> Paralysis                           | <input type="checkbox"/> Splints/Traction     |
| <input type="checkbox"/> Contractures/Spasms      | <input type="checkbox"/> Presence of Tubes (IV, chest, etc.) | <input type="checkbox"/> Unstable Spine       |
| <input type="checkbox"/> Fractures                | <input type="checkbox"/> Pressure Ulcers                     | <input type="checkbox"/> Other                |

Comments : \_\_\_\_\_

VII. Care Plan	Task	Equipment/Assistive Devices	# Staff
1	Transfer To and From: Bed-to-Chair, Chair-to-Toilet, Chair-to-Chair, or Car-to-Chair		
2	Lateral Transfer to and from: Bed-to-Stretcher, Trolley.		
3	Transfer to and from: Chair-to-Stretcher, or Chair-to-Exam Table		
4	Reposition in Bed: Side-to-Side, Up in Bed		
5	Reposition in Chair: Wheelchair and Dependency Chair		

**Sling Type (circle choices):**      1) Standard      2) Amputation      3) Head Support      **Sling Size:** \_\_\_\_\_

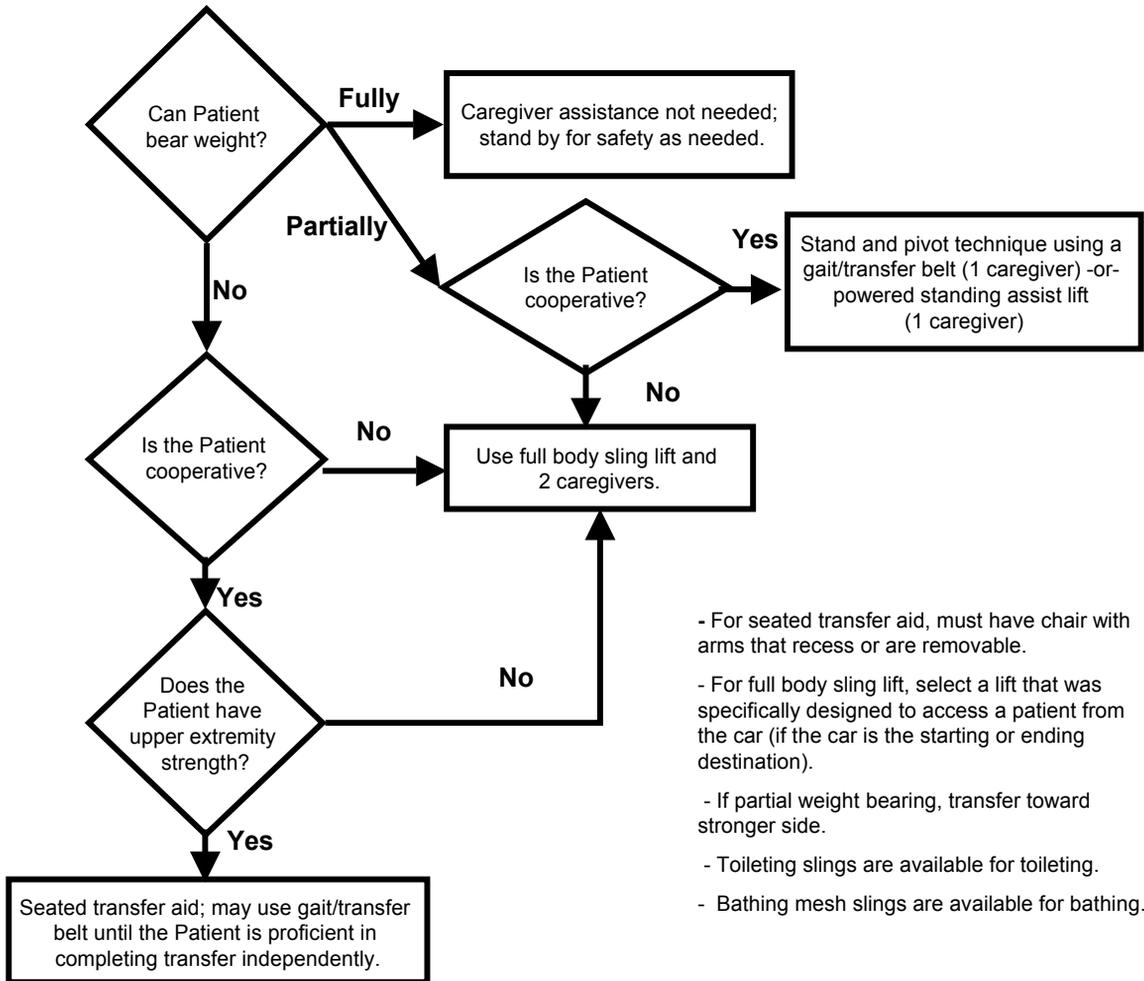
**Signature:** \_\_\_\_\_      **Date:** \_\_\_\_\_

The algorithms can be used to identify appropriate options among the measures presented in the Control Section of this document. For example, Figure 2 presents an algorithm that can be used to assess procedures and equipment for transferring a resident from a bed to a chair, a chair to the toilet, or between chairs. The algorithm indicates that when a resident cannot bear weight, and is not cooperative or does not have upper extremity strength, a full body sling lift and two caregivers should be used to perform the transfer. A ceiling-mounted lift device (shown as control method number 9) is an example of a control method appropriate for this situation. If the resident can partially bear weight and is cooperative, the algorithm indicates that either a stand and pivot technique using a gait/transfer belt or a powered standing assist lift (in each case with the assistance of one caregiver) would be appropriate. An example of an option for this situation would be control number 14, a portable powered standing assist device.

In many cases a number of control options will be available. For instance, Figure 3 presents an algorithm that can be used when performing lateral transfers between beds, stretchers or trolleys. If the resident is unable or only partially able to assist in the transfer, and the weight of the resident is less than 100 pounds, a lateral sliding aid with the assistance of two caregivers is recommended. Many alternative lateral sliding aids are available. The Control Section shows gurneys with transfer devices (control method number 1), free-standing mechanical devices (control method number 3), draw sheets (control method number 4), vinyl-covered boards and rollers (control method number 5), inflatable mattresses (control method number 6), and transfer cots with handles (control method number 7) that could be used in this situation. The employer should determine which device or devices are most appropriate to protect workers given the particular circumstances found in the workplace.

In some cases the algorithms indicate not only a choice in the particular type of control measure, but in the method used as well. For example, Figure 3 indicates several methods are appropriate for performing a transfer when a resident is unable or only partially able to assist in the transfer, and the resident weighs in excess of 200 pounds. Use of a lateral sliding aid with three caregivers, use of a friction-reducing device or lateral transfer device with two caregivers, or use of a mechanical lateral transfer device would all be considered acceptable. A range of options for each of these methods is presented in the Control Section. Again, the employer should determine which method or methods are most appropriate to protect workers given the particular circumstances found in the workplace. For instance, if staff availability precludes assigning three caregivers to assist with such a transfer, an employer may choose to adopt methods that can be performed safely with fewer staff members.

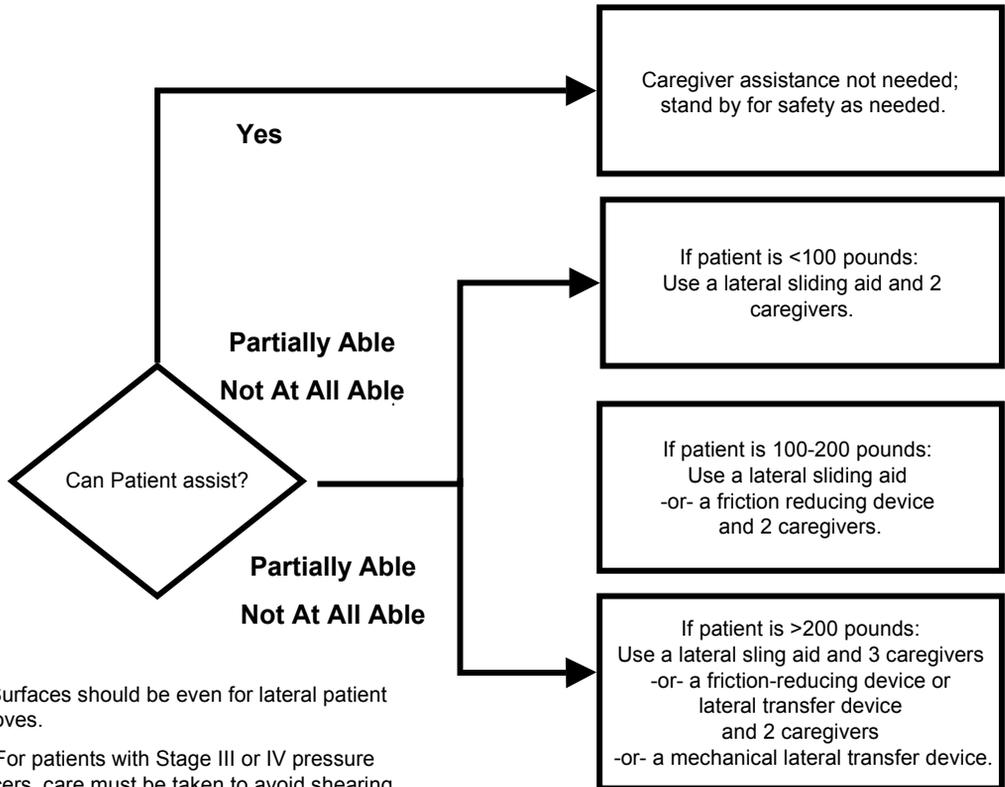
**FIGURE 2. Transfer to and from: Bed to Chair, Chair to Toilet, Chair to Chair, or Car to Chair**



- For seated transfer aid, must have chair with arms that recess or are removable.
- For full body sling lift, select a lift that was specifically designed to access a patient from the car (if the car is the starting or ending destination).
- If partial weight bearing, transfer toward stronger side.
- Toileting slings are available for toileting.
- Bathing mesh slings are available for bathing.

Source: The Patient Safety Center of Inquiry (Tampa, FL), Veterans Health Administration & Department of Defense. October 2001.

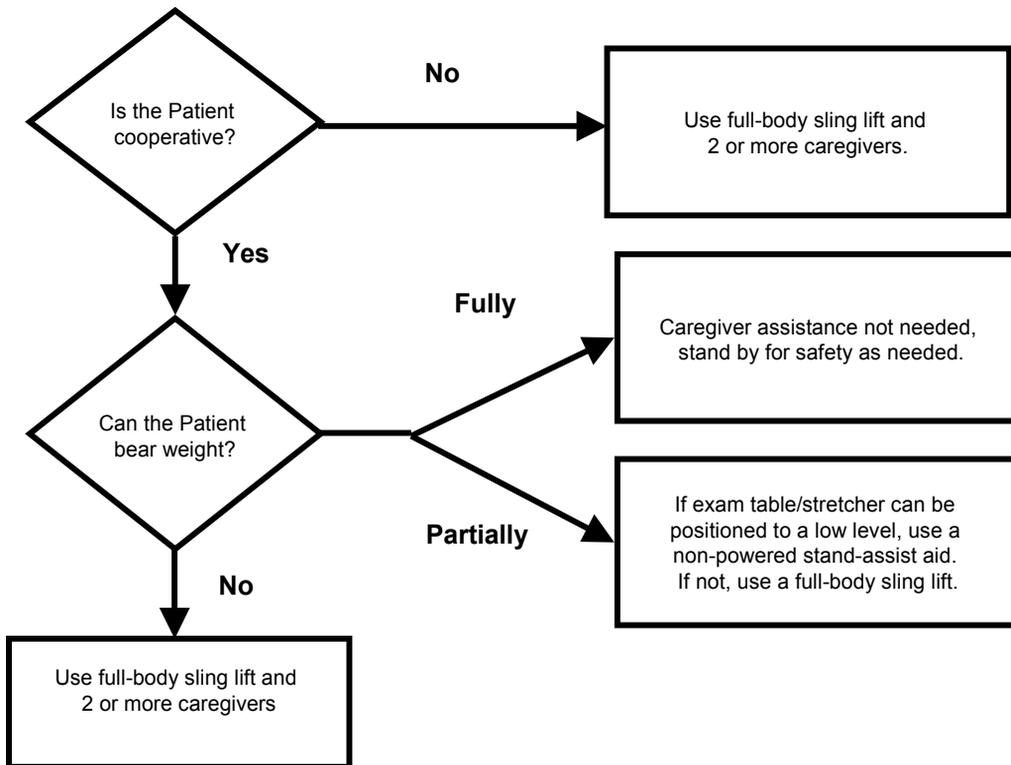
**FIGURE 3. Lateral Transfer to and from: Bed to Stretcher, Trolley**



- Surfaces should be even for lateral patient moves.

