A BACK INJURY
PREVENTION GUIDE
FOR HEALTH CARE PROVIDERS

CONSULTATION
STATE OF CALIFORNIA
CAL OSHA
DEPARTMENT OF INDUSTRIAL RELATIONS
SERVICE

NO ONE IS REQUIRED TO USE THE INFORMATION IN THIS GUIDE

The guide is based on currently available information, but the study of how to prevent back injuries is a dynamic process and new information is constantly being developed. Ask your staff for their ideas and input.

Try some of the suggestions in this book to see if they work for your organization. Cal/OSHA will periodically update the information to include the latest developments.

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ABOUT THIS GUIDE

This booklet is designed to provide general guidance for employers and employees about how to prevent back injury as a result of lifting and moving patients and residents. It may be useful in settings such as hospitals, nursing homes, assisted-living facilities, board and care homes, and during the provision of home health care. Some of the benefits of back injury prevention include decreased injuries and costs, as well as increased efficiency and employee morale. The practical suggestions in this guide are focused on orderlies, attendants, nurses, nursing assistants and others who actually lift and move patients and residents. The information was developed with the help of individuals and institutions in the health care field who have found effective ways to prevent back injuries.

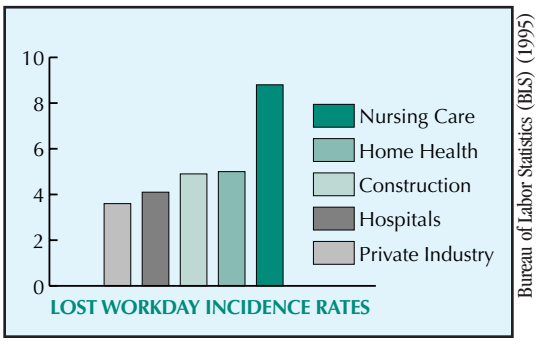
The guide discusses *how* to:

- Understand the scope of the back injury problem
- Analyze the workplace to find work activities, equipment and related factors which may contribute to the development of back injuries
- Identify and implement improvement options
- Evaluate the results

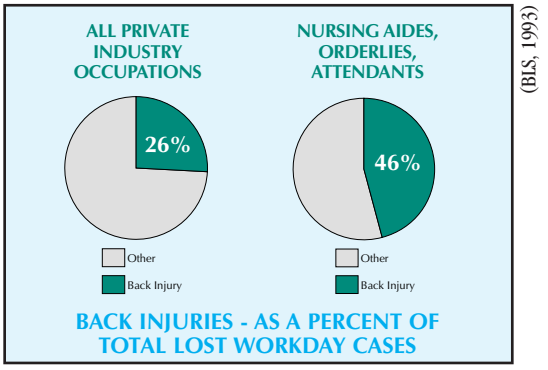
CONTENTS

DO LIFTING AND MOVING PATIENTS OR RESIDENTS LEAD TO INJURY?

The Health Care Industry is facing a big challenge. Nationally, total lost workday injury and illness incidence rates for Hospitals (4.1) are greater than those for Private Industry (3.6). The rates for Home Health Care (5.0) and Nursing and Personal Care Facilities (8.8) are



similar to or greater than more typically hazardous industries, such as Construction (4.9). (Note: Incident rates represent the number of injuries and illnesses per one hundred full-time employees.) Nursing aides, orderlies and attendants have a risk of lost workday injuries and illnesses about 3.5 times that of the average private industry worker. Their rate is similar to that for construction laborers (Reuser, Report on the American Workforce, Bureau of Labor Statistics, 1994). Other health care providers are also getting hurt often. Why are their rates high? Two words—back injuries.



Nurses and other health care providers have similar percentages. These numbers may not even tell the whole story. One study found that only one-third of nurses reported work-related back injuries. (The Magnitude of Low-Back Problems in Nursing, Owen, B., West. J. Nurs. Res., Vol. 11, pp. 234-242 (April 1989)

Health care workers are hurting their backs while lifting, transferring and otherwise moving patients or residents. The costs are enormous. The direct costs in workers' compensation, medical treatment and vocational rehabilitation are very high. In California, back injuries account for the largest proportion of incurred losses in the workers' compensation system. Claims involving back strain can cost about $4,000. The average back injury case costs $25,000. More serious cases requiring surgery can cost $85,000 (State Compensation Insurance Fund). Based on the average cost stated above, nationally, the approximately 67,000 back injuries among health care workers could total $1.7 billion in workers' compensation.

Additionally, indirect costs such as lost production, retraining and sick or administrative time can be at least four times the direct costs. An indirect cost of particular concern is the disruption of the professional integrity of services provided. Injured health care workers cannot work up to their full potential or may even leave the profession due to back injuries. Lastly, there is the toll on their personal lives.

These increasing injury costs are occurring simultaneously with a national push to reduce health care spending. This pressure to function in a more cost-conscious manner is leading to an emphasis on home health, reorganizations and downsizing. These trends, along with the traditional aspects of the health care workplace (e.g., emergency situations, long or rotating shifts, night work, a high census, or caring for large numbers of acutely ill individuals), make back injury prevention more difficult.

In spite of all of these challenges, many health care institutions have successfully prevented back injuries by using a combination of innovative approaches. There are solutions that work! A first step is to take a closer look at the types of work activities which can contribute to back injuries.

B

LIFTING AND MOVING PATIENTS AND RESIDENTS

Caring for people often necessitates lifting or helping them move. Since these work tasks involve sick or fragile human beings, they are more complicated and risky than handling materials in industrial settings. Compared to objects manually lifted or moved in industrial settings, the body is heavier, more delicate and awkward to handle. Also, the center of gravity and the distance to the patient or resident can change during the handling activity. This can suddenly put the provider in an awkward posture or position and require them to make more forceful exertions (e.g., when stopping a fall).

In addition, patients and residents can have medical, psychological or other conditions that can complicate lifting or moving them.

They may:

- *Have IV's, monitoring devices, dressings or other complicating factors*
- *Not be able to communicate well (e.g., disorientation or deafness)*
- *Be uncooperative or actively resist*
- *Have widely varied ranges of mobility*
- *Be subject to changes in condition due to fatigue or medication*

Complicating factors ▲

Lastly, health care workers must often engage in prescribed mobilizations where the goal of strengthening muscles and increasing skills means that the patients or residents are "pushed" closer to the limits of their abilities. This increases the chance for abrupt movements and falls.

Combative patient ▲

WHAT CONTRIBUTES TO BACK INJURIES ?

Lifting or moving patients or residents requires the interaction of the health care worker, the individual being moved, the equipment used and the work environment. There are a great variety of activities involved, including:

- *Manual lifting*
- *Laterally transferring between two horizontal surfaces*
- *Ambulating*
- *Repositioning in bed or chairs*
- *Manipulating extremities*
- *Transporting patients, residents and equipment*
- *Performing activities of daily living*
- *Stopping falls or transfers from the floor*
- *Assisting in surgery*

When lifting or moving patients or residents, there are a number of factors which can lead to the development or aggravation of back injuries, including:

1. *Physical demands of work*
2. *Equipment and facilities*
3. *Work practices or administrative issues*
4. *Personal factors*

THE PHYSICAL DEMANDS OF WORK

The physical demands of work generally include forceful exertions, awkward position or postures, and repetition.

Forceful Exertions

Force is the amount of physical exertion or muscular effort expended. How much force is used and how long it is sustained are important factors contributing to injuries. These are influenced by the weight and condition of patients, residents or equipment. The type of grips, body posture, and number of repetitions can also affect the amount of force required. Examples of excessive force include:

- *Lifting or transferring heavy patients*
- *Unexpected or abrupt forceful motions*
- *Stopping patient or resident falls or lifting them off the floor after a fall*

Awkward Position or Posture

Repeated bending, twisting, reaching or holding prolonged fixed positions can contribute to injuries of the neck, shoulder and back. Bending the back forward when lifting places great loads on the muscles, discs and ligaments of the lower back. One of the most damaging activities is to bend, reach out and lift, and then twist while raising the trunk. The ligaments of the back do not support twisting movements very well, especially when the back is bent forward. As pressures on the discs in the lower back increase, the center or nucleus of the disc is forced backwards. If the disc bulges or ruptures, this can damage the surrounding nerves. Examples of awkward posture are:

Bending, twisting or reaching when:

- *Attaching gait or transfer belts with handles (e.g., the bed or chair is too low or far away)*
- *Providing in-bed medical care (e.g., the bed is too low and side rails are up)*
- *Washing patient's legs and feet in a shower chair (e.g., the shower chair is too low and access is limited)*
- *Dressing or undressing patients or residents*
- *Repositioning or turning patients in bed (e.g., the side rails are up, bed is too low, and the provider reaches across patient or resident)*
- *Performing stand-pivot transfers (e.g., the wheelchair is too far from the bed and the providers twist their bodies instead of moving their feet in the direction of the transfer)*

▲ *Bent back*

Extended reach ▶

When assisting in surgery, providers:

- *Stand for long periods with a bent neck and back*
- *Hold manual retractors, patient's extremities or heavy instrument sets for prolonged periods*

Repetition

Repetition means performing the same motion over and over again. If repetitive motions are frequent or sustained, they can contribute to fatigue and injuries. The number and length of rest periods, the associated force, and unfamiliar work activities can all affect the impact of repetition on the body. For example:

- *Repeated repositioning in bed*
- *Numerous transfers to and from beds, chairs or commodes without rest breaks*

▼ *Bent back*

EQUIPMENT AND FACILITIES

Equipment Design and Maintenance Issues

Holding, pushing or handling equipment can cause forceful exertions or awkward body postures. Some of the ways equipment can cause problems include:

- *Jammed or worn wheels which make it harder to move and steer*
- *Faulty brakes which cause chairs or other equipment to shift during transfers*
- *Hard to reach controls or manual cranks on beds, chairs, or equipment. These can discourage providers from making adjustments and cause them to assume awkward postures or make forceful exertions*
- *Handles on beds, carts or other equipment which are either the wrong size or placed at an inappropriate height*
- *Missing attachable IV/Med poles which can lead to workers awkwardly pushing gurneys or wheelchairs with one hand and holding free-standing poles with the other*
- *Older mechanical lift devices (for patients or residents) which are hard to operate, uncomfortable, unstable or even dangerous*
- *High or heavy medical, food or linen carts which require bending, reaching or twisting to load or unload*

▼ *Heavy cart, handles too high, hard to see over*

▲ *Awkward, hard to crank*

▲ *Hard to push and see over*

▲ *Jammed wheel, faulty brake*

Facilities Design and Maintenance Issues

Health care workers may be forced to assume awkward postures because rooms, bathrooms, hallways, and other spaces are small in size, crowded or have obstructions. These factors may also prevent getting help from other employees or using assist equipment. Poorly maintained floors can cause slipping, tripping and abrupt movements when lifting or moving patients, residents or equipment.

