VANDERBILT UNIVERSITY
MEDICAL CENTER
DIVISION OF ACUTE CARE SURGERY

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

Revisions: 3/2024, 2/2022, 3/2020, 4/2018

Authors: Abby Luffman, ACNP-BC
Andrew Medvecz, MD

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Upper Spinal Cord Injury Management Protocol

(In addition to Lower SCI Management Protocol interventions:)

Cardiovascular

- Avoid hypotension
- Low dose 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 requiring high dose vasopressors, assess for other sources of hypotension
- AND discuss with attending need to individualize MAP goal especially in elderly patients or in patients with history of cardiac disease.
- If persistent vasopressor requirement: Consider midodrine 5mg q8h, and titrate up to 40mg/day
- If bradycardic or has systolic pauses, consider po albuterol, pseudoephedrine and/or glycopyrrolate as alternatives

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

Nutrition

- Patients with upper SCI are at high risk for silent aspiration and respiratory compromise.
- Keep NPO until Clinical Swallow Evaluation
- Consult SLP for Clinical Swallow Evaluation. SLP will determine readiness for FEES/VFSS
- For intubated patients, early DHT placement and TF initiation.

Steroids

- Attending to Attending agreement required prior to initiation of steroid therapy
- With attending approval, Dexamethasone 10mg 8h x3 doses

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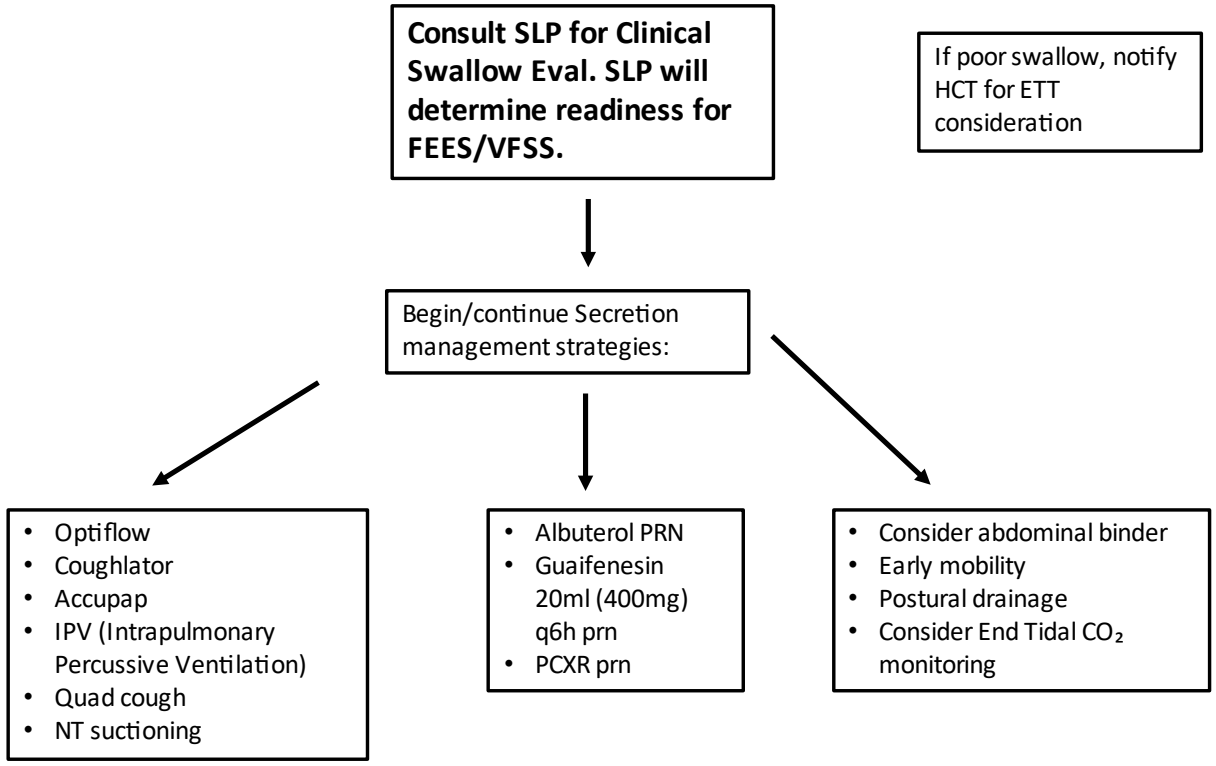
Andrew Medvecz, MD

Respiratory Care Guidelines: Non-intubated SCI patients



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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 pcxr 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