- For patients with Stage III or IV pressure ulcers, care must be taken to avoid shearing force.

**FIGURE 4. Transfer to and from: Chair to Stretcher**

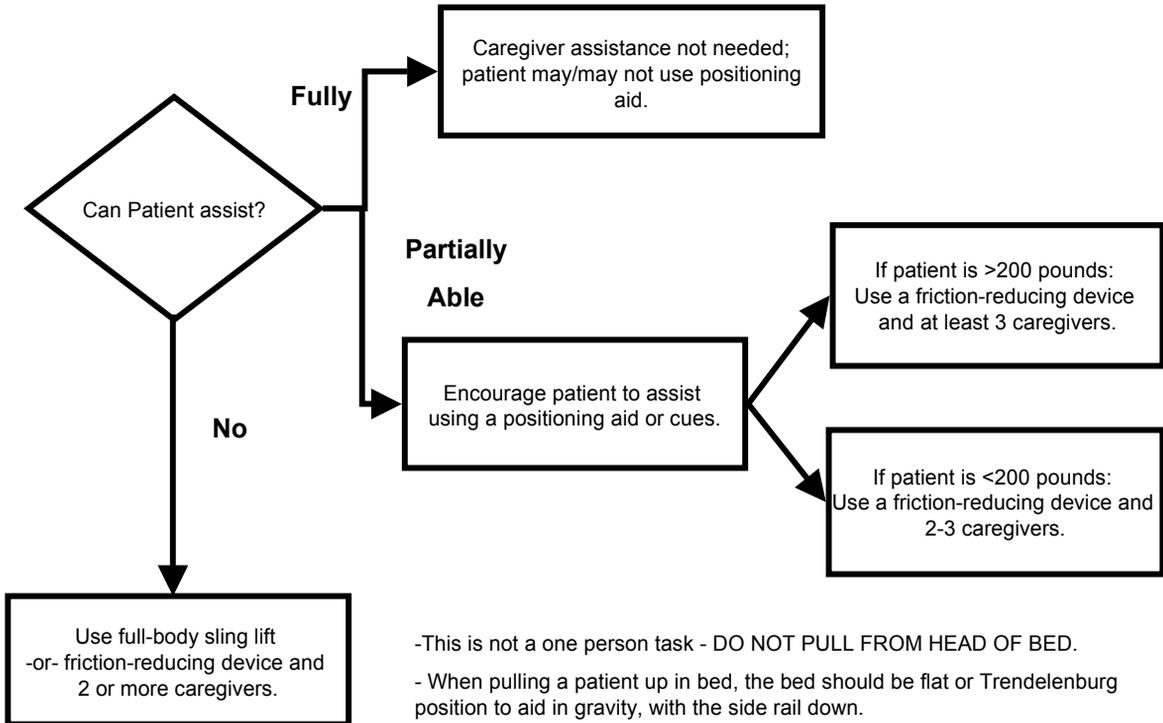


**Comments:**

- High/low exam tables and stretchers would be ideal.

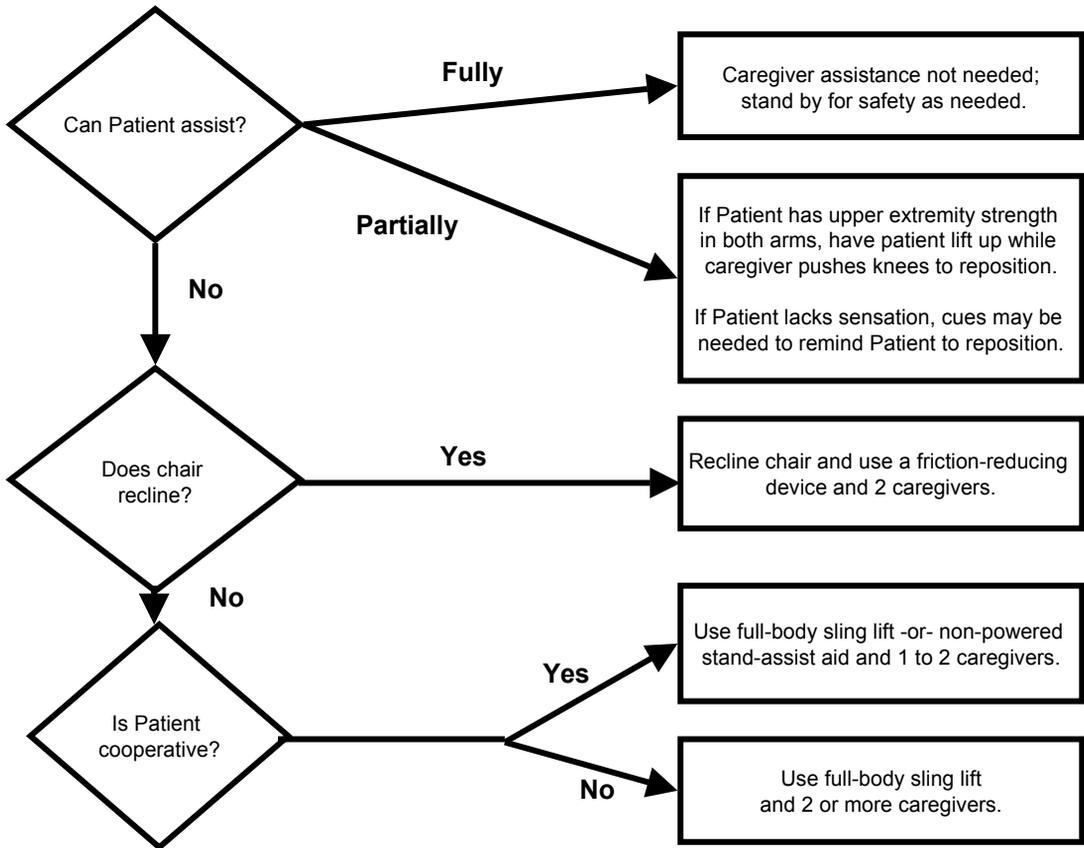
Source: The Patient Safety Center of Inquiry (Tampa, FL), Veterans Health Administration & Department of Defense. October 2001.

**FIGURE 5. Reposition in Bed: Side-to-Side, Up in Bed**



- This is not a one person task - DO NOT PULL FROM HEAD OF BED.
- When pulling a patient up in bed, the bed should be flat or Trendelenburg position to aid in gravity, with the side rail down.
- For patient with Stage III or IV pressure ulcers, care should be taken to avoid shearing force.
- The height of the bed should be appropriate for staff safety (at the elbows).
- If the patient can assist when repositioning "up in bed", ask the patient to flex the knees and push on the count of three.

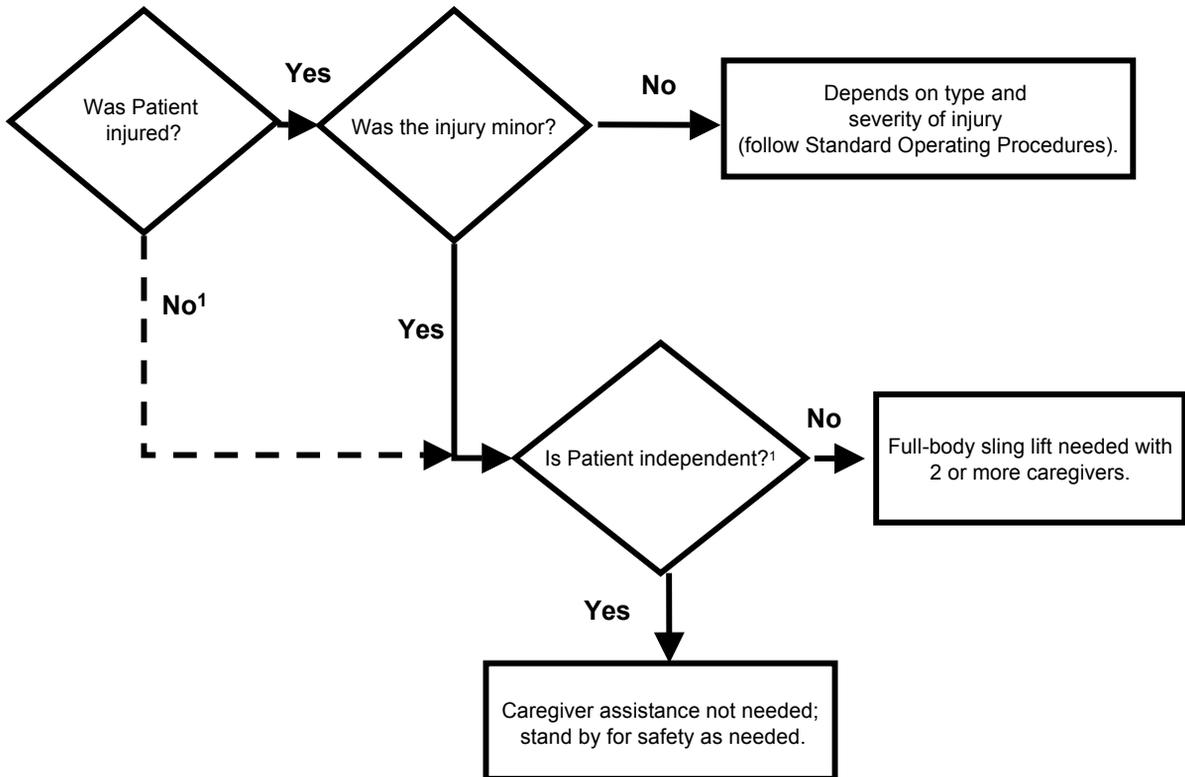
**FIGURE 6. Reposition in Chair: Wheelchair and Dependency Chair**



**Comments:**

- This is not a one person task: DO NOT PULL FROM BEHIND CHAIR.
- Take full advantage of chair functions, e.g., chair that reclines, or use of arm rest of chair to facilitate repositioning.
- Make sure the chair wheels are locked.

**FIGURE 7. Transfer a Patient Up From The Floor**



**Comments:**

- Use full-body sling that goes all the way down to the floor (most of the newer models are capable of this).

- <sup>1</sup>Modifications made with concurrence of Dr. Audrey Nelson at Veterans Administration Hospital, Tampa, Florida.

Source: The Patient Safety Center of Inquiry (Tampa, FL), Veterans Health Administration & Department of Defense. October 2001.

An assessment of resident handling activities should also take into account other considerations that may impact the task being performed. Considerations may include the presence of apparatuses such as oxygen tanks or intravenous connections, restrictions related to the environment such as limited room for equipment use in a bathroom, the availability of sufficient numbers of staff to perform assigned tasks properly, and safety concerns such as a wet floor or the potential for a chair or bed to move unexpectedly while a task is being performed. The special needs of bariatric residents may also need further examination. Assistive devices must be capable of handling the heavier weight involved, and modification of work practices may be necessary.