▼ *High shower lip*

▼ *Crowded room*

WORK PRACTICE AND ADMINISTRATIVE ISSUES

These issues affect the equipment available to employees, the types of work tasks they perform and how these activities are accomplished. For example:

- *Lifting or moving patients or residents without help from assist equipment and devices or other employees*
- *Performing unaccustomed physical work (e.g., a new hire, returning from a long absence, or covering for absent employees)*
- *Using improper work practices (e.g., using poor body mechanics)*
- *Having ineffective equipment repair procedures (e.g., no standard repair tag) or long repair turnaround times*
- *Not storing, replacing or distributing equipment so that it is readily available*
- *Not performing systematic patient or resident assessment*
- *Purchasing of equipment where selection is limited or there is no end-user review*
- *Training that is:*
  - *a.* ***limited only to proper body mechanics (e.g., does not include use of assist equipment)***
  - *b.* ***not hands-on or reinforced on a systematic basis***
  - *c.* ***not demonstrated in a competency***

  (Note: A competency is a testing or clinical evaluation where health care providers demonstrate proficiency of the skills necessary for their particular job classification.)
- *Poorly communicating job demands and expectations*
- *Not establishing physical job demands and essential job functions*

▲*No help, bent back*

▲*Makeshift repair tag*

PERSONAL FACTORS

HOME AND RECREATIONAL ACTIVITIES

Our bodies do not stop functioning when we go home from work. Home and recreational activities involving forceful exertions or awkward postures can also lead to or aggravate back injuries. Some examples include sports and home repair work.

PHYSIOLOGICAL AND PSYCHOLOGICAL FACTORS

Physical fitness, weight, diet, exercise, personal habits and lifestyle may also affect the development of back injuries. Individuals who are not in good physical condition tend to have more injuries. Excessive body weight can place added stress on the spine and is often associated with a higher rate of back injuries. Previous trauma or certain medical conditions involving bones, joints, muscles, tendons, nerves and blood vessels (e.g., fractures, arthritis, history of disc problems or other back injuries) may predispose individuals to injuries. Psychological factors, such as stress, may influence the reporting of injuries, pain thresholds, and even the speed or degree of healing.

The following sections are for those who either will evaluate the workplace or be responsible for selecting and trying out improvement options. Let us look at some useful tools to gain insight into where potential problems in your workplace may lie.

C EVALUATING WORK ACTIVITIES

PERFORMING WORK TASK EVALUATIONS

Gathering useful information is one way to start when addressing back injuries which are brought to your attention. First, talk to the affected employees. What is the nature of the problem and which specific work tasks are associated with it? Are the problems widespread, long-standing or severe? Is there a history of similar complaints about a job classification, task, unit or floor? In the process of trying to really understand the nature of the problem, use the knowledge and expertise of individuals who can help you (e.g., nursing personnel, supervisory staff, physical therapist, employee health, union representatives, maintenance or engineering departments, etc.). Remember that you can accomplish a great deal by:

- *Involving and communicating with employees*
- *Relying on the knowledge and skills you have in-house*
- *Using the simple tools given in this section*

Besides talking to employees, you can determine the types, numbers and severity of injuries and the specific work tasks associated with them by analyzing existing written records. This analysis can help identify which work tasks are associated with specific injuries. These records may include:

- *Cal/OSHA Log 200, Employers' and Doctors' First Reports of Occupational Injury and Illness*
- *Workers' compensation claim records*
- *Medical or first aid records (while respecting confidential information)*
- *Workplace inspections, maintenance records, incident or accident reports*
- *Employee reports or complaints*

Based on the information you gather, you may decide that the problems you are hearing about are connected to work activities. If this is the case, you can take a closer look at work activities by performing a **Work Task Evaluation.** Work task evaluations are simply a structured way of looking at jobs, workstations, or equipment to identify and analyze what aspects of the work may be contributing to injuries. Work Task Evaluations can also help clue you into what solutions may work.

WORK EVALUATION TOOLS

You should have already identified where problems are occurring. Pick a few areas that you think may be the worst and can be easily addressed. Involve the employees performing the work in evaluating the problems and coming up with potential solutions. Use the following assessment tools to help you conduct your work task evaluations:

- *Patient and Resident Handling Checklist*
- *Task Analyzer*
- *Equipment Checklist*
- *Facility Design Checklist*
- *Administrative Issues Checklist*

There are instructions given for each of the tools.

TOOL 1

THE PATIENT AND RESIDENT HANDLING CHECKLIST

HOW TO USE YOUR CHECKLIST–AS EASY AS 1, 2, 3

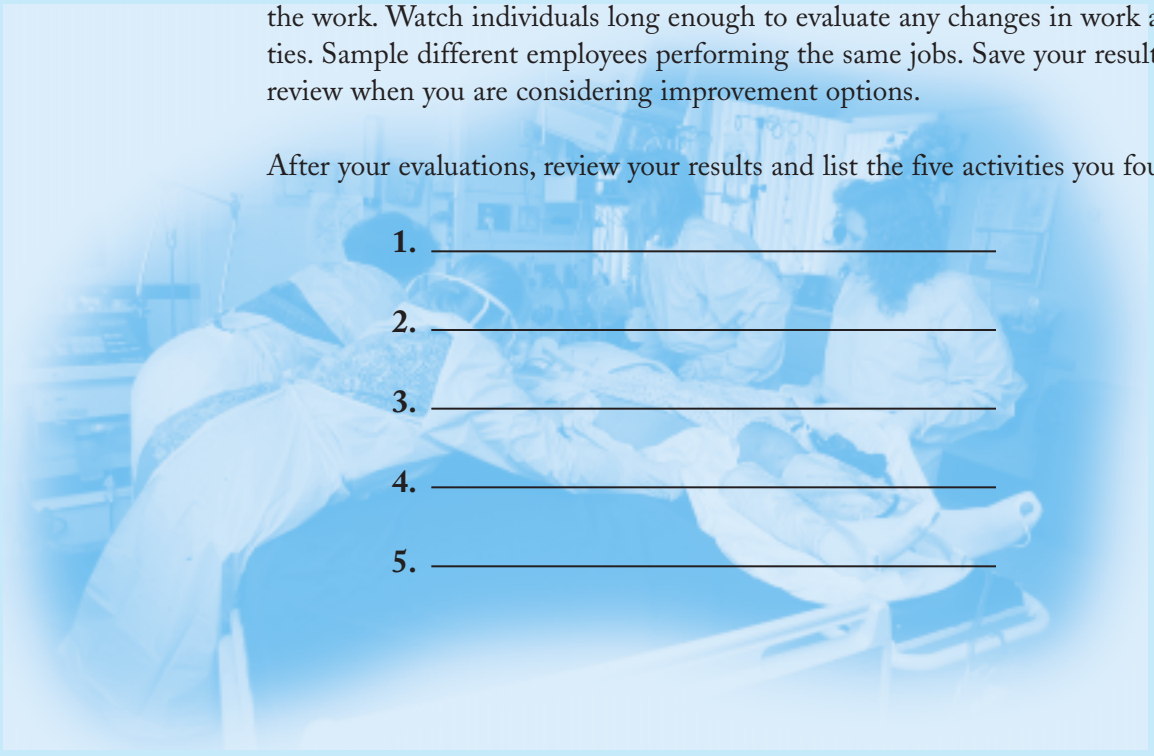
1. Select the portion of the checklist which corresponds to the type of activity being evaluated:

- *Transfers*
- *Ambulating, Repositioning, Manipulating*
- *Transporting or Moving*
- *Medically Related Activities*
- *Performing Activities of Daily Living*

2. Fill out the checklist for each type of activity you wish to evaluate. Simply place a check mark (✓) in the rows and columns. Make additional copies of the checklist when needed. Observers or employees performing the task can fill out the checklist.

3. Make sure that typical work practices and equipment are used as you evaluate the work. Watch individuals long enough to evaluate any changes in work activities. Sample different employees performing the same jobs. Save your results for review when you are considering improvement options.

After your evaluations, review your results and list the five activities you found



1. _____

2. _____

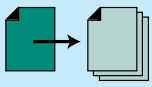
3. _____

4. _____

5. _____

TOOL 1 — PATIENT AND RESIDENT HANDLING CHECKLIST

ACTIVITIES	How often		How hard		Comments
(A) TRANSFERS (1) BED TO AND FROM:	Often	Sometimes	Hard	Easy	
Chairs (e.g., regular/cardiac/geri/wheel/shower, etc.)					
Gurneys					
Floor					
Other beds					
Walker					
Shower					
Toilet/bedside commode					
Bathtub					
Other					
(2) CHAIRS TO AND FROM:					
Chairs (e.g., regular/cardiac/geri/wheel/shower, etc.)					
Gurneys					
Floor					
Walker					
Shower					
Toilet					
Bathtub					
Other					
(B) AMBULATING, REPOSITIONING, MANIPULATING					
(1) Repositioning/Turning/Holding					
Whole body (e.g., placing epidurals)					
Extremities (e.g., exercising)					
(2) Hand-cranking beds/equipment					
(3) Assisting with ambulation					



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ACTIVITIES	How often		How hard		Comments
(C) TRANSPORTING OR MOVING	Often	Sometimes	Hard	Easy	
Beds or Gurneys					
Wheelchairs, Geri chairs, Cardiac chairs, etc.					
Room furniture					
Carts (e.g., linen, food, surgical, etc.)					
Monitors or equipment (e.g., x-ray, operating tables)					
Other					
(D) MEDICALLY RELATED ACTIVITIES					
Weighing					
Replacing oxygen tanks on gurneys					
Changing IV tubes or bags					
Wound care					
Replacing tape (e.g., endotrachial tubes)					
Manually holding retractors					
Handling surgical instrument sets (trays)					
Other (e.g., taking vitals, inserting catheter)					
(E) PERFORMING ACTIVITIES OF DAILY LIVING					
Handling food trays or feeding					
Bathing in bed or bathtub, showering					
Performing personal hygiene					
Dressing and undressing/placing and removing prostheses or braces					
Changing diapers					
Making beds with patients/residents in them					
Replacing draw sheets or incontinence pads					
Toileting					
Other					

EVALUATOR: LOCATION: DATE:

TOOL 2

THE WORK TASK ANALYZER

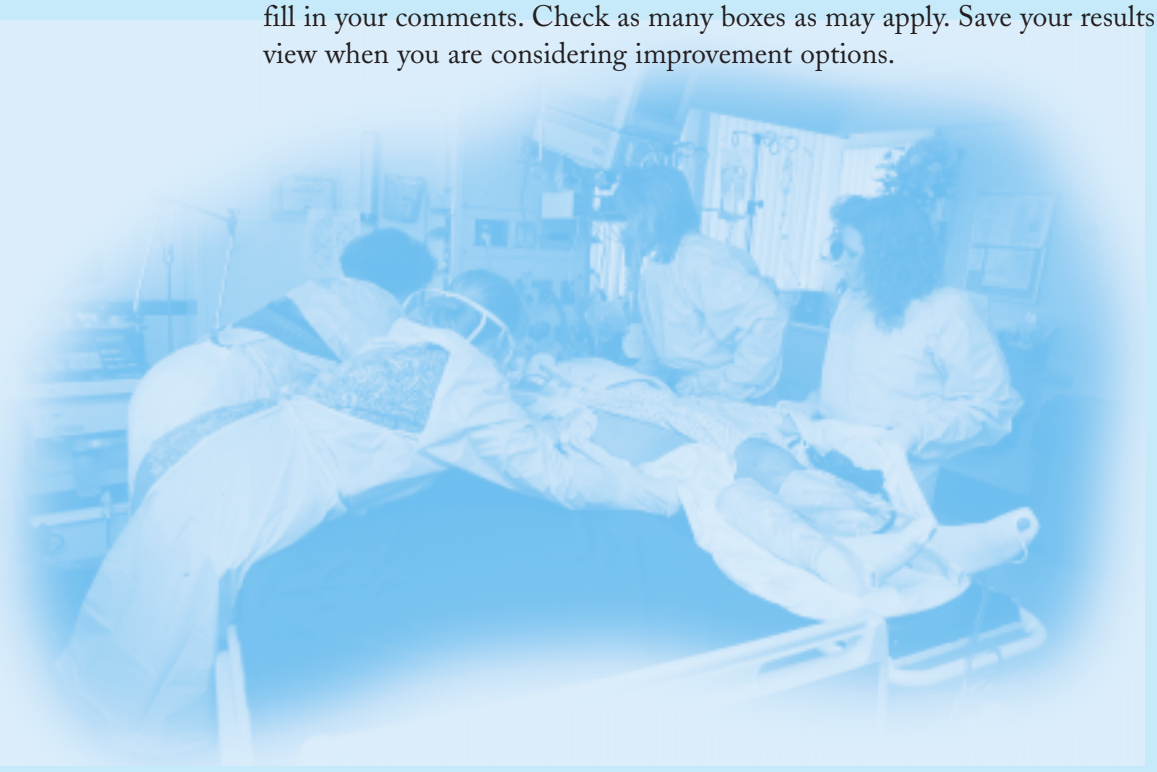
HOW TO USE YOUR TASK ANALYZER

1. The purpose of Tool 2 is to evaluate in more detail the work tasks you have already analyzed with Tool 1—the Patient and Resident Handling Checklist. You may want to do this if the problem is especially complicated, severe or widespread. A more in-depth analysis can also provide greater insights into the nature of the problem and potential improvement options.

