

## UNIT 1: LESSON PLAN

TOPIC: Spinal Immobilization

LEVEL: I

TIME: 90 minutes

### BEHAVIORAL OBJECTIVES:

Given: Simulated exercises and a written exam

Performance: Each trainee will be able to:

- know the functions and basic concepts of spinal immobilization
- understand and operate spinal immobilization equipment

Standard: By performance in classroom exercises in accordance with the standards described in EMS Agency policy, and passing of a multiple choice written exam with a minimum of 70% accuracy.

REFERENCES: Mountain-Valley EMS Agency policy 551.30 Prehospital Treatment Guidelines for BLS personnel; and policy 551.40 Prehospital Treatment Guidelines for ALS personnel

MATERIALS NEEDED: Handouts, white board, marker pens, viewgraphs, spinal immobilization equipment: c-collars, back boards, various types of immobilization straps

### MOTIVATION/PREPARATION:

Because of the severe consequences of inadequately immobilized blunt-mechanism spinal injuries, all patients with signs or symptoms of spine injury must be appropriately immobilized.

However, because of the clear dangers of spinal immobilization to all patients, those patients without suspicious signs or symptoms of spine injury **MUST NOT** be immobilized. The greatest danger to all patients in spinal immobilization is inability to protect their airway in the event of vomiting. Increasing pain from the immobilization device is almost universal for all patients, as well. Pressure necrosis of skin, especially of elderly patients or those in shock, does occur. Adverse impact on respiration and venous return to the heart also happens, especially to the elderly. Improperly-sized immobilizers, when applied to obese patients and children, may actually increase risk to the spinal cord or airway.

<u>PRESENTATION</u>	<u>APPLICATION</u>
<p>Introduction of trainees and instructors</p> <p>Administrative details:</p> <p>Parking</p> <p>Ground rules</p> <p>Facilities</p> <p>Meal schedules</p> <p>Use of telephones</p> <p>7. Other pertinent points</p>	
<p>Upon arrival on scene of blunt trauma victim:</p> <p>1. Assess airway/bleeding</p> <p>2. Identify need for spinal immobilization</p> <p>Indicators include:</p> <ol style="list-style-type: none"> <li>a. Complaint of neck/back pain</li> <li>b. Tenderness on direct palpation of c-spine</li> <li>c. Neuro deficit</li> <li>d. Altered level of consciousness</li> <li>e. Intoxication by alcohol, drugs, or medications</li> <li>f. Psychosis</li> <li>g. Preverbal/frightened children</li> <li>h. Distracting pain</li> <li>i. Unclear history with primary language other than English</li> <li>j. Blunt injury above the clavicle</li> <li>k. Multi-system trauma</li> </ol>	<p>Is patient vocalizing? -implies patent airway.</p> <p>Is airway clear?</p> <p>Any facial bleeding?</p> <p>Palpating the c-spine:</p> <ul style="list-style-type: none"> <li>• Maintain in-line immobilization of c-spine</li> <li>• Touch each spinous process to identify pain location.</li> </ul>

<u>PRESENTATION</u>	<u>APPLICATION</u>
<p>Contraindications include:</p> <ol style="list-style-type: none"> <li>a. Mechanical injuries of the lower back, such as occur with lifting or bending, even if they have lower extremity nerve symptoms (sciatica).</li> <li>b. Penetrating trauma to the neck, back, chest, and abdomen, who do not have clear evidence of spinal cord injury or who are not comatose, should be transported without full spinal immobilization, if those immobilization steps would prolong on-scene time</li> <li>c. Only lumbar and lower thoracic spine injuries MUST NOT receive c-spine immobilization. It is necessary to immobilize only the thorax, pelvis, and lower extremities.</li> <li>d. A fully awake and oriented patient, without other significant distracting pain and no evidence of significant intoxication, and who does not have spinal pain or tenderness or distal signs of spinal nerve injury, MUST NOT be immobilized</li> </ol>	
<p>3. Place proper fitting rigid extrication-type cervical collar</p> <p>[Supplement: Fitting patient with c-collar]</p> <ul style="list-style-type: none"> <li>• Proper size</li> <li>• Provides full occipital and mandibular support</li> </ul>	<p>Is head being maintained in in-line position?</p> <p>Is airway being protected?</p>
<p>4. Make necessary immobilization device preparations.</p> <p>[Supplement: Manufacturer recommendations for straps]</p>	<ul style="list-style-type: none"> <li>• Place straps and make adjustments per manufacturer recommendations</li> <li>• Clip on straps</li> </ul>
<p>5. Place patient in supine position on full length spine board or vacuum immobilization mattress</p> <ul style="list-style-type: none"> <li>• Rescuers roll patient toward themselves</li> <li>• One rescuer quickly examine the back while patient is on their side</li> <li>• Slide the backboard behind and under the patient</li> <li>• Roll the patient back onto the board</li> <li>• Ensure patient is centered on board</li> </ul>	<ul style="list-style-type: none"> <li>• Device must meet OSHA requirements</li> <li>• It may be of break-away design.</li> <li>• Maintain in-line position.</li> <li>• Torso and pelvis must be secured so that no motion occurs with log roll maneuvers</li> </ul>
<p>6. Secure patient to immobilization device</p>	<ul style="list-style-type: none"> <li>• Must be able to detach and reattach straps</li> </ul>