### **Assessment of Activities Other than Resident Handling**

Although the majority of work-related MSDs in nursing homes are associated with the manual transfer and repositioning of residents, a number of other activities may also involve increased risk to workers. The assessment process for these activities involves examination of the physical demands of work, layout and condition of the workplace or workstation, and characteristics of any objects handled. Tasks that may require assessment include:

- Cleaning rooms,
- Bending to make a bed or feed a resident,
- Lifting food trays above shoulder level or below knee level,
- Waste collection,
- Pushing heavy carts,
- Bending to remove items from a deep cart,
- Lifting and carrying when receiving and stocking supplies,
- Bending and manually cranking an adjustable bed,
- Removing laundry from washing machines and dryers.

The assessment includes an evaluation of the duration, frequency, and magnitude of exposure to ergonomic stressors, as discussed at the beginning of this section. In the vast majority of cases, job assessments can be accomplished by observing employees performing the task, and by discussing with employees the activities and conditions that they associate with difficulties. Observation provides general information about the workstation layout, tools, equipment, and general environmental conditions in the workplace. Discussing tasks with employees helps to ensure that a complete picture of the process is obtained. Employees who perform a given task are also often the best sources for identifying the cause of a problem, and developing the most practical and effective solutions. Once information is obtained and problems identified, suitable improvements can be implemented.

## Control Methods

This section on control methods for ergonomic stressors presents changes to equipment, work practices, and work methods that can reduce injury levels among staff and residents, help control costs, and make employee recruitment less difficult. The selection of appropriate controls should be based on worksite analysis described in the previous section. But other factors should also be considered. For example, what types of controls are possible for conditions in an individual facility. This decision can be based on a number of factors, including the number of residents, the current state of equipment used, the availability of caregivers, and other on-going or prospective projects that will compete for scarce resources.

The integration of ergonomic controls into the nursing home is a strategic decision that should be carefully planned and executed and that will pay long term benefits. The prudent administrator will gain staff support and commitment by sharing information and soliciting input from those affected by these decisions—other managers, the caregivers, the residents, and the residents' families. Keeping everyone informed of the possible changes and obtaining input and acceptance on the use of the controls, will smooth the transition to a safer workplace.

Forty-nine control approaches are presented in the following pages. The controls are not intended to be an exhaustive list, nor does OSHA expect that all the presented controls will be used in any given facility. The information represents a range of options available that a facility can consider using. Many of the control approaches are simple, common sense modifications to equipment or procedures that require little time or few resources to implement. Other control approaches may require more substantial efforts.

As stated earlier, OSHA recommends that manual lifting of residents should be minimized in all cases and eliminated when possible. Administrators should also be cognizant of several factors that might restrict the application of certain controls, such as residents' rehabilitation needs, the need for restoration of functional abilities, other medical contraindications, emergency conditions, and patients' dignity and rights.

Many controls are applicable to several conditions in a typical nursing home. Table 2 provides an index to the control descriptions for easy access. Each of the control descriptions begins with a title and a representative picture and includes the following information:

- **Activity** briefly describes the general work category being addressed. More than one activity may be listed here and some controls will have many activities listed.
- **Description** explains the types of equipment or handling methods used.
- **When To Use** describes the conditions under which it is appropriate to use the control.
- **Points to Remember** provides reminders about using the control, especially regarding safe and effective use.

- **References** refers to the source of the information used (see the Reference List at the end of this document).

One important consideration on the procurement of control equipment is the selection of the equipment supplier. Employers should establish a relationship with equipment suppliers. Such a relationship is critical because it facilitates obtaining training for employees in how to use equipment, modifying the equipment for special circumstances, and procuring parts and service when needed. The following questions are designed to aid in the selection of the supplier that best meets the needs of an individual nursing home.

- Availability of technical service – Is over-the-phone assistance, as well as onsite assistance, for repairs and service of the lift available?
- Availability of parts – Which parts will be in stock and available in a short time frame and how soon can they be shipped to your location?
- Storage ability of the mechanical lift – Is it too big for your facility? Can it be stored in close proximity to the area(s) where it is used?
- If needed, is a charging unit and back up battery included?
- What is the simplicity of the charging unit and space required for a battery charger if one is needed?
- If the lift has a self-contained charging unit, what is the amount of space necessary for charging and what electrical receptacles are required?
- What is the minimum charging time of a battery?
- How high is the base of the lift and will it fit under the bed and various other pieces of furniture?
- How wide is the base of the lift or is it adjustable to a wider and lockable position? How many people are required to operate the lift for lifting of a typical 200-pound person?
- Does the lift activation device (pendant) have remote capabilities?
- How many sizes and types of slings are available?
- What type of sling is available for optimum infection control?
- Is the device versatile? Can it be a sit-to-stand lift, as well as a lift device? Can it be a sit-to-stand lift and an ambulation-assist device?
- What is the speed and noise level of the device?

- Will the lift go to floor level? How high will it go?

Based on the characteristics of the resident population and the layout of the facility, employers should determine how many devices are needed and where to locate the devices so they are accessible to workers. If resident lifting equipment and controls are not accessible when they are needed, it is likely that all other aspects of the ergonomic process will be ineffective. Employers should also establish routine maintenance schedules to ensure that the equipment is in good working order.

**Table 2: Index of Control Methods**

<b>TOPICS</b>	<b>SEE THESE CONTROLS</b>
<i>Resident Handling</i>	
Transfers	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 16, 17, 18, 29
Repositioning	4, 6, 11, 19, 20, 21, 22, 23, 36
Lifting	2, 8, 9, 10, 14, 15, 27, 34, 35
Ambulation	17, 24
Activities of Daily Living	25, 26, 27, 28, 29, 30, 31, 32, 33, 37
<i>Non-Resident Handling</i>	
Dispense of Medication	38
Moving Equipment	39, 43
Dietary	40, 41, 43, 45
Housekeeping/Laundry	40, 41, 42, 43, 44, 45, 46, 47, 48, 49
Maintenance	41, 43, 44, 45

1

## Lateral Transfer

**Activity:**  
Resident Handling

**Description:**  
Gurneys with transfer devices



**When to Use:** Transferring a partial- or non-weight-bearing resident between 2 horizontal surfaces, such as a bed to a stretcher or gurney in supine position.

**Points to Remember:** Two caregivers are required to perform this type of transfer. Additional assistance may be needed depending on resident status, e.g., for heavier or non-cooperative residents. Motorized height-adjustable gurneys with built-in slide boards are preferred to those adjusted by crank mechanism to minimize physical exertion required by caregiver. Always ensure that lifting device is in good working order before use and is rated for the load weight to be transferred. Ensure wheels on equipment are locked. Ensure transfer surfaces are same level and at caregiver's waist level to avoid extended reaches and back flexion.

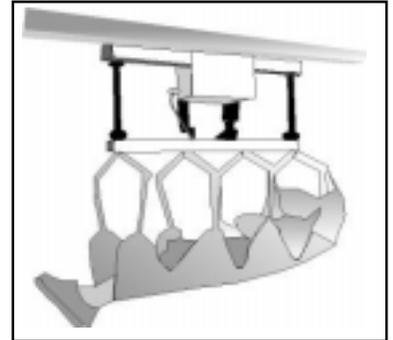
**References:** 13, 16, 39, 72

2

## Lateral Transfer

**Activity:**  
Resident Handling

**Description:**  
Ceiling-mounted device with horizontal frame system or litter



**When to Use:** Transferring residents who are totally dependent, non-weight bearing, have other physical limitations, or are very heavy and cannot be safely transferred by staff between 2 horizontal surfaces, such as a bed to a stretcher or gurney in supine position.

**Points to Remember:** Motors can be fixed or portable (lightweight). Device can be operated by hand-held control attached to unit or by infrared remote control. Always ensure lifting device is in good working order before use and is rated for the load weight to be lifted.

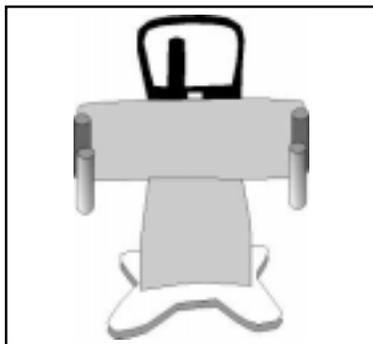
**References:** 40, 47, 55, 88

3

## Lateral Transfer

**Activity:**  
Resident Handling

**Description:**  
Free-standing lateral transfer devices used *with* height-adjustable stretcher or gurney



**When to Use:** Transferring a partial- or non-weight-bearing resident between 2 horizontal surfaces, such as a bed to a stretcher or gurney in supine position.

**Points to Remember:** Two caregivers are required to perform this type of transfer. Additional assistance may be needed depending on resident status, e.g., for heavier or non-cooperative residents. Always ensure that lifting device is in good working order before use and rated for the load weight to be transferred. Ensure wheels on equipment are locked. Ensure transfer surfaces are at same level and at a height that allows caregivers to work at waist level to avoid extended reaches and back flexion.

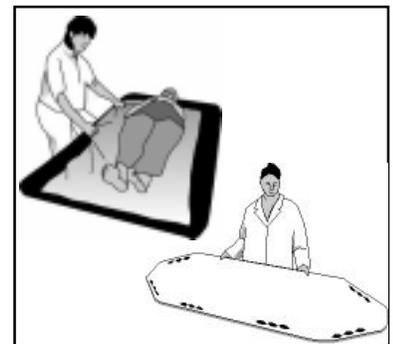
**References:** 16, 54

4

## Lateral Transfer; Repositioning

**Activity:**  
Resident Handling

**Description:**  
Draw sheet to be used in combination with friction-reducing devices such as slippery sheets, plastic bags, low friction mattress covers, or slide boards



**When To Use:** Transferring a partial- or non-weight bearing resident between 2 horizontal surfaces such as a bed to a stretcher or gurney in supine position or when repositioning resident in bed.

**Points to Remember:** Two caregivers are required to perform this type of transfer. Additional assistance may be needed depending upon resident status, e.g., for heavier or non-cooperative residents. May not be suitable for bariatric residents. Use a good hand-hold by rolling up draw sheets or use other friction-reducing devices with handles such as slippery sheets. Narrower slippery sheets with webbing handles positioned on the long edge of the sheet may be easier to use than wider sheets. Look for a combination of devices that will minimize risk of skin trauma. Ensure wheels on equipment are locked. Ensure transfer surfaces are at same level and at a height that allows caregivers to work at waist level to avoid extended reaches and back flexion. Count down and synchronize the transfer motion between caregivers.

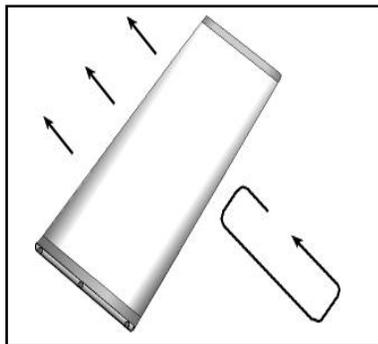
**References:** 13, 16, 27, 29, 30, 39, 56, 70, 76, 79, 89, 97, 113

5

## Lateral Transfer

**Activity:**  
Resident Handling

**Description:**  
Boards or mats with vinyl coverings and rollers



**When to Use:** Transferring a partial- or non-weight bearing resident between 2 horizontal surfaces, such as a bed to a stretcher or gurney in supine position.

**Points to Remember:** Two caregivers are required to perform this type of transfer. Additional assistance may be needed depending on resident status, e.g., for heavier or non-cooperative residents. Move resident to new surface using gentle push and pull motion. Device may not be suitable for bariatric residents. Ensure equipment wheels are locked. Ensure transfer surfaces are at same level and at a height that allows caregivers to work at waist level to avoid extended reaches and back flexion. Count down and synchronize the transfer motion between caregivers.