2. Analyze **separately** each of the tasks you previously evaluated using Tool 1—The Patient and Resident Handling Checklist. List one specific task in the space provided. For example:

- *Bed to gurney transfer*
- *Manipulating extremities for wound care*
- *Moving room furniture*
- *Bed to chair transfer*

3. As you observe the task, simply place a check mark in the appropriate boxes and fill in your comments. Check as many boxes as may apply. Save your results for review when you are considering improvement options.



SPECIFIC WORK TASK

_____

Contributing Factors

- ❑ Bending or twisting
- ❑ Reaching out/up
- ❑ Prolonged holding, sitting, standing, stooping
- ❑ Too much force (e.g., heavy patients, holding retractors, restraining patients or residents)
- ❑ Abrupt motions (e.g., stopping falls)

Equipment Used

- ❑ None
- ❑ Mechanical lift-assist equipment
- ❑ Gait or transfer belt with handles
- ❑ Slide board
- ❑ Draw sheets or incontinence pads
- ❑ Low-friction mattress covers
- ❑ Slippery sheets or plastic bags
- ❑ Transfer mats
- ❑ Roller boards or mats
- ❑ Transfer or pivot discs
- ❑ Shower or toilet chair
- ❑ Shower cart or gurney
- ❑ Pelvic lift device
- ❑ Other_____

Patient or Resident Assessment Prior to Handling?

- ❑ Yes
- ❑ No

Methods/Activities

- ❑ Working alone
- ❑ Help used (# of people____)
- ❑ Manual lifting
- ❑ Manual repositioning
  - ❑ Scooting up
  - ❑ Sitting up
  - ❑ Other _____
- ❑ Log rolling
- ❑ Turning
- ❑ Sliding
- ❑ Stand-Pivot
- ❑ Assisted walking
- ❑ Manipulating extremities
- ❑ Other _____
- ❑ Not applicable

Comments

- ❑ Equipment Factors

_____

_____

_____

- ❑ Work Space

_____

_____

_____

- ❑ Other

_____

_____

_____

EVALUATOR: LOCATION: DATE:

TOOL 3 — EQUIPMENT CHECKLIST

Place a check mark (✓) in the appropriate row or column to help identify problems with your equipment

FACTOR	BEDS (or rails)	GURNEYS (or rails)	CARTS				MEDICAL EQUIPMENT			COMMENTS
			Medicine	Surgery	Food	Laundry	Monitor	X-ray	Other	
Faulty brakes										
Takes too long or hard to adjust										
Casters/wheels do not roll easily										
Too low/high										
Too heavy/wide/big/unstable										
Controls/handles in awkward position										
Handles missing										
Storage of items too low/high/awkward/far away/hard to find										
Hard to steer										
Design not appropriate for patient/resident condition										
Armrests/foot pads not removable/adjustable										
Items missing (e.g., slings, IV/Med poles)										
Other										

FACTOR	LIFT DEVICES	IV/MED POLES	CHAIRS						OTHER	COMMENTS
			Geri	Cardiac	Wheel	Shower	Toilet	Other	Equipment	
Faulty brakes										
Takes too long or hard to adjust										
Casters/wheels do not roll easily										
Too low/high										
Too heavy/wide/big										
Controls/handles in awkward position										
Handles missing										
Storage of items too low/high/awkward/far away/hard to find										
Hard to steer										
Design not appropriate for patient/resident condition										
Armrests/foot pads not removable/adjustable										
Items missing (e.g., slings, IV/Med poles)										
Other										

EVALUATOR: LOCATION: DATE:

TOOL 4 — FACILITY DESIGN CHECKLIST

Place a check mark (✓) in space next to each item you feel may be a problem in your facility

	FACTOR	PROBLEM	LOCATION
1	High threshold or obstructions in entry ways of bathrooms, showers, hallways, etc. prevent access for assist equipment		
2	Steep ramp (greater than 10 degrees)		
3	Small or cluttered rooms/bathrooms/hallways or other spaces		
4	Door handles catch on beds/gurneys/etc.		
5	Floors slippery/uneven/cluttered		
6	Storage areas too high/low/awkward to reach		
7	Bedside medical and electrical outlets too low/only on one side		
8	Inadequate storage space		
9	No grab rails by toilets or in bathtubs or showers		
10	Toilet seats too low		
11	Other		

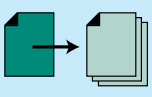
EVALUATOR: LOCATION: DATE:

TOOL 5 — ADMINISTRATIVE CHECKLIST

Based on observations in your facility, place a check mark (✓) in the NO column to help identify areas that may need a closer look

	FACTOR	YES	NO	COMMENTS
1	Systematic patient or resident assessment			
2	Formal policy or criteria for: Getting help or using assist devices Early reporting of problems Guiding instead of stopping falls			
3	Equipment maintenance: Standardized tags Short turnaround time Effective tracking systems			
4	Equipment purchasing/distribution: Flexible contracts Systematic end-user reviews Sufficient quantities ordered Adequate storage			
5	Communication with employees by: Meetings Bulletin boards or memos In-service or training sessions Other means (please specify)			
6	Job expectations clearly communicated			
7	Training: All employees trained Hands-on practice Opportunity for feedback Content is comprehensive (e.g., equipment, policies, etc.) Demonstrated in competency Systematically reinforced Other (please specify)			
8	Where possible, physically hard work tasks distributed equally among employees or shifts			
9	Where possible, scheduling avoids employees performing unaccustomed physical work			
10	Other (e.g., effective early reporting)			

EVALUATOR: LOCATION: DATE:



A CLOSER LOOK AT IMPROVEMENT OPTIONS

Health care institutions which have been successful in preventing back injuries have employed a multi-faceted approach involving:

- *Systematic patient or resident assessment*
- *Assist equipment and devices*
- *Safer work practices*
- *Lift teams*
- *Other measures (e.g., proper equipment maintenance)*
- *Comprehensive training*

THE GOOD NEWS: BACK INJURY PREVENTION SUCCESS STORIES

Here are just a few success stories showing how some institutions have been successful.

SUCCESS STORIES

San Francisco General Hospital, California 275 beds

Problems: Many back injuries and high employee turnover due to lifting and moving of patients.
Solutions: No lifting by nursing staff. Specially trained lifting team performs almost all patient lifting or moving of patients on the day shift. Policy of the lift team was to use mechanical lifting devices for all total body transfers.
Results: In the first year of implementation, lost-time back injuries dropped from 16 to 1 and lost days from 215 to 6. By the second year, the nursing staff did not have one single back injury during the lift team's shift. In the six years since the program began, workers' compensation costs dropped approximately 90%. The lift team's cost was $70,000 per year.

Camden Nursing Home, Maine approx. 260 employees and 200 beds

Problems: High incidence of low-back pain and pulled muscles resulting from lifting or moving of residents.
Solutions: Lift assist equipment required for all lifts (total cost of equipment was approximately $35,000); two employees required (using gait or transfer belt with handles) for all ambulations where residents are unstable; training from equipment manufacturers.
Results: Workers' compensation premium reduced from $750,000 to $184,000.

Kennebec Long-term Care, Maine approx. 250 employees and 300 beds

Problems: Low back strains, herniated discs, and shoulder strains from lifting, poor body mechanics, resident falls and combative Alzheimer patients.
Solutions: Employee committee (Certified Nursing Assistants) formed to evaluate mechanical lift assist equipment; systematic resident assessment instituted; use of gait belts required; full body and stand-assist lifts required for lifting or moving residents; comprehensive employee training; safety rewards and newsletters; modified duty programs instituted.
Results: Workers' compensation premiums dropped from $1.5 million in 1992 to $770,000 in 1996. Number of lost work days dropped from 573 in 1991 to 12 in 1996.

In addition to workers' compensation savings and reduced injuries, some institutions have experienced other significant benefits from implementing an appropriate combination of improvement options. These include:

- *Reduced absenteeism, turnover, and retraining*
- *Lower administrative costs*
- *Maximized efficiency and productivity*
- *Improved employee morale*
- *Improved employee-management problem solving*
- *Increased patient or resident comfort*

IDENTIFYING SOLUTIONS

Once problem work activities have been identified and evaluated, how do you decide which ones to address first and what changes are appropriate? Review the information you have gathered up to this point to guide your choices. Talk to the affected employees to get their ideas on how to improve their work activities. Coordinate the knowledge and expertise of in-house staff to identify and try out solutions. Depending on the nature and severity of the problems, it may be useful to consult with:

- *Nursing Administration and Supervision*
- *Health and Safety Committees*
- *Purchasing*
- *Maintenance*
- *Quality Assurance*
- *Human Resources*
- *Union Representatives*
- *Physical and Occupational Therapy*
- *Employee Health*
- *Workers' Compensation*
- *Risk Management*
- *Finance*

Also, you can contact others in the health care industry, equipment vendors and private consultants.

SELECTING SPECIFIC IMPROVEMENT OPTIONS

Do you have the responsibility and authority to implement any improvement measures? Securing management commitment will be essential to bring about positive change. Persuade the decision makers in your organization by presenting the direct and indirect costs of the problems and pointing out the injury reduction and cost-saving benefits. Keep in mind that the benefits of improved employee morale, patient comfort and better employee relations are not easily measured.

First, recognize what is working well and try to key in on specific changes to make. Keep in mind that many problems once identified can be solved by quick fixes or simple, commonsense improvements. Remember, start small and pick options you can realistically put into place. As you progress, build on your early successes. Talk to the affected employees to get suggestions on how to modify improvements.

Some institutions have found the following improvement options to be effective at reducing or preventing back injuries.

1.) Patient or Resident Assessment
2.) Assist Equipment and Devices
3.)Proper Work Practices
4.) Lift Teams
5.) Other Measures
- *Institutional Equipment and Facilities*
- *Maintenance*
- *Administrative Measures*
- *Exercise*
- *Safety Gear*

These suggestions are not the only ones possible and may need to be altered to fit your particular situation.

1.) Patient or Resident Assessment

Systematic patient or resident assessment, **which is focused on the lifting or moving of the patient or resident**, is essential to protect against injury. Unexpected movements, especially falls, can hurt both the employee and the patient or resident.

What information should the assessment include?

Many aspects of the patient's or resident's condition can affect how they are lifted or moved. In addition to their weight, consider the following:

Medical Condition

What could make them vulnerable to further injury?

- *dizziness*
- *confusion*
- *deafness*
- *medication*
- *muscle spasms*
- *recent surgery*
- *sensitive skin*
- *total hip replacement*

Physical Ability

How well can they sit up, stand up or walk on their own? What is their endurance?