<u>PRESENTATION</u>	<u>APPLICATION</u>
<ul style="list-style-type: none"> <li>• If scene conditions or patient size do not allow for the use of independently detachable straps, the use of D-ring straps with supplemental adhesive or duct-type tape is allowed</li> <li>• D-ring straps may be used in Figure-8 pattern to secure the pelvis.</li> </ul>	<ul style="list-style-type: none"> <li>• Fasteners must not meet over torso or pelvis</li> <li>• Once piece, threaded seat-belt-type straps are not acceptable.</li> <li>• Do not apply tape directly to skin.</li> <li>• Place padding between skin and tape.</li> <li>• Duct tape is not acceptable on torso.</li> <li>• Tape may be used to secure thigh and legs in uncooperative or combative patient.</li> </ul>
<p>7. Secure lateral neck support that prevents head rotation by stabilizing the temples.</p> <ul style="list-style-type: none"> <li>• May be of foam or cardboard</li> <li>• "Towel roll" type improvised supports are not acceptable</li> </ul>	
<p>8. Forehead and chin attachment may be made with adhesive or duct-type tape, and must prevent head rotation.</p>	<p>Do not tape facial hair or eyebrows.</p> <p><b>Do not</b> apply tape directly to skin.</p> <p>Padding must always be placed between the skin and tape.</p>
<p>9. Check and readjust straps as needed</p>	
<p>10. Put padding under joints.</p> <ul style="list-style-type: none"> <li>• Increased comfort and decreases voluntary motion.</li> <li>• Helps prevent loss of normal spine curvature</li> </ul>	<ul style="list-style-type: none"> <li>• Padding under flexed knees decreases low back pain and lumbar movement.</li> </ul>

SUMMARY: We have just reviewed the process for proper spinal immobilization in blunt trauma patients, including acceptable techniques and equipment

EVALUATION: Each trainee will be required to demonstrate the ability to apply principles learned through classroom simulation. Each trainee will also pass a written, multiple-choice exam with a minimum of 70% accuracy at-the end of the course.

ASSIGNMENT: Review all handouts, trainee manuals, and notes.

Mountain – Valley EMS Agency  
**Spinal Immobilization**  
Written Competency Exam

Select the correct answer to the following questions:

1. The greatest danger to all patients in spinal immobilization is inability to protect their \_\_\_\_\_ in the event of vomiting.
  - a. hips
  - b. airway
  - c. bloodflow
  - d. clean clothes
  
2. Improperly sized immobilizers, when applied to obese patients and children, may actually increase risk to the \_\_\_\_\_.
  - a. gag reflex
  - b. spinal cord
  - c. TMJ
  - d. foramen magnum
  
3. All of the following are *exclusive* indicators (no other indicators are necessary) that require spinal immobilization EXCEPT:
  - a. Complaint of neck / back pain.
  - b. Tenderness on direct palpation of c-spine
  - c. 50 mph motor vehicle accident
  - d. Blunt injury above clavicle
  
4. All of the following are contraindications for the use of spinal immobilization EXCEPT:
  - a. Mechanical injuries of the lower back, such as occur with lifting or bending, even if they have sciatica.
  - b. Patient is lying on a hill.
  - c. Penetrating trauma to the neck, back, chest and abdomen, who do not have clear evidence of spinal cord injury, or who are not comatose.
  - d. A fully awake and oriented patient, without other significant distracting pain, who does not have spinal pain or tenderness.
  
5. When securing patient to immobilization device, use:
  - a. multiple bungee cords.
  - b. baling wire through patient belt loops.
  - c. D-ring straps.
  - d. O-ring straps
  - e. None of the above