Chapter 8

Lifting and Moving Patients

Unit Summary

After students complete this chapter and the related course work, they will understand the body mechanics of patient movement, principles of safe reaching and pulling, urgent and nonurgent moves, how to move patients as a team, types of patient packaging and moving equipment, how to protect both the EMT and the patient from injury when moving patients, and the use of medical restraints.

National EMS Education Standard Competencies

**EMS Operations**

Knowledge of operational roles and responsibilities to ensure safe patient, public, and personnel safety.

Knowledge Objectives

1. Explain the need and use of the most common patient-moving equipment, the stretcher and backboard. (pp 261–263)

2. Explain the technical skills and general considerations that are required of EMTs during patient packaging and patient handling. (p 263)

3. Define the term *body mechanics*. (p 264)

4. Discuss how following proper patient lifting and moving techniques can help prevent work-related injuries. (pp 263–264)

5. Identify how to avoid common mistakes when lifting and carrying a patient. (pp 265–267)

6. Explain the power grip and sheet or blanket methods for lifting a patient. (pp 267–269)

7. Explain the general considerations required of EMTs to safely move patients without causing the patient further harm and while protecting themselves from injury. (pp 271–274)

8. Explain how to carry patients safely on stairs, including the selection of appropriate equipment to aid in the process. (pp 274–276)

9. Describe specific situations in which an urgent move or rapid extrication may be necessary to move a patient; include how each one is performed. (pp 283–287)

10. Describe specific situations in which a nonurgent move may be necessary to move a patient; include how each one is performed. (pp 288–293)

11. Explain the special considerations and guidelines related to moving and transporting geriatric patients. (pp 293–296)

12. Define the term bariatrics. (p 296)

13. Discuss the guidelines for lifting and moving bariatric patients. (pp 295–297)

14. Explain the need and use for additional patient-moving equipment (specialized); include examples. (pp 296–300)

15. Know the importance of decontaminating equipment in the prevention of disease transmission. (p 300)

16. Describe proper positioning of the following conditions: (p 301)

* Unresponsive patients without suspected spine injury
* Patients with chest pain, discomfort, or difficulty breathing
* Patients with suspected spine injury
* Pregnant patients with hypotension
* Patients who are nauseated or vomiting

17. Discuss situations that may require the use of medical restraints on a patient. (pp 301–302)

18. Explain guidelines and safety considerations for the use of medical restraints. (pp 301–302)

Skills Objectives

1. Perform a power lift to lift a patient. (p 266, Skill Drill 8-1)

2. Demonstrate a power grip. (p 267)

3. Demonstrate the body mechanics and principles required for safe reaching and pulling, including the technique used for performing log rolls. (pp 267–269)

4. Perform the diamond carry to move a patient. (p 272, Skill Drill 8-2)

5. Perform the one-handed carry to move a patient. (p 273, Skill Drill 8-3)

6. Perform a patient carry using a stair chair to move a patient down the stairs. (p 275, Skill Drill 8-4)

7. Perform a patient carry to move a patient down the stairs on a backboard. (pp 276–277, Skill Drill 8-5)

8. Demonstrate how to load a stretcher into an ambulance. (pp 276–281, Skill Drill 8-6)

9. Demonstrate how to perform an emergency or urgent move. (pp 281–287)

10. Perform the rapid extrication technique to move a patient from a vehicle. (pp 283–287, Skill Drill 8-7)

11. Perform the direct ground lift to lift a patient. (pp 288–289, Skill Drill 8-8)

12. Perform the extremity lift to move a patient. (pp 290–291, Skill Drill 8-9)

13. Perform the direct carry to move a patient. (pp 291–292, Skill Drill 8-10)

14. Demonstrate how to use the draw sheet method to transfer a patient onto a stretcher. (pp 291–293)

15. Use a scoop stretcher to move a patient. (pp 292–294, Skill Drill 8-11; p 300)

16. Demonstrate the correct use of medical restraints on a patient. (pp 301–302)

Readings and Preparations

Review all instructional materials including ***Emergency Care and Transportation of the Sick and Injured*, Eleventh Edition**, Chapter 8, and all related presentation support materials.

• Review the local protocol for the use of restraints.

