Central Venous Catheter (CVC) Insertion

1. Use imaging (e.g. Ultrasound or Fluoroscopy*) for all CVC insertions
   - Image guided insertion by trained individuals
     - Reduces rates of hematoma and inadvertent arterial puncture
     - Increases successful insertion

2. Check that the CVC tip is correctly placed
   - Confirm position by fluoroscopy if used at the time of insertion or other imaging such as chest x-ray if fluoroscopy is not used
   - Allows for ideal tip location for maximal hemodialysis blood flow*
   - The proper location of CVC tip is in the mid-right atrium

*Fluoroscopy is preferred imaging modality whenever possible (expert opinion)
*Malposition can lead to vessel perforation, venous thrombosis, catheter malfunction and cerebral migration

Note:
- Consider patient’s ESKD Life-Plan and circumstances with regard to CVC exit site and resulting placement of CVC limbs/hubs when tunneling CVC e.g. - Will the limbs/ports and hubs prohibit required activity, cause discomfort, or increase risk of infection or dislodgement?
Target Location for Hemodialysis CVC Tip Resting Place (green arrow)

**Figure 9a**
Poorly placed. This patient stocks shelves and cannot raise arms without constantly rubbing against catheter ends

**Figure 9b**

Note: Consider patient’s ESKD Life-Plan and circumstances with regard to CVC exit and resulting placement of limbs/hubs when tunneling CVC site