LUMBAR PUNCTURE

Lumbar puncture is a procedure during which a needle is inserted into the subarachnoid space to obtain cerebrospinal fluid (CSF) for laboratory analysis. CSF is formed within the ventricular choroid plexus and distributed in the ventricular system, basal cisterns and the subarachnoid space. The Healthcare Cost and Utilization Project (HCUP) estimates over 240,000 lumbar punctures were performed in hospitalized patients in 2002. Hospitalists identify patients who require lumbar puncture to assess acute or chronic central nervous system (CNS) disease processes. Early diagnosis and therapy of acute CNS infections or subarachnoid hemorrhage is essential to lower morbidity and mortality.

KNOWLEDGE

Hospitalists should be able to:

- Describe the anatomy of the spinal column and the spinal cord.
- Describe the signs and symptoms that require lumbar puncture.
- Describe disease processes that require frequent therapeutic lumbar puncture.
- Explain the indications and contraindications for lumbar puncture, including potential risks and complications.
- Describe the physical examination maneuvers used in the evaluation of suspected CNS infections and identify their sensitivity and specificity.
- List the indications for brain imaging prior to lumbar puncture.
- Explain the diagnostic testing indicated for CSF based on the clinical presentation.
- Describe indications for the use of interventional radiology in performing lumber puncture.
- Select the necessary equipment to perform a lumbar puncture at the bedside.

SKILLS

Hospitalists should be able to:

- Elicit a thorough history and review medical records to identify indications and potential contraindications for lumbar puncture.
- Perform a thorough physical examination, including neurologic and fundoscopic examination.
- Properly position the patient for lumbar puncture and identify major anatomic landmarks.
- Use sterile techniques during preparation for and performance of lumbar puncture.
- Obtain an accurate measurement of and interpret the opening pressure.
- Maintain clinician safety with appropriate protective wear.
- Manage the complications of lumbar puncture, particularly post-lumbar puncture headache.
- Order and interpret indicated diagnostic tests for CSF fluid.
- Order and interpret platelet and coagulation studies when indicated.
- Synthesize data obtained from history, physical examination, radiographic imaging, and CSF analysis to develop an evidence based treatment plan.

ATTITUDES

Hospitalists should be able to:

- Communicate with patients and families to explain the procedure, its expected diagnostic benefits, and potential complications; and to obtain informed consent.
- Discuss with patients and families pain management strategies for discomfort during and after lumbar puncture.
- Recognize the importance of proper positioning following the procedure.
- Identify patients who require isolation precautions.
- Manage patient discomfort or pain during and after the procedure.
- Recognize the indications for specialty consultation, which may include interventional radiology, infectious disease or neurology.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve efficiency and quality within their organizations, Hospitalists should:

- Collaborate with emergency physicians to develop protocols for rapid identification and evaluation of patients with suspected CNS infections.
- Lead, coordinate or participate in efforts to develop strategies to minimize institution complication rates.
- Lead, coordinate or participate in quality improvement programs to monitor hospitalists' performance and/or supervision of lumbar puncture.
- Lead, coordinate or participate in efforts to organize and consolidate lumbar puncture equipment in an identifiable location in the hospital, easily accessible to clinicians who perform the procedure.