Support Materials

• Lecture PowerPoint presentation

• Case Study PowerPoint presentation

• Skill Drill PowerPoint presentations

* Skill Drill 8-1, Performing the Power Lift PowerPoint presentation
* Skill Drill 8-2, Performing the Diamond Carry PowerPoint presentation
* Skill Drill 8-3, Performing the One-Handed Carrying Technique PowerPoint presentation
* Skill Drill 8-4, Using a Stair Chair PowerPoint presentation
* Skill Drill 8-5, Carrying a Patient on the Stairs PowerPoint presentation
* Skill Drill 8-6, Loading a Stretcher Into an Ambulance PowerPoint presentation
* Skill Drill 8-7, Performing the Rapid Extrication Technique PowerPoint presentation
* Skill Drill 8-8, The Direct Ground Lift PowerPoint presentation
* Skill Drill 8-9, Extremity Lift PowerPoint presentation
* Skill Drill 8-10, Direct Carry PowerPoint presentation
* Skill Drill 8-11, Using a Scoop Stretcher PowerPoint presentation

• Equipment needed to perform the psychomotor skills presented in this chapter

• Skill Evaluation Sheets

* Skill Drill 8-1, Performing the Power Lift
* Skill Drill 8-2, Performing the Diamond Carry
* Skill Drill 8-3, Performing the One-Handed Carrying Technique
* Skill Drill 8-4, Using a Stair Chair
* Skill Drill 8-5, Carrying a Patient on the Stairs
* Skill Drill 8-6, Loading a Stretcher Into an Ambulance
* Skill Drill 8-7, Performing the Rapid Extrication Technique
* Skill Drill 8-8, The Direct Ground Lift
* Skill Drill 8-9, Extremity Lift
* Skill Drill 8-10, Direct Carry
* Skill Drill 8-11, Using a Scoop Stretcher

Enhancements

• Direct students to visit Navigate 2.

• Consider inviting a personal trainer to speak to the class about developing an exercise regimen compatible with the type of activity encountered while working as an EMT. Be sure to provide the guest speaker with a background of the physical job requirements well in advance to allow for proper planning.

• The Mayo Foundation for Medical Education and Research provides resources on health and exercise that can be accessed on its website.

• **Content connections:** Lessons in other chapters will provide more in-depth study of injuries requiring special packaging and moving techniques, gaining access, and extrication from difficult environments.

• **Cultural considerations:** Explain to students that physical contact may be culturally uncomfortable or prohibited by some patients’ beliefs and practices. Explaining procedures briefly to the patient and/or family and asking if they have objections will reflect greater professionalism in the EMT and help place patients at ease, showing respect for their wishes for limited physical contact and modesty. A sheet or blanket should be available for every patient for both comfort and privacy before being brought out in public to board the ambulance.

Teaching Tips

• Explain to students that the EMT may spend several hours immobile inside an ambulance followed by sudden demands on strength, stamina, and flexibility. Stress the role that adequate physical conditioning plays in performing one’s duties safely and adequately. Consider coordinating one or more of the activities stressing physical conditioning (see the followingUnit Activities).

• After students are comfortably and safely handling a stretcher, stair chair, and other moving devices, have each student role-play as a patient being moved. This activity will allow the student to further understand the patient’s possible feelings of vulnerability and anxiety in being strapped in and carried. Be sure to supervise this activity.

• Be sure students follow the principles of proper lifting and moving when participating in muscle group/exercise projects.

• In small groups or a whole-class format, ask students to recall/discuss a time when they had to lift and move a heavy or awkward object and perhaps a time when this type of task caused discomfort or injury. Lead groups in further thinking: Can they recall the mechanics (proper or improper) of lifting in that incident? What could they have done differently?

• Discuss sports or other disciplines where body position needs to be precise for optimal power and strength, as well as for injury prevention. Some examples include diving, gymnastics, lay-up shots for basketball, serving in volleyball, throwing a javelin, long jump, and hitting a baseball.

Unit Activities

**Writing assignments:** Assign a muscle to each student or group and have them research:

* How to increase strength and flexibility in this muscle
* How this muscle can help in lifting and moving patients/equipment

**Student presentations:** Have students present the muscle research paper to the class and come up with at least two exercises for strengthening/stretching that muscle (they should be able to perform the exercise in class).

**Group activities:** Have students pantomime a patient lift, equipment lift, or move, and have the rest of the class identify:

* Proper or improper technique
* Muscles used
* Which exercises might be used to develop more strength and flexibility for this lift

**Medical terminology review:** Assign student groups to prepare a “commercial” to present one of the pieces of equipment from this chapter. Allow 15 minutes for groups to create their commercials. The guidelines should be that they have to demonstrate all ranges of motion for the equipment as well as all moving parts/positions/straps. In addition, they should use the vocabulary list to incorporate as many terms as possible.

