Preventing Ergonomic Injuries in Healthcare
OSHAcademy Course 623 Study Guide

Preventing Ergonomic Injuries in Healthcare

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Contact OSHAcademy to arrange for use as a training document.

This study guide is designed to be reviewed off-line as a tool for preparation to successfully complete OSHAcademy Course 623.

Read each module, answer the quiz questions, and submit the quiz questions online through the course webpage. You can print the post-quiz response screen which will contain the correct answers to the questions.

The final exam will consist of questions developed from the course content and module quizzes.

We hope you enjoy the course and if you have any questions, feel free to email or call:

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Course Introduction

All healthcare workers who lift and move patients are at high risk for back injury and other musculoskeletal disorders. A work-related musculoskeletal disorder (MSD) is an injury of the muscles, tendons, ligaments, nerves, joints, cartilage, bones, or blood vessels in the arms, legs, head, neck, or back that is caused or aggravated by work tasks such as lifting, pushing, and pulling.

Symptoms include:

- pain
- stiffness
- swelling
- numbness
- tingling

This course will take a closer look at ways employees can help prevent MSDs in their profession. It will also provide mechanical techniques to protect them from injuries when lifting and transferring patients.
Module 1: Safety and Health Program

Introduction
Ergonomics is the science of fitting the job to the worker. When there is a mismatch between the physical requirements of the job and the physical capacity of the worker, work-related musculoskeletal disorders (MSDs) can result.

Ergonomics provides a means for adjusting the work environment and work practices to prevent injuries before they occur. Health care facilities have been identified as an environment where ergonomic stressors exist.

Ergonomic Injuries
Employees can suffer ergonomic injuries during the handling, transferring, and positioning of patients.

Patient handling tasks pose increased ergonomic risk if they are:

- repetitive (e.g., repeatedly cranking manual adjustments for beds)
- done in awkward postures (e.g., reaching across beds to lift patients)
- done using a great deal of force (e.g., pushing chairs or gurneys across elevation changes or up ramps)
- lifting heavy objects (e.g., manually lifting immobile patients alone)

Other hazards include:

- overexertion
- trying to stop a patient from falling or picking patient/residents up from floor or bed
- multiple lifts per shift (more than 20)
- lifting alone, no available staff to help
- lifting un-cooperative, confused patients
- lifting patients who cannot support their own weight
- patient weight (bariatric patients)
- expecting employees to perform work beyond their physical capabilities
- distance to be moved, and the distance the patient is from the employee (it is more stressful to reach away from the body to lift or pull a patient)
- awkward postures required by the activity
ineffective training of employees in body mechanics and proper lifting techniques

**Potential Hazards**

Employee exposure to work related MSDs from ergonomic stressors that have not been effectively identified and addressed in a safety and health program could be a potentially hazardous situation.

Many patients, especially nursing home residents, are totally dependent on staff members to provide activities of daily living, such as dressing, bathing, feeding, and toileting. Each of these activities involve multiple interactions with handling or transferring of patients and could result in employee injuries. Employee injuries lead to increased injury costs, higher turnover rates, increased sick and/or injured days, and staffing shortages.

**Possible Solutions**

OSHA recommends minimizing the manual lifting of patients in all cases. Employees should eliminate lifting whenever possible. Employers should also identify and address ergonomic stressors in their facility’s safety and health plan.

Areas that should be addressed a facility's safety and health program include:

- management leadership/employee participation
- workplace analysis
- accident and record analysis
- hazard prevention and control
- medical management
- training

Let’s take a closer look at each of these components.

**Management Leadership/Employee Participation**

Management leadership should demonstrate a commitment to reduce or eliminate patient handling hazards through establishing a written program that addresses issues, such as:

- continued training of employees in injury prevention
- methods of transfer and lifting to be used by all staff
- compliance with transfer and lift procedures
- procedures for reporting early signs and symptoms of back pain and other musculoskeletal injuries

Employee participation should include:
• complaint/suggestion program which includes employee reports of unsafe working conditions
• prompt reporting of signs and symptoms as well as injuries

Workplace Analysis
Employers should conduct an analysis of the workplace to identify existing and potential workplace hazards and find ways to correct these hazards.

Assessment of work tasks involves:

• examination of duration
• frequency
• magnitude of exposure to ergonomic stressors such as force, repetition, awkward postures, vibration and contact stress to determine if employees are at risk of pain or injury

Observation, workplace walkthroughs, talking with employees and periodic screening surveys are used to help identify hazards such as stressful tasks.

Accident and Record Analysis
Records of injuries and illnesses should be analyzed to identify patterns of injury that occur over time, enabling the hazards to be addressed and prevented. This includes reviewing OSHA 300 logs, OSHA 301 forms and Workers' Compensation reports. For more on recordkeeping basics, please check out OSHAcademy course 708-OSHA Recordkeeping Basics.

