4.5 Spinal Trauma

The New Hampshire Medical Control Board has approved the following protocol. It supersedes Advanced Spinal Assessment Protocol 6.1. It represents a significant change in practice for EMS providers. It reflects our intention to ensure that EMS standards in New Hampshire remain consistent with the best emergency medicine standards. As with all protocol changes, services should promptly provide training for providers in the use of this protocol. Resources are available online at: http://nhoodle.nh.gov/ola/course/index.php?categoryid=13

EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

PURPOSE: This protocol provides guidance regarding the assessment and care of patients who have a possible spinal injury.

Patients who have experienced a mechanism of spinal injury (esp. high risk mechanisms. See Red Flag Box.) require spinal motion restriction (as described further on) and protection of the injury site if they exhibit:

- Midline spinal pain or tenderness with palpation.
- Abnormal (i.e. not baseline) neurological function or motor strength in any extremity.
- Numbness or tingling (paresthesia).
- Sensation is not intact and symmetrical (or baseline for patient).
- Cervical flexion, extension and rotation elicits midline spinal pain.

Or if they cannot competently participate in the assessment due to one of the following:

- Altered mental status (e.g., dementia, preexisting brain injury, developmental delay, psychosis).
- Alcohol or drug intoxication.
- Unable to participate in assessment (e.g. distracted by significant injuries to self or others.).
- Insurmountable communication barriers (e.g., deafness, or hard of hearing, language).

Patients without any of the above findings should generally be transported without the use of a cervical collar or other means to restrict spinal motion. Utilize spinal motion restriction only where, in the professional judgment of the provider, the patient is at high risk for spinal injury as described above or with clear clinical indications of injury (e.g. midline spinal pain or deformity of the spine).

E/A/P

Long backboards do not have a role for patients being transported between facilities. If the sending facility has the patient on a long backboard or is asking EMS to use a long backboard for transport, EMS providers should discuss not using a long backboard with the sending facility physician before transporting a patient. If a long backboard is used, it should be padded to minimize patient discomfort.

PEARLS:

- Secondary injury to the spine often arises from increased pressure (e.g. swelling, edema, hemorrhage) or from hypoperfusion or hypoxia (e.g. vascular injury). While the optimal treatment for secondary injury has not been established, providers should protect the injury site. Protecting the injury site from pressure may be as important as reducing spinal movement.
- In some circumstances, extrication of a patient using traditional spinal immobilization techniques may result in greater spinal movement or may dangerously delay extrication.
- Patients with penetrating trauma **DO NOT** require spinal motion restriction.All patients who have suffered possible spinal trauma should be handled gently and spinal motion should be minimized.
- Even with neurologic deficits caused by transection of the spinal cord, additional movement will not worsen an already catastrophic injury. Emphasis should be on airway and breathing management, treatment of shock, and rapid transport to a Level 1 or 2 trauma center.
- Caution should be exercised in older patients (e.g. 65 years or older) and in very young patients (e.g. less than 3 years of age), as spinal assessment may be less sensitive in discerning spinal fractures in these populations.

Protocol Continues

Protocol Continued

EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

- Routine Patient Care.
- Maintain manual in-line stabilization during assessment.
- Minimize spinal movement during assessment and extrication.
- Self-extrication by patient is allowable if patient is capable.
- A long backboard, scoop stretcher, vacuum mattress, or other appropriate full length extrication device may be used for extrication if needed. Do not use short board or KED device.
- Apply adequate padding to prevent tissue ischemia, minimize discomfort and maintain spinal neutrality after removing helmet or pads

If patient requires spinal motion restriction:

- Apply a rigid cervical collar.
- Allow ambulatory patients to sit on stretcher and then lie flat. "Standing Take-Down" is eliminated.
- Position backboarded patient on stretcher then remove backboard by using log roll or lift-and-slide technique.
- Situations or treatment priorities may require patient to remain on rigid vacuum mattress or backboard including the combative patient, elevated intracranial pressure (see Traumatic Brain Injury 4.7) or rapid transport of unstable patient.
- With patient lying flat, secure patient firmly with all stretcher straps and leave collar in place. Instruct patient to avoid moving head or neck as much as possible.
- Elevate stretcher back only if necessary for patient compliance, respiratory function, or other significant treatment priority.
- If patient poorly tolerates collar (e.g., due to anxiety, shortness of breath, torticollis), replace with towel roll and/or padding.
- Patients with nausea or vomiting may be placed in a lateral recumbent position. Maintain neutral head position with manual stabilization, padding/pillows, and/or patient's arm.

E/A/P

Pediatric Patients Requiring a Child Safety Seat

If child requires spinal motion restriction, transport in a child safety seat (See Pediatric Transportation Policy 8.12).

- Apply cervical collar. Use rolled towels/padding if infant/child will not tolerate collar.
- Patient may remain in own safety seat after motor vehicle crash if it has a self-contained harness with a high back and two belt paths and is undamaged. If all criteria are not met, use ambulance's safety seat.
- If required treatment (e.g., airway management) cannot be performed in a safety seat, secure patient directly to stretcher using padding and pediatric-sized restraints.

RED FLAG: Mechanisms that indicate a high risk for spinal injury include:

- Motor vehicle crash >60 mph, rollover, ejection (low-speed, rear-end can usually be excluded).
- Falls >3 feet/5 stairs (patient standing with feet 3' above floor).
- Axial load to head/neck (e.g., diving accident, heavy object falling onto head, contact sports).
- Significant injury or mechanism of injury above the clavicle.
- Injuries involving motorized recreational vehicles.
- Bicycle struck/collision.

Protocol Continues