**Visual thinking:**

* Present pictures to each group or PowerPoint slides to the whole class showing a variety of locations where the patient or the patient’s surroundings may make getting into a proper lift position more difficult and create challenges for safe lifting and moving (eg, furniture-cluttered rooms, narrow stairways, dark locales, construction pits, a rowboat, bathtubs). Have the groups brainstorm for a few minutes for ways to possibly lift and move the patient while maintaining healthy and safe body mechanics. Have groups present their ideas to the whole class or as a brief list for a homework assignment that can then be displayed for sharing/discussion.
* Prepare index cards ahead of time, listing one type of lift on each card. Divide students into groups of four or five, and give the team “leader” the card. Without speaking, the leader must direct all team members to correctly perform the lift on the card. The entire set of directions must be acted out without using any verbal communication. Team members will need to watch their leader carefully for instructions. The other groups should watch for errors.
* Give students pictures of EMTs performing lifts, and ask the students to use a highlighter to mark which muscles are probably being flexed during each lift. Allow students to stand up and act out the movement to get a better picture of which muscles are used.

Pre-Lecture

### You Are the Provider

“You Are the Provider” is a progressive case study that encourages critical thinking skills.

### Instructor Directions

**1.** Direct students to read the “You Are the Provider” scenario found throughout Chapter 8.

**2.** You may wish to assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions and the Patient Care Report.

**3.** You may also use this as an individual activity and ask students to turn in their comments on a separate piece of paper.

Lecture

I. Introduction

**A. In the course of a call, you will have to move patients several times to provide emergency medical care and transport.**

 1. Once you have assessed the patient and provided emergency care, you and your team may have to move the patient onto a backboard or stretcher.

**B. At a minimum, you will have to lift and carry the patient to the stretcher, move the stretcher to the ambulance, and load the stretcher into the patient compartment.**

**C. Upon arrival at the hospital, the patient must be removed from the ambulance, wheeled into the emergency department (ED), and transferred to the ED bed.**

**D. To move patients without injury to the patient, yourself, or your team, you need to learn how to lift and carry a patient properly.**

 1. Knowledge of proper body mechanics and a power grip is important.

**E. Lifting and carrying are dynamic processes; to avoid unexpected, dangerous shifts in weight and to reduce the risk of injury to yourself, your part­ner, and the patient, you and your team should practice these techniques often.**

II. The Wheeled Ambulance Stretcher

**A. Also called an ambulance stretcher or gurney**

1. The device most commonly used to move and transport patients

2. Weighs 40–145 lb (18–66 kg), depending on its design and features

3. Generally not taken up or down stairs or to other locations where the patient must be carried for any significant distance

4. Moving a patient by rolling, using a stretcher or other wheeled device, is pre­ferred when the situation allows and helps prevent injuries from carrying.

5. Modern stretchers are available in a number of models.

 a. Before going on a call, familiarize yourself with the specific features of the stretcher that your ambulance carries.

6. General features of stretchers

a. Specific head end and specific foot end

b. Strong, rectangular, tubular metal main frame to which all other parts are attached

c. Stretcher is pulled, pushed, or lifted by this main frame or its handles.

d. Most models have a second tubular frame made up of three sections that is attached within or above the main frame.

i. A metal plate is fastened to each of the three sections between its sides and serves as the platform on which the stretcher mattress and patient are supported.

e. The head section of the stretcher runs from the head end to near the center, where the patient’s hips will be.

f. Hinges at the center allow the head end to be elevated and the patient’s back to be positioned at any desired angle.

g. Retractable guardrails are attached along the central portion of the main frame.

i. Can be lowered when a patient is being loaded onto or out of a stretcher

ii. Prevent the patient from rolling off of the stretcher

h. The undercarriage frame allows the litter to be adjusted to any height and locked into place.

i. From 12 inches above the ground for when the stretcher is secured within the ambulance to 32–36 inches above the ground for when the stretcher is being rolled

i. The mattress on a stretcher must be fluid resis­tant so that it does not absorb any type of potentially infectious material, including water, blood, or other body fluid.

j. Patients must always be secured with the straps on the stretcher. In the event of a crash while en route to the hospital, the straps help safeguard the patient from further injury.

III. Backboards

**A. Long, flat boards made of rigid, rectangular material**

1. Used to carry and immobilize supine patients with suspected hip, pelvic, spinal, and lower extremity injuries or other multiple trauma

2. Can also be used to move patients out of awkward places

3. Backboards are 6–7 feet long.

4. Commonly used for patients who are found lying down

5. Parallel to the sides and ends of the board are long holes that serve as handles and that allow straps to be used to secure the patient to the board.