- *ambulatory*
- *stroke-weak on one side*
- *weight-bearing*
- *upper-body strength*

Acuity

How well do they follow instructions?

- *general understanding*
- *language problem*

Behavior

What might they do?

- *combative*
- *cooperative*
- *unpredictable*

Use the assessment to decide the appropriate type of assist equipment or devices, the techniques and number of people needed and other relevant considerations. Always check the condition of the patient or resident each time before you begin and during the activity. Their medical condition can change from day-to-day (for better or worse), during the day (from fatigue, medication or other factors), and even during the activity.

How should the results of the assessment be communicated to all who need to know?

Prior to lifting or moving patients or residents, employees should be encouraged to systematically review any information relevant to the transfer activity. This information should be readily available and clearly state the essential facts. Labels or signs can communicate the essential points in a simple manner. If there is a need to preserve confidentiality, you can use color-coded stickers that summarize information. Another way to communicate the information is to have brief daily meetings. Finally, remember that patients' or residents' medical conditions can change rapidly. Assessments may need to be updated and the new information shared among providers.

Independent

Minimum Assistance

Totally Dependent

2.) Assist Equipment and Devices

There are many types of equipment and devices designed to make lifting or moving patients or residents easier. Remember, it is important to use proper work practices and body mechanics in combination with equipment and devices. The following discussion categorizes assist equipment and devices by the type of work activity in which they are used.

Lifting

Mechanical assist devices (e.g., lifts) help reduce injury by avoiding unnecessary manual transfers, awkward postures, forceful exertions and repetitive motions. Although these devices may appear to take longer to perform the lift or move, they may save staff time by reducing the number of employees needed on a given transfer.

Based on your evaluations, mechanical assist devices should be used for the most potentially dangerous lifting or moving tasks.

Mechanical lifting devices eliminate the need to manually lift or move patients or residents:

- *To and from beds, chairs, gurneys, etc.*
- *Off of the floor*
- *To a standing position*
- *Up or over in bed*
- *During ambulation*
- *In and out of vehicles*
- *Into or out of bathtubs or showers*

General categories of mechanical lifts include:

- *Total-body*
- *Stand-assist*
- *Compact (total-body or stand-assist)*
- *Ambulation*
- *Bath/shower*

▲ *Total-body lift*

▲ *Stand-assist lift*

▲ *Off the floor*

For more information on these devices and the proper work practices associated with them, see pages 29-30 and 35-38.

Lifting devices have different features. When evaluating these devices look for those that:

- *Lift from floor up to the highest bed*
- *Allow the employee to operate the equipment in an upright, neutral posture*
- *Steer and operate easily*
- *Are stable and comfortable for the patient or resident*
- *Have effective and easy to adjust brakes*
- *Fit easily into rooms, bathrooms, or small spaces*
- *Can go under beds and around equipment*
- *Have slings which:*
  - *Attach with minimal lifting or pulling*
  - *Come in a variety of sizes*
  - *Provide patient or resident comfort (e.g., support the head, arms and legs)*
- *Lift the heaviest, biggest, or smallest patient or resident*
- *Have a bump sensor or emergency stop switch*
- *Do not catch or pinch the body or the feet*
- *Are easy to clean and maintain*
- *Have rechargeable batteries with sufficient capacity and fast charging times*

Lifting device fits easily in bathroom ▶

Lateral Transfers (Sliding)

Lateral transfers or sliding can be used to move patients and residents between two horizontal surfaces (e.g., bed to gurney or bed to cardiac chair, etc.). Helpful equipment and devices include slide boards, transfer mats, slippery sheets, draw sheets and incontinence pads. For more information on these and other devices and the proper work practices associated with them, see pages 30 and 35-38.

▲ *Draw sheet*

▲ *Slide board*

Ambulating, Repositioning and Manipulating

For help with these types of activities, use equipment and gait belts, transfer belts with handles, slippery sheets, plastic bags, draw sheets, incontinence pads, pivot discs, range of motion machines, fixtures, etc. For more information on these and other devices, as well as the proper work practices associated with them, see pages 30-31 and 35-38.

▲ *Transfer belt with handles*

▲ *Slippery sheet with handles*

Performing Activities of Daily Living

These activities include showering, bathing, toileting, dressing or undressing, and performing personal hygiene and related activities. Equipment and devices include shower-toilet combination chairs, extension hand tools, shower carts and gurneys, pelvic lift devices, etc. For more information on these and other devices, as well as the proper work practices associated with them, see pages 31-32 and 35-38.

▲ *Shower-toilet chair with wheels*

Useful Tips

Health care workers should be encouraged to use assist equipment and devices when they are appropriate. To facilitate use, they should be:

- *Purchased in sufficient quantities*
- *Stored so they are visible and readily available*
- *Evaluated and selected by the users*
- *Accompanied by effective training*
- *Equipped with sufficient replacement accessories (e.g., slings)*
- *Maintained in good working order*

3.) Proper Work Practices

Health care providers can be injured when manually lifting or moving patients, residents or equipment. Manual handling can also be uncomfortable for the patients or residents (e.g., the under-the-axilla-lift). Consulting a physical therapist or reference texts on proper body mechanics can also help in evaluating lifting or other manual activities. Whenever manual handling of patients or residents is performed, employees must be thoroughly trained, including "hands-on" practice sessions under supervision.

Even when performed properly, manual lifting or moving of patients or residents involving awkward position and posture or forceful exertions (e.g., lifting extremely heavy individuals) can still result in employee injury. In these situations, consideration should be given to the use of mechanical lifting devices or other assist equipment. Prior to using mechanical lifting devices or other assist equipment, employees need to be thoroughly trained on how to use the equipment and on proper work practices.

The discussion which follows describes the general principles of manually lifting and moving patients and residents. See the Resources Information section on page 35-38 for more detailed information on the following:

- *Lifting and lateral transfers*
- *Ambulating, repositioning and manipulating*
- *Transporting patients, residents and equipment*
- *Performing activities of daily living*
- *Transferring from the floor*
- *Assisting in surgery*

General Guidelines for Lifting and Moving Patients or Residents

- **Assess the patient or resident before lifting or moving them**
- **Eliminate or reduce manual lifting and moving of patients or residents whenever possible.** Use assist devices or equipment when available and appropriate for the activity
- **Get patients or residents to help as much as possible** by giving them clear, simple instructions with adequate time for response
- **Know your own limits and do not exceed them**
- **Get help whenever possible**
  Use teamwork. Try to choose team members who:
  - are adequately trained, and;
  - have a similar understanding of proper techniques and timing
- **Mentally plan and prepare** (e.g., consider routes of travel and obstructions; clear out paths)
- **Use (or modify) chairs, beds or other surfaces to keep work tasks, equipment and supplies close and at the correct height** (i.e., between the waist and shoulders)
- **Make sure brakes hold properly and apply them firmly on beds, gurneys, chairs, etc.**
- **Use upright, neutral working postures and proper body mechanics**
  - Bend your legs, not your back. Use your legs to do the work
  - When lifting or moving the patient or resident always face them
  - Do not twist when turning. Pick up your feet and pivot your whole body in the direction of the move

The photos on the following page illustrate proper work practices for some typical activities involving lifting and moving patients and residents.

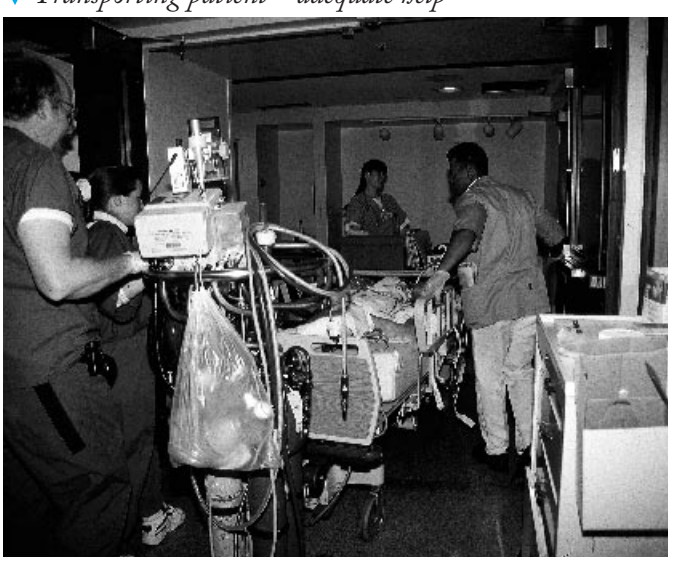
▲ *Lateral transfer—working together, good posture (e.g., straight back and minimal reach)*

▲ *Repositioning—good body mechanics (e.g., straight back, patient close, bed at waist height)*

▲ *Performing an ADL—good posture (straight back, bent knees)*

▲ *Stand-pivot transfer—close to patient, no twisting, straight back*

▼ *Transporting patient—adequate help*



▼ *Transfer from floor—using a slide board, enough help and a coordinated effort*

Guiding and Slowing Falls

Reviewing patient or resident assessments and watching for signs of weakness are effective ways of preventing falls. If falls do occur, no attempt should be made to stop them abruptly. Stopping falls is a sure way to get hurt. The safest method involves guiding, slowing and lowering the patient or resident to the floor while trying to maintain a neutral body posture. Regulatory reporting requirements may cause employees to try stopping a fall. Reporting of falls should not lead to fault-finding or negative consequences.

▲ *Protect the patient*

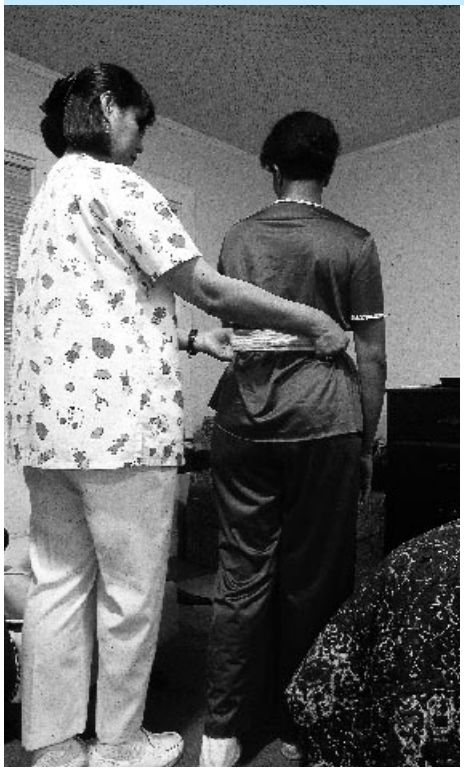
▲ *Protect your back, keep it straight*

Low bed, crowded room ▶

Providing Home Health Care

This is a difficult situation for health care workers. Facilities and equipment are not under their control and they cannot get help from other employees. However, there are a few helpful strategies that can be followed:

- *Ask for help from the patient's family or friends*
- *Provide suggestions for the layout of bedrooms and other areas*
- *Follow correct body mechanics*
- *Maintain clear spaces. Avoid trip or slip hazards*
- *Provide suggestions for desirable equipment (e.g., gait belts, transfer devices appropriate for the home, shower-toilet chair combinations, extension hand tools for showering, adjustable beds, etc.). If medical supply companies do not stock these items, discuss other alternatives*



▲ *Using a gait belt*

▲ *Low chair, use good body mechanics*

▲ *Small lift for the home*

4.) Lift Team

Even with the availability of the appropriate assist equipment, injuries can still occur because of a variety of factors, including:

- *Limited equipment usage*
- *Not asking for help from coworkers*
- *Training that "doesn't stick"*
- *Loss of patient or resident handling skills*
- *Employee turnover*
- *Inconsistent policies for lifting or moving patients or residents*
- *Other factors (e.g., cramped rooms, bathrooms or facilities)*

How can these complex variables be addressed in order to effectively reduce injuries? Some institutions have chosen to create a special "lift team" dedicated to performing the majority of the lifting or moving of patient or residents. This can be effective because it reduces the risks by relying on only a few thoroughly trained employees. The team's policy is to use assist equipment and not perform manual lifting or moving activities unless necessary. The lift team coordinates with the nurses and other medical personnel responsible for the patient or resident. The team performs both scheduled and unscheduled moves and is available by beeper.