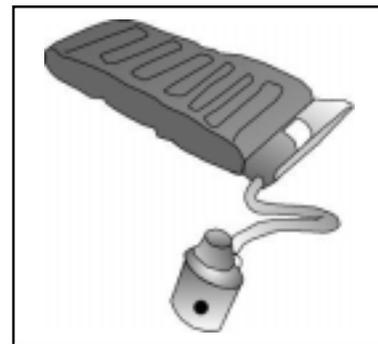
**References:** 13, 16, 90, 97

6

## Lateral Transfer; Repositioning

**Activity:**  
Resident Handling

**Description:**  
Air-assist lateral sliding aid;  
flexible mattress inflated by  
portable air supply



**When to Use:** Transferring a partial- or non-weight bearing resident between two horizontal surfaces such as a bed to stretcher or gurney in supine position. Can also be used for repositioning a resident in bed. Increases resident's comfort and reduces risk of tissue damage during transfer.

**Points to Remember:** Two caregivers are required to perform this type of transfer. Additional assistance may be needed depending on resident status, e.g., for heavier or non-cooperative residents. Ensure wheels on equipment are locked. Ensure transfer surfaces are at level and at a height that allows caregivers to work at waist level to avoid extended reaches and back flexion. Count down and synchronize the transfer motion between caregivers.

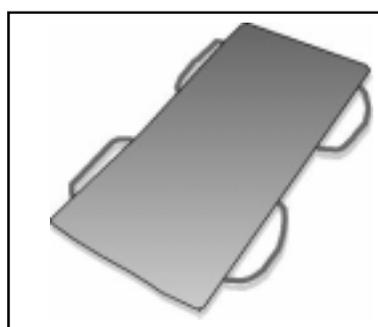
**References:** 16, 39

7

## Lateral Transfer

**Activity:**  
Resident Handling

**Description:**  
Transfer cots with handles



**When to Use:** Transferring a partial- or non-weight-bearing resident between 2 horizontal surfaces, such as a bed to a stretcher or gurney in supine position.

**Points to Remember:** Two caregivers are required to perform this type of transfer. Additional assistance may be needed depending on resident status, e.g., for heavier or non-cooperative residents. Technique may not be suitable for bariatric residents. Use in combination with friction-reducing devices such as slide boards or slippery sheets. Ensure wheels on equipment are locked. Ensure transfer surfaces are at same level and at a height that allows caregivers to work at waist level to avoid extended reaches and back flexion. Count down and synchronize the transfer motion between caregivers.

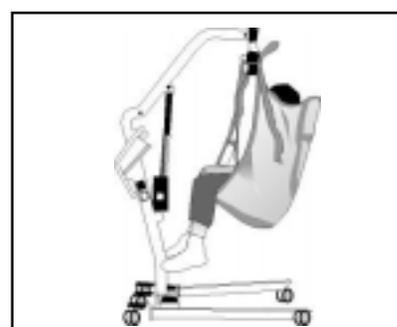
**References:** 13, 90

8

## Resident Lifting

**Activity**  
Resident Handling

**Description:**  
Portable lift device (sling  
type); can be a universal/  
hammock sling or a  
band/leg sling



**When to Use:** Lifting residents who are totally dependent, are partial- or non-weight bearing, are very heavy, or have other physical limitations. Transfers from bed to chair (wheel chair, Geri or cardiac chair), chair or floor to bed, lateral transfers, or for bathing and toileting. Enhances resident safety and comfort.

**Points to Remember:** May require 2 or more caregivers. Look for a device with a variety of slings, lift-height range, battery portability, hand-held control, emergency shut-off, manual override, and boom pressure sensitive switch. Having multiple slings allows one of them to remain in place while resident is in bed or chair for only a short period, reducing the number of times the caregiver lifts and positions resident. Ensure lifting device is in good working order before use and is rated for the load weight to be lifted. Electric/ battery powered lifts are preferred to crank or pump type devices to allow a smoother movement for the resident, and less physical exertion and risk of musculoskeletal injury to the caregiver.

**References:** 3, 13, 14, 16, 27, 29, 33, 38, 41, 43, 46, 50, 51, 52, 57, 65, 66, 69, 72, 73, 74, 75, 76, 77, 86, 90, 93, 94, 97, 98, 108, 110, 113

## Resident Lifting

**Activity:**  
Resident Handling

**Description:**  
Ceiling-mounted lift device



**When to Use:** Lifting residents who are totally dependent, are partial- or non-weight bearing, very heavy, or have other physical limitations. Transfers from bed to chair (wheel chair, Geri or cardiac chair), chair or floor to bed, or for bathing and toileting. Increases residents' safety and comfort during transfer.

**Points to Remember:** May require 2 or more caregivers. Some residents can use the device without assistance. May be quicker to use than portable device. Motors can be fixed or portable (lightweight). Device can be operated by hand-held control attached to unit or by infrared remote control. Ensure lifting device is in good working order before use and is rated for the load weight to be lifted.

**References:** 13, 16, 39, 40, 47, 51, 74, 75, 78, 85, 88, 90, 94

## Resident Lifting

**Activity:**  
Resident Handling

**Description:**  
Portable compact lifts



**When to Use:** Lifting residents who are totally dependent, partial- or non-weight bearing, or have other physical limitations. Transfers from bed to chair (wheelchair, Geri or cardiac chair), chair or floor to bed, chair to car, lateral transfers, or for bathing and toileting. Increases resident safety and comfort during transfer. Can be used where space or storage is limited.

**Points to Remember:** May require 2 or more caregivers. Look for a device with a variety of slings, lift height range, battery portability, hand-held control, emergency shut-off, manual override, and boom pressure-sensitive switch. Having multiple slings allows one of them to remain in place while resident is in bed or chair for only a short period reducing the number of times a caregiver lifts and positions the resident. Always ensure lifting device is in good working order before use and rated for the load weight to be lifted. Electric/battery powered lifts are preferred to crank or pump type devices to allow a smoother movement for the resident and less physical exertion and risk of musculoskeletal injury to the caregiver.

**References:** 13, 16, 51, 69, 76

## Lateral Transfer; Repositioning

**Activity:**  
Resident Handling

**Description:**  
Convertible wheelchair or Geri chair to stretcher



**When to Use:** For lateral transfer of residents who are partial- or non-weight bearing. Eliminates the need to perform lift transfer in and out of wheelchairs.

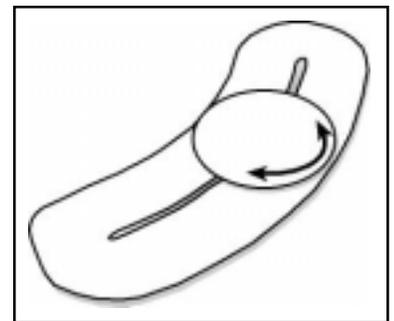
**Points to Remember:** Two caregivers are required to perform lateral transfer. Additional assistance for lateral transfer may be needed depending on residents status, e.g., for heavier or non-cooperative residents. Wheelchairs that convert to stretchers may also have a mechanical transfer aid built in for bed-to-stretcher or stretcher-to-bed type transfers. Motorized height-adjustable devices are preferred to those adjusted by crank mechanism to minimize physical exertion and risk of musculoskeletal injury to the caregiver. Always ensure device is in good working order before use and is rated for the load weight to be transferred. Ensure wheels on equipment are locked. Ensure transfer surfaces are at same level and at a height that allows caregivers to work at waist level to avoid extended reaches and back flexion.

**References:** 16, 26, 42

## Lateral Transfer in Sitting Position

**Activity:**  
Resident Handling

**Description:**  
Transfer boards – wood or plastic (some with movable seat)



**When to Use:** Transferring (sliding) residents who have good sitting balance and are cooperative from one level surface to another, e.g., bed to wheelchair, wheelchair to car seat or toilet. Can also be used by residents who require limited assistance but need additional safety and support. Movable seats increase resident comfort and reduce incidence of tissue damage during transfer.

**Points to Remember:** Ensure clothing is present between the resident's skin and the transfer device. The seat may be cushioned with a small towel for comfort. May be uncomfortable for larger residents. Usually used in conjunction with gait belts for safety depending on resident status. Ensure boards have tapered ends, rounded edges, and appropriate weight capacity. Ensure wheels on equipment are locked and transfer surfaces are at same level. Remove lower bedrails from bed and remove arms and foot rests from chairs as appropriate.

**References:** 13, 16, 57, 86, 90, 94, 97, 113

## Lateral Transfer in Sitting Position

**Activity:**  
Resident Handling

**Description:**  
Transfer slings



**When to Use:** Transferring residents who are partially dependent, cooperative, have some weight-bearing capacity, can sit up unaided and are able to bend hips, knees, and ankles. Transfers from bed to chair, or chair to chair, chair or toilet.

**Points to Remember:** Can be used by 1 or 2 caregivers with pivot or transfer disc to assist transfer as necessary. Place sling under resident's hips. Caregiver(s) *support* resident during the transfer. Use for short distance transfers only. Sling should not be used to lift residents. Position sling so as not to dig into or slip off of resident. Ensure sling is in good condition before use and resident is wearing non-slip clothing. Adjust bed so resident's feet are flat on floor. Use smooth motion by moving feet while pivoting.

**References:** 13, 90, 97

## Transfer from Sitting to Standing Position

**Activity:**  
Resident Handling

**Description:**  
Powered sit-to-stand or standing-assist devices.



**When to Use:** Lifting residents who are partially dependent, have some weight-bearing capacity, are cooperative, can sit up on the edge of the bed with or without assistance, and are able to bend hips, knees, and ankles. Transfers from bed to chair (wheel chair, Geri or cardiac chair), or chair to bed, or for bathing and toileting. Can be used for repositioning where space or storage is limited.

**Points to Remember:** Usually requires 1 caregiver. Look for a device that has a variety of sling sizes, lift-height range, battery portability, hand-held control, emergency shut-off, and manual override. Ensure lifting device is in good working order before use and is rated for the load weight to be lifted. Electric/battery powered lifts are preferred to crank or pump type devices to allow a smoother movement for the resident, and less physical exertion and risk of musculoskeletal injury to the caregiver.

**References:** 13, 16, 33, 38, 43, 46, 48, 86, 90, 94, 113

## Transfer from Sitting to Standing Position

**Activity:**  
Resident Handling

**Description:**  
Lift cushions and lift chairs



**When to Use:** Transferring residents who are weight-bearing and cooperative but need assistance when standing and ambulating. Can be used for independent residents who need an extra boost to stand. Can aid resident independence.

**Points to Remember:** Lift cushions use a lever that activates a spring action to assist residents to rise up. Lift cushions may not be appropriate for heavier residents. Lift chairs are operated via a hand-held control that tilts forward slowly, raising the resident. Residents need to have physical and cognitive capacity to be able to operate lever or controls. Always ensure device is in good working order before use and is rated for the load weight to be lifted.

**References:** 13

## Transfer from Sitting to Standing Position

**Activity:**  
Resident Handling

**Description:**  
Stand-assist devices; can be fixed to bed or chair or be free-standing



**When to Use:** Transferring residents who are weight-bearing and cooperative and can pull themselves up from sitting to standing position. Can be used for independent residents who need extra boost to stand. Can aid resident independence.

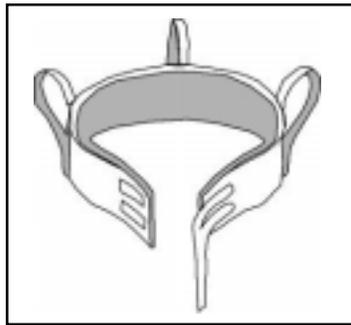
**Points to Remember:** Check that device is stable before use and is rated for resident weight to be supported. Ensure frame is firmly attached to bed, or if relies on mattress support that mattress is heavy enough to hold the frame.

