



SPINAL MOTION RESTRICTION

Effective: January 1, 2023
Replaces: February 12, 2019

I. Purpose

The purpose of this protocol is to provide a spinal injury assessment tool to assist the BLS and ALS prehospital provider in the determination of the most appropriate Spinal Motion Restriction (SMR) treatment of patients that may have sustained a spinal injury.

II. Spinal Motion Restriction (SMR)

- A. **Spinal Motion Restriction (SMR)** begins with the manual stabilization and immobilization of the cervical spine, followed by the proper application of:
1. Properly sized rigid cervical collar, and;
 2. Long plastic radio translucent spine board, and;
 3. Approximately 4-cm-thick padding for torso and shoulders (for ages 8 and younger) if available, and;
 4. Web belt or strapping device, and;
 5. Lateral head support device
- B. SMR will be applied to all patients that have or may have sustained a significant mechanism of injury and have an abnormal Spinal Injury Assessment, as described in Section III of this protocol.
- C. **Modified Spinal Motion Restriction** begins with the manual stabilization and immobilization of the cervical spine, followed by the application of, at minimum, a rigid cervical collar and is utilized for a less acute patient with a simple mechanism of injury.
- D. Modified SMR is utilized when full SMR is not practical or is not best suited for the management of the patient's special circumstances by restricting the gross motion of the spine with non-traditional methods. (i.e. pt on gurney with collar)
- E. Modified SMR is utilized for patients that exhibit para-vertebral pain or soft tissue tenderness and has an unremarkable Spinal Injury Assessment, as described in Section III of this protocol.

III. Spinal Injury Assessment

- A. If the potential for a spinal injury exists, apply manual cervical stabilization, and assess the patient for the following:
1. Determine the patient is without a language barrier
 2. Assess for any distracting injuries and alcohol or drug use
 3. Determine if the patient is cooperative, alert and orientated
 4. Palpate and visualize the entire vertebral column for injury

- B. If the above assessment is Abnormal at any step, apply SMR.
- C. If the above assessment is Unremarkable continue with exam:
 - 1. Assess for adequate circulation, motor, and sensation in all extremities
 - 2. Assess flexion and extension in both elbows and wrist
 - 3. Assess finger adduction and abduction in both hands
 - 4. Assess flexion and extension in both knees
 - 5. Assess plantar flexion and dorsiflexion in both feet
- D. If the above assessment is Abnormal at any step, apply SMR.
- E. If the above assessment is Unremarkable consider Modified SMR or omit SMR.

IV. Special Considerations of SMR

- A. The following factors should be considered in conjunction with the Spinal Injury Assessment to determine the appropriate use of SMR or Modified SMR:
 - 1. Patients over age fifty-five (55) have an increased risk of death from even moderate injuries
 - 2. Pediatric patients sustain more head and multi-systems injuries than adults, due to the traumatic force applied to a child's body is distributed over less body mass
 - 3. The presence of, cardiac, respiratory, end stage renal disease requiring dialysis, or metabolic disease are also factors that may merit the use of SMR with patients presenting moderate injuries
- B. Spinal immobilization has been found to limit patient's ability to ventilate and/or oxygenate. Consider the use of modified spinal immobilization of geriatric and pediatric patients with acute or chronic dyspnea.
- C. Infants restrained in a rear-facing car seat may be immobilized to the car seat and extricated in the car seat if his/her condition allows.
- D. Pediatrics restrained in a front facing car seat with a high back may be immobilized to the car seat and extricated in the car seat.
- E. Pediatrics restrained in a booster seat without a back must be placed in SMR.
- F. Foam, anti-skid pads or similar products provide proper alignment for pediatric patients 8 years and younger on adult spine boards by elevating their shoulders and torso by approximately 4 cm and should be used whenever possible.
- G. Avoid methods that provoke increased spinal movement and/or agitation in combative patients.
- H. Patients with penetrating trauma to the head, neck, or torso and no evidence of spinal injury should not be immobilized on a backboard.

V. Treatment Flow Chart

