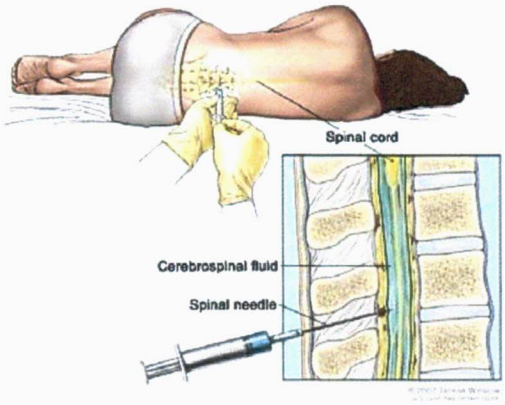
Basic Skills Qualification
Lumbar Puncture



Evaluation Process
Prior to seeking BSQ certification, a resident should be confident in their skills. The "Basic Skills Qualification" is printed and given to the supervising physician, where after, the resident performs the procedure under direct observation of the supervising physician. The competency assessment is completed by the supervising physician with their signature and given back to the resident. The resident then returns the competency assessment to the Academic Coordinator.

Resident: _____

	Competent	Needs Work
Informed consent: can state contraindications and describe risks, benefits, alternatives and procedure		
Positioning: Lateral decubitus, position, knee-chest, neck flexed, lower lumbar spine should be flexed with the back perfectly perpendicular to the edge of a bed		
Identify anatomy of the lumbar spine correctly		
Sterile technique, universal precaution		
Selects and draws appropriate anesthetic, typically 1% lidocaine without epinephrine		
Stylet and Spinal needle insertion		
Place 3 way stopcock and manometer, measure open pressure		
CSF collection in 4 tubes		
Remove stylet and spinal needle, place bandage over the puncture site		

Faculty: _____

Date: _____

Lumbar Puncture (Adult)

Consent

Indications:

- Suspected CNS infection
- Suspected subarachnoid hemorrhage
- Therapeutic reduction of CSF pressure
- Sampling of CSF for any other reason

Contraindications:

- Local skin infections over proposed puncture site
- Uncontrolled bleeding diathesis
- Lack of patient cooperation

Relative contraindications:

- Raised intracranial pressure (ICP)
- Suspected spinal cord mass or intracranial mass lesion

Other considerations:

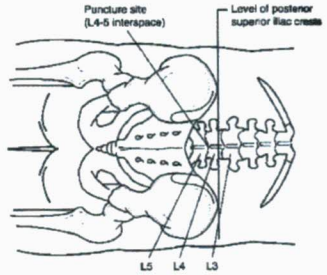
- Spinal column deformities (may require fluoroscopic assistance)

Risks:

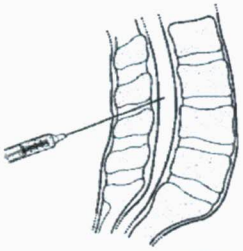
- Headache: up to 40% with Quincke needle, 5% with Sprotte or Whitacre needle
- Infection, lower back pain, nerve root irritation, bleeding, spinal hematoma, cranial neuropathy, herniation, are rare.

You will be expected to demonstrate the following:

1. Assess indications for procedure and obtain informed consent as appropriate
2. Explain procedure to the parent/guardian (risks, benefits, alternatives)
3. Prepare equipment/field; prepare the patient, light the area
4. Positioning
   - Place the patient in the lateral decubitus position lying on the edge of the bed and facing away from operator.
   - Place the patient in a knee-chest position with the neck flexed.
   - The lower lumbar spine should be flexed with the back perfectly perpendicular to the edge of a bed.
   - The hips and legs should be parallel to each other and perpendicular to the table.
   - The patient's head should rest on a pillow, so that the entire cranio-spinal axis is parallel to the bed.
5. Locate landmarks: between spinous processes at L4-5, L3-4 levels. (See [1]) On obese patients, find the sacral promontory; the end of this structure marks the L5-S1 interspace. Use this reference to locate L4-5 for the entry point. You will aim the needle towards the navel.



1] Anatomy of lumbar spine showing sites for dural puncture



[2] Angling the needle so it passes between the spinous processes of the vertebrae.

6. Prep and drape the area after identifying landmarks.
7. Use lidocaine 1% with or without epinephrine to anesthetize the skin and the deeper tissues under the insertion site.
8. Assemble needle and manometer. Attach the 3-way stopcock to manometer.
9. Insert stylet, then the spinal needle (bevel-up if Quincke needle) through the skin and advance through the deeper tissues.

- A slight pop or give is felt when the dura is punctured.
- Angle of insertion is on a slightly cephalad angle, between the vertebra (see [2]).
- If you hit bone, partially withdraw the needle, reposition, and readvance.

10. When CSF flows, attach the 3-way stopcock and manometer. Measure ICP…this should be 20 cm or less.

- Pressure reading is not reliable if the patient is in the sitting position.

11. If CSF does not flow, or you hit bone, withdraw needle partially, recheck landmarks, and re-advance
12. Once the ICP has been recorded, remove the 3-way stopcock, and begin filling collection tubes 1-4 with 1-2 ml of CSF each.

After tap, remove stylet and the needle, and place a bandage over the puncture site. Instruct patient to remain lying down for 1-2 hours before getting up