Central Venous Access Devices (CVADs) used for Parenteral Nutrition (PN) Support

The location of the catheter tip should rest in the distal superior vena cava (SVC), cavoatrial junction (CAJ) or the proximal right atrium (RA).

Prior to using a new catheter, correct catheter placement is verified by
- X-ray.
- Vascular Interventional Radiology (VIR) placement.
- 3CG Technology.

If a patient comes to UNC with an existing CVAD, obtain x-ray to confirm placement prior to using the catheter.

PN requires a dedicated catheter lumen. Label one lumen specifically for “TPN only”. Never infuse medication, blood or intravenous fluids through the TPN catheter. The goal is to not interrupt the TPN infusion.

Power Lines (Catheters) and Power Ports allow for the power-injection of contrast media.

Common CVAD complications include
- Infection
- Catheter occlusion
- Thrombus

Prevention and monitoring of complications include
- Diligent hand washing.
- Every 4 hour assessment for signs and symptoms of infection.
- Paying special attention to swelling of extremities.
- Aseptic dressing changes.
- Following UNCH flushing protocols.
Percutaneous Non-Tunneled Catheters are
- Placed at the bedside or during surgery by physician (MD) or by VIR.
- For short-term use (days to weeks).
- Inserted into internal jugular, subclavian, or femoral veins by direct venipuncture.
- Subject to higher risk of infection.
- Not appropriate for home care.
- Removable by Registered Nurse.

![Non-Tunneled Central Venous Access Device](image1)

Tunneled Cuffed Catheters are
- Placed in the Operating Room (OR) or VIR.
- Used longer term (> 1 year).
- Inserted at one vein (neck, chest) and are tunneled under the skin to a separate exit site.
- Held in place by cuff just before exit from skin. The cuff should never be visible.
- A lower infection risk than non-tunneled catheters.
- Appropriate for home care.
- Removed by a Doctor.

![Diagram of Tunneled Cuffed Catheter](image2)
Implanted Ports are
- Placed and removed in the OR or VIR.
- Located entirely under the skin (in chest) with “pocket” of skin sutured over it.
- Used longer term (> 1 year or 2,000 punctures).
- Possibly appropriate for home care.
- Accessed with a special Huber Needle per Nursing Policy.

Peripherally Inserted Central Catheters (PICCs) are
- Placed by Vascular Access Team (VAT) at bedside or by VIR.
- For short-term use (avg. 6 months to 1 year).
- Appropriate for home care.
- Inserted in a peripheral vein and threaded into SVC.
- A lower infection risk than non-tunneled catheters.
- Removed by a Doctor, VIR, or VAT Team.
- Contraindicated for insertion when the following conditions are present.
  - Thrombosis – upper extremity, subclavian.
  - Chronic renal failure, ESRD – May need arm veins for dialysis fistulas.
Peripheral Catheters are
  o Placed by VAT at bedside.
  o For short-term use (up to 2 weeks).
  o Not appropriate for home care.
  o A lower infection risk than central catheters.
  o Not used for solutions greater than 900 mOsm/L.
  o Removed by VAT or RN.

<table>
<thead>
<tr>
<th>Catheter</th>
<th>Tip Location</th>
<th># Lumens Recommended</th>
<th>Placed by</th>
<th>Removed by</th>
<th>Home Care</th>
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<tbody>
<tr>
<td>Percutaneous non-tunneled</td>
<td>SVC CAJ RA</td>
<td>Triple</td>
<td>MD VIR</td>
<td>MD VIR RN</td>
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<tr>
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<td>OR VIR</td>
<td>OR VIR</td>
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<td>MD VIR VAT</td>
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