6. If your service uses wooden backboards, you must follow infection control procedures before you can reuse them.

7. Newer backboards are made of lighter plastic materials that will not absorb blood or other infectious substances.

IV. Moving and Positioning the Patient

**A. When you move a patient, take care that injury does not occur:**

1. To you

2. To your team

3. To the patient

**B. Patient lifting and moving are technical skills that require repeated training and practice.**

**C. Many EMTs are injured while lifting and moving patients.**

**D. Using proper body mechanics and maintaining physical fitness greatly reduce the chance of injury.**

**E. You must master the skills necessary for the use of all equip­ment and understand the advantages and limitations of each device before you use it in the field.**

V. Body Mechanics

**A. Anatomy review**

1. The shoulder girdle rests on the rib cage and is supported by the vertebrae.

2. The arms are connected to and hang from the shoulder girdle.

3. When standing upright, the vertebrae are stacked on top of each other and aligned over the sacrum.

4. The sacrum is both the mechanical weight-bearing base of the spinal column and the fused central posterior section of the pelvic girdle.

5. Body mechanics:the relationship between the body’s anatomic structures and the physical forces associated with lifting, moving, and carrying

a. Maintaining proper posture and body movement during daily activities is applying the use of body mechanics.

b. Using good body mechanics while lifting and moving patients reduces your risk of injury.

6. When standing upright, the weight of anything being lifted and carried in the hands is reflected onto the shoulder girdle, the spinal column, the pelvis, and then the legs.

**B. Lifting position**

1. The shoulder girdle should be aligned over the pelvis.

2. The hands should be held close to the legs.

3. Force then goes essentially straight down the spinal column.

4. Very little strain occurs.

**C. You may injure your back:**

1. If you lift while leaning forward

2. If you lift with your back straight but bent forward at the hips

**D. Lifting technique**

1. Legs should be spread about 15 inches apart (shoulder width).

2. Place feet so that your center of gravity is properly balanced.

3. With your back held upright, bring your upper body down by bending the legs.

4. Grasp the patient or stretcher and make any necessary adjustments in the location of your feet.

5. Lift the patient by raising your upper body and arms and straightening your legs until you are in a standing position, and then curling your arms up to waist height.

6. Lifting by extending the properly placed flexed legs is the safest and most powerful way to lift.

a. This is called the power lift (**Skill Drill 8-1**).

7. Hold your arms so that your hands are almost adjacent to the plane described by your anterior torso, and keep the weight you are lifting as close to your body as possible.

8. Keep your arms the same distance apart as when hanging your arms at each side of your body.

**E. Reverse these steps when you are lowering the stretcher.**

**F. Use the power grip to get maximum force from hands when you are lifting.**

1. Palms up and thumbs extended upward

2. Hands about 10 inches apart

3. All fingers at same angle; fingers and thumb curled tightly over the top of the handle

4. Fully support the handle on your curved palm.

5. When directly lifting a patient, tightly grip the patient in a place and manner that will ensure that you will not lose your grasp on the patient.

VI. Principles of Safe Reaching and Pulling

**A. The same body mechanics and principles apply to moving, lifting, and carrying a patient.**

**B. Body drag**

1. Keep your back locked in a slight curve created by tightening your abdominal muscles.

2. Kneel to minimize the distance you will have to lean over.

3. Extend arms no more than 15–20 inches in front of you.

4. When you can pull no farther because your hands have reached the front of your torso, stop and move back another 15–20 inches.

5. Alternate between pull­ing the patient by slowly flexing your arms and repositioning yourself.

**C. If you must drag a patient across a bed, kneel on the bed to avoid reaching beyond the recommended distance.**

 1. Drag the patient to within 15–20 inches.

2. Complete the drag while standing at the side of the bed.

3. Use the sheet or blanket under the patient rather than dragging the patient by his or her clothing.

**D. In the hospital, transfer the patient from the stretcher to a bed with a body drag.**

1. The stretcher should be the same height or slightly higher than the bed.

2. You and a partner should kneel on the bed and drag in increments.

**E. Another method involves an EMT on each side of the patient, just beyond the patient’s shoulder and facing the patient’s groin.**

a. Extend one arm across and in front of your chest, and grasp the patient’s armpit.

b. Extend your other arm in front and to the side of the patient’s torso, and grasp the patient’s belt.

c. Raise your elbows and flex your arms to pull the patient.

**F. Log rolling a patient onto his or her side**

1. Kneel as close to the patient’s side as possible.

2. When you lean forward, keep your back straight and lean solely from the hips.

3. Roll the patient without stopping until the patient is resting on his or her side and braced against your thighs.

4. Pulling toward you allows your legs to prevent the patient from rolling over completely and from rolling beyond the intended distance.

VII. Principles of Safe Lifting and Carrying

**A. Whenever possible, use a device that can be rolled to move a patient.**

**B. When a wheeled device is not available, make sure that you understand and follow the proper guidelines for carrying a patient on a stretcher.**

**C. Patient weight**

1. Estimate the patient’s weight before lifting.

a. Adults often weigh 120–220 lb.

b. Two EMTs should be able to safely lift this weight.