**References:** 13, 16, 90, 113

## Transfer from Sitting to Standing Position; Ambulation

**Activity:**  
Resident Handling

**Description:**  
Gait belts/transfer belts with handles



**When to Use:** Transferring residents who are partially dependent, have some weight-bearing capacity, and are cooperative. Transfers such as bed to chair, chair to chair, or chair to car; when repositioning residents in chairs; supporting residents during ambulation; and in some cases when guiding and controlling falls.

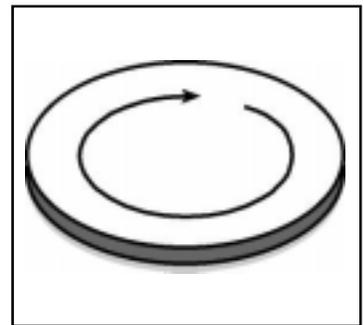
**Points to Remember:** May require 1 or 2 caregivers. Belts with padded handles are easier to grip and increase security and control. Always transfer to resident's strongest side. Use rocking and pulling motion rather than lifting when using a belt. Belts may not be suitable for ambulation of heavy or non-weight bearing residents or residents with recent abdominal or back surgery, abdominal aneurysm, etc. Should not be used for lifting residents. Ensure belt is securely fastened and cannot be easily undone by the resident during transfer (i.e., Velcro fasteners). Ensure a layer of clothing is between residents' skin and the belt to avoid abrasion. Keep resident as close as possible to caregiver during transfer. Lower bedrails, remove arms and foot rests from chairs, and other items that may obstruct the transfer.

**References:** 3, 13, 16, 27, 29, 38, 41, 52, 57, 76, 87, 90, 91, 97, 113

## Transfer from Sitting to Standing Position

**Activity:**  
Resident Handling

**Description:**  
Pivot discs or boards; some discs have a stand-assist device attached for independent residents



**When to Use:** Transferring residents who are partially dependent, have some weight-bearing capacity, and are cooperative. Transfers such as bed to chair, chair to chair, or chair to car. Helps caregivers perform transfers without twisting.

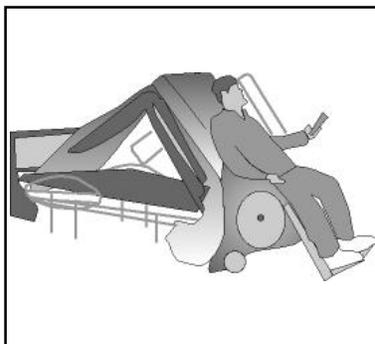
**Points to Remember:** May require 1 or 2 caregivers. The disc is placed on the floor and used to rotate the resident 90 degrees to a bed or chair. Lower bed so that resident's feet are supported on the floor before standing. Resident's feet should be in the center of the disc, not touching the outer rim. A transfer or gait belt can be used in addition to the disc. May not be appropriate for heavier residents. Ensure disc has non-slip material on either side. Ensure wheels on equipment are locked and transfer surfaces are at same level. Lower bedrails, remove arms and foot rests from chairs and other items that may obstruct the transfer.

**References:** 13, 29, 41, 90, 97

## Repositioning

**Activity:**  
Resident Handling

**Description:**  
Beds that convert to chairs



**When to Use:** Repositioning residents who are totally dependent, non-weight bearing, very heavy, or have other physical limitations. Can also be used to assist residents who are partially weight bearing from a sit-to-stand position.

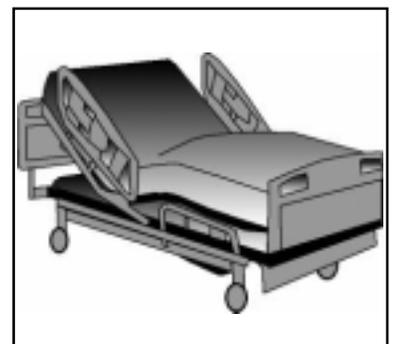
**Points to Remember:** Additional friction-reducing devices may be required to reposition resident. Heavy duty beds are available for bariatric residents. Device should have easy-to-use controls located within easy reach of the caregiver, sufficient foot clearance, and wide range of adjustment. Electric motor operation is preferred to reduce physical exertion and risk of musculoskeletal injury to caregiver and to facilitate positioning of resident.

**References:** 16, 39, 54

## Repositioning

**Activity:**  
Resident Handling

**Description:**  
Electric powered height adjustable bed



**When To Use:** For all activities involving resident care, transfer, repositioning in bed, etc., to reduce caregiver trunk flexion when interacting with resident.

**Points to Remember:** Device should have easy-to-use controls located within easy reach of the caregiver, sufficient foot clearance, and wide range of adjustment. Heavy duty beds are available for bariatric residents. Beds raised and lowered with an electric motor are preferred over crank-adjust beds which require trunk flexion, force, and repetitive motion to use.

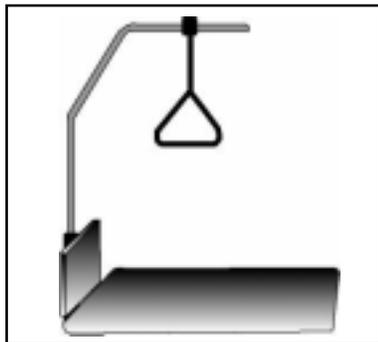
**References:** 29, 57, 67, 68, 70, 73, 79, 80, 94, 107

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## Repositioning

**Activity:**  
Resident Handling

**Description:**  
Trapeze bar



**When to Use:** Reposition residents that have the ability to assist the caregiver during the activity, i.e., residents with upper body strength and use of extremities, who are cooperative and can follow instructions.

**Points to Remember:** Residents use device by grasping bar suspended from an overhead frame to raise themselves up and reposition themselves in a bed. Heavy duty trapeze frames are available for bariatric residents. Ensure that bed wheels are locked, bedrails are lowered and bed is adjusted to caregiver's waist height to reduce back flexion.

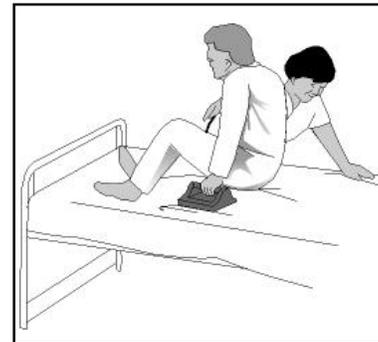
**References:** 13, 75, 90, 113

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## Repositioning

**Activity:**  
Resident Handling

**Description:**  
Hand blocks and push up bars.



**When to Use:** Repositioning residents that have the ability to assist the caregiver during the activity, i.e., residents with upper body strength and use of extremities, who are cooperative and can follow instructions.

**Points to Remember:** Blocks also enable residents to raise themselves up and reposition themselves in bed. Bars attached to the bed frame serve the same purpose. May not be suitable for heavier residents. Ensure that bed wheels are locked, bedrails are lowered, and bed is adjusted to caregiver's waist height to reduce back flexion.

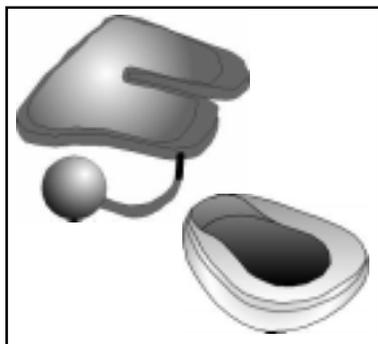
**References:** 13, 57

23

## Repositioning

**Activity:**  
Resident Handling

**Description:** Pelvic lift devices (hip lifters)



**When to Use:** To assist residents who are cooperative and can sit up with or without assistance, to position on a special bed pan. May reduce need for extra toileting.

**Points to Remember:** Device is positioned under hips and inflates like a pillow to lift hips. Use correct body mechanics, lower bedrails and adjust bed to waist height to reduce back flexion.

**References:** 13, 27

24

## Ambulation

**Activity:**  
Resident Handling

**Description:**  
Ambulation assist device



**When to Use:** For residents who are weight bearing and cooperative and who need extra security and assistance when ambulating. Increases resident safety during ambulation and reduces risk of falls.

**Points to Remember:** Usually requires one caregiver. The device supports residents as they walk and push it along during ambulation. Ensure height adjustment is correct for resident before ambulation. Ensure device is in good working order before use and rated for the load weight to be lifted. Apply brakes before positioning resident in or releasing resident from device.

**References:** 13, 16, 28

## Bathtub, Shower, and Toileting Activities

### Activity:

Resident Handling

### Description:

Height-adjustable bathtub and easy-entry bath tubs



**When to Use:** Bathing residents who sit directly in the bathtub, or to assist ambulatory residents climb more easily into a low tub, or easy-access tub. Bathing residents in portable-powered or ceiling-mounted lift device using appropriate bathing sling. Reduces risk of back and shoulder injuries to caregiver and to those who clean the tub after use. Increases resident safety and comfort.

**Points to Remember:** The tub can be raised to eliminate bending and reaching for the caregiver. Use correct body mechanics, and adjust the tub to waist height to reduce back flexion, when performing hygiene activities.

**References:** 13, 33, 94

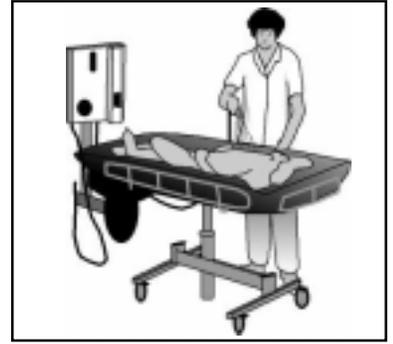
## Bathtub, Shower, and Toileting Activities

### Activity:

Resident Handling

### Description:

Height-adjustable shower gurney or lift bath cart with waterproof top



**When to Use:** For bathing non-weight bearing residents who are unable to sit up. Transfer resident to cart with lateral transfer boards or other friction-reducing devices.

**Points to Remember:** The cart can be raised to eliminate bending and reaching to the caregiver. Feet and head supports are available for resident comfort. May not be suitable for bariatric residents. Look for carts that are power-driven to reduce force required to move and position device.

**References:** 13, 29, 98

## Bathtub, Shower, and Toileting Activities

### Activity:

Resident Handling

### Description:

Built-in or fixed bath lifts



**When to Use:** Bathing residents who are partially weight bearing, have good sitting balance, can use upper extremities (have upper body strength), are cooperative, and can follow instructions. Useful in small bathrooms where space is limited.

**Points to Remember:** Ensure that seat raises so resident's feet clear tub, easily rotates, and lowers resident into water. May not be suitable for heavy residents. Always ensure lifting device is in good working order before use and rated for the load weight to be lifted. Choose device with lift mechanism that minimizes physical effort by caregiver when raising and lowering device.

**References:** 28, 90, 108, 113

## Bathtub, Shower, and Toileting Activities

### Activity:

Resident Handling

### Description:

Shower and toileting chairs



**When to Use:** Showering and toileting residents who are partially dependent, have some weight bearing capacity, can sit up unaided, and are able to bend hips, knees, and ankles.

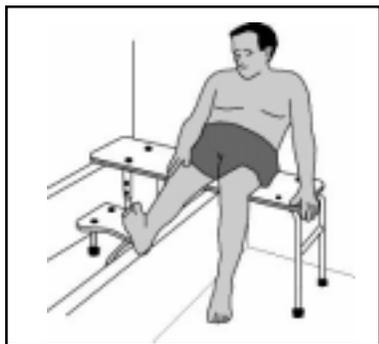
**Points to Remember:** Ensure that wheels move easily and smoothly; chair is high enough to fit over toilet; chair has removable arms, adjustable footrests, safety belts, and is heavy enough to be stable, and that the seat is comfortable, accommodates larger residents, and has a removable commode bucket for toileting. Ensure that brakes lock and hold effectively on at least two wheels and that weight capacity is sufficient for resident handling.

