

Spinal Care

(Adapted from an evidence-based guideline created using the National Prehospital Evidence-Based Guideline Model Process)

(9914107 – Spinal Cord Injury)

Patient Care Goals

1. Select patients for whom spinal immobilization is indicated
2. Minimize secondary injury to spine in patients who have, or may have, an unstable spinal injury
3. Minimize patient morbidity from immobilization procedures

Patient Presentation

Inclusion criteria

Traumatic mechanism of injury

Exclusion criteria

No specific recommendations

Patient Management

Assessment

1. Assess the scene, to determine the risk of injury. Mechanism alone should not determine if a patient requires cervical spine immobilization. However, mechanisms that have been associated with higher risk of injury are the following:
 - a. Motor vehicle collisions, including automobiles, all-terrain vehicles, and snowmobiles
 - b. Axial loading injuries to the spine
 - c. Associated, substantial torso injuries
 - d. Falls >10 feet
2. Assess the patient in the position he/she was found. Initial assessment should focus on determining whether or not a cervical collar needs to be applied.
3. Assess for mental status, neurologic deficits, spinal pain or tenderness, any evidence of intoxication, or other severe injuries

Treatment and Interventions

1. Immobilize patient with cervical collar if there is any of the following:
 - a. Patient complains of midline neck or spine pain
 - b. Any midline neck or spinal tenderness with palpation
 - c. Any abnormal mental status (including extreme agitation) or neurologic deficit
 - d. Any evidence of alcohol or drug intoxication
 - e. Another severe or painful distracting injury is present
 - f. Torticollis in children
 - g. A communication barrier that prevents accurate assessment

If none of the above apply, patients should not have a cervical collar placed

2. Patients with penetrating injury to the neck should not receive spinal immobilization, regardless of whether they are exhibiting neurologic symptoms or not. Doing so can lead to delayed identification of injury or airway compromise, and has been associated with increased mortality
3. If extrication may be required
 - a. From a vehicle: After placing a cervical collar, if indicated, children in a booster seat and adults should be allowed to self-extricate. For infants and toddlers already strapped in a car seat with a built-in harness, extricate the child while strapped in his/her car seat
 - b. Other situations requiring extrication: A padded long board may be used for extrication, using the lift and slide (rather than a logroll) technique
4. Helmet removal
 - a. If a football helmet needs to be removed, it is recommended to remove the face mask followed by manual removal (rather than the use of automated devices) of the helmet while keeping the neck immobilized. Occipital padding should be applied, as needed, with the patient in a supine position, in order to maintain neutral cervical spine positioning
 - b. Evidence is lacking to provide guidance about other types of helmet removal
5. Patients should not routinely be transported on long boards, unless the clinical situation warrants long board use. An example of this may be facilitation of immobilization of multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or other treatment priorities. In these rare situations, long boards should be padded or have a vacuum mattress applied to minimize secondary injury to the patient
6. Patients should be transported to the nearest appropriate facility, in accordance with the Centers for Disease Control "Guidelines for Field Triage of Injured Patients" (see **General Trauma Management** guideline)

Patient Safety Considerations

1. Be aware of potential airway compromise or aspiration in immobilized patient with nausea/vomiting, or with facial/oral bleeding
2. Excessively tight immobilization straps can limit chest excursion and cause hypoventilation
3. Prolonged immobilization on spine board can lead to ischemic pressure injuries to skin
4. Prolonged immobilization on spine board can be very uncomfortable for patient
5. Children are abdominal breathers, so immobilization straps should go across chest and pelvis and not across the abdomen, when possible
6. Children have disproportionately larger heads. When securing pediatric patients to a spine board, the board should have a recess for the head, or the body should be elevated approximately 1-2 cm to accommodate the larger head size and avoid neck flexion when immobilized

Notes/Educational Pearls

Key Considerations

1. Evidence is lacking to support or refute the use of manual stabilization prior to spinal assessment in the setting of a possible traumatic injury, when the patient is alert with spontaneous head/neck movement. Providers should not manually stabilize these alert and spontaneously moving patients, since patients with pain will self-limit movement, and forcing immobilization on children with this clinical appearance may unnecessarily increase

- discomfort and anxiety
2. Certain populations with musculoskeletal instability may be predisposed to cervical spine injury. However, evidence does not support or refute that these patients should be treated differently than those who do not have these conditions. These patients should be treated according to the spinal care guideline like other patients without these conditions
 3. Age alone should not be a factor in decision-making for prehospital spine care, yet the patient's ability to reliably be assessed at the extremes of age should be considered. Communication barriers with infants/toddlers or elderly patients with dementia may prevent the provider from accurately assessing the patient
 4. Spinal immobilization should be considered a treatment or preventive therapy
 5. Patients who are likely to benefit from immobilization should undergo this treatment
 6. Patients who are not likely to benefit from immobilization, who have a low likelihood of spinal injury, should not be immobilized
 7. Ambulatory patients may be safely immobilized on gurney with cervical collar and straps and will not generally require a spine board
 8. Long spine board should be reserved for patient movement in non-ambulatory patients who meet immobilization criteria and should be removed as soon as is practical

Pertinent Assessment Findings

1. Mental status
2. Normal neurologic examination
3. Evidence of intoxication
4. Evidence of multiple trauma with other severely painful injuries

Quality Improvement

Key Documentation Elements

1. Patient complaint of neck or spine pain
2. Spinal tenderness
3. Mental status/GCS
4. Neurologic examination
5. Evidence of intoxication
6. Documentation of multiple trauma
7. Documentation of mechanism of injury

Performance Measures

1. Percentage of patients with high risk mechanisms of injury and signs or symptoms of cervical spine injury who are placed in a cervical collar
2. Percentage of patients without known trauma who have a cervical immobilization device placed (higher percentage creates a negative aspect of care)
3. Percentage of trauma patients who are transported on a long backboard (target is a low percentage)
4. Percentage of patients with a cervical spinal cord injury or unstable cervical fracture who did not receive cervical collar

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