In one study, the response time from one lifting or moving activity to the next was five minutes. A two-person lift team handled the load for a hospital with a census of 350 to 400 patients, of whom 8% to 12% were handled from 9 AM to 5 PM. [see The Lift Team: A Method To Reduce Lost Time Injury In Nursing, Charney, W., Journal of the American Association of Occupational Health Nursing (AAOHN), May 1991, VOL. 39, No. 5, and, for a more recent study of ten hospitals and nursing homes, The Lift Team Method For Reducing Back Injury: A Ten Hospital Study, Charney, W., AAOHN, June 1997, VOL. 45, No. 6]

The lift team dramatically reduced back injuries and their associated costs. There were also significant savings on administrative and equipment costs. The study further suggested that the use of the "lift team" was beneficial to patients since it allowed them to be moved or transferred more frequently in a safer, easier manner.

When considering the use of a lift team, keep in mind that:

- *It may be difficult to cover all lifting or moving activities (e.g., dispersed facilities, medical emergencies or night or weekend shifts)*
- *There may be organizational constraints (e.g., no centralized staff that functions across departments, wards, or units)*

Institutional Equipment and Facilities

Well-designed and maintained institutional equipment and facilities are important in reducing or preventing back injuries. Institutional equipment should be designed to allow the user to maintain neutral body postures and reduce forceful motions. For example:

- *Beds, wheelchairs, cardiac chairs and other equipment that are easy to adjust and move*
- *Equipment with wheels that roll and steer easily. These can decrease the force and number of people needed*

▲ *Attachable pole, 5th wheel, easy steering*

▲ *Foot-operated bed control*

▲ *Adjustable or removable foot rests and arm pads*

▲ *Hand-held bed control*

For more detailed information on beds, carts, chairs, gurneys and other equipment, see the Resource Information section on page 33-34.

Facilities should be designed to allow easy operation and movement of equipment. During lifting or moving activities, there should be enough room for staff to avoid awkward postures and for other employees to help. For example:

- *Patient, resident, shower and bath rooms (and other areas) with adequate work space*
- *Low thresholds on entryways that allow the use of equipment with wheels (e.g., rolling shower chairs which eliminate an extra transfer)*

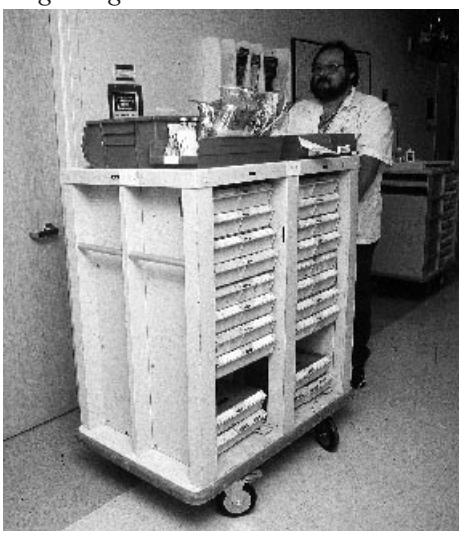
▼ *Enough space to work*

▲ *Large shower room*

▲ *Low threshold*

For more detailed information on rooms, floors, hallways and other areas see the Resource Information section on page 34.

▼ *Handles allow neutral grip; cart not too big or high*



Maintenance

Maintenance personnel have an important role to play in back injury prevention programs. A regular program of maintenance can help ensure sufficient quantities of equipment in all units or floors and avoid shortages and breakdowns.

Systematic preventative maintenance should include:

- *Checking brakes for their ability to lock and hold*
- *Oiling and adjusting mechanisms to work easily (e.g., to prevent stuck cranks or rails)*
- *Cleaning or replacing casters or wheels so they roll easily and smoothly*
- *Replacing and securing attachments (e.g., slings, bed controls, or footboards)*
- *Using standardized tags that have the name of the person reporting the problem, their department, the date and the problem description*
- *Instituting tracking systems to ensure prompt turnaround times*
- *Maintaining equipment instruction manuals*

Maintaining facilities properly can allow easy equipment movement and reduce tripping or slipping.

For example:

- *Keeping floors free of holes, clutter, broken tiles or slippery conditions*
- *Adjusting doors to open easily*

▲ *Replacing wheels*

Administrative Measures

Equipment Purchase, Storage and Distribution

Some basic considerations include:

- *Conducting a review that evaluates if the equipment is appropriate for the specific lifting or moving activity. The review should involve onsite testing of a variety of equipment by the end users*
- *Ordering a sufficient quantity of equipment and attachments. This will allow the equipment to be readily available at all the various locations where it is needed (e.g., enough lifts or IV/Med poles that are permanently attached to gurneys)*
- *Providing for the convenient storage of assist and institutional equipment. This can ensure that equipment is easy to find and, in turn, help encourage health care workers to use it*
- *Using flexible purchasing procedures that allow for the evaluation and purchase of up-to-date equipment with the most appropriate features*

Remember that many equipment manufacturers or distributors are happy to provide samples of equipment for in-house demonstrations or evaluations.

Work Coordinating Tips

Certain work tasks may be especially hard to perform. Try to:

- *Break up tasks with rest breaks or lighter work*
- *Schedule hard tasks for early in the work shift*
- *Share tasks more equally among shifts*
- *Specify criteria for getting help*

Employees who are new, returning after long absences or members of a float pool may perform physical work tasks they are not accustomed to (e.g., lifting, pushing, being on one's feet all day, etc.). Performing unaccustomed physical work can increase the risk of back injuries. Where possible, new or returning employees should be encouraged to increase gradually the pace or difficulty of their work activities.

Other Ideas

Other administrative measures to reduce or prevent back injuries can include:

- *Return-to-work and light-duty programs*
- *Job descriptions which establish the appropriate physical requirements*
- *Early reporting and treatment. Employees should be encouraged to report physical problems or other work-related issues as early as possible. This is particularly important with back injuries which are less costly and serious at first, and more expensive and severe in later stages*

Exercise

A combination of the appropriate equipment, proper work practices and exercise programs can be effective at injury prevention. Physically fit indi-

viduals tend to have fewer and less severe injuries.They also recover faster if they are hurt. Other potential benefits from long-term, sensible exercise programs include:

- *Increased balance, coordination, strength and flexibility*
- *Weight reduction*
- *Reduced fatigue, stress and tension*

Employers should encourage employees to:

- *Warm up and stretch before engaging in work activities*
- *Participate in long-term, sensible exercise programs involving aerobic conditioning and other appropriate activities*

Remember to consult with a physician or physical therapist about which aerobic, strength and flexibility exercises are right for the employee. This is especially important for those individuals who have pre-existing injuries or medical conditions.

Safety Gear

Safety gear includes items worn or attached to the body. Some considerations when selecting safety gear are discussed below.

Footwear

The appropriate footwear can provide good traction to help prevent slips or falls and cushioning when standing or walking for long periods on hard surfaces.

Back Belts

Back belts may help maintain the proper curvature of the spine during lifting or physical exertion by applying intra-abdominal compression on the lumbar section of the spine. However, the use of back belts in preventing injuries remains a question that requires further analysis. Studies have not produced a conclusive body of evidence supporting the effectiveness of back belts as an injury reduction tool (see Workplace Use of Back Belts, Review and Recommendations, NIOSH Back Belt Working Group, May 1994). One recent study conducted in an industrial setting suggests that back belts when accompanied by other measures may reduce low back injuries (see Reduction of Acute Low Back Injuries by Use of Back Supports, Kraus, et al., International Journal of Occupational and Environmental Health, Volume 2, Oct.-Dec. 1996). Currently, there are no studies that address the effectiveness of back belts as an injury prevention tool in health care. Some concerns related to the use of back belts are that they:

- *Provide a false sense of security and lead employees to lift loads beyond their capabilities*
- *Are used in lieu of other more proven options*
- *Might not be worn properly*
- *May lead to decreased abdominal muscle strength with prolonged use*

TRYING OUT IMPROVEMENT OPTIONS

To effectively implement the improvement options selected, it is helpful to set a schedule, provide training and get feedback on how changes are working.

Training

Effective training is an important part of trying to reduce or prevent injuries. You have gathered a lot of good information. Look back at your notes. Review the Work Evaluation Tools, the improvement options and the information in this booklet. All of these sources provide good information on the nature and causes of back injuries, as well as measures to help reduce or prevent them. You can now use the information and experiences you have accumulated in combination with your in-house expertise to help with the training. Keep in mind that training is not effective at reducing injuries unless it:

- *Includes classroom education and hands-on practice*
- *Allows feedback*
- *Requires that employees demonstrate the skills learned in a competency evaluation*
- *Is systematically reinforced by retraining*

Some areas to consider in your training program are:

- *Anatomy and physiology related to back injuries*
- *Proper work practices and administrative measures*
- *Patient or resident assessment*
- *Assist equipment and devices*
- *Reporting of injuries, equipment and facility problems*

Finally, remember that for training to be successful at reducing employee injuries, management must provide firm support and workers must practice the skills on a daily basis during work activities.

Getting Feedback

Open lines of communication allow you to find out if improvements are working and to respond quickly to new problems. It is important to track the progress of any improvements you try out. Look to see if injuries and symptoms associated with problem work activities are decreasing over time. Are the improvements reducing costs and working from a productivity and organizational standpoint? When evaluating improvements, talk to your employees and ask what suggestions they may have to refine the changes. Remember to give the changes time to work and allow employees to get used to them.

E

RESOURCE INFORMATION

This section is intended to provide supplemental information on improvement options. Included are descriptions of a variety of assist equipment and devices, design considerations, and work practices which may be effective in reducing or preventing back injuries. The options listed are only a sampling of those available and may or may not work for your particular situation or problem. Consult equipment manufactures for details on specific products.

ASSIST EQUIPMENT AND DEVICES

LIFTS

Total-Body

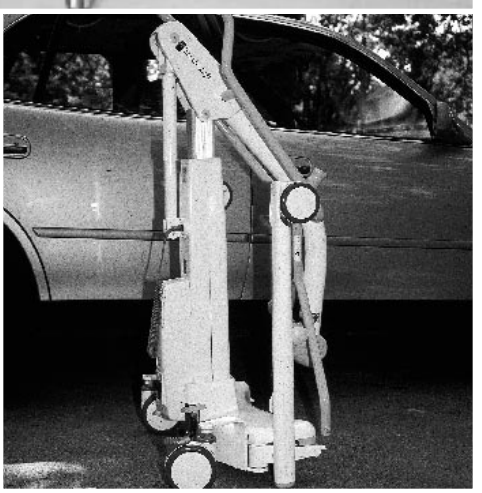
These devices are designed to lift or move individuals who are totally dependent by supporting their entire body weight during the transfer. The best devices are battery-operated. Typically, they can lift an individual from the floor to the highest bed or gurney. Some devices can lift individuals up to 500 pounds or more. There is a large number of different types of lifts available with a variety of features.

