10O – SPLINTING OF INJURIES ADULT & PEDIATRIC

EMERGENCY MEDICAL RESPONDER

EMT

EMT-INTERMEDIATE 85

ADVANCED EMT

PARAMEDIC

10Oa: Spinal Motion Restriction – Adult & Pediatric:

Many patients evaluated by EMS professionals are placed in a cervical collar and onto a long spine backboard based as much upon "tradition" that this practice is without risk and the benefit is without question. Like many medical practices scrutinized over time, evidence-based medicine reveals it is with risk (pain, tissue damage leading to pressure sores, and concerns about risks of aspiration and impaired breathing mechanics). Similarly, the benefit is not certain. Few "real" injuries are so unstable that the process of spinal motion restriction as performed in EMS is the difference-maker between paralysis and ambulation.

This protocol does not seek to avoid spinal motion restriction when clinically indicated. This protocol rather seeks to provide an evidence-based approach that directs the careful practice of spinal motion "restriction" in situations where history, exam findings, and/or patient interaction limitations make the possible benefit outweigh the risks. When the benefit does not outweigh the risks, patients should not incur clinically unnecessary collars and boards.

When applying spinal motion restriction, include the following:

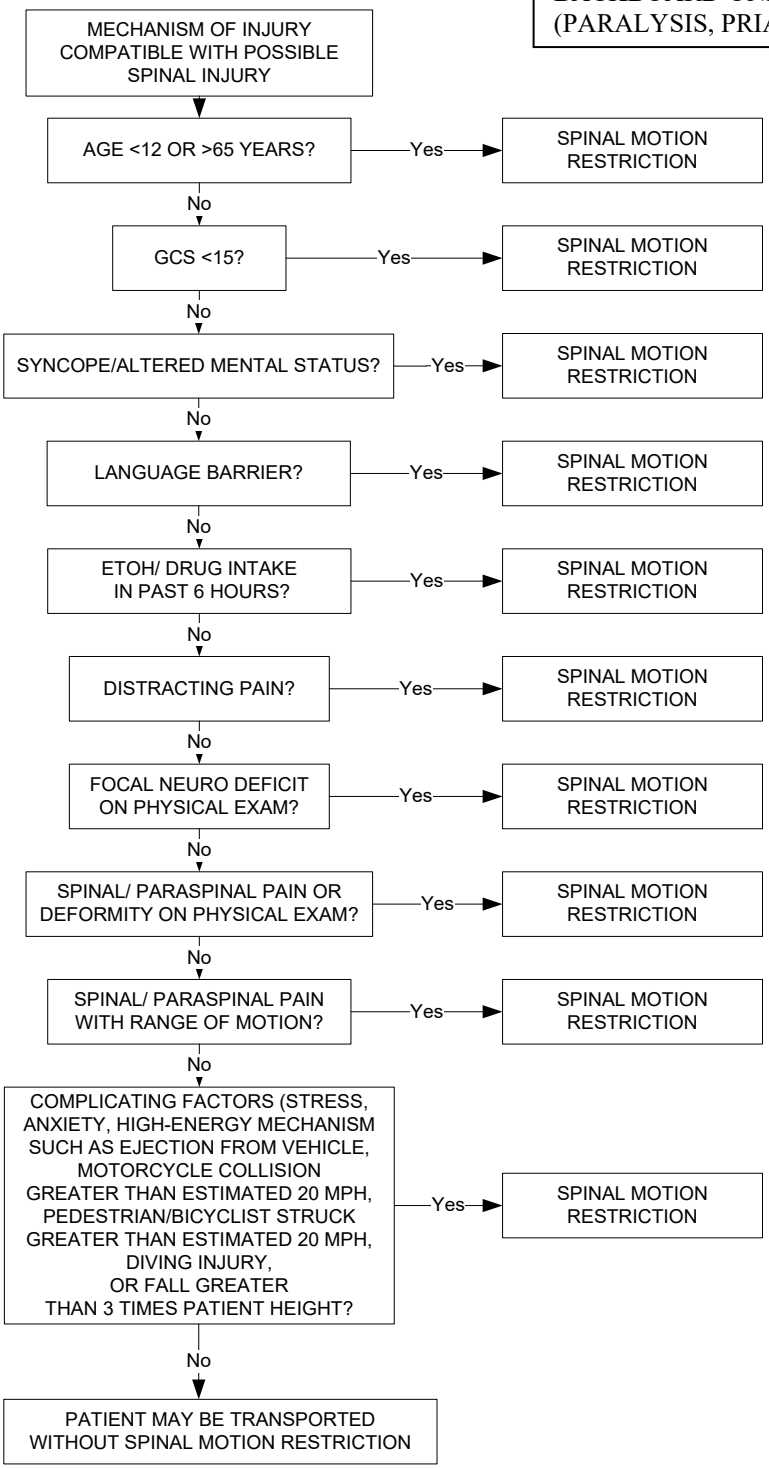
1. Avoid traction being placed on the spine in any direction.
2. Correctly size the cervical collar to additionally avoid traction being placed on the spine.
3. Maintain the spinal column alignment integrity when rolling the patient onto a long back board, using a scoop stretcher, or placing/moving in any other spinal motion restriction device.
4. Secure the torso and extremities to the backboard first, the head/neck last.
5. Remove from the long spine backboard once on the stretcher, unless CPR is ongoing or anticipated during transport.