2. Try to use four providers to lift when possible.

a. More stability

b. Requires less strength

3. Do not attempt to lift a patient who weighs more than 250 lb with fewer than four providers.

4. Know the weight limitations of the equipment and how to handle patients who exceed the weight limitations.

**D. Lifting and carrying a patient on a backboard or stretcher**

1. More of the patient’s weight rests on the head half of the device than on the foot half.

2. The diamond carry uses one EMT at the head and one at the foot of the backboard, and one on each side of the torso (**Skill Drill 8-2**).

3. The one-handed carry includes four or more rescuers each using one hand to support the backboard so that they are able to face forward as they are walking (**Skill Drill 8-3**).

4. When the stretcher must be carried, it is best if four providers are available to carry it. One provider should be positioned at each corner of the stretcher to provide an even lift.

5. When you are rolling the wheeled ambulance stretcher, make sure that it is in the fully elevated position.

 a. Your partner should control the head end and assist you by pushing with his or her arms held with the elbows bent.

**E. Moving a patient with a stair chair**

1. Use a stair chair to carry a patient up or down a flight of stairs or other significant incline if:

a. The patient is conscious.

b. The patient’s condition allows him or her to be placed in a sitting position.

2. A stair chairis a lightweight folding chair with a molded seat, adjust­able safety straps, and fold-out handles at both the head and feet.

3. Most models have rubber wheels in the back with casters in front so that they can roll along the floor and make turns.

4. Some have a specially designed track to facilitate movement down steps with little lifting required.

**F. Moving a patient on stairs with a stretcher**

1. A backboard should be used for a patient:

a. Who is unresponsive

b. Who must be moved in supine position

c. Who must be immobilized

2. Carry the patient on the backboard down the stairs to the prepared stretcher.

a. Place the strongest EMTs at the head and foot ends of the board.

b. The taller person should be at the foot end.

3. Once you reach the stretcher, place both the backboard and the patient on the stretcher; secure both to the stretcher with additional straps.

4. To carry a patient on stairs on a backboard, fol­low the steps in Skill **Drill 8-5**.

**G. Loading a wheeled stretcher into an ambulance**

1. Ensure the frame is held firmly between two hands so it does not tip.

2. Newer models are self-loading.

a. Extra wheels at the head end of the stretcher allow you to push the stretcher into the back of the ambulance.

3. Models that are not self-loading need to be lowered and then lifted to the height of the floor of the ambulance.

4. Clamps inside the ambulance will hold the stretcher in place during transport.

5. Follow the steps in Skill Drill 35-6 to load a stretcher onto an ambulance.

VIII. Directions and Commands

**A. Team actions must be coordinated.**

**B. Team leader**

1. Indicates where each team member should be

2. Rapidly describes the sequence of steps to perform before lifting

**C. Preparatory commands are used.**

**D. Example**

1. The team leader says, “All ready to stop,” to get the team’s attention, identify who should act, and prepare the team to act.

2. The team leader says, “Stop!” in a louder voice to indicate the exact moment of execution.

3. Countdowns are often used to lift a patient.

a. Example: “One, two, three.”

b. Always clarify if “three” is part of the preparatory command or whether it is to serve as the order to execute.

4. Carefully plan ahead.

5. Select the methods that will involve the least amount of lifting and carrying.

a. Always consider whether there is an option that will cause less strain to you and the other EMTs.

IX. Emergency Moves

**A. Emergency moves are used when there is a potential for danger before assessment and care are provided.**

1. Examples: fire, explosives, hazardous materials

**B. Use such moves when you cannot properly assess the patient or provide immediate care because of the patient’s location or position.**

**C. If you are alone, use a drag to pull the patient along the long axis of the body.**

**D. Use techniques to help prevent aggravation of the patient’s spinal injury, if present.**

1. Clothes drag: Pull on the patient’s clothing in the neck and shoulder area.

2. Blanket drag: Place the patient on a blanket, coat, or other item that can be pulled.

3. Arm drag: Rotate the patient’s arms so they are extended straight on the ground beyond his or her head, grasp the wrists, and drag the patient.

4. Arm-to-arm drag: Place your arms under the patient’s shoulders and through the armpits, and, while grasping your opposite wrist, drag the patient backward.

**E. Removing an unconscious patient from a vehicle alone**

1. Move the patient’s legs clear of the pedals.

2. Rotate the patient so that his or her back is toward the open car door.

3. Place your arms under the patient’s shoulders and through the patient’s armpits, and support the patient’s head against your body.