Stand-Assist

These lifts are for moving patients and residents to and from chairs, toilets, beds or into and out of showers. Stand-assist type lifts are appropriate for patients or residents who are weight-bearing and have some upper-body strength and control. The best devices are battery operated.

Compact

These are a smaller version of a total-body or stand-assist lift. They are appropriate for use in the provision of home care, where space or storage is limited, or in moving individuals into and out of cars (e.g., emergency rooms).



Ambulation Lifts

These lifts support a patient or resident during ambulation. The individual pushes the lift along as they walk. A strap in the back prevents them from falling backwards.

Bathtub and Shower Lifts

Designed for transfers directly from the bed or chair to a bathtub or shower, without removing the patient or resident from the lift. They can be portable or fixed devices which operate by batteries or the power from the facility. The patient or resident can stay on the lift during the bathing or showering activity and any related activities. Other types include bathtubs that have built-in lift devices to lower the patient or resident directly into the tub.

LATERAL TRANSFERS (SLIDING)

Transfer Boards

A board between two horizontal surfaces that the patient or resident slides across. They may be unstable when transferring to or from surfaces of unequal height. They may be uncomfortable for very large patients.

Draw Sheets or Incontinence Pads

Commonly used to slide patients or residents between horizontal surfaces, or for repositioning in beds or chairs. To ensure an adequate grip, the provider should roll up the edges. This will also reduce forceful exertions and awkward upper body postures. The sheets or pads should be used in combination with friction-reducing devices such as slide boards, slippery sheets, plastic bags, or low-friction mattress covers.

Gurneys with Transfer Devices

Height-adjustable gurneys with built-in slide boards or mechanical means (e.g., hand or motorized crank) to laterally move patients.

Cots

Strong fabric cots with handles to improve the grip. They can be used in combination with friction-reducing devices such as slide boards or slippery sheets.

Slide Boards (Smooth Movers or Plastic Transfer Board)

A large plastic board which reduces friction. Some slide boards have hand-holds. The patient or resident is slid or rolled onto the board and the board is then pushed or pulled to accomplish the transfer.
In another common practice, the board goes under the patient or resident who is pulled over the board by use of a draw sheet or incontinence pad.

Roller Boards or Mats

Boards or mats with vinyl coverings and rollers. They are placed between the transfer points. The patient or resident is placed on the board or mat and rolled to the new position.

Slippery Sheets, Low-Friction Mattress Covers or Plastic Bags

Can be used under draw sheets or incontinence pads to reduce friction on lateral transfers. Slippery sheets or plastic bags can also be used in lieu of draw sheets or incontinence pads.

Transfer Mats

Two low-friction mats which are placed under and strapped onto the patient or resident (i.e., one under the head, one under the hips). The mats are then pulled to accomplish the transfer.

Transfer Slings

Slings with cut-outs or rings for handholds. The slings are tucked securely around the patient or resident and help move them between various surfaces. When using these slings, remember they may dig into or slip off the patient or resident.

AMBULATIONS, REPOSITIONS, MANIPULATIONS

Fixtures and Stands

Devices which hold arms, legs and extremities when providing medical care, assisting with surgical procedures, or performing related services.

Gait Belts

Simple canvas belts, without handles, which are traditionally used to support patients or residents during ambulation. They may also be used to sit up, reposition, or gradually lower individuals to the floor during a fall.

Gait belt ▼

▲ *Transfer belt with handles*

The belts are fastened securely around the patient's or resident's waist and the care provider grips the belt. When attaching, removing or using gait belts you should avoid bending, twisting or reaching. Precautions to consider when using gait belts include that they:

- *Can slide up causing scrapes, skin tears, and rib injuries*
- *Are not suitable for ambulations of heavy or non-weight-bearing patients or residents*
- *Can, if set too tight, cause the care providers' knuckles to dig into the patient or resident*
- *Have certain limitations for their use (e.g., recent abdominal or back surgery, abdominal aneurysm, etc.)*
- *Should be used so that there is layer of clothing between the skin and the belt*

Transfer Belts with Handles

A wider version of a gait belt with buckles. They have padded handles on each side that are easier to grip and allow better control in case of a fall. The same considerations and precautions apply as for gait belts (see above).

Hand Blocks

Blocks that enable the patient or resident to raise themselves up and reposition in a bed.

Lift Chairs

Chairs equipped with a lift that slowly raises upward and tilts forward. This helps the patient or resident stand up.

Lift Cushions

A spring action lift cushion which raises patients or residents up.

Pivot Discs

Discs which resemble a Lazy Susan. They are placed on the floor and used to rotate the patient or resident 90 degrees to a bed or a chair. When used properly, they can help providers perform transfers without twisting.

Push-up Bars

A bar on the bedside. It allows patient or residents to reposition themselves.

Range of Motion Machines

Machines which automatically move or manipulate arms, legs or extremities.

Trapeze Bar

A bar suspended from an overhead frame. The patient or resident grasps the bar and assists in repositioning in bed.

ACTIVITIES OF DAILY LIVING

Hand Tools for Showering, Bathing and Cleaning

These include long-handled extension tools on hand-held shower heads, wash or scrub brushes and other items. These tools can reduce the amount of bending, reaching and twisting required when washing the legs, feet and trunk of patients or residents.

Shower-Toileting Chairs

These are shower chairs which have wheels and are high enough to fit over the toilet. These save unnecessary transfer to and from wheelchairs, toilets, portable commodes, or toileting chairs. Use these in lieu of low toilet or shower chairs which do not have wheels. The heavier metal ones tend to be more stable. On all shower-toileting chairs, make sure the brakes hold tightly.

Shower Carts or Gurneys

Gurneys or carts with waterproof tops so that patients or residents can then be undressed, showered, dried and dressed on the cart or gurney.

Ramp or Bed Scales

Eliminate unnecessary transfers by weighing patients or residents in wheelchairs or in bed. Built-in bed scales will increase the weight of the bed and may prevent it from lowering to appropriate work heights.

Bath Boards

Boards leveled between the shower seat or bathtub. The patient or resident slides or is assisted from a chair or wheelchair into the bathtub or shower. To reduce friction, make sure there is either clothing or other material between the person's skin and the board. These boards are appropriate for non or partially weight-bearing individuals with upper body strength and control.

Pelvic Lift Devices (Hip Lifters)

Inflatable lifts that are positioned under the hips. They inflate like a pillow and lift the hips so a special bed pan can be readily inserted and removed. These devices may eliminate the need for an additional transfer for toileting.

Height-Adjustable Bathtubs

Bathtubs with lifting and lowering mechanisms. Ambulatory patients and residents can more easily climb into a low bathtub. Nonambulatory individuals can be lowered in by a lift. The bathtub can be raised to waist height to eliminate bending and reaching. Raising the bathtub will also reduce bending and reaching when cleaning the tub after the bath.

Toilet Seat Risers

Plastic seats on top of the toilet that decrease the distance and amount of effort required to lower or raise patients or residents.

Work Practice Guidelines for using the above-mentioned equipment and devices are discussed on pages 35-58.

DESIGN OF INSTITUTIONAL EQUIPMENT AND FACILITIES

The following information suggests some desirable design characteristics for equipment and facilities. For exact design specifications or product line availability, consult with equipment suppliers or manufacturers.

EQUIPMENT

Beds

- ✗ Adjustability
  - *Easily adjustable (e.g., rails lower or raise easily, short cycle time)*
  - *Height ranges that allow upright working postures, use of lifts, and facilitate patient or resident mobility*
  - *Brakes, controls and handholds positioned to allow upright working postures (i.e., easy to reach without bending or twisting)*
- ✗ Size and weight
  - *Able to fit into rooms, down hallways or other spaces*
  - *Easy to move (e.g., not excessively heavy, large or bulky)*
- ✗ Brakes which hold
- ✗ Foot boards which attach securely

Carts (e.g., laundry, food, medicine, crash, case, etc.)

- ✗ Can move easily
- ✗ Not too high or wide to see over or around
- ✗ Handles at approximately waist height
- ✗ Storage or retrieval of items does not require bending too low, reaching too high or far

Shower/Toilet Chair Combinations

- ✗ Have wheels which roll easily and smoothly
- ✗ High enough to fit over toilet
- ✗ Brakes, which lock and hold effectively, on at least two wheels
- ✗ Removable commode bucket for toileting
- ✗ Comfortable commode seat
- ✗ Safety belt
- ✗ Adjustable or removable arm and footrests
- ✗ Heavy enough to be stable

Room or Hallway Furniture

- ✗ Light enough to move easily
- ✗ Have wheels or casters which roll easily and have good brakes
- ✗ Not too big or bulky (e.g., does not limit access for assist equipment and devices, staff or other items)

Cardiac or Geri Chairs

- ✗ Easy to adjust, move and steer
- ✗ Coverings not too slippery (e.g., requiring continued patient or resident repositioning)

Gurneys

- ✗ Easy to steer (e.g., by fifth wheel or other means)
- ✗ Easy to adjust (e.g., can easily raise or lower entire gurney or side rails)
- ✗ Controls and handholds allow upright, neutral working posture (e.g., easy to reach without bending or reaching)
- ✗ Have IV/Med poles permanently attached
- ✗ Have multiple attachment points for IV/Med poles

IV/Med Poles (with wheels)

- ✗ Base should be wide enough to ensure stability without hitting the feet of staff, patients or residents
- ✗ Wheels or casters roll easily

Medical Equipment (X-ray, monitors, microscopes, etc.)

- ✗ Can be easily moved manually or self-propelled if very heavy
- ✗ Not too high or wide to see over or around
- ✗ Handles at waist height and positioned to allow neutral posture

Wheelchairs

- ✗ Stable (i.e., do not tip backwards)
- ✗ Footpads and armrests are removable and easily adjustable

FACILITIES

Patient or Resident Rooms and Bathrooms

- Large enough for easy access of furniture, equipment and staff
- Bedside power, suction and equipment outlets that are easy to reach (i.e., between the waist and the shoulders; located on both sides of the bed)
- Grab rails installed by toilets, bathtubs and showers
- Door handles with a style or at a height so that they do not cause beds, gurneys and wheelchairs to catch and stop abruptly

Floors

- No high thresholds at entryways (e.g., eases movement of beds, gurneys, shower chairs and other wheeled equipment)
- Non-slip surfaces in wet areas
- Anti-fatigue mats to allow employees to stand comfortably for long periods
- No rough surfaces
- Ramps with less than a 10 degree slope

Hallways

- Large enough to provide easy access for equipment, staff and furniture
- Convex mirrors to prevent collisions or abrupt stops
- Automatic doors

Other

- Storage shelves located between waist and shoulder height
- Sufficient and accessible storage for hoists and other assist equipment and devices

PROPER WORK PRACTICES

In general, eliminate lifting and moving patients or residents manually whenever possible by using assist equipment and devices. Get help from other staff. Tell patient or resident what they can do to help you. Give them clear, simple instructions with adequate time for response.