**References:** 13, 29, 43, 90, 108

## Bathtub, Shower, and Toileting Activities

**Activity:**  
Resident Handling

**Description:**  
Bath boards and transfer benches



**When to Use:** Bathing residents who are partially weight bearing, have good sitting balance, can use upper extremities (have upper body strength), are cooperative, and can follow instructions. Independent residents can also use these devices.

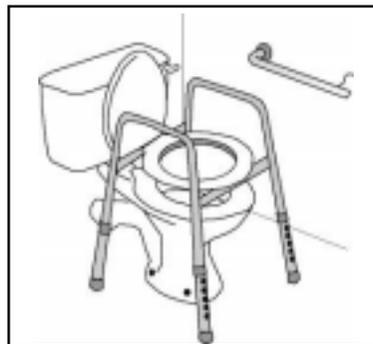
**Points to Remember:** To reduce friction and possible skin tears, use clothing or material between the resident's skin and the board. Can be used with a gait or transfer belt and/or grab bars to aid transfer. Back support and vinyl padded seats add to bathing comfort. Look for devices that allow for water drainage and have height-adjustable legs. May not be suitable for heavy residents. Ensure wheels on equipment are locked, transfer surfaces at same level, and device is securely in place and rated for load to be transferred. Remove arms and foot rests from chairs as appropriate and ensure that floor is dry.

**References:** 13, 29, 90, 108

## Bathtub, Shower, and Toileting Activities

**Activity:**  
Resident Handling

**Description:**  
Toilet seat risers



**When to Use:** For toileting partially weight-bearing residents who can sit up unaided, use upper extremities (have upper body strength), are able to bend hips, knees, and ankles, and are cooperative. Independent residents can also use these devices.

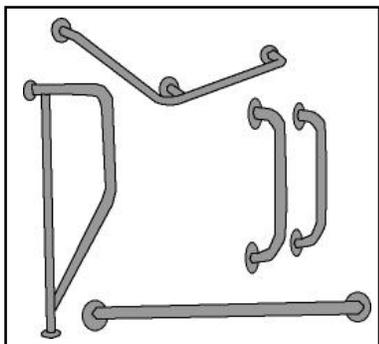
**Points to Remember:** Risers decrease the distance and amount of effort required to lower and raise residents. Grab bars and height-adjustable legs add safety and versatility to the device. Ensure device is stable and can accommodate resident's weight and size.

**References:** 13, 80, 113

## Bathtub, Shower, and Toileting Activities

**Activity:**  
Resident Handling

**Description:**  
Grab bars and stand assists; can be fixed or mobile



**When to Use:** When toileting, bathing, and/or showering residents who need extra support and security. Residents must be partially weight bearing, able to use upper extremities (have upper body strength), and be cooperative. Independent residents can also use these devices.

**Points to Remember:** Movable grab bars on toilets minimize workplace congestion. Ensure bars are securely fastened to wall before use.

**References:** 108, 113

## Bathtub, Shower, and Toileting Activities

**Activity:**  
Resident Handling

**Description:**  
Long-handled extension tools on hand-held shower heads, wash or scrub brushes



**When to Use:** When bathing or showering residents.

**Points to Remember:** These devices reduce the amount of bending, reaching, and twisting required when washing feet, legs, and trunk of residents. Residents who are independent can also use these devices to facilitate personal hygiene activities.

**References:** 13, 29, 44, 105

## Weighing

**Activity:**  
Resident Handling

**Description:**  
Scales with ramp to accommodate wheelchairs; portable-powered lift devices with built-in scales; beds with built-in scales.



**When to Use:** To reduce the need for additional transfer of partial- or non-weight-bearing or totally dependent residents to weighing device.

**Points to Remember:** Some wheelchair scales can accommodate larger wheelchairs. Built-in bed scales may increase weight of the bed and prevent it from lowering to appropriate work heights.

**References:** 13, 43, 57, 71, 94

## Guiding and Slowing Falls

**Activity:**  
Resident Handling

**Description:**  
Method for guiding and slowing falls



**When To Use:** When resident is falling.

**Points to Remember:** The use of transfer or gait belts may assist the caregiver in guiding the fall. Hold onto the belt/handles and slowly lower the resident to the floor using correct body mechanics. Reviewing resident assessments and watching for signs of weakness are effective ways of preventing falls. Keep back straight, tighten abdominal muscles, bend legs, and stay close to resident if safe to do so. Do not attempt to stop the fall abruptly as this may contribute to caregiver injury.

**References:** 13, 56, 76, 113

## Lifting from the Floor

**Activity:**  
Resident Handling

**Description:**  
Methods to lift residents from floor



**When To Use:** After a resident fall.

**Points to Remember:** Assess resident for injury prior to lifting. If resident cannot stand with minimal assistance, use a powered portable or ceiling-mounted lift device to move resident. If resident can regain standing position with minimal assistance, use gait or transfer belt with handles to aid resident. If manual assistance is required insure adequate number of caregivers are available to provide needed assistance. Use 2 or more caregivers when assisting larger residents. Keep back straight, bend legs, and stay as close to resident as possible.

**References:** 13, 16, 27, 29

## Repositioning in Chair

**Activity:**  
Resident Handling

**Description:**  
Variable position  
Geri chairs



**When to Use:** Repositioning partial- or non-weight-bearing residents who are cooperative.

**Points to Remember:** One caregiver can assist if resident has upper extremity strength in both arms. If resident cannot assist to reposition self in chair, use at least 2 caregivers and friction-reducing device. Wheels on chair add versatility. Ensure that chair is easy to adjust, move, and steer. Lock wheels on chair before repositioning. Remove trays, foot rests, and seat belts where appropriate. Ensure device is rated for the resident weight.

**References:** 16, 31, 94

## Various Activities of Daily Living and Bedside Assistance

### Activity Description:

Various Activities of Daily Living

### Description:

Work practices for feeding, dressing, and grooming



**When to Use:** During feeding, dressing, personal hygiene tasks, vital sign assessment, and other bedside assistance.

*Bedside Assistance:* Lower bed rails, position resident as close to edge as safely possible. Sit or stand as close as possible to resident's side and face resident. Adjust tables and electric beds to a height to allow caregivers to work at waist level and place supplies close by to avoid back flexion and twisting. Gather supplies in advance and place them on a table that is positioned perpendicular to the resident. Avoid reaching across resident; rather, walk to other side. Carry objects close to the body. Provide adaptive equipment for resident use when appropriate to increase independence and reduce assistance from caregiver.

*Feeding:* Cut food before placing in front of resident.

*Dressing and grooming:* Ensure that resident's feet are flat on the floor or a stool for balance when sitting. Place weaker limb in pant or sleeve first. Use appropriate adaptive equipment for dressing, grooming and oral hygiene.

**References:** 56, 99, 100, 101, 102, 103, 104

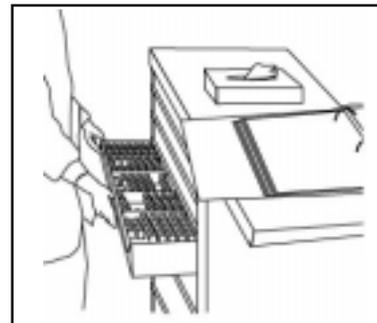
## Activities of Daily Living

### Activity:

Dispensing medications

### Description:

Low profile medication cart and cartridge pill dispenser



**When to Use:** Dispensing medications. The cart increases accuracy and reduces time required to perform task.

*Medications cart:* Sort medications by day and time. Low profile carts with easy-open side drawers are recommended to accommodate hand height of shorter nurses.

*Cartridge dispenser:* Use cartridges with a "flip top" to store medications until dispensed rather than foil wrapped doses or small bottles. Individually wrapped medications in foil and paper may require high finger forces and a sharp object to break the seal.

**References:** 43, 56, 92, 106

## Activities of Daily Living

### Activity:

Transporting Equipment

### Description:

Work methods and tools to transport equipment



**When to Use:** When transporting assistive devices and other equipment

*Oxygen tanks:* Use small cylinders with handles to reduce weight and allow for easier gripping. Secure oxygen tanks to transport device.

*Medication pumps:* Use stands on wheels.

*Transporting equipment:* Push equipment, rather than pull, when possible. Keep arms close to the body and push with whole body and not just arms. Remove unnecessary objects to minimize weight. Avoid obstacles that could cause abrupt stops. Place equipment on a rolling device if possible. Take defective equipment out of service. Perform routine maintenance on all equipment.

**References:** 16, 29, 43, 82

## Pouring Liquids

### Activity:

Dietary and Housekeeping

### Description:

Pouring containers that tilt



**When to Use:** In dietary and housekeeping areas when pouring soups or other liquid foods that are heavy, and in housekeeping areas when emptying buckets with floor drain arrangements. Reduces risk of spills and burns, speeds process, and reduces waste.

**Points To Remember:** Tilt handle or mechanism should allow the worker to reach it without bending and be positioned to assist in controlling the weight of the container and liquid. If the worker stands for more than 2 hours per day, shock-absorbing floors or insoles will minimize back and leg strain. With hot liquids, ensure a splash guard is included.

**References:** 43

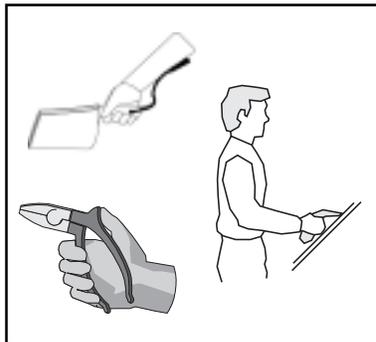
## Hand Tools

### Activity:

Dietary, Laundry,  
Housekeeping and  
Maintenance

### Description:

Select and use properly  
designed tools



**When to Use:** When selecting tools for the kitchen, housekeeping, laundry and maintenance areas. Enhances tool safety, speeds process, and reduces waste.

**Points To Remember:** Handles should fit the grip size of the user. If tool must be used with a bent wrist, purchase bent-handled tools. Minimize tool weight. Select tools that have minimal vibration or vibration damping devices. Implement a regular maintenance program for tools to keep blades sharp and edges and handles intact. Always wear the appropriate personal protective equipment.

**References:** 34

## Linen Carts

### Activity:

Laundry

### Description:

Spring loaded carts that  
automatically bring linen  
within easy reach



**When to Use:** Moving or storing linen. Speeds process for handling linen, and reduces wear on linen due to excessive pulling.

**Points to Remember:** Select a spring tension that is appropriate for the weight of the load. Carts should have wheel locks and height-appropriate handles that can swing out of the way. Heavy carts should have brakes.

**References:** 14, 35, 43, 56, 59, 64, 79, 92, 94

## Storage and Transfer of Food and Supplies

### Activity:

Dietary, Laundry, House-  
keeping and Maintenance

### Description:

Use of carts



**When to Use:** When moving food trays, cleaning supplies, equipment, and maintenance tools. Speeds process for accessing and storing items.

**Points to Remember:** Placement of items on the cart should keep the most frequently used and heavy items within easy reach between hip and shoulder height. Carts should have full-bearing wheels of a material designed for the floor surface in your facility. Cart handles that are vertical, with some horizontal adjustability will allow all employees to push at elbow height and shoulder width. Carts should have wheel locks. Handles that can swing out of the way may be useful. Heavy carts should have brakes. Balance loads and keep loads under cart weight restrictions. Ensure stack height does not block vision.

**References:** 15, 35, 60, 84

## Handling Bags

### Activity:

Laundry, Housekeeping,  
and Maintenance

### Description:

Equipment and practices  
for handling bags



**When to Use:** When handling laundry, trash and other bags. Reduces risk of items being dropped, and speeds process for removing and disposing of items.

**Points to Remember:** Receptacles that hold bags of laundry or trash should have side openings that keep the bags within easy reach and allow employees to slide the bag off the cart without lifting. Minimize the size and weight of bags and provide handles to decrease the strain of handling. Chutes and dumpsters should be at or below grade level. Provide automatic opening or hardware to keep doors open to eliminate twisting and awkward handling.

