

# C-Spines Are Us!

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, approximately 1/3 to 1/2 of all trauma patients can be determined, in the field, to have very low risk of spinal injury. These patients must be identified, and spinal immobilization must NOT be applied. Always immobilize only those blunt trauma patients or suspected trauma patients who:

- Have posterior spine pain or tenderness, pain with neck motion, distal numbness, tingling, weakness, or paralysis.
- Have altered consciousness or poor communication, so that their pain perception or neurologic exam cannot be trusted. These patients include those with:
  - Altered level of consciousness
  - Intoxication by alcohol, drugs, or medications
  - Psychosis
  - Pre-verbal or very frightened children
  - Significant distracting pain (ex: other major fractures or significant abrasions)

The greatest danger to all patients in spinal immobilization is the:

- inability to protect their airway in the event of vomiting
- increasing pain from the immobilization device
- pressure necrosis of skin
- adverse impact on respiration and venous return to the heart
- improperly-sized immobilizers may actually increase risk to the spinal cord or airway.

Full spinal immobilization for suspected cervical or upper thoracic spine injury after blunt trauma must include the following equipment and techniques:

- Assure manual in-line stabilization of the head and neck until the patient is secured with a c-collar and backboard.
- Rigid extrication-type cervical collar, of proper size, that provides full occipital and mandibular support.
- Secure the patient, even if the patient is secured to a short board or other extrication device, to a full-length spine board or vacuum immobilization mattress. Device must meet OSHA requirements. It may be of break-away design.
- Assure lateral head support that prevents head rotation by stabilizing the temples. The stabilization device may be made of foam or cardboard. "Towel roll" type improvised supports are not acceptable.
- Forehead and chin attachment may be made with head stabilization device manufacturer provided straps, or adhesive or duct-type tape, and must prevent head rotation. Do not tape

facial hair or eyebrows.

- Torso straps must securely attach torso and pelvis to spine board, so that no motion occurs during log-rolling maneuvers. One must be able to independently detach torso or pelvic straps for exam or procedures, without loosening all straps. One must be able to detach and reattach straps with the patient supine on the backboard. Fasteners for the strap ends must not meet over the torso or pelvis. One-piece threaded “seat belt” type straps are not acceptable. Duct tape or other tape is not acceptable on the torso, even as “reinforcement” for straps.
- Thigh and leg straps must prevent extremity motion from shifting the pelvis.
- Place padding under joints and voids. These increase comfort (and hence decrease voluntary motion) and prevent loss of normal spinal curvature. In particular, padding under flexed knees dramatically decreases low back pain and lumbar movement.
  - Adults should have 1 - 2" of padding under occipital portion of the skull
  - Infants and small children require some padding under the back and shoulder to keep the cervical spine in a neutral position.

Lumbar and lower thoracic spine injuries **MUST NOT** have immobilization of the cervical spine. Only immobilization of the thorax, pelvis, and lower extremities is required.

Mechanical injuries of the lower back, such as occur with lifting or bending, virtually never cause instability of spinal supporting structures. Immobilization of any kind is not indicated. Transport these patients in a position of comfort, even if they have lower extremity nerve symptoms (sciatica).

Management of penetrating spine injuries remains controversial. Penetrating injuries of the spinal cord occur at the time of projectile impact only. Supporting spine structures remain intact and prevent further injury from the normal minor movement associated with extrication and resuscitation. The risks of uncontrollable internal bleeding and unmanageable airway compromise, especially in neck and thorax penetrations outweigh the risk of further spinal cord injury. Hence, patients with 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.