GUIDELINES FOR MANUAL LIFTING AND LATERAL TRANSFERS

Lifting

- ✗ Use upright, neutral working postures and proper body mechanics
  - *Bend your legs, not your back. Use your legs to do the work*
  - *When lifting or moving people always face them*
  - *Do not twist when turning. Pick up your feet and pivot your whole body in the direction of the move*
- ✗ Try to keep the person you are moving, equipment and supplies close to the body. Keep handholds between your waist and shoulders
- ✗ Move the person towards you, not away from you
- ✗ Use slides and lateral transfers instead of manual lifting
- ✗ Use a wide, balanced stance with one foot slightly ahead of the other
- ✗ Lower the person slowly by bending your legs, not your back. Return to an erect position as soon as possible
- ✗ Use smooth movements and do not jerk. When lifting with others, coordinate lifts by counting down and synchronizing the lift

Lateral Transfers

- ✗ Position surfaces (e.g., bed and gurney, bed and cardiac chair) as close as possible to each other. Surfaces should be at approximately waist height, with the receiving surface slightly lower to take advantage of gravity
- ✗ Lower the rails on both surfaces (e.g., beds and gurneys)
- ✗ Use draw sheets or incontinence pads in combination with friction-reducing devices (e.g., slide boards, slippery sheets, plastic bags, low-friction mattress covers, etc.)
- ✗ Get a good hand-hold by rolling up draw sheets and incontenence pads or use other assist equipment such as slippery sheets with handles
- ✗ Kneel on the bed or gurney to avoid extended reaches and bending of the back
- ✗ Have team members on both sides of the bed or other surfaces. Count down and synchronize the lift. Use a smooth, coordinated push-pull motion. Do not reach across the person you are moving

GUIDELINES FOR AMBULATING, REPOSITIONING AND MANIPULATING

These work tasks are usually performed in or around beds, gurneys, chairs, toilets, showers and bathtubs. Equipment commonly used includes gait or transfer belts with handles (for better grips and stability), pivot discs, draw sheets and incontinence pads.

Using Gait or Transfer Belts with Handles

- ✗ Keep the individual as close as possible
- ✗ Avoid bending, reaching or twisting your back when:
  - *attaching or removing belts (e.g., raise or lower beds, bend at the knees)*
  - *lowering the individual down*
  - *assisting with ambulation*
- ✗ Pivot with your feet to turn
- ✗ Use a gentle rocking motion to take advantage of momentum

Performing Stand-Pivot Type Transfers

Used for transferring from bed to chair, etc., or to help an individual get up from a sitting position.

- ✗ Use transfer discs or other assists when available. If using a gait or transfer belt with handles, follow the above guidelines.
- ✗ Keep feet at least a shoulder width apart
- ✗ If the patient or resident is on a bed, lower the bed so that they can place their feet on the floor to stand
- ✗ Place the receiving surface (e.g., wheelchairs) on the individual's strong side (e.g., for stroke or hemiparalysis conditions) so they can help in the transfer
- ✗ Get the person closer to the edge of bed or chair and ask them to lean forward as they stand (if medically appropriate)
- ✗ Block the individual's weak leg with your legs or knees (this may place your leg in an awkward, unstable position; an alternative is to use a transfer belt with handles and straddle your legs around the weak leg of the patient or resident)
- ✗ Bend your legs, not your back
- ✗ Pivot with your feet to turn
- ✗ Use a gentle, rocking motion to take advantage of momentum

Lifting or Moving Tasks with the Patient or Resident in Bed

Some common methods include scooting up or repositioning individuals using draw sheets and incontinence pads in combination with a log roll or other techniques.

- ✗ Adjust beds, gurneys or other surfaces to waist height and as close to you as possible
- ✗ Lower the rails on the bed, gurney, etc., and work on the side where the individual is closest
- ✗ Place equipment or items close to you and at waist height
- ✗ Get help and use teamwork

GUIDELINES FOR TRANSPORTING PATIENTS, RESIDENTS AND EQUIPMENT

It is often necessary to transport people in gurneys, wheelchairs, or beds or handle various types of carts, monitors, instrument sets and other medical equipment.

- ✗ Decrease the load or weight of carts, instrument trays, etc.
- ✗ Store items and equipment between waist and shoulder height
- ✗ Use sliding motions or lateral transfers instead of lifting
- ✗ Push don't pull. Keep loads close to your body. Use an upright, neutral posture and push with your whole body, not just your arms
- ✗ Move down the center of corridors to prevent collisions
- ✗ Watch out for door handles and high thresholds which can cause abrupt stops

GUIDELINES FOR PERFORMING ACTIVITIES OF DAILY LIVING

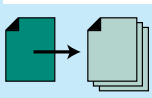
Cramped showers, bathrooms or other facilities in combination with poor work practices may cause providers to assume awkward positions or postures or use forceful exertions when performing ADLs.

- ✗ Use upright, neutral working postures and proper body mechanics. Bend your legs, not your back
- ✗ Eliminate bending, twisting and long reaches by:
  - *Using long-handled extension tools (e.g., hand-held shower heads, wash and scrub brushes)*
  - *Wheeling people out of showers or bathrooms and turning them around to wash hard-to-reach places*

- ✗ Use shower-toilet chairs which are high enough to fit over toilets. This eliminates additional transfers to and from wheelchairs, toilets, etc.

- ✗ Use shower carts or gurneys, bath boards, pelvic lift devices, bathtub and shower lifts and other helpful equipment

When providing in-bed medical care or other services, follow the guidelines listed previously.



GUIDELINES FOR TRANSFERRING FROM THE FLOOR

When it is medically appropriate, use a mechanical assist device to lift people from the floor. If assist devices are not readily available or appropriate, you may have to perform a manual lift. When placing slings, blankets, draw sheets or cots under the person:

- ✗ Position at least two providers on each side of the person. Get additional help for large patients or residents
- ✗ Bend at your knees, not your back. Do not twist
- ✗ Roll the person onto their side without reaching across them
- ✗ If using hoists, lower the hoist enough to attach slings without strain

If manually lifting, kneel on one knee, grasp the blanket, draw sheet or cot. Count down and synchronize the lift. Perform a smooth lift with your legs as you stand up. Do not bend your back.

GUIDELINES FOR ASSISTING IN SURGERY

- ✗ Use retractor rings instead of prolonged manual holding of retractors
- ✗ Position operating tables or other surfaces at waist height
- ✗ Stand on lifts or stools to reduce reaching
- ✗ Frequently shift position or stretch during long operations
- ✗ Avoid prolonged or repeated bending of the neck or the waist
- ✗ Stand with one foot on a lift and frequently alternate feet to reduce pressure on the back
- ✗ Reduce the number of instrument sets (trays) on a case cart
- ✗ Store instrument sets (trays) in racks between the waist and shoulders
- ✗ Use stands or fixtures to hold extremities
- ✗ Get help from coworkers as needed to:
  - *Position legs or extremities in stirrups*
  - *Move heavy carts, microscopes, monitors, alternate operating tables, equipment or fixtures*

HOW WE ARE PUT TOGETHER

Back, neck, and shoulder injuries are the most frequent and costly type of injuries among health care workers. Some basic information on the structure and function of the body can help provide an understanding on how these injuries occur and how we can prevent them.

The Neck

The first seven vertebrae are called cervical vertebrae and form the neck. Areas of the spine such as the neck, where flexible and inflexible sections join, are particularly susceptible to strains, sprains and injuries.

The Shoulder

The shoulder is an example of a ball and socket joint where the ball of one bone fits into a hollow crevice of another. The shoulder joint allows movement and rotation of the arms inward, outward, forward or backward. There are several different tendons attached to bones in the shoulder. Bursae reduce friction and cushion the tendons as they slide back and forth.

The Back

Spinal Column

The spine is a column of approximately 30 bones called vertebrae which run from the neck to the tailbone. These vertebrae are stacked on top of one another in an S-shaped column and form spinal joints which move independently. In the healthy spine there are three natural curves: a forward curve in the neck, a backward curve in the chest area, and another forward curve in the lower back. The back's three natural curves are correctly aligned when ears, shoulders and hips are in a straight line. At the end of the spine, the vertebrae are fused together to form the sacrum and the tailbone.

The lower back or lumbar area is the workhorse of the back. It carries most of the weight and load of the body. Aligning and supporting the lumbar curve properly helps prevent injury to vertebrae, discs and other parts of the spine.

The spine also has various types of associated soft tissues like the spinal cord, nerves, discs, ligaments, muscles and blood vessels.

Discs

Discs are soft, shock-absorbing cushions located between vertebrae. They allow vertebral joints to move smoothly and absorb shock as you move. Each disc has a spongy center (i.e., the nucleus pulposus) and tough outer rings (i.e., the annulus fibrosis).

Muscles and Ligaments Affecting the Back

The vertebrae are connected by a complex system of ligaments which "knit" them together. Strong flexible muscles maintain the three natural spinal curves and help in movement. The most important muscles which affect the spine are the stomach, hip flexors, hamstrings, buttock and back muscles.

Spinal Cord and Nerves

The spinal cord is a delicate cylinder of nerve fibers running the length of the spine inside a hollow tunnel formed by the vertebrae. Spinal nerves branch off of the spinal cord and exit through openings between vertebrae. These nerves then travel to all parts of the body.

Tendons

Tendons are tough, connective tissue that attach muscles to bones. They help move the hands, arms, legs and other body parts by acting as "pulleys."

Bursae

Bursae are small sacs filled with fluid. They serve as soft slippery cushions between bony projections and muscle-tendon units.

TYPES OF INJURIES

Muscle Pain, Sprains and Strains

Pain in the muscles is extremely common. When muscles contract repetitively without sufficient rest they can become sore and painful. This can happen without movement (e.g., when holding objects or fixed body postures) or when we move repetitively. A sprain is damage to ligament fibers caused by moving or twisting a joint beyond its normal range. A strain occurs when a muscle or a muscle-tendon unit is overused.

Bursitis

Bursitis is an irritation and inflammation of bursae in the shoulders and other areas caused by their rubbing on adjacent tendons.

Tendinitis and Tenosynovitis

When a tendon is overused, it can become inflamed and irritated causing tendinitis. When the tendon sheath is also involved, the condition is called tenosynovitis.

Neck Tension Syndrome

The joint where the last neck vertebra meets the first mid-back vertebra is a major site of acute back pain, muscle tension and other injuries. Common symptoms include: muscle tightness, soreness, restricted movement, headaches, numbness and tingling in the hands, wrists, arms or the upper back.

Shoulder Tendinitis, Bursitis and Impingement

Shoulder tendinitis is common in people who lift continuously or who work at levels above their shoulder. Several different tendons attach to bones in the shoulder region and produce different types of tendinitis, including rotator cuff and bicipital tendinitis. Shoulder bursitis inhibits the free movement of the tendons in the crowded shoulder girdle and limits the mobility of the shoulder. Shoulder impingement occurs when enlarged or inflamed bursae or tendons get caught between structures in the shoulder.

Degenerated, Bulging or Ruptured (Herniated) Discs

Over time, discs wear out or degenerate from natural aging. The discs dry out and become stiffer and less elastic. The outer fibrous rings can crack and the disc narrows. They become less able to handle loads put on them. If the inner jelly-like center bulges into the outer rings (i.e., the annulus), it may compress nearby nerves or blood vessels. If the inner jelly-like center breaks through the outer rings, the condition is called a ruptured (herniated) disc. The discs in the lower back are more susceptible to damage than other discs because they bear most of the load in lifting, bending and twisting.

Sciatica

Sciatica occurs when bulging or ruptured discs constrict the sciatic nerve or nearby blood vessels causing pain to be felt (i.e., referred) down the hips, buttocks or legs.

Wear and Tear Arthritis (Degenerative or Osteoarthritis)

Degenerative or "osteo" (bone) arthritis simply means the wearing out of joints, vertebrae, discs, facets or other structures over time. Osteoarthritis is associated with loads put on the spine over long time periods. As the discs dry out and narrow, they lose their shock-absorbing ability. The vertebrae become closer together, irritated and may produce bony outgrowths.

Facet Joint Syndrome

The facets interlock with the vertebrae above and below to form joints in the spine. The facets can become misaligned from bending, lifting and twisting while working.