**References:** 11, 26, 35, 53, 56, 62, 63

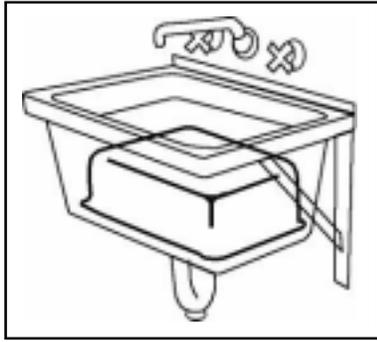
## Reaching into Sink

### Activity:

Dietary, Housekeeping, and Maintenance

### Description:

Tools used to modify a deep sink for cleaning small objects



**When to Use:** Cleaning small objects in a deep sink.

**Points to Remember:** Place an object such as a plastic basin in the bottom of the sink to raise the work surface and reduce back flexion sink bottom. An alternative is to use a smaller porous container to hold small objects for soaking, transfer to an adjacent countertop for aggressive cleaning, and then transfer back to the sink for final rinsing. Store inserts and containers in a convenient location to encourage consistent use.

**References:** 15, 36, 56, 109

## Loading or Unloading Laundry

### Activity:

Laundry

### Description:

Front-loaded washers and dryers



**When to Use:** When loading or unloading laundry from washers, dryers and other laundry equipment. Speeds process for retrieving and placing items, and minimizes wear-and-tear on linen.

**Points to Remember:** Washers with tumbling cycles separate clothes, making removal easier. For deep tubs, a rake with long or extendable handle can be used to pull linen closer to the door opening. Raise machines so that opening is between hip and elbow height of employees.

**References:** 15, 43, 45, 81

## Cleaning Rooms (Dry Method)

### Activity:

Housekeeping

### Description:

Work methods or tools to clean resident rooms without water and chemical products



**When to Use:** When cleaning rooms, beds, counters, walls, and furniture; sweeping and dusting floors.

*For hand tool use:* Alternate leading hand; avoid tight and static grip; and use padded non-slip handles.

*For cleaning:* Raise beds to waist level; use knee pads when kneeling; use tools with long handles, step stools, or ladders to avoid overhead reaching; alternate tasks frequently; and use carts to transport cleaning supplies.

*Sweeping and dusting:* Use flat head duster or "doodle bugs" and push with leading edge; avoid lifting leading edge of duster; sweep all areas into one pile for pick up; and vacuum if possible.

**References:** 11, 26, 37, 50, 56, 60, 61, 63, 83

## Cleaning Rooms (Wet Method)

### Activity:

Housekeeping

### Description:

Work methods and tools to clean resident rooms with water and chemical products



**When to Use:** When cleaning with water and chemical products; mopping; and using spray bottles.

*For hand tool use:* Alternate leading hand; avoid tight, static grip and use padded non-slip handles.

*For all cleaning:* Use chemical cleaners and abrasive sponges to minimize scrubbing force. Use kneepads when kneeling. Avoid bending and twisting. Use extension handles, step stools, or ladders for overhead needs. Use carts to transport supplies. Carry only small quantities and weights of supplies. Maintain all equipment regularly. Ventilation of rooms may be necessary when chemicals are used.

*Mopping:* Alternate mopping styles frequently (e.g. push/pull, figure 8 and rocking side to side). Use rubber-soled shoes in wet areas to prevent slipping. Wheeled buckets should have functional brakes. Use dry mop vs. wet mop to minimize back strain.

*Cleaning wheelchairs:* Push wheelchair up a ramped platform to perform work at waist height.

*Spray bottles:* Use trigger handles long enough for the index and middle fingers. Avoid using the ring and little fingers.

**References:** 11, 26, 37, 60, 61, 63, 83, 111, 112

## Cleaning Rooms (Electrical)

**Activity:**

Housekeeping

**Description:**

Work methods and tools to vacuum and buff floors



**When to Use:** Vacuuming and buffing floors.

*Buffing:* Buffers should have lightweight construction, triggers long enough to accommodate at least the index and middle fingers, adjustable handle height, and easy to reach controls.

*Vacuuming:* Vacuums should have lightweight construction, adjustable handle height, and controls that are easily accessed. Avoid short strokes by walking with the machine. Alternate leading hand and avoid tight grip. Use telescoping or extension handles for areas that are high, low, or far away. Remove vacuum bag when 1/2 to 3/4 full. Vacuums and powered devices are preferred over manual devices for moderate-to-long duration use. Heavy rolling canisters should have brakes.

*Emptying trash:* limit size of container to limit weight of load; dump carts of trash into receptacle at lower level for gravity assistance; use frame vs. solid can to prevent plastic bag from sticking to inside of container; avoid tying bag to frame; and place receptacles in unobstructed and easy to reach places.

**References:** 11, 26, 56, 62, 63, 109

## ***Reference List***

1. Bureau of Labor Statistics. 2000. Number of nonfatal occupational injuries and illnesses by industry and selected case types.
2. Garg A. 1995. *Effectiveness of Ergonomics Interventions at United Health, Inc.* Preliminary Report, Industrial and Manufacturing Engineering, University of Wisconsin-Milwaukee, Milwaukee, WI.
3. Garg A. 1999. *Long-Term Effectiveness of "Zero-Lift Program" in Seven Nursing Homes and One Hospital.* U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (NIOSH), Cincinnati, OH. August. Contract No. U60/CCU512089-02.
4. National Institute for Occupational Safety and Health (NIOSH). 1997. *Musculoskeletal Disorders and Workplace Factors – A Critical Review of Epidemiologic Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity, and Low Back.* July.
5. National Research Council. 1999. *Work-Related Musculoskeletal Disorders.* National Academy of Sciences. Washington, DC: National Academy Press.
6. National Research Council and Institute of Medicine. 2001. *Musculoskeletal Disorders and the Workplace – Low Back and Upper Extremities.* National Academy of Sciences. Washington, DC: National Academy Press.
7. American Health Care Association. 2002. Results of the 2001 AHCA nursing position vacancy and turnover survey. Health Services Research and Evaluation, American Health Care Association.
8. Cohen A L, Gjessing C G, Fine L J, Bernard B P, McGlothlin J D. March 1997. *Elements of Ergonomics Programs: A Primer Based on Workplace Evaluations of Musculoskeletal Disorders.* US Department of Health and Human Services.
9. Pheasant S., Stubbs D. 1992. Back pain in nurses: Epidemiology and risk assessment. *Applied Ergonomics.* 23(4):226-232.
10. Service Employees International Union. 1997. *Caring Till It Hurts.*
11. Lawrence Livermore National Laboratory. n.d. *Custodial Cleaning Manual.*
12. Documents submitted to OSHA by Wyandot County Nursing Home.
13. Feletto M., Graze W. 1997. *A Back Injury Prevention Guide for Health Care Providers.* November. Cal/OSHA Consultation Service.
14. SEIU Education and Support Fund. 1996. *Back Facts: A Training Workbook To Prevent Back Injuries in Nursing Homes.*
15. New Zealand Department of Labor. 1993. *Back in Care: Preventing Musculoskeletal Injuries in Staff in Hospitals and Residential Care Facilities.* Occupational Safety & Health Service, Dept. of Labour, Wellington, New Zealand. ISBN0-477-03521-3.

16. Veterans Administration Hospital, Tampa, Florida. 2001. *Patient Care Ergonomic Resource Guide: Safe Patient Handling and Movement*. Patient Safety Center of Inquiry, Veterans Health Administration, and Department of Defense. November.
17. Veterans Health Administration, Patient Safety Center of Inquiry. n.d. Draft: Safe Patient Handling and Movement Policy.
18. Moore J., Garg A. 1995. The strain index: a proposed method to analyze jobs for risk of distal upper extremity disorders. *AIHA Journal* 56(5): 443-458.
19. Waters T., Putz-Anderson V., Garg A. 1994. *Applications Manuals for the Revised NIOSH Lifting Equation*. National Institute for Occupational Safety and Health. DHHS, NIOSH Publication No. 94-110. January.
20. Snook S., Ciriello V. 1991. The design of manual handling tasks: revised tables of maximum acceptable weights and forces. *Ergonomics* 34(9): 1197-1213.
21. McAtamney L., Corlett E. 1993. RULA: a survey method for the investigation of work-related upper limb disorders. *Applied Ergonomics* 24(2): 91-99.
22. Hignett S., McAtamney L. 2000. Rapid Entire Body Assessment (REBA). *Applied Ergonomics* 31: 201-205.
23. American Conference of Governmental Industrial Hygienists. 1998. 1998 Threshold Limit Values for physical agents in the work environment. In: *1998 TLVs® and BEIs® Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices*, pp. 109-131.
24. United Auto Workers-General Motors Center for Human Resources, Health and Safety Center. 1998. UAW-GM Ergonomic Risk Factor Checklist RFC2.
25. Documents submitted to OSHA by Citizens Memorial.
26. Worker's Compensation Board of British Columbia. 2002. *MSI Prevention Bulletin 4: Room Cleaning in Healthcare*.
27. National Institute for Occupational Safety and Health. 1997. *Ergonomics: Effective Workplace Practice and Programs*.
28. National Institute for Occupational Safety and Health. 1997. Health Hazard Evaluation Report, University of Cincinnati Hospital, Cincinnati, OH
29. University of California at San Diego. 1998. *UCSD Healthcare Ergonomic Guidelines*. Univ. of California San Diego Medical Center.  
<http://www-ehs.ucsd.edu/MCERGO.HTML>
30. U.S. Department of Veterans Affairs. 2001. *Veteran Health Administration: Use of Physical Restraint for Veterans at Risk of Falling*. January.
31. National Institute for Occupational Safety and Health. 1988. *Guidelines for Protecting the Safety and Health of Health Care Workers*. DHHS (NIOSH) Publication No. 88-119. U.S. Government Printing Office. September.

32. (Reserved)
33. Lincoln Lutheran Minimal Lift CQI Team. 1996. *The Minimal Lift Program for Maximum Safety*. October.
34. Worker's Compensation Board of British Columbia. n.d. Draft ergonomics regulations: ergonomics code of practice part 3. Canada.
35. Tessler J. 1999. *Backs for the Future - an Ergonomics Training Program for the SUNY Health Science Center Workforce*. Public Employees Federation AFL-CIO Health and Safety Dept. Albany, N.Y.
36. New Zealand Department of Labor. n.d. *Back in Care - Preventing Back Pain and Back Injuries in Caregivers*.
37. Glan Hafren National Health Service Trust. n.d. *Minimal Manual Handling Policy*. NHS Trust, UK.
38. Yip Y. 2001. A study of work stress, patient handling activities and the risk of low back pain among nurses in Hong Kong. *Journal of Advanced Nursing* 36(6):794-804.
39. Shepherd C. 2001. Dimensions of care—ergonomics for the hospital setting. *Occupational Health Tracker*, Summer, SYSTOC, pp.8-9.
40. Ronald L., Yassi, A., Spiegel J., Tate R., Tait D., Mozel, M. 2002. Effectiveness of installing overhead ceiling lifts: reducing musculoskeletal injuries in an extended care hospital unit. *AAOHN Journal* 50(3):120-127.
41. Chin-Cheng Pan, Andris Frelvalds. 2000. Ergonomic evaluation of a new patient handling device. In: *Proceedings of the IEA 2000/HFES 2000 Congress*. Human Factors and Ergonomics Society.
42. Fragala G. 1996. *Ergonomic Solutions for Preventing Patient Care Worker Back Injury*. Wy'East Medical, Clackamas, OR.
43. Washington Department of Labor and Industries. 2001. *Ergonomics Demonstration Project: Skilled Nursing Facility*. October. <www.lin.wa.gov>
44. Proteau R. 2000. Ergonomics in home care. In: *Proceedings of the IEA 2000/HFES 2000 Congress*, Vol. 4, p. 4-275.
45. Rollins G. 2000. Ergonomics solutions in health care. *NSC Safety and Health*, November, pp. 26-31.
46. Roth P., Ciecka J., Wood E., Taylor R. 1993. Evaluation of a unique mechanical client lift. *AAOHN Journal*. Vol. 41, No. 5:229-234.
47. Occupational Health and Safety Agency for Healthcare, British Columbia. 2000. *Evaluation of Resident Lifting System Project, St. Joseph's Hospital, Comox, BC*.

