

## **UCH Acute Spinal Cord Injury (SCI): Initial and ICU Management**

1. Spine service, PT/OT, Respiratory Therapy, Social Work, Physical Med and Rehab, Psych consultation should be obtained immediately.
2. In blunt injuries, if imaging of entire spine not completed, completion imaging via CT of spine should be performed given frequency of synchronous spine injury. MRI should be completed at the recommendation of the Spine Surgery service.
3. Backboard should be removed early. Spinal precautions, logroll and use of C collar, should be maintained until all imaging reviewed and clinical re-assessment performed by a qualified practitioner. "Clearance" of precautions and activity orders, including range of motion while in bed, should be dictated by Spine service.
4. Steroid use should be guided by the responsible Spine Surgery attending. Their routine use or initiation greater than 6 hours after injury should be avoided. If commenced greater than 6 hours after injury, they should be discontinued immediately. Steroids are not indicated in the management of the neurologically intact patient.
5. Patients with spinal cord injury should be admitted to the Neuro ICU or the STICU with the following objectives:
  - a. Immediate restoration of normotension and euvolemia.
  - b. Blood pressure parameters to be determined by spine service.
  - c. Prevent hypoxemia (maintain SpO<sub>2</sub> > 93%)
  - d. Treat bradyarrhythmias
  - e. once euvolemia is established, including studies to rule out ongoing bleeding as cause of hypotension, vasopressors should be initiated for maintenance of blood pressure parameters (neurogenic shock is rare in SCI below T5)
6. For patients not requiring intubation, watch for signs of hypoventilatory failure, including consideration for use of EtCO<sub>2</sub> nasal cannula, given high risk of progressive, insidious ventilatory failure. This is particularly true for patients with an injury at the C5 level or above.
7. Meticulous attention to skin care should be provided based on nursing and physical therapy guidelines specific to the care of the patient with SCI.
8. Given high risk of VTE, prophylaxis should be initiated as soon as possible. Unless contraindicated, enoxaparin has shown to be favorable.
  - a. Consider placing a vena cava filter only in those patients with active bleeding anticipated to persist for more than 72 hours and begin anticoagulants as soon as feasible.

9. Respiratory care and ventilator management should be catered to the SCI patient, as appropriate\*:
  - a. Incorporation of pulmonary toilet maneuvers for SCI (i.e., “quad coughing”)
  - b. Daily Forced Vital Capacity (FVC) for all cervical spinal cord injuries at C5 and above. Perform cough and deep breathe in non-intubated patients. NIF in intubated patients. Incentive Spirometry Q 1 hour.
  - c. For patients on ventilator, consider incorporation of modifications beneficial to SCI population, i.e., utilization of higher tidal volumes, unless contraindication, such as ARDS.
  - d. \*Approximately 20% of those with SCI will have concomitant moderate to severe chest trauma; principals applicable to the respiratory care of these patients may need to take precedence in the early course of these patients (i.e., low tidal volumes in patients with acute lung injury; withholding of aggressive pulmonary toilet maneuvers with rib fractures).
  
10. Bowel / bladder training should be done after patient transferred to SCI center. Initiation in ICU as may create fear, anxiety around these issues if lack of consistency.
  - a. Bowel regimen should be initiated per the UCHHealth Spinal Cord Injury Order Set Neurogenic Bowel Orders.
  
11. Offer the awake and receptive patient education and resources regarding sexual and reproductive health
12. Please refer to the Order Set: UCHS Spinal Cord Injury Orders

## References

1. Spinal Cord Injury Thromboprophylaxis I. Prevention of venous thromboembolism in the acute treatment phase after spinal cord injury: a randomized, multicenter trial comparing low-dose heparin plus intermittent pneumatic compression with enoxaparin. *J Trauma*. 2003;54(6):1116-1124; discussion 1125-1116.
2. Consortium for Spinal Cord M. Respiratory management following spinal cord injury: a clinical practice guideline for health-care professionals. *J Spinal Cord Med*. 2005;28(3):259-293.
3. Consortium for Spinal Cord M. Early acute management in adults with spinal cord injury: a clinical practice guideline for health-care professionals. *J Spinal Cord Med*. 2008;31(4):403-479.
4. Hurlbert RJ, Hadley MN, Walters BC, et al. Pharmacological therapy for acute spinal cord injury. *Neurosurgery*. 2013;72 Suppl 2:93-105.
5. Ryken TC, Hurlbert RJ, Hadley MN, et al. The acute cardiopulmonary management of patients with cervical spinal cord injuries. *Neurosurgery*. 2013;72 Suppl 2:84-92.