"Slipped" Vertebrae (Spondylolisthesis)

Vertebrae in the lower back are pushed forward so they don't line up with other vertebrae. This condition disrupts the proper natural curves of the spine and causes joints, ligaments and muscles to be overburdened.

Spinal Canal Narrowing (Spinal Stenosis)

Narrowing (i.e., stenosis) in the spine can occur in the canal that the spinal cord runs through (or in the gap at the sides of vertebrae where nerves exit).

Vertebrae Fractures

Events like slips, trips, and falls can generate severe forces on the spine and cause compression fractures of the vertebrae.

F

REFERENCE READINGS

The following publications provided useful background information in the development of this booklet. Readers may find additional information on back injury prevention in health care by reviewing any of the following publications.

ARTICLES

1) The Lift Team Method For Reducing Back Injury: A Ten Hospital Study, Charney, W., June 1997, VOL. 45, No. 6

2) Identifying Risk Factors for Work Related Musculoskeletal Disorders in Nursing Homes, Orr, G. (OSHA Directorate of Technical Support), Nursing Homes Safety and Health Training Course, OSHA Office of Training and Education, USDL (July 1996)

3) Back Breaks, Romano, M., Contemporary Long Term Care, pp. 45-51 (February 1996)

4) Reduction of Acute Low Back Injuries By Use of Back Supports, Kraus, J. F., Brown, K.A., McArtheur, D.L., Peek-ASA, C., Samaniego, L., Kraus, C., and Zhou, L., International Journal of Occupational and Environmental Health, Vol. 2, pp. 263-273 (Oct.-Dec. 1996)

5) The Epidemiology of Back Injuries in Nurses at a Large Canadian Tertiary Care Hospital: Implications for Prevention, Yassi, A., Khokhar, J., Tate, R., Cooper, J. , Sow, C., Vallentyne, S., Occupational Medicine, Volume 45, No. 4, pp. 215-220 (1995)

6) Workplace Use of Back Belts, Review and Recommendations, Lemen, R.A., NIOSH Back Belts Working Group, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (July 1994)

7) Report on the American Workforce, Bureau of Labor Statistics, 1994

8) Lifting Team Design, A Method to Reduce Lost-time Back Injury in Nursing, Study in Four Acute Care Hospitals, Charney, W., Paper to The American Public Health Association Conference (October 1993)

9) Low Back Injuries Among Home Health Aides Compared with Hospital Nursing Aides, Myers, A., Jensen, R. C., Nestor, D., Rattiner, I. J., Home Health Care Services Quarterly, Vol. 14 (February/March 1993)

10) Back Stress Isn't Part of the Job, Owen, B., Garg, A., American Journal of Nursing, pp. 48-51 (February 1993)

11) Ergonomic Workplace Assessment in a Health Care Context, McAtamney, L., Corlett, E.N., Ergonomics, Vol. 35, No. 9, pp. 965-978 (1992)

12) Reducing Back Stress to Nursing Personnel: An Ergonomic Intervention in a Nursing Home, Garg, A., Owen, B., Ergonomics, Vol. 35, pp. 1353-1375 (1992)

13) An Ergonomic Evaluation of Nursing Assistants' Job in a Nursing Home, Owen, B., Garg, A., Carlson B., Ergonomics, Vol. 35, No. 1, pp. 979-995 (1992)

14) Four Methods for Identification of Most Back-Stressing Tasks Performed by Nursing Assistants in Nursing Homes, Owen, B. D., Garg, A., Jensen, R.C., International Journal of Industrial Ergonomics, Vol. 9, pp. 213-220 (January 1992)

15) The Lift Team: A Method To Reduce Lost Time Injury In Nursing, Charney, W., Journal of the American Association of Occupational Health Nursing, May 1991

16) Reducing Risk for Back Pain in Nursing Personnel, Owen, B., Garg, A., American Association of Occupational Health Nurses Journal, Vol. 39, pp. 24-33 (January 1991)

17) Patients Lifts, in Health Devices, Emergency Care Research Institute, Vol. 19 No.3 (March 1990)

18) Nursing Home Aides Experience Increase in Serious Injuries, Personick, M. E., Monthly Labor Review (February 1990)

19) Back Injuries Among Nursing Personnel Related to Exposure, Jensen, R.C., Applied Occupational and Environmental Hygiene, Vol. 5, pp. 38-45 (January 1990)

20) The Magnitude of Low-Back Problems in Nursing, Owen, B., West. J. Nurs. Res., Vol. 11, pp. 234-242 (April 1989)

21) Back Injury Control Programs for Nursing Staff, Jensen, R., Paper presented at 1989 International Industrial Engineering Conference and Societies' Manufacturing and Productivity Symposium Proceedings

22) Hospital Bed Design and Operation—Effect on Incidence of Low Back Injury among Nursing Personnel, Nestor, D., Trends in Ergonomics—Human Factors V, Hazadeh, F., (editor), Elsivier Science Publishers, B. V. (North-Holland) (1988)

23) The Use of Assistance While Lifting, Vojtecky, M. A., Harber, P., Sayre, J. W., Billet, E., and Shimozaki, S., Journal of Safety Research, Vol. 18, pp. 49-56 (1987)

24) The Handling of Patients in Geriatric Wards, Takala, E. P., Kukkonen, R., Applied Ergonomics, Vol. 18.1, pp. 17-22 (March 1987)

25) Back Injury: A Preventable Occupational Hazard, Marchette, L., Marchette, B., Orthopedic Nursing, Vol. 4, No. 6 (November/December 1985)

BACK INJURY PREVENTION GUIDES

1) Nursing Homes Safety and Health Training Course, OSHA Office of Training and Education, USDL (July 1996)

2) Back Injury Prevention Through Ergonomics: A Curriculum for Nurses, University of Oregon Labor Education and Research Center (in cooperation with the Oregon Federation of Nurses and Health Professionals under a grant from the Oregon Occupational Safety and Health Division) (December 1995)

3) Back Facts: A Training Workbook To Prevent Back Injuries In Nursing Homes, SEIU Education and Support Fund (under a grant from OSHA)

4) A Musculoskeletal Injury Prevention Process, Newfoundland Hospital and Nursing Home Association, Department of Employment and Labour Relations, Newfoundland and Labrador Nurses' Union, Canadian Union of Public Employees, and Newfoundland Association of Public Employees (1991)

WE WANT TO HEAR FROM YOU

We value and welcome your comments on the back injury prevention guide. Cal OSHA wants to provide the best service possible to employers and employees in California. Please fax this form to the Education and Training Unit of the Cal/OSHA Consultation Service at (916) 574-2532 or mail to: 2211 Park Towne Circle #4, Sacramento, CA 95825. **We thank you for your important participation!**

Topic	YES	NO	COMMENTS
1. Are the descriptions of back injury risk factors accurate?			
2. Are the work task evaluation tools useful?			
3. Do the potential improvement options seem practical?			
4. Will the guide's information help convince your decision makers (e.g., administrators) to try out some improvements?			
5. Overall, do you believe that the guide can help reduce back injuries?			

ADDITIONAL COMMENTS (PLEASE WRITE IN)

1. Please describe briefly what your organization plans to do or has done as a result of this guide (e.g., designated individuals or a group to plan and decide the strategy on improvement options; looked at injury statistics; added up direct and indirect costs; performed work task evaluation(s); bought lift equipment; trained staff, etc.)

2. What specific comments or suggestions do you have to improve this guide? For example:
   - What else can be done to further persuade management to implement appropriate solutions? Please be specific.
   - Are you aware of any other improvement options?
   - Are there any other important issues we did not address?

3. Do you have any other comments? (when referring to specific text or sections please indicate page numbers)

4. Are there any back injury success stories that you would like to share with us? If you provide your name and phone number we can more easily get the full story.

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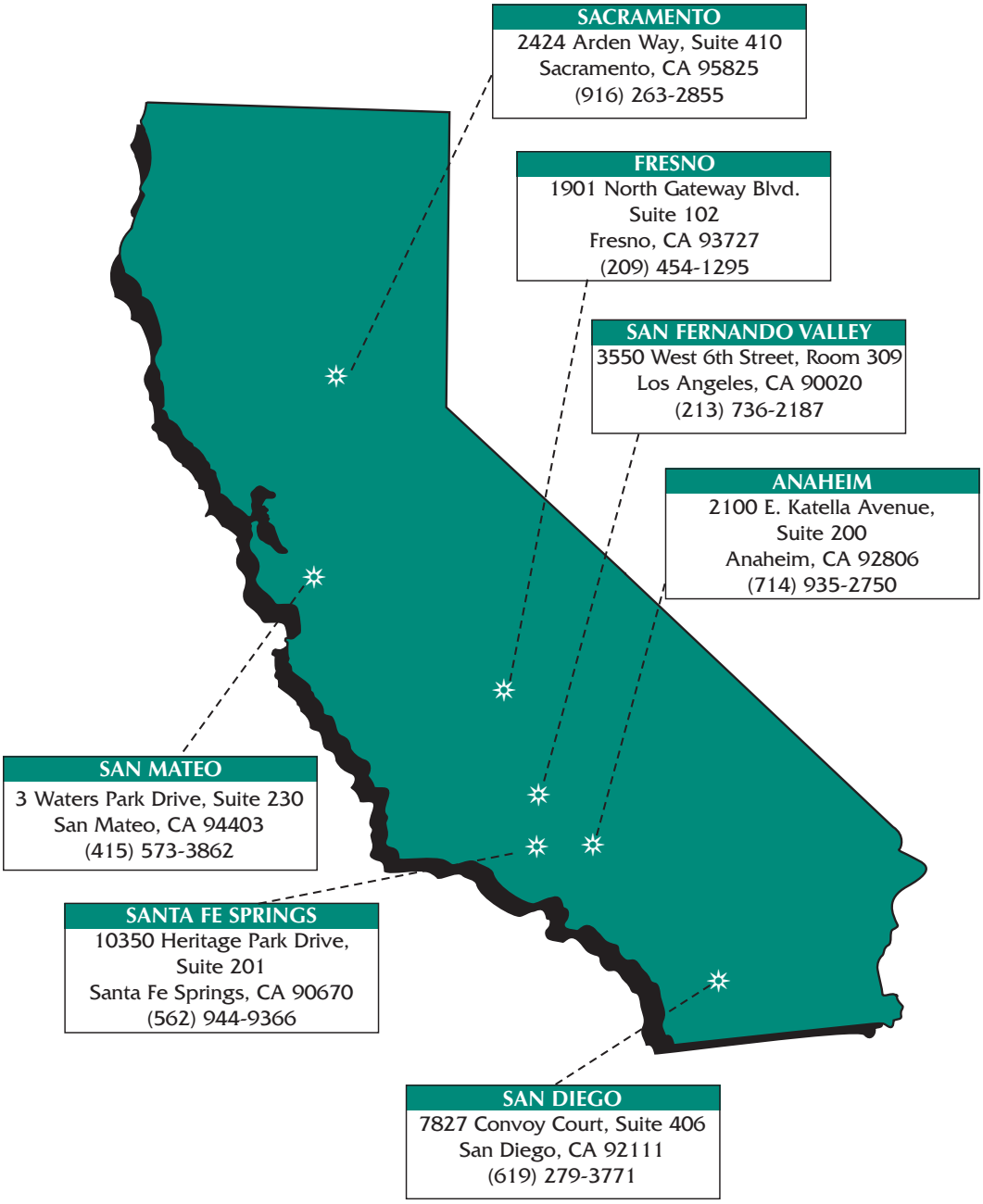

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