Documentation of spinal motion restriction should include a neurologic assessment before and after the process, which includes the application of a cervical collar, noting any movement using a backboard/scoop stretcher, and indicating prompt removal from the backboard/scoop stretcher unless CPR ongoing/anticipated. In the seated patient that is hemodynamically stable and requiring spinal motion restriction, assist the patient in pivoting and lying supine onto the stretcher and/or use a spinal motion restriction device to achieve the same, whichever involves less anticipated spinal motion.

PROTOCOL 10O: Splinting of Injuries, cont.

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***SPINAL "IMMOBILIZATION" INCLUDING BACKBOARD ONLY IF SPINAL INJURY EVIDENT (PARALYSIS, PRIAPISM, OR NEURO SHOCK)



PROTOCOL 10O: Splinting of Injuries, cont.
10Oa - Spinal Motion Restriction – Adult & Pediatric, cont.

Comments regarding the Selective Spinal Motion Restriction Process:

1. The process of EMS-performed selective spinal motion restriction constitutes a formal step-wise screening of individuals suffering from mechanisms of injury compatible with possible injury to the spine. This process, now increasingly widely adopted in EMS systems across the United States, is designed from research-verified assessments, identifying individuals that may be safely transported to an emergency department, without spinal immobilization, for further appropriate physician evaluation. IT DOES NOT CONSTITUTE FORMAL "CLEARING" OF THE SPINE.

2. When following the decision flowchart in this protocol, there is no validated benefit to applying a cervical collar to patients who do not have any indication for spinal motion restriction and risks of pain, skin trauma, and compromise of respiratory mechanics may result if placed and left on a long spine backboard.

3. The process of EMS-performed selective spinal motion restriction, while continuing to involve placement of a cervical collar, no longer requires continuous use of a long spine backboard. While the long spine backboard is one option to assist a patient supine onto a stretcher, in the absence of ongoing or imminent CPR, patients should be removed off the long spine backboard as soon after movement onto the stretcher as possible.

4. Patients with penetrating trauma have been shown to have worse outcomes with continuous use of the long spine backboard, in part due to prolonged scene times relating to extensive spinal motion restriction actions. Victims of penetrating trauma (stabbings, gunshot wounds) to the head, neck, and/or torso SHOULD NOT receive spinal motion restriction unless there is one or more of the following:
   - Obvious neurologic deficit to the extremities
   - Priapism
   - Neurogenic shock
   - Anatomic deformity to the spine secondary to injury

5. Patients with any form of trauma may experience reduction in pulmonary mechanics (ease of oxygenation/ventilation) when placed onto a long spine backboard. Continuous use of the long spine backboard should be limited to situations involving ongoing or imminent CPR.

6. Patients at age extremes are prone to unreliable history and physical assessments. Patients under the age of 12 years or over the age of 65 years, if they have suffered a mechanism of injury compatible with possible spinal injury, are to be placed in spinal motion restriction.

7. The designation of a Glasgow Coma Scale score of 15 includes an assessment that no neurological deficits exist. If a patient is complaining of motor and/or sensory loss following a mechanism of injury compatible with possible spinal injury, that patient is to be placed in a cervical collar with verbal reinforcement that they limit movement of their cervical spine, keeping the spine in natural/neutral alignment.

PROTOCOL 10O: Splinting of Injuries, cont.
10Oa - Spinal Motion Restriction – Adult & Pediatric, cont.

Comments regarding the Selective Spinal Motion Restriction Process (cont):

8. At any point from sustaining an acute mechanism of injury compatible with possible spinal injury through EMS care, if the patient has a reported loss of consciousness or altered mental status, regardless of normal mental status upon EMS contact and assessment, that patient is to be placed in spinal motion restriction.

9. A language barrier exists if the EMS professional and the patient cannot fluently communicate. Fragmented communication ("broken" language) or the use of a family member or bystander to communicate with the patient does not constitute fluent communication. If the EMS professional has a language barrier with the patient following an injury involving a mechanism compatible with possible spinal injury, that patient is to be placed in spinal motion restriction.

