

RDSTF – Region 5

Standard Principles and Guidelines for Prehospital Management of the Trauma Patient

Spinal Immobilization Immobilization of the Supine/Prone Patient

These are meant as guidelines and are not a requirement

RATIONALE

Although spinal precautions are still very important, there is increasing concern that we may be doing more harm than good with backboard use. This protocol aims to continue safe care of the injured spine while minimizing harm from backboard use.

In the right patient (see below), it is safe to protect and care for the injured spine without using a backboard. Backboards do an imperfect job of immobilizing the spine, and movement is often worse on the backboard than on a soft surface that conforms to the patient such as a stretcher mattress.

Specifically:

- Spinal precautions can be followed without the use of a backboard.
- Patients who are alert enough to follow commands can typically maintain stabilization of their own spine without assistance.
- Backboards have not been shown to prevent neurological complications from spinal injury.
- Backboards increase mortality in certain trauma patients, i.e. penetrating trauma.
- Backboards restrict respiration, which has potential to directly harm patients.
- Backboards rapidly lead to skin breakdown and pressure ulcers, even after a short period of time, and they can be particularly harmful to elderly patients.
- Backboards increase patient anxiety and discomfort, as well as increase EMS scene times.
- Backboard use has been correlated with increased use of imaging studies and other resources in the Emergency Department.

INDICATIONS

1. Mechanism of injury
 - a. Violent impact on the head, neck, torso or pelvis
 - b. Incidents that produce sudden acceleration or deceleration, including lateral bending forces

- c. Any fall, especially in the elderly
 - d. Ejection or fall from a moving mode of transportation
- 2. Altered level of consciousness or inability to communicate
 - a. Abnormal GCS
 - b. Evidence of significant intoxication
 - c. Dementia
 - d. Speech or hearing impairment
 - e. Age (young children < 5
 - f. Language barrier
- 3. Complaints suggestive of spinal injury
 - a. Spinal pain or tenderness, when palpations the posterior spinous processes
 - b. Neurologic deficit or complaint, including paresthesia, paralysis or weakness
 - c. Anatomical deformity of the spine
- 4. Distracting Injuries
 - a. Long bone fractures
 - b. Joint dislocations
 - c. Abdominal or thoracic pain, or obvious visceral injury
 - d. Large lacerations, degloving injuries or crush injuries
 - e. Serious burns
 - f. Any injury producing acute functional impairment
- 5. Penetrating trauma
 - a. Altered level of consciousness
 - b. Any neurological deficits* or complaints
 - i. Test motor function in both upper and lower extremities (entire extremity)
 - ii. Test sensation in both upper and lower extremities (start proximal and work towards hands and feet)
 - iii. Ask about numbness or tingling in extremities
- 6. Other situations
 - a. Immobilize all patients with the following conditions:
 - i. High voltage electrical injuries (does not include Taser use).
 - ii. Shallow water drowning or diving injuries.
 - b. If spinal immobilization is indicated but refused by the patient:
 - i. Advise the patient of the indication for immobilization, and the risks of refusing the intervention.
 - ii. If the patient allows, apply the cervical collar even if backboard is refused.
 - iii. Maintain spinal alignment as best as can be achieved during transport.
 - iv. Clearly document refusal of immobilization.
 - c. If spinal immobilization is indicated but the patient cannot tolerate supine position:
 - i. Apply all elements of spinal immobilization that the patient will tolerate.
 - ii. Maintain spinal alignment as best as can be achieved during transport.
 - iii. Clearly document the clinical condition that interfered with full immobilization.
 - d. **Spinal precautions can be maintained by application of a cervical collar and securing patient firmly to the stretcher without a long backboard if all 5 of these criteria are met:**
 - i. Patient is ambulatory at the scene.
 - ii. Patient does not demonstrate an altered level of consciousness or inability to communicate.
 - iii. Patient does not have complaints but is tender upon palpation over the spinous processes of the cervical spine.
 - iv. Patient does not have any point tenderness when palpating the spinous processes of the thoracic and lumbar spine.

- v. Patient does not have distracting injuries.
- e. **Spinal precautions do not need to be maintained if there is/are no:**
 - i. Tenderness over the spinous processes of the cervical, thoracic, lumbar spine.
 - ii. Distracting injuries.
 - iii. Altered level of consciousness or inability to communicate.
 - iv. Evidence of intoxication.

OTHER CONSIDERATIONS

1. Extrications

Backboards are primarily for EXTRICATION. Use the long spine board, scoop stretcher, vacuum mattress, short board, and/or Kendrick Extrication Device (KED) to minimize movement of the patient when moving them from the point of injury to the stretcher.