Hazard Prevention and Control
This includes implementing administrative and engineering controls to help prevent ergonomic injuries.

Administrative controls: These are typically rules or procedures established by management to decrease the likelihood of an injury. For example, providing for adequate staffing, assessment of patient needs and restricted admittance policies.

Engineering controls: Help to isolate or remove the hazard from the workplace. Providing proper selection, training, and use of assist devices or equipment are all examples of engineering controls.
Medical Management

A medical management program, supervised by a person trained in the prevention of musculoskeletal disorders, should be in place to manage the care of those injured. The program should include:

- accurate injury and illness recording
- early identification and treatment of injured employees
- "light duty" or "no lifting" work restrictions during recovery periods
- systematic monitoring of injured employees to identify when they are ready to return to regular duty

Training

A training program, designed and implemented by qualified persons, should be in place to provide continual education and training about ergonomic hazards and controls to managers, supervisors and all healthcare providers, including "new employee" orientation. Training should be updated and presented to employees as changes occur at the workplace, and be at a level of understanding appropriate for those individuals being trained, and should also include:

- The opportunity to ask questions of the trainer.
- An overview of the potential risks, causes, and symptoms of back injury and other injuries. Be able to identify existing ergonomic stressors and methods of control, such as the use of engineering, administrative, and work practice controls particularly safe resident handling techniques.
- Recognizing the signs and symptoms of MSDs and the procedures for reporting potential problems.
- Encouragement of staff physical fitness.
- Lifting guidelines for health care workers (nurse assistants, licensed practical nurses, registered nurses) which should include:
  - Never transfer patients when off balance.
  - Lift loads close to the body.
  - Never lift alone, particularly fallen patients, use team lifts or use mechanical assistance.
  - Limit the number of allowed lifts per worker per day.
  - Avoid heavy lifting especially with spine rotated.
Training in when and how to use mechanical assistance.

**Success with Ergonomics: Case Study**

Borderview Rehabilitation and Living Center in Maine reduced musculoskeletal injury rates through an ergonomics program. The program involved employee participation and feedback, workstation and equipment modifications, and reassessment of the changes that are made.

Let’s take a closer look at the problem and how management, along with employees, fixed the issue.

**The Problem**

All 153 employees were trained in proper body mechanics for job-related tasks; however, several back injuries were still being reported over a short period of time.

**The Solution**

The company already had annual department-specific “back care” training in place to teach employees about proper body mechanics. After the numerous back injuries were reported, Borderview developed and implemented a program of separate analysis of the jobs in each department. As part of the job task analyses, the employees also completed a questionnaire where they could voice their concerns and comments. With input from the employees, the department heads worked with an ergonomics team to modify tasks and/or change the work environment and/or equipment. After the changes were made, management consulted employees to determine if the changes were effective or if additional modifications were needed. Employees also participated in exercise programs designed by the company’s physical therapists to increase strength and reduce the likelihood of injury.

**The Impact**

The company had three times achieved its goal of 100 consecutive days with a lost-time injury.

**Caring for Caregivers**

A Missouri health-care foundation is teaching its workers to look out for their own health and safety as well as their residents’. [Read more here](#).
Module 1 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. Patient handling tasks pose increased ergonomic risks if they are _____.
   a. done using a great deal of force
   b. repetitive
   c. easy
   d. both A and B are correct

2. OSHA recommends minimizing the manual lifting of patients in _____ cases.
   a. 50% of
   b. majority of
   c. all
   d. minimum of

3. Which of the following should be addressed in a facility’s safety and health program?
   a. Workplace analysis
   b. Management support
   c. Training
   d. Both A and C are correct

4. These are typically rules or procedures established by management to decrease the likelihood of an injury.
   a. Administrative controls
   b. Engineering controls
   c. Workplace analysis
   d. Hazard prevention

5. A training program, designed and implemented by qualified persons, should be in place to provide _____ education and training about ergonomic hazards.
   a. good
   b. continual
   c. complete
   d. unnecessary
Module 2: Patient Handling Controls

Introduction
Hospital health care workers (especially nursing assistants, who do a majority of the lifting in many facilities) may develop musculoskeletal injuries such as muscle and ligament strain and tears, joint and tendon inflammation, pinched nerves, herniated discs and others from patient handling.

Good work practice includes continually identifying the most hazardous tasks and implementing engineering and work practice controls to help reduce or prevent injuries in those tasks.

Employers must provide employees with proper assist devices and equipment to reduce excessive lifting hazards.

The proper equipment selection depends on the specific needs of the facility, patients, staff, and management.
Bathing Assistance

Devices such as shower chairs can fit over the toilet. Using this device can eliminate multiple transfers, which prevents health care workers from having to lift patients several times. A patient can be moved to the shower chair, toileted, showered, and transferred back to the wheelchair. Shower stalls allow for shower chairs to be pushed in and out on level floor surfaces.

