Spinal Cord Injury Guidelines

I. <u>Immobilization</u>

- a. Maintain proper immobilization per neurosurgery recommendations.
- b. Custom TLSO braces must be ordered from the company – NSGY APP will order.
- c. Soft TLSO & quickdraw braces are kept in central supply. PT will help determine appropriate size.
- d. Change hard c-collar to Aspen collar as soon as possible if c-spine can't be cleared.

II. <u>Blood Pressure Management (ASIA A, B, C, D)</u>

- a. Consider MAP goal > 85 up to 7 days from cervical, thoracic, and lumbar conus injuries if risk is not prohibitive.
- b. The risk/benefit of elevated MAP goals must be reviewed for all patients prior to initiation of any interventions.
- c. Caution is advised for MAP goal >85 in the following patients:
  - i. Mild systolic heart failure
  - ii. Mild diastolic heart failure
  - iii. Coronary artery disease
  - iv. History of stroke
  - v. Concurrent TBI
  - vi. Acute bleeding
  - vii. History of atrial fibrillation or other dysrhythmias
- d. Contraindications for MAP goal >85:
  - i. Active hemorrhage
  - ii. Moderate to severe systolic heart failure
  - iii. Moderate to severe diastolic heart failure
  - iv. Aortic injuries/aneurysms
- e. Patients on beta-blockers and antiarrhythmic medications:
  - i. Hold non-rate controlling antihypertensive medications.
  - ii. Continue medications for rate control such as beta blockers and non-dihydropyridine calcium channel blockers.
  - iii. Do not start vasopressors unless MAP <65. Hold rate controlling meds such as beta-blockers and calcium channel blockers while on pressors.
- f. To increase MAP:
  - i. Hold appropriate antihypertensive medications (do not hold rate controlling medications such as beta blockers and non-dihydropyridine calcium channel blockers).
  - ii. Ensure euvolemia.
  - iii. <u>Patients with the above cautions/contraindications will be reviewed by the critical care attending PRIOR to starting any medications to increase blood pressure.</u>
  - iv. Early initiation of midodrine, start 5-10 mg TID, max dose 20 mg QID.
  - v. Initiate norepinephrine (only once euvolemia is achieved) and titrate as needed. Do NOT increase norepinephrine above 0.2 mcg/kg/min unless the MAP is <65.
- g. Central and arterial lines are required for initiation of vasopressors. This must be considered when weighing the risks and benefits of elevated MAP goals. Avoid femoral lines.
- h. Patients with MAP remaining >85 w/o norepinephrine and are otherwise stable do not require ICU level monitoring.

III. <u>Neurogenic Shock</u>

- a. Common cause of hypotension/bradycardia in spinal cord injuries above T6.
- b. **If the patient has tachycardia, look for another cause for hypotension**
- c. Rarely seen in patients without a complete injury
- d. **Norepinephrine** is the first line agent

e. Add midodrine 10 mg po TID to help wean norepinephrine. May increase to 20 mg QID, if needed
f. Fludrocortisone 0.1 mg daily can be used as an adjunct to midodrine to reduce norepinephrine. Increase by 0.1 mg up to 0.5 mg daily.
g. Ensure euvolemia
h. Bradycardia:
   i. Theophylline 100 mg QID
   ii. Glycopyrrolate 0.2 mg IV prior to procedures
   iii. Avoid medications that may cause bradycardia
   iv. Cardiology consult for transvenous pacing, if persistent

IV. Pulmonary Management

a. Aggressive pulmonary hygiene is critical to preventing intubation.
b. **No patients with high-level paraplegia should be transferred to the floor without good IS volumes for several days**. The entire team should agree on transfer.
c. **NO patients with quadriplegia should be sent to the floor without a trach** except in rare and special circumstances (NEVER on the weekend), and the entire team should agree. Almost ALL patients with complete quadriplegia will require intubation and tracheostomy.
d. Once a patient with quadriplegia requires intubation, plan trach and peg as soon as possible. Do not delay the procedures to attempt extubation.

V. Bowel regimen

a. Immediately initiate aggressive bowel regimen that includes MiraLAX 17 g BID and daily suppository
b. Monitor for daily bowel movements and administer milk of magnesia 30 ml if no BM in the last 24 hours.
c. If still no BM, add enema and magnesium citrate

VI. Bladder management

a. Remove indwelling catheter as soon as possible
b. Most patients with spinal cord injury will require intermittent catheterization every 4-6 hours
c. Do not allow the volume of urine to remain above 500 ml/catheterization. Either increase frequency of intermittent catheterizations to q4 hours or replace indwelling catheter.
d. Check post-void residual volume for patients voiding spontaneously. They often still require intermittent catheterization.

VII. Steroids

a. Do **NOT** give any steroids routinely for spinal cord injury.
b. This includes continuous and intermittent dosing.
c. Steroids may be indicated following cervical ACDF due to risk for dysphagia.