2. Patient Moves

Once the patient is moved to the stretcher, based on provider discretion, you may use log roll or lift-and-slide technique to lay the patient flat on the stretcher off the board and leave the c-collar in place. Elevate the back of the stretcher as needed for patient comfort and secure the patient using the stretcher belts.

3. Transporting

Do not routinely transport patients to the hospital on a backboard, short board, KED, or vacuum mattress unless it is necessary for patient safety or for their level of injury. Crews may also leave the patient on the board if transport time is expected to be 15 mins or less or there are other extenuating circumstances.

4. Agitated/Combative/Seizing Patient

Patients who are markedly agitated and/or confused from head injury may not be able to follow commands with regard to minimizing spinal movement, and combativeness may also be a factor. Patients may remain on a backboard if the crew deems it safer for the patient, and this will be at the discretion of the crew. A combative or seizing patient should not be forcefully trapped to a backboard, beyond what is required for their safety, as this can create higher forces and cause increased injury.

***WHEN IN DOUBT IMMOBILIZE**

Acronym "NSAIDS" to help remember the steps in this protocol

N	Neuro exam any focal deficits	YES - IMMOBILIZE
S	Significant mechanism of injury	YES - IMMOBILIZE
A	Alteration in mental status	YES - IMMOBILIZE
I	Intoxication evidence	YES - IMMOBILIZE
D	Distracting injury	YES - IMMOBILIZE
S	Spinal exam: point tenderness over the posterior spinous processes	YES - IMMOBILIZE

IF NO TO ALL - SPINAL IMMOBILIZATION NOT REQUIRED

PROCEDURE

1. Begin with manual immobilization of the head in a neutral, in-line position. Manual immobilization should be provided without interruption until complete patient immobilization is accomplished.
2. Contraindications to placement in an in-line position:
 - a. Neck muscle spasm that prohibits neutral alignment
 - b. Increased pain
 - c. Onset of or increase of a neurological deficit such as numbness, tingling, or loss of motor ability
 - d. Compromise of the airway or ventilation
 - e. If the patient's injuries are so severe that the head presents with such misalignment that it no longer appears to extend from the midline of the shoulders
3. Size and apply the appropriate cervical collar. To size the collar, measure the distance, using your fingers, between the bottom of the jaw to the top of the trapezius muscle or according to manufacturer's recommendations. In the rare instance an appropriately sized cervical collar is not available, maintain manual immobilization and complete the immobilization process without a cervical collar.
4. While maintaining manual stabilization with a cervical collar in place:
 - a. Position the backboard next to the patient so that the head of the backboard is approximately 1-2 feet above the patient's head.
 - b. Log roll the patient onto the backboard in a supine position.
 - c. Reposition patient, in order to center on backboard, by sliding patient in an upward motion (axial) on the board. Do not slide patient in a direct lateral position, as this may manipulate the spine.
5. Place cervical immobilization device in place.
6. Pad the space, as needed, between the back of the head and the backboard to prevent hyperextension of the cervical vertebrae.
7. Secure the patient's body to the board with a minimum of six (6) straps.
 - a. Immobilize the upper torso to prevent upward sliding of patient's body during movement and transportation. This is accomplished by bringing straps over the shoulders and across the chest to make an X.

- b. Additional straps must be placed to prevent side to side movement of the body on the board. This can be accomplished by placing straps across the iliac crests to make an X and mid-to-distal thigh to make an X.
- c. Arms should be placed at the patient's side to prevent movement of the shoulder girdle.
- d. Secure both feet together to prevent rotary movement of the legs.
- e. Apply 1 or 2 inch tape directly across the forehead and secure the head while extending the tape under the backboard. DO NOT apply tape directly under the chin as this may create an airway obstruction. Tape may be placed across the surface of the semi rigid cervical collar.

SUMMARY

* Long Spine Boards (LSB) have both risks and benefits for patients and have NOT shown to improve outcome.

* Best use of the LSB may be for extricating the unconscious patient or providing a firm surface for chest compression.

* LSB immobilization if blunt trauma, distracting injury, intoxication, altered mental status, neurological complaints - numbness, weakness, non-ambulation, with spinal pain, tenderness or spinal deformity.

The Region 5 Trauma Advisory Board Clinical Leadership Committee would appreciate your feedback on these guidelines. Please click on the link below to take a 1 minute survey to provide your input.

<https://www.surveymonkey.com/r/RDSTF5-CLC-ProtocolsFeedback>