Adjustable Bathtubs: These are used to bath patients who sit directly in the bathtub. They are also used to assist ambulatory patients.

Shower Gurney: Use for bathing non-weight bearing patients. The cart can be raised to eliminate bending and reaching to the caregiver.

Shower chairs can eliminate multiple transfers, saving health care workers multiple lifts.
Toileting Assistance
Toilet seat risers are used on toilets to equalize the height of wheelchair and toilet seat, making it a lateral transfer rather than a lift up and back into wheelchair.

Mechanical Lift Equipment
There are several types of equipment to help lift patients who cannot support their own weight. You should choose a lift that does not require manual pumping to avoid a possible repetitive motion disorders to workers’ arms or shoulders.

Let’s take a look at some popular lift equipment types.

Overhead track mounted patient lifters: A tract system built into the ceiling that sling lifts attach to. This system provides patient mobility from room to room without manual lifting.
Lateral transfer devices: Devices used to laterally transfer a patient (for example from bed to gurney). They usually involve multiple staff members to help do the lifting. This is often done with the help of a draw sheet, or similar device. Some new lateral transfer systems do not require any lifting by staff, and are totally mechanical. This type of device helps prevent staff back injuries.

Sliding boards: A slick board used under patients to help reduce the need for lifting during transfer of patient from bed to chair, or chair to car. Patients are slid rather than lifted.

- Some newer versions of sliding boards have devices that allow the resident to slide easily along the board without tissue damage and with no lifting involved.
- The friction of the movement is borne by the sliding board, not the patient’s skin. These devices are very useful for difficult transfers like car to wheelchair.
- This type of sliding board protects against back injuries, brachial plexus injuries and conditions which can cause pressure sores.
**Slip sheets/Roller sheets**: Helps to reduce friction while laterally transferring or repositioning patients in bed. They also help reduce the force workers need to exert to move the patient.
Repositioning Devices: Mechanically pulls patient up in bed, which eliminates manual maneuvering by staff.

Height adjustable electric beds: These should have height controls to allow for easy transfers from bed height to wheelchair height. These beds can be kept low to the ground for patient safety and then raised up for interaction with staff. Avoid hand cranked beds, which can lead to wrist/shoulder musculoskeletal disorders such as strain or repetitive motion injuries.
**Trapeze lifts:** A bar device suspended above the bed which allows patients with upper muscle strength to help reposition themselves. This device is particularly useful with adjustable beds and armless wheelchairs.

**Walking belts or gait belts** (with handles): Provide stabilization for ambulatory patients by allowing workers to hold onto the belt and support patients when walking. Not designed for lifting patients.
**Sitting-standing wheelchairs:** Wheelchairs that provide sitting to standing options for patients and health care workers.

**Pivot transfer disk devices:** Used for standing pivot transfers and seated pivot transfers for patients who have weight bearing capacity and are cooperative.
Module 2 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. Employers must provide employees with proper assist devices and equipment to reduce excessive lifting hazards.
   a. True
   b. False

2. This type of lift is suspended above the bed and allows patients to help repositioning themselves.
   a. Walking belts or gait belts
   b. Trapeze lift
   c. Slip sheets/Roller sheets
   d. Lateral transfer devices

3. Which device is not designed for lifting patients?
   a. Walking belts or gait belts
   b. Lateral transfer devices
   c. Trapeze lifts
   d. Pivot transfer disk devices

4. This device provides patient mobility from room to room without manual lifting.
   a. Lateral transfer devices
   b. Overhead track mounted patient lifters
   c. Pivot transfer disk devices
   d. Slip sheets/Roller sheets

5. Why should you avoid hand-cranked adjustable beds?
   a. They are harder to use
   b. Can lead to wrist or shoulder MSDs
   c. Can cause repetitive motion injuries
   d. Both B and C are correct
Module 3: Other Ergonomic Hazards

Some reports indicate a significant number of work-related MSDs in the healthcare facilities occur in activities other than patient lifting.

**Awkward Postures**

Awkward postures occur with twisted, hyper-extended or flexed back positions. They are unsafe back postures for patient lifting.

**Potential Hazard**

Increased potential for employee injury exists when awkward postures are used when handling or lifting patients. Awkward postures include:

- forces on the spine increase when lifting, lowering or handling objects with the back bent or twisted
- more muscular force is required when awkward postures are used because muscles cannot perform efficiently
- fixed awkward postures (i.e., holding the arm out straight for several minutes) contribute to muscle and tendon fatigue, and joint soreness
- reaching forward or twisting to support a patient from behind to assist them in walking

**Possible Solutions**

Good work practice recommends avoiding awkward postures while lifting or moving patients.

