



Southern Minnesota Regional Trauma
Advisory Committee (SMRTAC)

Practice Management Guideline

Final
Edits
to be made

Spine Motion Restriction (Spine Immobilization)

Combined Adult Pediatrics
Practice Management Guideline

Effective: 11/2011

Contact: SMRTAC Coordinator

Last Reviewed:

Purpose

To state the appropriate procedure for spine motion restriction for adult and pediatric trauma patients.

Definitions

1. Adult trauma patient – any patient age fifteen (15) or older suffering an injury. For the purposes of this guideline the definition is any injured patient who may be at risk for a spine injury.
2. Pediatric trauma patient — any patient <15 years of age.
3. Spine motion restriction – maintenance of a straight neutral spinal position of the entire spine. Equipment such as stiff neck collars, long back board, and head stabilization blocks may be utilized.
4. Distracting injury/condition – A situation that may affect the patient's ability to reliably perceive signs or symptoms of a spine injury. These may include (but are not limited to) extremity fractures, abdominal or chest trauma, large lacerations/de-gloving/crush injuries, emotional distress, or significant burns.

Policy Statements

1. Motion restriction is a priority in multiple trauma patients, spine clearance is not. The spine should be assessed and cleared when appropriate given the injury characteristics and physiologic state of the patient.
2. Patients at risk for spinal injury should be placed in a stiff cervical collar and kept in a straight neutral position. In the emergency department setting this includes straight on a patient cart. Pre-hospital providers should follow their standard operating procedures (SOP) for motion restriction.
 - a. For pediatric patients when size appropriate collars are not available head stabilization devices may be used to stabilize the spine.
3. Anatomically the pediatric patient's occiput size may necessitate padding to be placed under the ~~shoulders~~ or torso to maintain neutral position of the cervical spine.
4. An immobilized child is at risk for airway compromise so should be monitored closely.

5. Imaging of the spine does not take precedence over life-saving diagnosis and therapeutic procedures.
6. Patients who remain on hard long boards can suffer complications in a relatively short period of time including pressure sores, deferred pain, and respiratory compromise.
7. Long backboards are commonly used for extrication purposes. However, the benefit of long backboards beyond the extraction phase of transport is largely unproven.
8. Utilization of backboards for motion restriction during transport should be judicious, so that the potential benefits outweigh the risks. Use of the long back board may be considered with the following subset of patients:
 - a. Blunt trauma and altered level of consciousness
 - b. Spinal pain or tenderness
 - c. Neurologic complaint (numbness or motor weakness)
 - d. Anatomic deformity of the spine
 - e. High-energy mechanism of injury and any of the following
 - i. Drug or alcohol intoxication
 - ii. Inability to communicate
 - iii. Distracting injury
9. Pediatric patients at risk for cervical spine injury include:
 - a. Loss of consciousness within the past 4-6 hours, unconscious state
 - b. Neck pain/focal neck tenderness
 - c. Abnormal neurologic exam findings (motor, sensory, or reflexes)
 - d. Signs of neck trauma (ecchymosis, abrasions, deformity or swelling)
 - e. Unexplained cardiorespiratory instability or arrest
 - f. History of transient neurologic symptoms suggestive of spinal cord injury including but not limited to weakness, paresthesias, burning sensation down spine/extremity or related to neck movement.
 - g. First rib or clavicle fractures.
 - h. mandible fracture

Procedure Statements

1. The stable pediatric patient, who is in appropriate car seat, should be transported via EMS in the car seat.
2. All trauma patients should have a primary and secondary survey examination following ATLS®/CALS® guidelines which includes an examination of the neck and spine.
3. All trauma patients should be removed from the pre-hospital back board when turned during/following the secondary survey. This is ideally done within twenty (20) minutes of patient arrival. Patients going on to CT scan should be removed from the board *prior* to imaging. Continue neutral alignment.
4. Clinical clearance of the spine can be completed if the patient meets all of the following criteria:
 - a. Fully alert and oriented (GCS 15)
 - b. No evidence of head, spine, or spinal cord injury.
 - i. Patients should exhibit no signs of neuro-deficits such as numbness, tingling, paresis, paralysis, etc.
 - c. No evidence of impairment by drugs or alcohol
 - d. Absence of neck pain
 - e. No distracting injury or condition as defined
5. Radiologic evaluation of the c-spine is indicated for all patients who do not meet above criteria. Transfer should not be delayed to complete imaging.

- a. For adult patients plain cervical spine x-rays are not indicated in any patient who is going to have a CT scan for any other reason. In those instances, cervical spine imaging should be accomplished in the CT scanner.
 - b. For pediatric patients, use of plain cervical spine x-rays are the primary method of C-spine clearance.
6. When a patient is transferred to a tertiary care facility the default practice is to transfer the patient in a cervical collar and with neutral positioning.
- a. For the patient to be considered clinical cleared at the tertiary care facility documentation of the negative physical examination **and** the negative imaging must be available for the trauma team at **time of admission**.
 - b. Children are especially at risk for a spinal cord injury without radiographic abnormality so clinical clearance prior to the transfer should be an uncommon practice

Resources/Links

Advanced Trauma Life Support for Doctors (ATLS) © 9th Edition

Rural Trauma Team Development Course (RTTDC) © Third Edition

EMS Spinal Precautions and the Use of the Long Backboard: National Association of EMS Physicians and American College of Surgeons Committee on Trauma. Prehospital Emergency Care 2013; Early Online:1-2

The National Emergency X-Radiography Utilization Study (NEXUS)
Annals of Emergency Medicine July 2001

Trauma Nursing Core Course (TNCC) © Seventh Edition

Practice Management Guidelines for the Screening of Thoracolumbar Spine Fracture
Eastern Association for the Surgery of Trauma; Practice Management Guideline
Committee Revised 07-17-2006

Stiell, I.G., Wells, G.A., Vandemheen, K.L., Clement, C.M., Lesiuk, H., De Maio, V.J, et al. (2001). The Canadian C-Spine Rule for Radiography in Alert and Stable Trauma Patients. *Journal of the American Medical Association*, 286(15), 1841-1848.

Prepared by: SMRTAC leadership

Approvals: SMRTAC PI Subcommittee; SMRTAC 12/15/2011

Disclaimer: This is a general guideline and is not intended as a substitute for clinical judgment or as a protocol for the management of all trauma patients.