48. Washington Department of Labor and Industries. 1999. *Frequently Asked Questions About Sit-Stand Patient-Resident Devices*. May. <[www.lin.wa.gov](http://www.lin.wa.gov)>
49. Marras W., Davis K., Krikling B., Bertsche P. 1998. Low back disorder and spinal loading during patient transfer. In: *Proceedings of the Human Factors and Ergonomics Society 42<sup>nd</sup> Annual Meeting*, Vol 2, pp. 901-905.
50. Kothiyal K., Yuen T. 2000. Manual handling in nursing jobs: an ergonomic study of a patient transferring aid. In: *Proceedings of the IEA 2000/HFES 2000 Congress* Vol. 5, p. 5-610 .
51. Engkvist I., Wigaeus Hjelm E., Hagberg M. 2000. Patient transfers and the preventative effects for over exertion back injury of training and use of transfer devices among nursing personnel. In: *Proceedings of the IEA 2000/HFES 2000 Congress*, Vol. 5, pp. 5-427 – 5-429.
52. Caillard J., Iwatsubo Y. 2000. Prevention of musculoskeletal disorders among health care workers. In: *Proceedings of the IEA 2000/HFES 2000 Congress*, Vol. 5, pp. 5-781 – 5-784.
53. Washington Department of Labor and Industries. 2002. *Simple Engineering Controls Can Improve Workflow and Reduce Twisting and Bending*.
54. Hill-Rom Services, Inc. 1998. *Total Care Bed System*. Hill-Rom A HillenBrand Industry. Pub. No. CTG001 RB2.00. <[http://www.hill-rom.com/prodbins/prods/brochures/f\\_totcr\\_b01\\_brc.pdf](http://www.hill-rom.com/prodbins/prods/brochures/f_totcr_b01_brc.pdf)>
55. Guldmann. 2001. Various articles about ceiling hoists that demonstrate Guldmann's successes globally. <[www.guldmann.com](http://www.guldmann.com)>
56. Vredenburgh A. 2000. Worker related MSDs: ergonomic risk to health care workers. *Applied Ergonomics*. Chapter 17, pp. 146-155.
57. Rhodes L., Rhodes D. 2001. *Safety and Health in Nursing Homes - A Pennsylvania Perspective*. American Society of Safety Engineers.
58. (Reserved)
59. Steinbrecher S. 1994. The revised NIOSH lifting guidelines—application in a hospital—linen handling. *AAOHN Journal* 42(2) pp 62-66.
60. Louhevaara V. 2000. Cardiorespiratory strain during floor mopping with different methods. In: *Proceedings of the IEA 2000/HFES 2000 Congress*, Vol.5 pp. 518- 520.
61. Hopsu L., Toivonen R. Louhevaara, Sjogaard K. 2000. Muscular strain during floor mopping with different cleaning methods (housekeeping). In: *Proceedings of the IEA 2000/HFES 2000 Congress*, Vol.5 pp. 521- 524. HFES.
62. Loussenhop S., Krueger D., Huth, E. 2000. Musculoskeletal disorders in cleaning personnel - interventions for prevention and rehabilitation. In: *Proceedings of the IEA 2000/HFES 2000 Congress*, Vol.5 pp. 747- 750. HFES.
63. Woods V., Buckle P. 2000. Recommendations for reducing musculoskeletal health problems among cleaners. In: *Proceedings of the IEA 2000/HFES 2000 Congress*, Vol. 5, pp. 510-513. HFES.

64. Intilli H. 1999. The effects of converting wheels on housekeeping carts in a large urban hospital. *AAOHN Journal* 47(10):466-69.
65. Garg A., Wen B., Beller D., Banaag D. 1991. A biomechanical and ergonomic evaluation of patient transferring tasks: bed to wheelchair and wheelchair to bed. *Ergonomics* 34(3):289-312.
66. Yassi A., Cooper J., Tate R., Gerlach S., Muir M., Trottier J., Massey K. 2001. A randomized controlled trial to prevent patient lift and transfer injuries of health care workers. *Spine* 26(16):1739-46.
67. de Looze M., Zinzen E., Caboor D., Heyblom P., van Bree E., van Roy P., Toussaint H, Clarijs J. 1994. Effect of individually chosen bed-height adjustments on the low-back stress of nurses. *Scandinavian Journal of Work, Environment and Health* 120(6):427-34.
68. Caboor D., Verlinden M., Zinzen E., Van Roy P., Van Riel M., Clarys J. 2000. Implications of an adjustable bed height during standard nursing tasks on spinal motion, perceived exertion and muscular activity. *Ergonomics* 43(10):1771-8.
69. Retsas A., Pinikahana J. 2000. Manual handling activities and injuries among nurses: an Australian hospital study. *Journal of Advanced Nursing* 31(4):875-83
70. Owen B. 2000. Preventing injuries using an ergonomic approach. *AORN Journal* 72(6):1031-6.
71. Owen B., Garg A. 1994. Reducing back stress through an ergonomic approach: weighing a patient. *International Journal of Nursing Studies* 31(6):511-9.
72. Brophy, M., Achimore, L., Moore-Dawson J. 2001. Reducing incidence of low-back injuries reduces cost. *AIHA Journal* 62(4):508-11.
73. Tessler J. 1999. *Back Injury Prevention Strategies for the Nursing Home Manager: A Guide to an Ergonomic Approach to Back Injury Prevention in Nursing Homes*. Prepared for the Public Policy and Education Fund of New York, NYSDOL contract # C008311.
74. Kraker K., Vajdik C. 1997. Designing the environment to make bathing pleasant in nursing homes. *Journal of Gerontological Nursing* 23(5):50-1.
75. White C. 1998. How to prevent injury caused by moving and handling. *Nursing Times* 94(34):58-62.
76. Lloyd P. 1997. Moving patients. *Community Nurse* 3(8):25-6.
77. Sykes K. 1998. Sweden: preventing health workers' back injuries. *Public Health Reports* 113(6):559.
78. Holiday P., Femie G., Plowman, S. 1994. The impact of new lifting technology in long-term care. *AAOHN Vol. 42; No. 12: 582-589*.
79. Warthinton K. 2000. Watch your back. *American Journal of Nursing* 100(9):96.
80. Fern Gold M. 1994. The ergonomic workplace. Charting a course for long term care. *Provider* 2/94.

81. Pugliese G. 1993. Error-free linen handling. *Materials Management in Health Care* 2(9):36-9.
82. Griffin W. 2001. All in the timing: scheduling is key to floor care success. *Health Facilities Management*. 14(11):33-35.
83. Finestone H., Helfenstein S. 1994. Spray bottle epicondylitis: diagnosing and treating workers in pain. *Canadian Family Physician* 40:336-7.
84. Huang J., Ono y., Shibata E., Takeuchi Y., Hisanaga, N. 1988. Occupational musculoskeletal disorders in lunch centre workers. *Ergonomics* 31(1):65-75.
85. Guldmann. 2001. *Success With Ceiling Hoist in Canada*. Canadian ASSTSAS. <[www.guldmann.com](http://www.guldmann.com)>.
86. Schiff L. 2001. Lift and transfer devices—market choices. *RN* Vol. 64 No 8: 61-62.
87. Muir III T. n.d. Back injury prevention in health care requires training techniques, exercise. *Occupational Health and Safety*. Stevens Publishing.
88. Holiday P., Femi G., Plowman S. 1994. The impact of new lifting technology in long term care. *Journal* 42(12):582-589.
89. Spiegel J., Yassi A., Ronald L., Tate F., Hacking P., Colby, T. 2002. Implementing a resident lifting system in an extended care hospital: demonstrating cost-benefit. *AAOHN* Vol. 50, No. 3, pp 128-134.
90. Health Care Health and Safety Association of Ontario. 2000. *Transfers and Lifts for Caregivers*.
91. Health Care Health and Safety Association of Ontario. 2001. *Ergonomics for Health Care*. The Ergonomic Resource Guide for Organizations in Health and Community Care: ERGO. Health Care Health & Safety Association of Ontario.
92. U.S. General Accounting Office. 1997. *Worker Protection – Private Sector Ergonomics Programs Yield Positive Results*. August. GAO/HEHS-97-163.
93. Washington Department of Labor and Industries. 1999. *Frequently Asked Questions About Portable Total Body Patient-Resident Lifts*. <[www.lin.wa.gov](http://www.lin.wa.gov)>
94. Ohio Bureau of Workers' Compensation, Division of Safety and Hygiene. 2002. Draft: Extended Care Facilities Ergonomics Best Practices.
95. (Reserved)
96. (Reserved)
97. Medical Devices Agency. 1993-1997. *Disability Equipment Assessment*. Documents A3, 10, 19, and 23.
98. Medical Devices Agency. 1998/2000. *Moving and Handling: Portable bath Lifts – A comparative evaluation*. MH1, June, 1998. Also *Moving and Handling: Mobile electric hoists – An evaluation*. MH2, July 2000. Medical Devices Agency, UK.

99. Mills M. 1983. A gooseneck feeding device. *The American Journal of Occupational Therapy* 37(2):112.
100. Ahasan R., Campbell D., Salmoni A., Lewko J. 2001. HF/ergonomics of assistive technology. *Journal of Physiological Anthropology and Applied Human Science* 20(3):187-97.
101. Yates J. Whitehead G. 1986. Aids to feeding. *Nursing* 3(7):244-8
102. Shinnar S.. 1983. Use of adaptive equipment in feeding. *Journal of the American Dietetic Association* 83(3):321-2.
103. Marshall S. 1968. Bowl stabilizer. *American Journal of Occupational Therapy* 22(1):38-9
104. Weiss D., Weiss L. 1976. The sandwich holder. *American Journal of Occupational Therapy* 30(6):384.
105. Paul S., Baron T. 1988. Toileting device for patients with decreased hand function. *Archives of Physical Medicine and Rehabilitation* 69(2):142-3.
106. Huffman M., Cummins J. 1986. Providing 24-hour pharmaceutical services with mobile medication carts. *American Journal of Hospital Pharmacy* 43(6):1504-6.
107. Medical Devices Agency. 2002. *Entrapment Risk in Electric Operated Adjustable Variable Height Beds*.
108. Center for Assistive Technology. 2002. *RERC Aging—Safety in the Bathroom—Products To Assist With Bathing*. University of Buffalo. <<http://cat.buffalo.edu/rerc-aging/rerca-benches.php>>
109. *Manual Handling in the Health Industry: Support Services Identification and Solutions*.
110. Bogue B. 2001. Focus on caregiving: a look at no-manual-lift programs. *Provider* 43-5.
111. Taylor and Francis. 1988. Redesigning Tools, Workstations and Jobs. Chapter 9 in: *Cumulative Trauma Disorders: A Manual for MSDs of the Upper Limb*. Putz-Anderson V, ed., p. 107.
112. Rodgers S. 1986. Design and Selection of Containers, Hand Carts, and Hand Trucks. Chapter 21 in: *Ergonomic Design for People at Work*, Rodgers S, ed., p. 375. Volume 2. Van Nostrand Reinhold Co.
113. Occupational Health and Safety Agency for Healthcare in British Columbia. 2002. *Safe Patient and Resident Handling*.
114. Royal College of Nursing. n.d. *RCN Code of Practice for Patient Handling*.