



## PROCEDURE CHECKLIST

# Lumbar puncture

Sampling cerebrospinal fluid from the lumbar subarachnoid space to diagnose meningitis, encephalitis or subarachnoid haemorrhage, and to measure opening pressure.



EM Orbit

Patient reference

Date

Time

Completed by

### Equipment ready

- ☐ Sterile gloves, gown, mask and drapes
- ☐ Skin antiseptic (chlorhexidine in alcohol, allowed to dry fully)
- ☐ Lidocaine 1% with 25 G and 21–23 G needles and syringe
- ☐ Spinal needle 20–22 G, 90 mm (longer needle for obese patients); atraumatic (pencil-point) needle with introducer where available
- ☐ Manometer with three-way tap
- ☐ Sterile numbered specimen tubes (at least 3–4) and a fluoride (grey-top) tube for paired plasma glucose
- ☐ Sterile dressing
- ☐ Light-protected container for xanthochromia sample

### Before · Decide and check

- ☐ Confirm the indication and whether the LP will change management.
- ☐ **If bacterial meningitis is suspected, give empirical antibiotics immediately and do not wait for the LP.**  
Take blood cultures first if this causes no delay; antibiotics can still be followed by an LP within hours.
- ☐ Screen for features that require CT before LP.
- ☐ **Do not perform LP if there are clinical or CT signs of raised intracranial pressure or significant mass effect.**  
Risk of cerebral herniation. A normal CT does not exclude raised pressure if clinical signs are present.
- ☐ Check platelet count, coagulation screen and anticoagulant or antiplatelet history.
- ☐ For suspected subarachnoid haemorrhage, time the LP at least 12 hours after headache onset.
- ☐ Examine the back for skin infection, deformity or scars.

### Before · Consent and preparation

- ☐ Explain the procedure, benefits and risks and obtain written or verbal consent as local policy requires.
- ☐ Offer analgesia or anxiolysis if the patient is distressed.
- ☐ Take a venous sample for plasma glucose just before the LP.
- ☐ Label the specimen tubes 1 to 4 in order of collection before starting.

### During · Positioning

- ☐ Position the patient in the left lateral position at the edge of the bed, knees drawn to the chest and neck flexed.
- ☐ Use the sitting position, leaning forward over a table, if landmarks are difficult (e.g. obesity) and opening pressure is not needed.
- ☐ Palpate the iliac crests; the line joining them (Tuffier's line) crosses the L4 spinous process or L4/L5 interspace.
- ☐ Mark the chosen interspace.

### During · Asepsis and anaesthesia

- ☐ Wash hands and put on sterile gloves, gown and mask.

- ☐ Clean a wide area with chlorhexidine in alcohol and allow it to dry fully, then drape.
- ☐ Check equipment: assemble the manometer, confirm the stylet moves freely in the spinal needle.
- ☐ Raise a skin wheal with lidocaine 1% using the 25 G needle, then infiltrate deeper along the planned track.

### During · Insertion

- ☐ Insert the spinal needle (with stylet) in the midline, bevel facing the patient's side (parallel to the longitudinal dural fibres), aiming slightly cephalad towards the umbilicus.
- ☐ Advance slowly, removing the stylet periodically to check for CSF.
- ☐ If bone is struck, withdraw to the subcutaneous tissue and redirect; recheck midline and patient position.
- ☐ **Stop and withdraw if the patient reports sharp, shooting pain or paraesthesia down a leg.**  
The needle is touching a nerve root; redirect towards the side away from the pain.
- ☐ Limit the number of attempts; after repeated failure ask for senior help or consider image-guided LP.

### During · Pressure and samples

- ☐ When CSF flows, attach the manometer and ask the patient to relax and straighten the legs slightly.
- ☐ Read the opening pressure when the column settles and note respiratory swing.
- ☐ Collect CSF into the numbered tubes in order, by free drip; do not aspirate.
- ☐ Send samples for: microscopy, Gram stain and culture; protein; glucose; and, as indicated, viral PCR, xanthochromia (protected from light) and cytology.
- ☐ Replace the stylet before withdrawing the needle.
- ☐ Withdraw the needle and apply a sterile dressing.

### After · Care and documentation

- ☐ Hand deliver or urgently send the samples; xanthochromia samples must be protected from light and reach the laboratory promptly.
- ☐ Allow the patient to mobilise as comfortable.
- ☐ Observe neurological status and vital signs, and report new headache, limb weakness, sensory change or bladder dysfunction.
- ☐ Document indication, consent, position, interspace, needle type and size, number of attempts, opening pressure, CSF appearance, samples sent and complications.
- ☐ Chase and interpret results with the paired plasma glucose.
- ☐ Advise the patient about post-LP headache (worse on standing, better lying) and when to return.



A drafted procedure checklist, awaiting senior review. Perform procedures only within your training, competence and local policy. It does not replace your clinical judgement.

EM Orbit · Emergency medicine, in one orbit · proc-lumbar-puncture · red rows are the steps that must not be missed