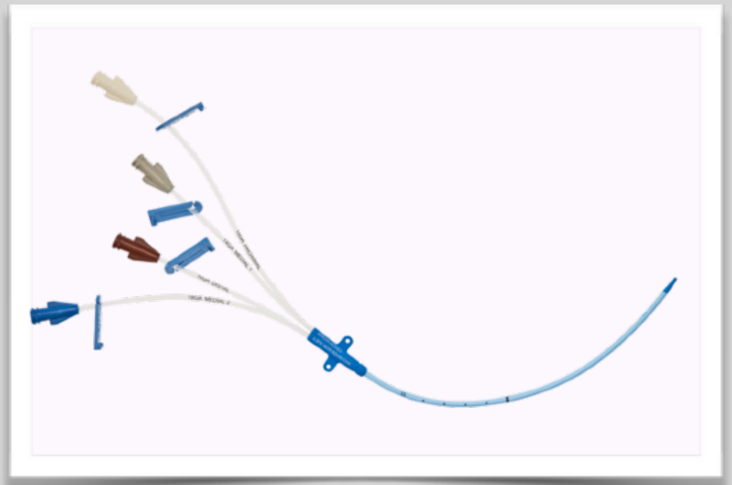
ACCU KIT OF THE WEEK

THE ROYAL LONDON HOSPITAL

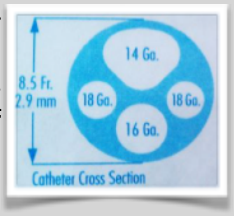
Central Venous Catheter

JM December 2020



What is this?
This is a quad-lumen central venous catheter (CVC).

How does it work?
The CVC's tip is designed to be placed in a central vein (large calibre, high flow vessel near the heart). It is better thought of as 4 lines of different diameter bound together:



What are the indications?
IV access & medication/feed administration: 1) the long catheter makes subcut displacement unlikely 2) irritant and vasoactive substances infused into a large-bore high-flow vein, reduce harm to the vessel wall and vasovasorum. This makes tissuing/perforation much less likely, therefore allowing more reliable delivery of critical medications. **Monitoring:** CVPressure, use in cardiac output monitoring, central venous oxygen sats, repeated blood sampling.

Contraindications?
All are effectively only *relative* contraindications: Overlying skin infection/burn, obstructed vein, stenosis, severe coagulopathy, etc. Risk/benefit.

Which vessel to access?
INTERNAL JUGULAR VEIN- Pro- easy USS access, low infection rates, easy to nurse **Con-** need to lay patient flat/head down to insert (not ideal in inc. ICP), carotid injury, risk of PTX.

SUBCLAVIAN VEIN- Pro- rapid insertion possible even in hypovolaemia, low infection rates, easy to nurse **Con-** Blind technique (could USS axillary vein), biggest risk of pneumothorax, may impact future AV fistula formation for haemodialysis.

FEMORAL VEIN- Pro- sometimes easier in agitated/awake respiratory failure patients, does not need head down **Con-** Much higher infection rates, difficult to nurse.

How is it inserted?
Consent. NICE recommends US-guided insertion. Full Asepsis with assistant, full monitoring-**Seldinger technique**-vein is accessed with a needle, a guidewire is inserted, the needle is removed, the skin/soft tissue tract is dilated, the primed line is inserted, the guidewire is removed, ports are aspirated and flushed, the line is secured with sutures at 4 points, then dressed with clear tegaderm dressing. Placement confirmed with Intra procedure USS, then VBG & CXR.

What are the risks?
EARLY COMPLICATIONS:

Arrhythmia at insertion- withdraw guidewire

Bleeding/vessel rupture- J tipped guidewire is atraumatic; be careful with the sharp, rigid dilator (only needs to just reach the vein), ensure wire always moves freely within dilator.

Arterial puncture/dilatation- remove needle apply pressure/ leave line in and consult vascular surg for repair. Neuro obs if carotid.

Retained guidewire-never event-use checklist

Pneumo/heamomothorax- Insert ICD

Air embolism- caution around sampling/ removal. Never use 3 way taps.

LATE COMPLICATIONS:

Catheter fracture- avoid additional procedures on same vein.

lumen blockage- ensure line flushed after use.

Infection- daily VIP score, remove when not needed, avoid femoral route.

Tip displacement- remove when not needed.

(deep-vein) thrombosis- remove when no longer needed- treat as DVT.