- Educate and train employees about safer lifting techniques.
- Use assist devices or other equipment whenever possible.
- Use team lifting based on assessment.

**Transferring Equipment**

Strains and sprains can occur if an employee is transferring equipment like IV poles, wheelchairs, oxygen canisters, respiratory equipment, dialysis equipment, x-ray machines, or multiple items at the same time.

To reduce the hazards of transferring equipment:
- Place equipment on a rolling device if possible to allow for easier transport, or have wheels attached to the equipment.
- Push rather than pull equipment when possible. Keep arms close to your body and push with your whole body not just your arms.
- Assure that passageways are unobstructed.
- Attach handles to equipment to help with the transfer process.
- Get help moving heavy or bulky equipment or equipment that you can’t see over.
- Don't transport multiple items alone. For example, if you are moving a patient in a wheelchair in addition to an IV pole and/or other equipment get help. Do not overexert yourself.

**Reaching Into Deep Sinks or Containers**

If washing dishes, laundry, or working in maintenance areas and using a deep sink, limit excessive reaching and back flexion by:

- Placing an object such as a plastic basin in the bottom of the sink, to raise the surface up while washing items in the sink, or
- Removing objects to be washed into a smaller container on the counter for scrubbing or soaking and then replacing back in the sink for final rinse.

**Lifting Heavy Bags**

Limit reaching or lifting hazards when lifting trash, laundry or other kinds of bags by:

- Using handling bags for laundry, garbage, and housekeeping when possible. Bags which have side openings to allow for easy disposal without reaching into and pulling bags up and out. The bags should be able to slide off the cart without lifting.
  - Limit the size and weight of these bags and provide handles to further decrease lifting hazards.
- Using garbage cans that have a frame versus a solid can to prevent plastic bags from sticking to the inside of the can.
- Use products that stick to the inside of the garbage can to prevent the bag from sticking.
  - Limit the size of the container to limit the weight of the load employee must lift and dump.
  - Place receptacles in unobstructed and easy to reach places.
- Installing chutes and dumpsters at or below grade level.
- Using spring-loaded platforms to help lift items such as laundry. These keep work at a comfortable uniform level.

**Using Hand Tools**
Limit strains and sprains of the wrists, arms, and shoulders, of maintenance workers by choosing hand tools carefully. Hand tools should:

- Be properly designed, and fit to the user.
- Have padded non-slip handles.
- Wrist can remain straight by selecting ergonomic tools, such as ergonomic knives or bent-handled pliers
- Have minimal tool weight.
- Have minimal vibration or use vibration dampening devices and vibration-dampening gloves.
- Use trigger bars rather than single finger triggers.
- Not be used when performing highly repetitive manual motions by hand. You should use power tools instead (e.g., use power screwdrivers instead of manual screwdrivers).

**Housekeeping Tasks**
To decrease ergonomic stressors when employees are performing cleaning tasks employees should:

- Alternate leading hand.
- Avoid tight and static grip and use padded, non-slip handles.
- Clean objects at waist level if possible, rather than bending over them (e.g., push wheelchairs up a ramped platform to perform cleaning work, or raise beds to waist level before cleaning).
- Use knee pads when kneeling.
• Use tools with extended handles, or use step stools or ladders to avoid or limit overhead reaching.
• When sweeping or dusting, use flat head dusters and push with the leading edge; sweep all areas into one pile and pick up with a vacuum.
• Use chemical cleaners and soaks to minimize force needed for scrubbing.
• Frequently change mopping styles when mopping (e.g. push/pull and rocking side to side) to alternate stress on muscles.
• Be sure buckets, vacuums, and other cleaning tools, have wheels or are on wheeled containers with functional brakes.
• Alternate tasks or rotate employees through stressful tasks.
• Avoid awkward postures while cleaning (e.g. twisting and bending).
• Use carts to transport supplies rather than carrying.
• Use buffers and vacuums that have lightweight construction and adjustable handle heights.
• Use spray bottles and equipment that have trigger bars rather than single finger triggers.
Module 3 Quiz
Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. Which of the following is a good work practice technique to avoid awkward postures while lifting or moving patients?
   a. Educate employees about safer lifting techniques
   b. Use assist devices whenever possible
   c. Use team lifting
   d. All of the above are correct

2. How can you prevent plastic bags from sticking to the side of a garbage bag?
   a. Use a solid can
   b. Use a plastic can
   c. You should never use plastic bags for disposal
   d. Use a frame can

3. Hand tools should not be used when performing highly repetitive manual motions.
   a. True
   b. False

4. To decrease ergonomic stressors when performing cleaning tasks, you should _____.
   a. Alternate leading hand
   b. Avoid tight and static grip
   c. Do not clean longer than an hour at a time
   d. Both A and B are correct

5. Pull rather than push equipment when possible.
   a. True
   b. False
Endnotes