



PROCEDURE CHECKLIST

Pleural aspiration

Needle aspiration of the pleural space under ultrasound guidance, for diagnosis of an effusion, relief of breathlessness from a large effusion, or treatment of a primary spontaneous pneumothorax.



EM Orbit

Patient reference

Date

Time

Completed by

Equipment ready

- ☐ Ultrasound machine with sterile probe cover
- ☐ Sterile gloves, drape, chlorhexidine 2% in alcohol
- ☐ Lidocaine 1%, syringes and needles
- ☐ Diagnostic tap: 21 G green needle and 50 mL syringe
- ☐ Therapeutic tap or pneumothorax: 14–18 G cannula or a dedicated aspiration kit with three-way tap and tubing
- ☐ Sample containers: sterile pots, blood culture bottles, heparinised blood gas syringe
- ☐ Drainage bag or large syringe
- ☐ Dressing

Before · Checks and consent

- ☐ Review imaging and confirm the side
- ☐ **Use ultrasound guidance for every pleural fluid aspiration; mark the site immediately before the procedure with the patient in the same position**
- ☐ Check clotting, platelets and anticoagulants
- ☐ Obtain informed consent including pneumothorax, bleeding, infection, pain and failure
- ☐ Perform a safety pause

Before · Position

- ☐ For effusion: sit the patient upright, leaning forward on a table with arms folded
- ☐ Choose a site in the posterior or mid-axillary line, one or two spaces below the top of the fluid, avoiding the diaphragm and organs
- ☐ For pneumothorax: supine or semi-recumbent; 2nd intercostal space mid-clavicular line or 4th–5th space in the safe triangle

During · Anaesthesia

- ☐ Clean and drape the site with full aseptic technique
- ☐ Infiltrate local anaesthetic into the skin and down to the pleura over the upper border of the rib
- ☐ **Stay on the upper border of the rib to avoid the neurovascular bundle**

During · Diagnostic aspiration

- ☐ Insert the 21 G needle on a 50 mL syringe perpendicular to the skin, aspirating as you advance

- ☐ Withdraw 50–60 mL of fluid and remove the needle
- ☐ Note the appearance: straw, bloody, turbid, purulent, milky
- ☐ Send samples: protein, LDH, glucose, pH, microscopy, Gram stain and culture, cytology, and other tests as indicated

During · Therapeutic aspiration

- ☐ Insert the cannula or aspiration catheter, remove the needle and connect the three-way tap
- ☐ Aspirate slowly, or allow gravity drainage into a bag
- ☐ **Stop at 1.5 L in a single aspiration, or earlier if the patient develops chest tightness, cough, pain or vasovagal symptoms**

During · Pneumothorax aspiration

- ☐ Insert a 14–18 G cannula (or aspiration kit) into the pleural space and remove the needle
- ☐ Aspirate air with a 50 mL syringe and three-way tap, counting volumes
- ☐ Stop when resistance is felt, the patient coughs excessively, or 2.5 L has been aspirated

After · Care and follow-up

- ☐ Remove the needle or cannula and apply a dressing
- ☐ Repeat the chest X-ray after therapeutic or pneumothorax aspiration, or if symptoms develop
- ☐ Observe for pain, breathlessness, cough, hypotension and desaturation
- ☐ For pneumothorax: if the lung has re-expanded and the patient is well, arrange early follow-up with advice to return; if not, insert a chest drain
- ☐ Interpret the results: transudate versus exudate by Light's criteria
- ☐ Pleural pH below 7.2 in suspected infection indicates a need for drainage; discuss with the respiratory team
- ☐ Advise patients after pneumothorax not to fly until resolution is confirmed, and never to dive unless specialist-cleared
- ☐ Document site, ultrasound findings, volume removed, appearance, samples sent and complications



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-pleural-aspiration · red rows are the steps that must not be missed