4. If the legs and feet clear the car, rapidly drag the patient from the seat to a safe location.

a. If the legs and feet do not clear the car, lower the patient to the ground until the patient is on his or her back, clear the legs from the vehicle, and drag the patient to a safe location.

X. Urgent Moves

**A. An urgent move may be necessary to move patient:**

1. With altered level of consciousness

2. With inadequate ventilation

3. In shock

4. In extreme weather conditions

**B. Rapid extrication technique should be used when a patient is sitting in a vehicle and must be urgently moved (Skill Drill 8-7).** Whether a backboard is used for this skill will depend on your local protocols.

1. This technique should be used if only urgency exists.

a. The vehicle or scene is unsafe.

b. Explosives or other hazards are on scene.

c. There is fire or a danger of fire.

d. The patient cannot be properly assessed prior to removal from the vehicle.

e. The patient needs immediate intervention that requires a supine position.

f. The patient has a life-threatening condition requiring immediate transport.

g. The patient blocks your access to another seriously injured patient.

2. Proper placement of immobilization devices usually requires 6–8 minutes.

3. Using the rapid extrication technique, a patient can be moved from sitting in a vehicle to supine on a backboard in 1 minute or less.

4. Because of its rapid nature, this technique increases the risk of damage if the patient has a spinal injury.

5. Look at all available options before using this technique.

6. You should not use this technique if no urgency exists.

7. It requires a team of three providers who are knowledgeable and practiced in the procedure.

8. Once the patient has been moved onto the backboard, move the patient away from the hazard to begin life-saving treatment.

XI. Nonurgent Moves

**A. Used when both the scene and the patient are stable.**

**B. Carefully plan how to move the patient.**

**C. The team leader must ensure there are enough providers, obstacles are identified and removed, the proper equipment is available, and the procedure and path to be followed are identified.**

**D. Methods for lifting and carrying**

1. Direct ground lift (**Skill Drill 8-8**)

a. Used for patients with no suspected spinal injury who are found supine on the ground

b. Use the direct ground lift when the patient will need to be carried a distance to the stretcher.

c. EMTs stand side by side to lift and carry the patient.

d. Ideally it should be performed by three EMTs, but it can be done with two.

2. Extremity lift (**Skill Drill 8-9**)

a. Used for patients with no suspected extremity or spinal injury who are supine or in a sitting position

b. May be helpful when the patient is in a small space because it does not require EMTs to stand side by side

c. One EMT is positioned at the patient’s head and the other EMT is positioned at the patient’s feet.

d. Coordinate your movements using direct verbal commands.

**E. Transfer moves**

1. Direct carry

a. With two or more rescuers, move the supine patient from the bed to stretcher using a direct carry method (**Skill Drill 8-10**).

2. Draw sheet method

a. With two or more rescuers, move the patient from the bed to the stretcher using a sheet or blanket.

b. Place the stretcher next to the bed, making sure it is at the same height or slightly lower, the rails are lowered, and straps are unbuckled. Hold or secure the stretcher to keep it from moving. Loosen the bottom sheet underneath the patient, or log roll the patient onto a blanket. Reach across the stretcher, and grasp the sheet or blanket firmly at the patient’s head, chest, hips, and knees. Gently slide the patient onto the stretcher.

c. Center the patient on the sheet and tightly roll up the excess fabric on each side. This produces a cylindrical handle that provides a strong, secure way to grasp the fabric.

3. Using a scoop stretcher (**Skill Drill 8-11**)

a. Insert the halves of the scoop stretcher under each side of the patient.

b. Fasten the sides together.

c. With two or more rescuers, move the patient to a nearby stretcher.

4. Other carries

a. Place a backboard next to the patient, log roll or slide to move the patient onto the backboard, secure the patient, and lift and carry the backboard to the nearby prepared stretcher.

b. Assist the patient to the edge of the bed, and place the patient’s legs over the side, helping the patient to sit up. Move the stretcher so that its foot end touches the bed near the patient. Help the patient to stand and rotate so that he or she can sit down on the center of the stretcher. Lift the patient’s legs, and rotate them onto the stretcher while your partner lowers the patient’s torso onto the stretcher.

**F. If the patient is in a chair and cannot assist you, transfer the patient from the chair to a stair chair.**

XII. Geriatrics

**A. Most patients transported by EMS are geriatric patients.**

**B. Skeletal changes**

1. Skeletal changes in older people may cause brittle bones, rigidity, and spinal curvatures.

2. Present special challenges in packaging and moving older patients

3. Many patients cannot lie supine on a backboard or scoop stretcher without causing further injury.

4. Consider geriatric-specific immobilization devices, such as a vacuum mattress.

5. Consult local protocols.

**C. Fear**

1. For many older patients, the fear of illness and disability is ever present, and an emergency trip to the hospital can be a terrifying and disorienting experience. The possibility of never returning home is a real fear for many of these patients.

