SPINAL MOTION RESTRICTION (SMR) – PEDIATRIC

DEFINITION:

Spinal motion restriction (SMR) is stabilization of the head, neck, and torso to protect a potentially injured spinal cord. This protocol is specific to patients younger than 15 years of age.

INDICATIONS:

Pediatric victims with blunt or penetrating trauma the cervical, thoracic, or lumbar regions. Specific SMR indications include, but are not limited to the following:

Physical:

- Newly reported numbness, tingling, weakness, or paralysis to any extremity
- Neck or spinal pain (voluntarily stated by patient or upon questioning)
- Spinal tenderness over the bony spine upon palpation by EMS personnel
- Injury with altered mental status (including intoxication) such that physical assessment is unreliable
- Painful injury of the head, chest, abdomen-pelvis, arms or legs such that physical assessment for potential spinal injury may not be reliable due to victim focusing on pain or injury

Mechanism of Injury:

- Accidents in which the head strikes an obstacle and the cervical spine is stressed by motion or mechanical force (such as occurs with diving, surfing, football, fall, and automobile accidents).
- Hyperextension neck injuries (forceful bowing of the neck from the head being pushed or thrown back)
- Victims surviving attempted hanging.
- Victims of electric shock with reported or suspected muscle convulsive activity or loss of consciousness.

Judgment:

- SMR should be placed if an EMT or Paramedic suspects spinal injury based on history, physical exam, mechanism.
- Pediatric patients less than 5 can be prone to unreliable medical history or have difficulty communicating the events leading to the injury. If these patients have suffered a mechanism of injury compatible with possible spinal injury, they should be placed in spinal motion restriction

RAPID EXTRICATION EXCEPTIONS:

In the following situations, patients should be moved (while limiting motion of the spine as much as possible) to an appropriate perimeter or location before placing SMR and the reasons clearly documented:

- ▶ Unsafe scene that poses an imminent danger to the patient or providers
- ▶ Patient with a life-threatening condition that requires immediate intervention
- ▶ Patient must be moved so that providers can access other patients(s) with potential serious conditions

CONTRAINDICATIONS:

- Facial/oral bleeding or uncontrolled vomiting such that the airway cannot be controlled
- Uncontrolled bleeding that cannot be controlled with SMR in place.

EQUIPMENT:

- Personal protective equipment (PPE) as conditions require
- Adjustable rigid cervical collar (properly fitted to individual patient)
- Soft supports as needed for placement on both sides of the head and padding of the body space voids

- X-Ray Translucent rigid long back board for extrication and movement of patient
- Gurney with appropriate straps to secure patient and limit spinal axis motion.

Safety Restraints

- Infants restrained in a rear-facing car seat may remain in and be extricated in the car seat if child's 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 and transported in the car seat if stable.
- Children restrained in a booster seat (without a back) should be extricated and cared for following standard spinal motion restriction procedures.

PROCEDURE:

1. Manually restrict motion of the patient's head maintaining an in-line neutral position and avoid unnecessary patient movement.
2. Assess airway and monitor continuously whenever SMR is in place.
3. Assess motor, sensory and circulatory function in each extremity and document findings pre and post SMR.
4. Use manual stabilization of the head and neck until motion restricted by placement of a properly fitting, rigid cervical collar.
5. If patient is ambulatory or able to self-extricate and is coherent:
    - Escort and assist getting onto gurney.
    - Keeping rigid cervical collar in place, secure patient with gurney straps in supine position (or position of comfort if supine position not tolerated).
6. If not ambulatory or if extrication is required, in addition to a properly fitting, rigid cervical collar, a long back board or short rigid, padded extrication device should be used for moving a patient to a gurney.
    - The long back board or extrication device should be removed and patient secured to a gurney with motion restriction by rigid cervical collar and straps during transport. Manually support head and cervical spine against rotation any time patient is moved from gurney after back board or extrication device removed. For transport times less than ten (10) minutes, long back board or extrication device may be left in place during transport if tolerated by patient.
7. If wearing helmet:
    - Helmeted athletes lying supine and wearing shoulder pads (football, ice hockey, and lacrosse) should be motion restricted and transported with helmet and pads left in place; with face guard or shield removed to allow assessment of and access to the airway.
    - If not wearing shoulder pads, remove helmet with second responder maintaining manual stabilization of the head and neck in neutral position.
8. If obviously pregnant, secure in left lateral position and maintain SMR with pillows or blankets.
9. Remove cervical collar if device impairs airway or breathing or cannot be tolerated and document reason.
10. Document post-motion restriction assessment of motor, sensory, and circulation findings.

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NOTES:

1. The responder maintaining manual stabilization of the head and neck should not put unnecessary pressure or traction on the neck.
2. Use towels or other padding as necessary to affect SMR for patients with chronic spinal deformity.
3. Slider boards are preferred for patient transfer from gurney to gurney or hospital bed.
4. A "breakaway flat" (or combi carrier or like device) can be used to facilitate transfer as long as the device is in good working order and maintains gross spinal alignment.
5. "Megamovers" or soft flats are not considered rigid extrication devices.