	<b>Trauma Services</b>	No. 4104
	Title: <b>Thoracic and Lumbosacral Spine Injuries- Shared</b>	Page: 1 of 3 Effective Date: 06/08/2020

### **Practice Guidelines:**

Thoracic and lumbar spinal fractures are commonly encountered in blunt trauma patients, up to 50% of vertebral fractures occur in the thoracolumbar spine (TLS). Clinicians caring for these acutely injured patients must rely on assessment skills and diagnostic techniques to minimize the time to diagnosis and interventions.

- I. Logroll patient, with full C-spine control, to determine areas of tenderness in the thoracic and lumbosacral spine. Examine for areas of increased kyphosis or spinous process step off.
  - a. Patients without complaints of TLS pain with a normal mental status and normal exam may be excluded from TLS injury by clinical exam alone, without radiographic imaging
  - b. Patients with alteration in sensorium (traumatic head injury, shock or intoxication) may not have a reliable exam therefore radiographic imaging is essential.
    - i. Obtain CT Chest/Abdomen and Pelvis for patients with pain in thoracic vertebrae or lumbosacral vertebrae.
    - ii. If fracture is noted in one area of spine, a complete radiographic evaluation of the CTLS should be obtained to assess additional fractures.
- II. Perform and document a complete neurologic exam to determine any deficits suggestive of neurologic injury and at what level.
  - a. Examine rectal tone (involuntary and voluntary).
- III. If quadriplegia or paraplegia are noted, perform a bulbocavernosus reflex test:
  - a. Males – pull on glans penis while examining for an increase in rectal tone.
  - b. Females – pull on Foley catheter while examining for an increase in rectal tone.
  - c. If reflex is present, spinal shock is not occurring and injury will usually not improve.
  - d. If reflex is absent, spinal shock may be occurring and ultimate outcome of injury is masked.
- IV. With any injury referable to the spinal cord, consult the physician on Spine Call immediately.
  - a. Consult neurosurgery or orthopedics if bony injury or neurologic deficit is found.
  - b. If neurologic injury is found without bony injury, obtain an MRI scan of the involved spine in consultation with spine service.
  - c. Maintain spinal precautions until cleared by the consulting service.

\*Steroids are no longer the standard of care in acute spinal cord injury (SCI).

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**Approved by:** MEDICAL DIR TRAUMA - CARY, MEDICAL DIR TRAUMA - RALEIGH

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**DEFINITIONS:**

<b>TERM</b>	<b>DEFINITION</b>
Stable Spine Injuries	Those injuries not associated with a neurologic deficit and not prone to late collapse (i.e., transverse process fractures, spinous process fracture minimal compression fracture).
Unstable Spine Injury	Any fracture pattern associated with a neurologic deficit, those that may develop a neurologic deficit, or those prone to late collapse (i.e., fracture subluxation and dislocation, severe burst fractures).
Traumatic Quadriplegia	Any injury associated with a spinal cord or nerve root deficit, not involving the cranial nerves, above and including C8, T1 roots.
Traumatic Paraplegia	Any injury associated with a spinal cord or nerve root deficit below the level of injury.
Complete Spinal Cord Injury	Any spinal cord injury with no demonstrable sensory or motor function below the level of injury.
Incomplete Spinal Cord Injury	Any spinal injury with some degree of motor or sensory function remains below the level of injury, including perianal sensation.
Bulbocavernosus Reflex	Also known as Osinski reflex is a polysynaptic reflex that is useful in testing for spinal shock and gaining information about the state of spinal cord injuries.
Spinal Shock	Flaccidity (loss of muscle tone) and loss of reflexes that occur immediately after SCI. After a period of time, spasticity ensues.

**I. ADDITIONAL RESOURCES**

- a. J Trauma. 73(5):S326-S332, November 2012
- b. Advanced Trauma Life Support ATLS: Student Course Manual. (2018). 10th ed. Chicago: American College of Surgeons.

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<b>Motor Level</b>	<b>Muscle (action)</b>
C5	Deltoid
C6	Biceps
C7	Triceps
C8	finger flexors
T1	intrinsic hand muscles
L2, 3	psoas (hip flexion)
L4	anterior tibialis (ankle dorsiflexion)
L5	extensor hallicus longus
S1	gastrocnemius (plantar flexion), peroneal tendons
S4,5	anal sphincter (voluntary contraction)
<b>Sensory Level</b>	<b>Anatomic site</b>
C5	clavicle, lateral deltoid
C6	first dorsal web space
C7	middle finger
C8	little finger
T1	medial forearm
T5	medial, proximal arm
T7	Nipples
T10	costal margins
T12	Umbilicus
L3	inguinal ligament
L4	anterior thigh, medial knee
L5	first dorsal web space
S1	lateral foot
S3, 4	posterior thigh, buttocks, perineum
<b>Level</b>	<b>Reflex</b>
C6	Biceps
C7	Triceps
T7-10	Upper abdomen
T10-12	Lower abdomen
L1	Cremasteric
L4	Knee jerk
S1	Ankle jerk
S2-4	Bulbocaverosus
S4-5	Anal cutaneous

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