2. Allay the patient’s fears with a sympathetic and compassionate approach.

3. Slow down, explain, and anticipate.

XIII. Bariatrics

**A. Approximately 76 million adults in the United States are obese.**

1. 40% of adults aged 40–59

2. 30% of adults aged 20–39

3. 35% of adults aged 61 or older

4. 17% of children

**B. Bariatrics: the management (prevention or control) of obesity and allied diseases.**

**C. The larger the patient, the more likely he or she will need emergency treatment and transportation.**

**D. Bariatric patients are taking an increasing toll on the health of EMTs; back injuries account for the largest number of missed days of work.**

**E. Stretchers and equipment are being produced with ever-higher capacities.**

1. Increased capacity does not address the danger to users of that equipment.

2. Mechanical ambulance lifts are used in Europe but are uncommon in the United States.

XIV. Additional Patient-Moving Equipment

**A. Bariatric stretchers**

1. A specialized wheeled stretcher for overweight or obese patients

2. Wider patient surface area

3. Wider wheelbase allowing for increased stability

4. Some are equipped with optional features such as a tow package, which allows for an ambulance-mounted winch to assist in loading the patient into the ambulance, or telescoping side lift handles, which allow for increased leverage when lifting with multiple providers.

5. The most important feature is the increased weight-lifting capacity.

a. Typical stretchers are rated to a maximum weight of 650 lb.

b. The bariatric stretcher is rated to hold 850–900 lb.

**B. Pneumatic and electronic-powered wheeled stretchers**

1. Battery operated with electronic controls to raise and lower the undercarriage

2. The added controls and equipment increase the weight of the stretcher.

a. This creates a potential hazard when transporting a patient on uneven terrain or up and down steps.

**C. Portable/folding stretchers**

1. A stretcher with a strong rectangular tubular metal frame with rigid fabric stretched across it

2. Does not have a second frame or an adjustable undercarriage

3. Some models have two wheels that make it easier to move the loaded stretcher.

4. Some models can be folded in half for storage.

5. Used in areas that are difficult to reach or when a second patient must be transported on the squad bench

6. Weigh much less than wheeled stretchers

7. Because most models do not have wheels, your team must support all of the patient’s weight, equipment, and the stretcher itself.

**D. Flexible stretchers**

1. Can be rolled up across the stretcher’s width or length so the stretcher becomes a smaller tubular package

2. Excellent for storage and carrying

3. Conform around a patient’s sides and do not extend beyond them

4. When extended, useful when removing a patient from or through a confined space

5. Certain flexible stretchers can be belayed or rappelled by ropes.

6. The most uncomfortable stretcher but provides excellent support and immobilization

**E. Short backboards**

1. Used to immobilize the head, torso, and neck of a seated patient with a suspected spinal injury until the patient can be moved to a long backboard

a. 3–4 feet long

b. Short wooden backboards have mostly been replaced with a vest-type device such as the KED, which is designed to immobilize that patient until he or she is moved from a sitting position to a supine position on a backboard.

**F. Vacuum mattresses**

1. Alternative to the backboard for immobilizing geriatric and pediatric patients

2. The patient is placed on the mattress and the air is removed from the device, allowing it to mold around the patient.

3. Provides a high degree of immobilization, comfort, and ther­mal insulation

**G. Basket stretcher**

1. A rigid stretcher also called a Stokes litter

2. Used to carry the patient across uneven terrain from a remote location that is inaccessible by ambulance or other vehicle

3. Used for technical rope rescues and some water rescues

4. If the patient has a suspected spinal injury, secure the patient to a backboard and place the backboard inside the basket stretcher.

5. When you return the ambulance, lift the backboard out of the basket stretcher and place it on the wheeled ambulance stretcher.

6. Basket stretchers are made of plastic with an aluminum frame or have a full steel frame that is connected by woven wire mesh.

7. Their design allows water to drain through the stretcher.

**H. Scoop stretchers**

1. Also called an orthopaedic stretcher

2. Designed to be split into two or four pieces

3. Pieces are fitted around the patient who is lying on the ground or on a flat surface

4. The parts are then reconnected and the patient is lifted and put onto a backboard.

5. Both sides of the patient must be accessible to use a scoop stretcher.

6. You must fully immobilize and secure the patient on the scoop stretcher.

**I. Neonatal isolette**

1. A neonatal patient cannot be transported on a wheeled ambulance stretcher.

2. A neonatal isolette is sometimes referred to as an incubator.

3. Keeps the neonatal patient warm, with moistened air in a clean environment

4. Protects from noise, drafts, infection, and excess handling

5. The isolette can be:

a. Placed directly on a wheeled ambulance stretcher and secured with seatbelts

b. Freestanding and secured into the back of an ambulance in place of where the standard stretcher would be

**J. Decontamination**

1. It is essential that you decontaminate equipment after use.

a. For your own safety

b. For the safety of crew using the equipment after you

c. For the safety of your patients

d. To prevent the spread of disease

e. Know and follow your local standard operating procedures for disinfecting equipment.

