

# Lumbar Puncture Clinical Findings

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# Lumbar Puncture Indications

- Measure CSF pressure
- Collect CSF for quantitative analysis
- Diagnosis of meningitis, CNS infections, neurosyphilis, hemorrhage, tumors, and brain abscesses

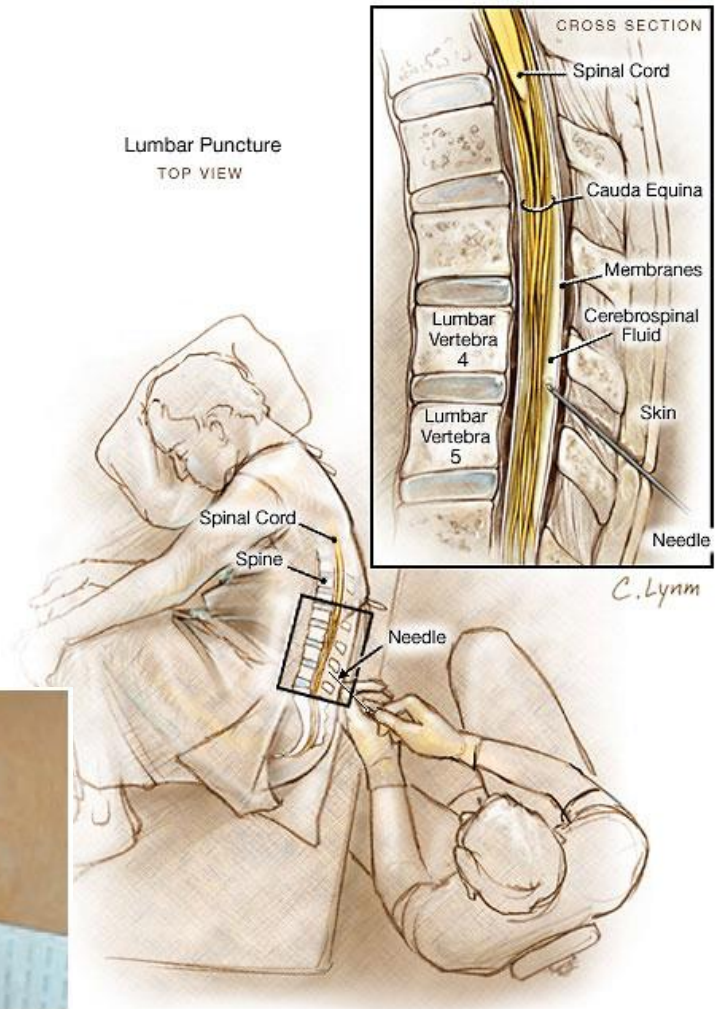
# Lumbar Puncture Equipment

- Lumbar Puncture tray
- Sterile gloves
- Local anesthetic
- Iodine solution



# Lumbar Puncture Procedure

- Patient in fetal position
- Inject anesthetic
- Spinal needle inserted between L3/L4 or L4/L5
- Pressure measured and sample obtained



# Lumbar Puncture Clinical Findings

Test	Normal	Pathological + Implications
Pressure	50-180 mm H <sub>2</sub> O	Increase: Infection, hemorrhage, tumor, edema Decrease: Obstruction
Appearance	Clear, colorless	Cloudy: infection; bloody: hemorrhage; brown, orange or yellow: RBC breakdown
Protein	15-45 mg/dl	Increase: Infection, tumors, trauma, hemorrhage, diabetes mellitus, polyneuritis
Gamma Globulin	3-12% total protein	Increase: Demyelinating disease, neurosyphilis
Glucose	50-80 mg/dl	Increase: Systemic Hyperglycemia Decrease: Systemic hypoglycemia, bacterial/fungal infection
Cell Count	0-5 WBCs  0 RBCs	Increase: Meningitis, acute infection, tumor, abscess, demyelinating disease RBCs: Hemorrhage or traumatic tap
VDRL	Nonreactive	Positive: Neurosyphilis
Chloride	118-130 mEq/L	Decrease: Meningitis or TB
Gram Stain	None	Positive: Bacterial meningitis

# Lumbar Puncture Precautions and Complications

- Pressure must be checked, as increased ICP may lead to cerebellar tonsillar herniation
- Adverse effects
  - headache (most common), bleeding, infection, herniation

# References

- Harrison's Manual of Medicine
- The Merck Manual
- Professional Handbook of Diagnostic Tests