

Lower Spinal Cord Injury Management Protocol

(for SCI without neurogenic shock, T6 and below)

Neuro

- Spinal immobilization and log roll orders
- Additional imaging as needed
- Brace per spine recommendations
- Multimodal Pain management

Gastrointestinal

- Bowel regimen:
- Trauma bowel Regimen:
 - (Senna + MiraLAX) AND
 - bisacodyl suppository, qday
- Nursing order: Administer bowel regimen as ordered; notify provider if no daily BM

Musculoskeletal/Integument

- Begin PROM on admission if stable
- PT/OT orders after stabilization
- Early mobility
 - OOBTC when cleared by Spine
 - Frequent position changes
- Podis Boots to prevent foot drop

Genitourinary

- Discontinue Foley per CL 30-15.05 *Indwelling Urinary Catheters: Insertion, Maintenance, and Discontinuation*
- If patient unable to void, initiate scheduled I/O catheterization q6h; if UOP>500ml, increase frequency

Psych/Dispo

- PM&R consult
- Consider psych consult to evaluate patient as depression/anxiety are common after SCI
- Communicate early with Case Management to determine disposition options

Prophylaxis

- DVT prophylaxis per Trauma protocol and
- Operative spine, initiate DVT ppx on POD1 unless delay requested per spine team.
- 3 month DVT ppx if patient non-ambulatory
- Stress Ulcer ppx per Trauma protocol

Upper Spinal Cord Injury Management Protocol

(In addition to Lower SCI Management Protocol interventions:)

Cardiovascular

- Avoid hypotension
- Vasopressors for MAP >85 for 72h post-injury in blunt SCI, norepinephrine first line agent, **attending to attending conversation for extension of MAP goals**
- If persistent vasopressor requirement: Consider midodrine 5mg q8h, and titrate up to 40mg/day
- If bradycardic, consider pseudoephedrine and/or glycopyrrolate as alternatives

Steroids

- Dexamethasone 10mg 8h x3 may be considered in pts with no significant co-morbidities
- **Attending to Attending agreement required prior to initiation of dexamethasone order**

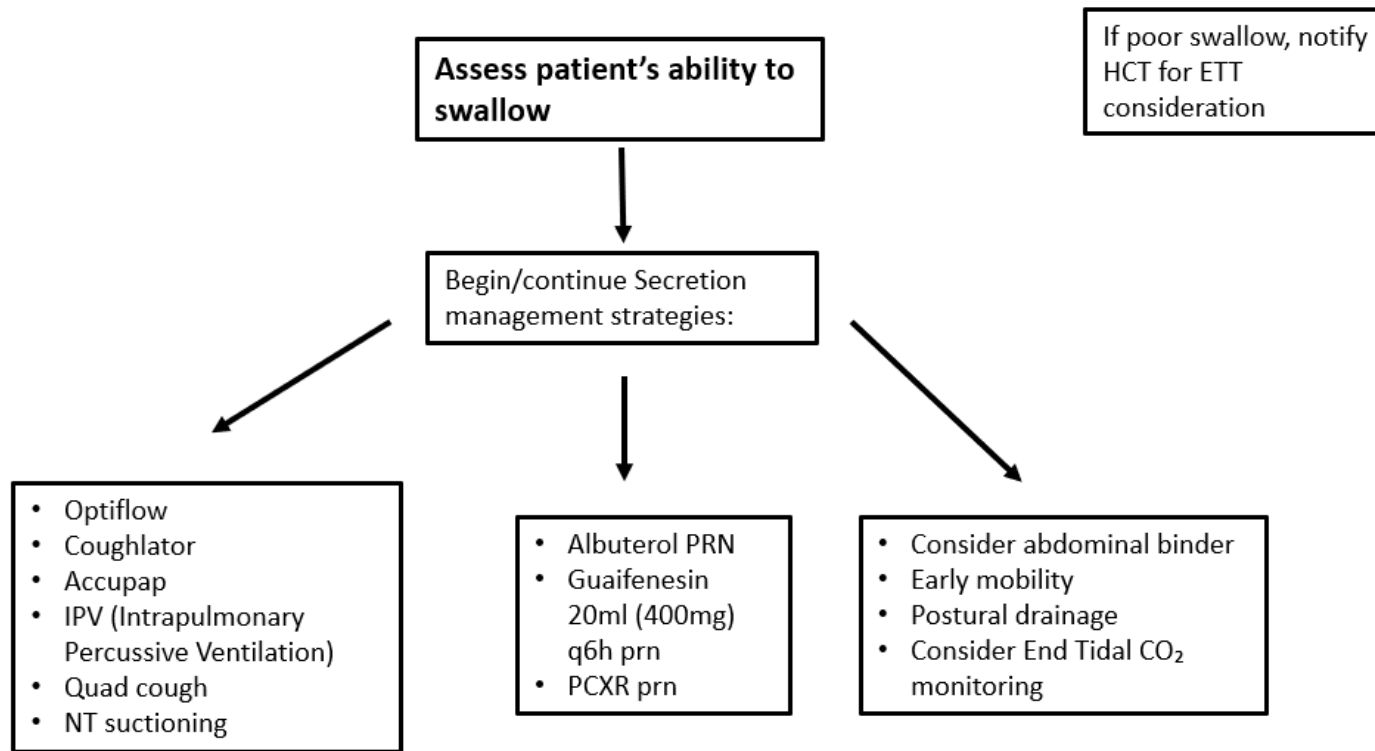
Consider for Intubation:

- Patients unable to swallow
- Patients with increasing O2 requirement
- Patients with atelectasis, or plugging on cxr
- Paradoxical respiratory pattern
- Persistent need for frequent suctioning of airway
- Peek Expiratory Flow <5L
- Inability to manage secretions

Respiratory

- Respiratory Care Guidelines: Non-intubated SCI patients
- Early Tracheostomy Protocol/ Respiratory Care Guidelines for Intubated SCI patients
- Respiratory Care Guidelines for Ventilatory weaning of SCI patients

Respiratory Care Guidelines: Non-intubated SCI patients



Early Tracheostomy Protocol/ Respiratory Care Guidelines for Ventilated SCI patients

Indications for Early Tracheostomy (2 or more of the following)

C4 and above motor complete injury
Early ETT requirement
Flail chest
Paradoxical respiratory pattern
Persistent need for frequent suctioning of airway
Peek Expiratory Flow <5L

Consider Tracheostomy if:

- Need for multiple operative interventions
- Failed extubation

Tracheostomy/
ETT in-place

Secretion
management
strategies

- Guaifenesin 20ml (400mg) q6h x 5 days then prn
- Albuterol PRN
- Daily pcrx x 5d then PRN
- Consider abdominal binder
- Early mobility: turn q2h, OOB bid

Initial Ventilator settings:

- SIMV/PRVC preferred initial mode
- Heated circuit on ventilator
- PS to deliver goal TV on spontaneous breaths

- IPV
- HIT (Hyper Inflation Therapy)
- Quad cough
- Suction PRN
- Bronchoscopy prn

Planned extubation?
Consider extended 0/0 SBT

Respiratory Care Guidelines for Non-
intubated SCI patients

Respiratory Care Guidelines for Weaning Ventilated SCI Patients

Meets criteria for weaning?

- Hemodynamics stable
- Secretions under control
- Initiating breaths on current mode

no

Continue secretion management and reassess readiness for weaning daily

yes

Continue secretion management strategies

CPAP/PS primary weaning mode

- Consider VS if patient unable to maintain TV on CPAP/PS
- Begin with brief periods of CPAP/PS (minutes) and progress to longer periods
- When tolerating > 24 hrs on spontaneous mode, consider Trach collar trials
- Begin with short (minutes) TC trials, slowly increase as tolerated

Do not decannulate quadriplegic patients with tracheostomy who have successfully weaned from the ventilator during acute hospital phase.

References

- Beom, T., & Seo, H. (2018). The need for early tracheostomy in patients with traumatic cervical cord injury. *Clinics in Orthopedic Surgery* 10(20).
- Berney, S., et al. (2011). The acute respiratory management of cervical spinal cord injury in the first 6 weeks after injury: a systematic review. *Spinal Cord* 49, 17-29.
- Branco, B., et al. (2011). Incidence and clinical predictors for tracheostomy after cervical spinal cord injury. *J Trauma* 70(1), 111-115.
- Canseco, J., et al. (2021). Updated Review: the steroid controversy for management of spinal cord injury. *World Neurosurgery* 150: 1-8.
- Consortium for Spinal Cord Medicine. (2005). Respiratory Management following Spinal Cord Injury: A clinical practice guideline for health-care professionals. *J Spinal Cord Medicine*, 28, 259-293.
- Ditunno, J., Cardenas, D., Formal C., & Dalal, K. (2012). Advances in the rehabilitation management of acute spinal cord injury. *Handbook of Clinical Neurology*, 109(181-194).
- Fehlings, M., et al. (2017). A clinical practice guideline for the management of acute spinal cord injury: introduction, rationale, and scope. *Global Spine Journal* 7(3S), 84S-94S.
- Hadley, M., Walters, B., et al. (2013). Guidelines for the management of acute cervical spine and spinal cord injuries. *Neurosurgery*. 72 (Supp) , S1-S259.
- Saadeh, Y., et al. (2017). The impact of blood pressure management after spinal cord injury. *Neurosurgical Focus*. 43(5)E20.
- Schwartzburger, G. & Stein, D. (2016). Critical Care of Traumatic Cervical Spinal Cord Injuries: Preventing Secondary Injury. *Seminars in Neurology*, 36(6), 577-585.
- Wang, Z., Zhou, L., Zheng, X., & Liu, W. (2018). Effects of dexamethasone on autophagy and apoptosis in acute spinal cord injury. *NeuroReport* 29:1084-1091.
- Yue, J., et al. (2017). Update on critical care for acute spinal cord injury in the setting of polytrauma. *Neurosurgical Focus* 43(5).

Revisions By:
Abigail Luffman, ACNP
Allan Peetz, MD
Silky Chotai, MD

Revision Dates: April 2019, June 2021

Approval By:
Brad Dennis, MD – Trauma Medical Director
Oscar Guillamondegui, MD- Chief of Trauma, Surgical Critical Care