XV. Patient Positioning

**A. A patient must be properly positioned based on the chief complaint.**

1. Certain patient conditions, such as head injury, shock, spinal injury, pregnancy, and obese patients, call for special lifting and moving techniques.

2. A patient with no suspected injury reporting chest pain or respiratory distress should be placed in a position of comfort—typically a Fowler or semi-Fowler position.

3. Patients who are in shock should be packaged and placed in a supine position.

4. Patients in late stages of pregnancy should be positioned and transported on their left side if they are uncomfort­able or hypotensive when supine.

5. An unre­sponsive patient with no suspected spinal, hip, or pelvic injury should be placed in the recovery position.

6. A patient who is nauseated or vomiting should be transported in a posi­tion of comfort.

7. Obese patients should be positioned the same as other patients with a similar condition

a. Ensure their dignity is maintained.

XVI. Medical Restraints

**A. First evaluate the patient for correctible causes of combativeness.**

1. These include head injury, hypoxia, and hypoglycemia.

**B. Follow local protocols. Obtain medical control authorization if necessary.**

1. There may be consequences for either applying the restraints or failing to restrain a patient who should have been restrained.

**C. If the patient poses a danger to you, your team members, himself or herself, or bystanders, the application of physical restraints needs to be considered.**

 1. Before you take action to restrain the patient, attempt to speak to the patient in a calming manner, and de-escalate the situation.

**D. Restraint requires a minimum of five personnel.**

1. One for each extremity of the patient, and one for his or her head

2. One EMT should be the established team leader.

3. Develop a plan to restrain the patient together.

4. A patient who is caught off guard is less likely to cause injury to responders.

**E. The patient should be in the supine position.**

1. A patient in the prone position can develop positional asphyxia.

**F. Each extremity should have a restraint applied to it.**

**G. The patient should be restrained on a backboard with one arm above his or her head and the other arm by his or her side.**

**H. Assess the patient’s ABCs, mental status, and distal circulation after restraints are applied.**

**I. Document all information.**

XVII. Personnel Considerations

**A. Ask yourself these questions before moving a patient:**

1. Am I physically strong enough to lift/move this patient?

2. Is there adequate room to get the proper stance to lift the patient?

3. Do I need additional personnel for lifting assistance?

**B. Injured EMTs cannot help anyone.**

Post-Lecture

This section contains various student-centered end-of-chapter activities designed as enhancements to the instructor’s presentation. As time permits, these activities may be presented in class. They are also designed to be used as homework activities.

## Assessment in Action

This activity is designed to assist the student in gaining a further understanding of issues surrounding the provision of prehospital care. The activity incorporates both critical thinking and application of basic EMT knowledge.

### Instructor Directions

**1.** Direct students to read the “Assessment in Action” scenario located in the Prep Kit at the end of Chapter 8.

**2.** Direct students to read and individually answer the quiz questions at the end of the scenario. Allow approximately 10 minutes for this part of the activity. Facilitate a class review and discussion of the answers, allowing students to correct responses as may be needed. Use the quiz question answers noted below to assist in building this review. Allow approximately 10 minutes for this part of the activity.

**3.** You may wish to ask students to complete the activity on their own and turn in their answers on a separate piece of paper.

### Answers to Assessment in Action Questions

**1.** **Answer:** B Clothes drag

**2.** **Answer:** A keep your back straight.

**3.** **Answer:** B Yes, there is a significant MOI.

**4.** **Answer:** C scoop stretcher

**5.** **Answer:** C your elbows should extend just beyond the anterior torso.

**6.** **Answer:** D power lift.

**7.** **Answer:** A orthopaedic stretcher

**8.** **Answer:** A diamond carry.

**9.** **Answer:** Communication is important because you must constantly coordinate your lifting and carrying movements with other team members.

**10.** **Answer:** Am I physically strong enough to lift/move this patient? Is there adequate room to get into the proper stance before I lift the patient? Do I need additional personnel for lifting assistance?

## Assignments

A. Review all materials from this lesson and be prepared for a lesson quiz to be administered (date to be determined by the instructor).

B. Read Chapter 9, “Airway Management,” for the next class session.