10. Regardless of apparent "soberness" on assessment, if a patient has ingested ethanol or mental-status altering drugs (e.g. narcotics, benzodiazepines, barbiturates, marijuana, cocaine) within six hours prior to a mechanism of injury compatible with possible spinal injury, that patient is to be placed in spinal motion restriction.

11. Distracting pain or injury is best defined as an injury in which the patient is repetitively fixated upon to the extent the history and physical assessment is frequently interrupted to address that injury. The EMS professional must use his or her best judgment and anytime a concern exists that an injury may prove distracting to a patient with a mechanism of injury compatible with possible spinal injury, that patient is to be placed in spinal motion restriction.

12. In circumstances of acute vomiting and/or third trimester pregnancy, the patient is preferentially transported left lateral recumbent to reduce aspiration of emesis and when in advanced stages of pregnancy, to avoid compromising venous return to the chest.

13. If the supine positioning of the patient wearing a cervical collar is compromising respiratory mechanics and/or causing the patient to have dyspnea, the head of the stretcher may be elevated approx 15 degrees to assist respiratory status.

14. If a patient suffering a mechanism of injury compatible with possible spinal injury complains of pain in the spinal or paraspinal area anywhere from the base of the skull to the coccyx, that patient is to be placed in spinal motion restriction.

15. In the physical examination of a patient suffering a mechanism of injury compatible with possible spinal injury, if the EMS professional discovers spinal or paraspinal pain or deformity upon palpation or with patient flexion, extension, or lateral rotation of the neck or back, that patient is to be placed in spinal motion restriction.

PROTOCOL 10O: Splinting of Injuries, cont.
10Oa - Spinal Motion Restriction – Adult & Pediatric, cont.

Comments regarding the Selective Spinal Motion Restriction Process (cont):

17. If the EMS professional judges a complicating factor (e.g. patient stress or anxiety, the energy or nature of the mechanism of injury) to be present or significantly concerning, that patient is to be placed in spinal motion restriction. If any doubt exists in the view of the EMS professional as to whether to spinal motion restrict the patient, that patient is to be placed in spinal motion restriction.

18. An instance may occur when a patient has been deemed safe for transport without spinal motion restriction using this protocol and the patient subsequently develops neck or back pain in the ambulance during transport to an emergency department. The EMS professional must use his or her best judgment factoring the degree of pain verbalized and the remaining transport route and time in deciding when to spinal motion restrict the patient. As a guideline, if the remaining route involves unusually rough highway or will be prolonged beyond several minutes duration, the EMS crew should temporarily stop transportation and apply spinal motion restriction to the patient in the ambulance unless the patient's condition is otherwise unstable and requires continued emergency transport. As a guideline, if the arrival at the destination emergency department is imminent, the patient may be spinal motion restricted upon hospital arrival. In each instance, the EMS professional should inform the receiving nurse or physician of the events and timing of spinal motion restriction and appropriately reflect the events in the patient care report.

19. Any utilization of the selective spinal motion restriction protocol should be clearly documented in the patient care report, with each requirement in this process denoted.

20. An instance may occur when a patient that is to be spinal motion restricted by this protocol absolutely refuses a cervical collar and other such movement limitations. These are, indeed, difficult circumstances. If repeated attempts to secure the cooperation of the patient fail, guidance from OLMC should be sought. If such a patient is transported without spinal motion restriction by the direction of the OLMC, detailed documentation of the spinal motion restriction attempts, OLMC consultation and direction, and subsequent actions is to be contained in the patient care report.

21. For pediatric patients found in car seats and involved in motor vehicle collisions, use the following if spinal motion restriction indicated:

    - Infants restrained in a rear-facing car seat may remain in and be extricated in the car seat if secure and his/her condition allows (no signs of respiratory distress or shock)
    - Children restrained in a car seat (with a high back) may remain in and be extricated in the car seat.
    - Children restrained in a booster seat (without a back) need to be extricated and cared for following standard spinal motion restriction procedures.

PROTOCOL 10O: Splinting of Injuries, cont.

10Ob – Extremity – Adult & Pediatric:

When applying extremity splinting, include the following:

1. Assess and document the assessment of distal vascular (pulse) and nerve (motor/sensation) function, before and after splinting.

2. In general, immobilize the joint on either side of the suspected fracture area.

3. Pad splints whenever possible to avoid tissue pressure from splints.

4. In the setting of that an extremity is pulseless distal to a markedly angulated fracture, make one gentle attempt to place the angulated extremity in near-normal alignment. Document the distal vascular and nerve function before and after any such maneuver.

5. Prioritize timely transport to an appropriate emergency department for extremity injuries with pulselessness distal to the suspected fracture/injury.