

HEAD AND SPINAL INJURY
PROTOCOL

Purpose: To provide the process for the assessment and management of the patient who may have a head or spinal column injury.

- M B S P**
- I. Assessment Information**
- A. History:
1. Past Medical History: medications, previous injury, previous neuro-deficit.
 2. Current History: Suspect head/spinal trauma based on Mechanism of Injury, (ie: motor vehicle accident, falls, diving incident, head injury present).
- B. Specific Objective Findings:
1. Vital Signs
 - a. Especially change in level of consciousness
 2. Neurological exam and documentation
 - a. Note level of sensory/motor function or deficit
 - b. Document findings before and after patient movement
 3. Pain, tenderness of spinal column
 4. Muscle spasm
 5. Priapism
 6. Spinal shock
- MB S P**
- II. Management**
- A. Utilize universal precautions.
- B. Establish and maintain airway with spine stabilization , provide oxygenation and support ventilation as needed.
1. Use modified jaw thrust to open airway.
 2. Manual immobilization with hands on bony prominences **MUST** be done while attempting intubation, even if immobilization equipment in place, OR during other patient movement procedures.
 3. Hyperventilate the severe head injured patient with decreasing level of consciousness at a rate of 20vents/min.
- C. Control hemorrhage.
- D. Maintain manual immobilization of the spine. To maintain the spinal column in a neutral position until patient is properly immobilized with equipment.
1. Cervical Immobilization Devices
 - a. Cervical collar should be placed on patient prior to patient movement, unless absolutely impossible.
 - b. Collar must fit so as not to compromise circulation or airway, yet be rigid to support neutral cervical alignment.
 - c. If no collar can be made to fit patient, towel or blanket rolls may be used to support neutral head alignment.
 - d. Alignment of trachea and distention of jugular veins should be assessed before placement of collar.

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2. Emergency Patient Removal
 - a. Indicated when scene poses an **imminent, life -threatening danger** to patient and/or rescuers(ie: vehicle or structure fire).
 - b. Possibly would be done by first rescuer on scene who assesses presence of danger.
 - c. Patient is pulled from danger while best attempt is made to immobilize c-spine.
 - d. Rescuer has made decision to risk loss of limb to save the life.

3. Rapid Extrication Procedure (from sitting position)
 - a. Indicated when patient condition is unstable, (**ie; airway-breathing compromise, shock, unconsciousness**).
 - b. One rescuer immobilizes head by placing hands against anterior bony prominences in such a manner that the rescuer will be able to rotate hands when patient is moved to horizontal position.
 - c. Second rescuer holds patient under arm with one hand and second arm-hand serves as splint to vertebral column.
 - d. Third rescuer holds legs with knees flexed as to keep body weight up towards torso.
 - e. The team works together to rotate the patient around and down onto a long back board, then slide to proper position on board.
 - f. The long board should be stationed above a surface, such as the stretcher, for safety and held in place by a fourth rescuer, if available during patient rotation.
 - g. Patient is then packaged for transportation by first strapping the chest, pelvis, and legs. The head should then be immobilized with blocking (ie: foam pads, blanket rolls) as to prevent lateral movement).

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4. Extrication Device/Short Backboard Procedure
 - a. Indicated when patient condition is stable, and patient is in a sitting position.
 - b. Patient's head and cervical spine should be manually immobilized from an anterior or posterior location.
 - c. Rescuers place patient in stable, neutral position where space is created to place extrication device/backboard behind patient.
 - d. While patient is supported, extrication device/backboard is placed behind patient, and patient moved back into secure position if necessary.
 - e. Extrication device/short backboard device is secured to

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patient with torso straps applied before head immobilization.

- 1) Head immobilization material is used without compromising movement of lower jaw (to assure possible airway management especially after patient placed in supine position).
- f. Patient is moved to supine position on long backboard.
- g. Patient is further immobilized on long backboard.
5. Long Backboard Immobilization
 - a. Indicated when patient is found in more of a horizontal position than a sitting position, a stable or unstable condition.
 - b. Cervical immobilization device should be in place.
 - c. Patient is moved to a neutral position where board can be placed next to patient.
 - d. Patient is log rolled, maintaining neutral alignment of spine and extremities, to the long backboard (Log roll is preferred method).
 - 1) If log roll is not possible, patient should be slid onto board with a straddle lift.
 - e. Patient is strapped to the board in a manner to prevent lateral or axial slide.
 - f. Head immobilization materials such as foam pads, blanket rolls are used to prevent lateral, flexion or extension movements.
 - g. Patient is further packaged for transport.
6. Long Backboard Immobilization of Standing Patient
 - a. First rescuer immobilizes patient's cervical spine from behind patient and a cervical collar is applied.
 - b. Second rescuer places long backboard immediately behind patient.
 - c. Second and third rescuer stand to side of patient; rescuers' arm closest to patient is placed under patient's axilla and holds backboard handhold as high on the backboard as possible.
 - d. Patient's arms should be held against patient's trunk with rescuers' other hand.
 - e. At the instruction of rescuer maintaining cervical immobilization, the patient and backboard are laid back onto the ground.
 - f. Body straps are placed; the head is then secured.

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- E. Transport
- F. Obtain vascular access.
- G. Monitor EKG.

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- H. Monitor vital signs closely for signs of spinal shock and/or hypothermia (refer to appropriate protocol).

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III. Special Considerations

- A. Hypoventilation is likely to occur with spinal cord injury above the diaphragm. Quality of ventilation should be monitored closely with support offered early.
- B. Spinal Shock (neurogenic) may result from high spinal cord injury. Monitor patient for bradycardia, and hypotension. The typical sympathetic nervous system response to trauma can not occur because of interruption of nerve impulses.
- C. Neurologic impairment will complicate assessment of abdomen and extremities (pain, guarding, etc., may not be present).
- D. Immobilization of the patient wearing a helmet should be according to the Helmet Removal Procedure.

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