

CORE SKILLS**LUMBAR PUNCTURE****INTRODUCTION**

Lumbar puncture is a common typically performed procedure to confirm clinical suspicion of meningitis. Other common indications include the evaluation and diagnosis of pseudotumor cerebri, complex migraine headaches, altered mental status, subarachnoid hemorrhage, neurologic deterioration, and demyelinating diseases such as Guillan Barré. A lumbar puncture or “spinal tap” often elicits great concern from both patients and the family/caregiver due to a misunderstanding of risk to the spinal cord. Adequate discussion with patients and the family/caregiver, and appropriate use of topical anesthesia, anxiolysis, or sedation can create the environment needed for a successful procedure. Pediatric hospitalists frequently encounter patients requiring lumbar puncture and should be adept at performing lumbar puncture in all appropriately selected pediatric patients.

KNOWLEDGE

Pediatric hospitalists should be able to:

- List the indications for lumbar puncture, such as confirmation of pleocytosis, aiding initial antimicrobial selection, therapeutic removal of fluid, assessment of response to treatment, performance of neurometabolic studies, and others.
- Review the basic anatomy of the spine and spinal column.
- List the indications for obtaining an imaging study of the brain or spinal cord prior to performing a lumbar puncture.
- Describe the relative contraindications to lumbar puncture such as pre-existing ventriculoperitoneal shunt or previous spinal surgeries and discuss the options for safely obtaining cerebrospinal fluid in these patients
- List the absolute contraindications to lumbar puncture, such as increased intracranial pressure, unstable cardiorespiratory status, unstable coagulopathies, and others.
- Describe the risks and complications of lumbar puncture attending to infection, bleeding, nerve injury, pain, post-procedure headache, and others.
- Summarize factors that may increase risk for complications such as age, disease process, and anatomy.
- Review the steps in performing a lumbar puncture, attending to aspects such as infection control, patient identification, positioning options, monitoring, family/caregiver presence and others.
- Discuss the roles of each member of the healthcare team, attending to proper level of monitoring to maximize safety, timeout, documentation, specimen labeling and transport to the laboratory, and communication with patients and the family/caregiver.

SKILLS

Pediatric hospitalists should be able to:

- Perform a pre-procedural evaluation to determine risks and benefits of lumbar puncture.
- Correctly obtain informed consent from the family/caregiver.
- Correctly order and ensure proper performance of procedural sedation if indicated, including assurance of adequate number of staff present for both the lumbar puncture and the sedation.
- Demonstrate proficiency in performance of lumbar puncture on infants, children, and adolescents.
- Correctly identify the need for and efficiently offer education to healthcare providers on proper techniques for holding and calming patients before, during, and after lumbar puncture attempts.
- Consistently adhere to infection control practices.
- Order appropriate monitoring and correctly interpret monitor data.
- Identify complications and respond with appropriate actions.
- Accurately use the pressure manometer as appropriate.
- Correctly identify the need for and efficiently access appropriate consultants and support services for assistance with pain management, sedation, and performance of a lumbar puncture.

ATTITUDES

Pediatric hospitalists should be able to:

- Work collaboratively with hospital staff and subspecialists to ensure coordinated planning and performance of lumbar punctures.
- Communicate effectively with patients and the family/caregiver regarding the indications for, risks, benefits, and steps of the procedure.
- Role model and advocate for strict adherence to infection control practices.

SYSTEMS ORGANIZATION AND IMPROVEMENT

In order to improve efficiency and quality within their organizations, pediatric hospitalists should:

- Lead, coordinate or participate in the development and implementation of cost-effective, safe, evidence-based procedures and policies for performance of lumbar punctures for children.
- Work with hospital administration, hospital staff and others to develop and implement standardized documentation tools for the procedure.
- Lead, coordinate or participate in the development and implementation of a system for review of family/caregiver and healthcare provider satisfaction into procedural strategies.

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