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This article, the final in our six-part series, explains how to collect and send a central venous catheter (CVC) tip for sampling.

CVCs are used in a variety of settings for central venous pressure monitoring and to give central access for drugs and fluids. They are inserted using a sterile procedure into a large, central vein.

Most research shows that strict aseptic technique and careful, regular cleaning of the site can lower the incidence of catheter-related infections.

Four sites can be used for CVC placement: the femoral vein in the groin; the subclavian vein; the internal jugular vein; and the external jugular vein. Recent advice favours the subclavian site as infection rates are lower (Mermel, 2000). However, the jugular site is also popular due to the reduced risk of pneumothorax (Timsit, 2000). The femoral site can be problematic due to increased risk of infection and impact on mobility. Infection risk can be reduced with the use of catheter care guidelines (Department of Health, 2007).

CVC REMOVAL
The removal of CVCs should be carried out by those familiar with the procedure and those who are fully aware of the potential risks.

Catheter tips are generally sent for microculture and sensitivity when there is evidence of phlebitis or signs of infection with no other obvious cause (Drewett, 2000). Primary risks to the patient during and following CVC removal are air embolus and bleeding.

To prevent air emboli it is important to position the patient flat with the head down and feet raised. The patient needs to be able to hold in a deep breath during removal and a few seconds afterwards, to prevent air entering the space where the catheter has been and to allow the vein to reseal.

Some patients, such as those with respiratory problems, may find lying flat difficult. Reassurance should be given along with oxygen therapy, as prescribed. It may also be useful to consider timing the intervention after the patient has had any bronchodilators that they are prescribed. Along with this, it may be necessary to ask a colleague to lower and raise the bed to minimise the amount of time the patient remains flat.

Equipment
This procedure will require:
- Dressing pack including sterile gloves;
- Gauze swabs;
- Chlorhexidine solution 2%;
- Stitch cutter;

This procedure should be undertaken only after approved training, supervised practice and competency assessment, and carried out in accordance with local policies and protocols.
The procedure

- Obtain informed consent.
- Ascertain the patient’s clotting status, seek advice from medical staff as necessary.
- Wash hands and don apron.
- Explain the procedure to the patient, including the requirement to deep breathe and hold the breath.
- Open the dressing pack on to a clean trolley to create a sterile field. Pour chlorhexidine 2% into pot, open stitch cutter and gauze swab.
- Wash hands again/apply handrub. Don sterile gloves.
- Clean the area with chlorhexidine 2% to prevent a false positive result from skin flora.
- Cut the sutures holding the clip in place as close to the skin as possible. Pull through the skin from the other side so as not to pull the longer section of suture under the skin, which may be colonised with bacteria.
- Ask a colleague to adjust the bed so the patient is supine with feet raised and head down – the Trendelenburg position (Fig 1).
- Cut the sutures holding the clip in place as close to the skin as possible. Pull through the skin from the other side so as not to pull the longer section of suture under the skin, as it may be colonised with bacteria (Fig 2).
- Ask the patient to inhale deeply and hold their breath. Pull out the CVC while covering the area with a folded gauze swab. Apply firm pressure immediately after the line has been removed (Fig 3).
- Ask the patient to breathe out.
- Maintaining pressure on the site, ask a colleague to return the patient to a comfortable position. Place the CVC on the sterile field.
- Check the tip does not have a ragged edge as this would indicate it had broken off inside the patient, risking catheter embolus.
- Hold the gauze in place until bleeding stops and cover with transparent air occlusive dressing to prevent air embolus.
- Once bleeding has stopped, using sterile scissors, cut around 5cm from the end of the CVC (Dougherty and Lister, 2004) and place inside the container (Figs 4 and 5).
- Dispose of waste, remove apron and wash hands.
- Complete documentation (Fig 6).
- Dispatch sample with patient label, date and time to appropriate destination in accordance with local policies.
- Observe site for signs of bleeding and infection, usually for up to 48 hours.

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**REFERENCES**


**NEXT WEEK**

Systems of life

Genes 1: Introduction