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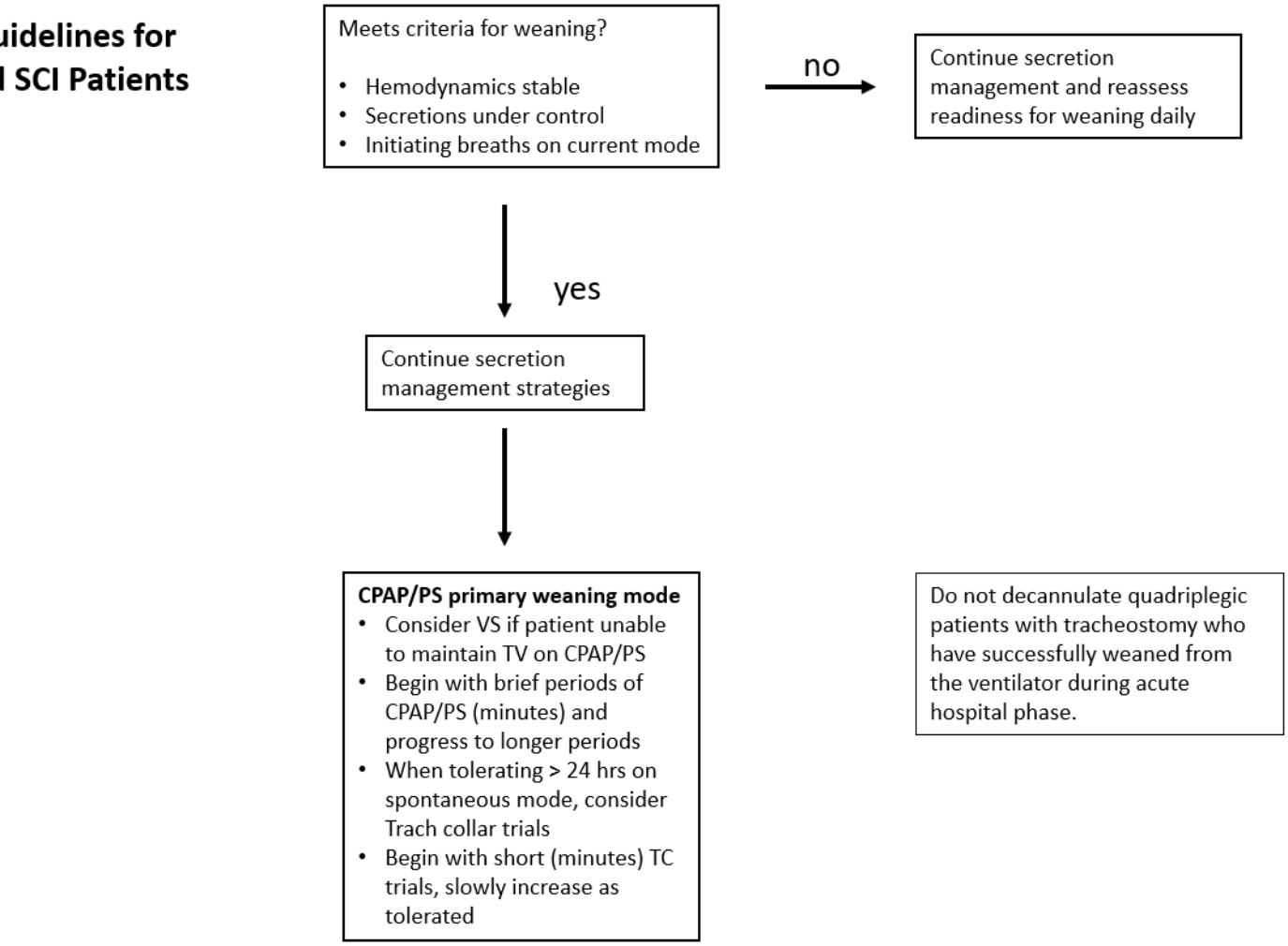
Respiratory Care Guidelines for Weaning Ventilated SCI Patients



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References

Agarwal, N., et al. (2023). Hypotension requiring vasopressor treatment and increased cardiac complications in elderly spinal cord injury patients: a prospective TRACK-SCI registry study. *Journal of Neurosurgery Spine 38*(735-43).

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.

Evans CH., et al. (2014). Enteral albuterol decreases the need for chronotropic agents in patients with cervical spinal cord injury-induced bradycardia. *J Trauma Acute Care Surg* 76(297-302).

Fehlings, M., el 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.

Foran, S., et al. (2022). Timing of tracheostomy in acute traumatic spinal cord injury. *Journal of Trauma and Acute Care Surgery 92*(1), 223-231

Hadley, M., Walters, B., et al. (2013). Guidelines for the management of acute cervical spine and spinal cord injuries. *Neurosurgery*. *72* (Supp), S1-S259.

Ihalainen, T., et al. (2017). Traumatic cervical spinal cord injury: a prospective clinical study of laryngeal penetration and aspiration. *Spinal Cord. 55*, 979-984.

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Lim-Hing K., et al. (2022). Impact of Enteral Albuterol on Bradycardic Events After Acute Cervical Spinal Cord Injury. *Neurocrit Care 36*(840-845).

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).

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