Policy
This policy applies to short cannulas. For midline catheters see Nursing P&P G-22.

1. A physician or RN(EC)’s order for peripheral intravenous therapy must be in place before a nurse can insert a peripheral vascular access device (PVAD).
2. A physician or RN(EC)’s order must be obtained to use a vein in the lower extremities.
3. Registered Nurses and Registered Practical Nurses who have the knowledge, skill and competence to insert PVADs can initiate a peripheral IV on individuals age 12 and over. Registered Practical Nurses must be certified by CarePartners in IV Therapy and must have the approval of the Nurse Manager before inserting PVADs. See Nursing P&P G-32 for insertion of PVADs in children under the age of 12.
4. Catheter insertion must be performed using strict aseptic technique.

Site Selection
Clients requiring a peripheral IV start will need an individual assessment to select the correct site based on:

- Client’s condition, age and diagnosis
- Vein condition, size and location
- Type and duration of prescribed therapy (Verify pH and osmolarity of medication being infused. If pH is outside 5-9 pH and the osmolarity above 600mmol/L and therapy greater than week consider an alternative vascular access device such as a central line.)
- Client’s infusion history
- Client’s preference for location
Only select veins in the arms and hands are used to insert a PVAD. Avoid using lower extremities, unless absolutely necessary.

Assess veins in both dorsal and ventral surfaces of the upper extremities:
- Metacarpal
- Cephalic
- Basilic
- Median veins

Avoid the lateral surface of the wrist approximately 4-5 inches due to the potential for nerve damage.

Use the most appropriate distal vein.

Vein selected for cannulation should be able to accommodate the size and length of catheter selected.

Insert new devices proximal to previous insertion sites.

Avoid areas of joint flexion including the antecubital fossa. Avoid the affected arm of a client with a mastectomy, cerebral vascular accident, arteriovenous shunt or fistula, blood clot, edema, or infection. Avoid veins below a previous IV infiltration; veins below a phlebitic area; sclerosed and thrombosed veins; areas of skin inflammation, disease, bruising and breakdown.

The following chart will aide in determining the vein level of the client. Once the vein level is identified the nurse can identify if he/she has the skill in order to initiate the peripheral IV on the client. For example, if a nurse was skilled at starting PVAD on a client with a vein level of 2, the nurse would be able to attempt a start on a client with a vein level of 1,2 and could try once on a client with a vein level of 3.
<table>
<thead>
<tr>
<th>Vein Level</th>
<th>Client Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>- Veins visible</td>
</tr>
<tr>
<td></td>
<td>- Easy to palpate</td>
</tr>
<tr>
<td></td>
<td>- Large in size</td>
</tr>
<tr>
<td>Level 2</td>
<td>- Veins visible</td>
</tr>
<tr>
<td></td>
<td>- Easy to palpate</td>
</tr>
<tr>
<td></td>
<td>- Moderate in size</td>
</tr>
<tr>
<td></td>
<td>- Previous IV sites, undamaged veins</td>
</tr>
<tr>
<td>Level 3</td>
<td>- Veins visible</td>
</tr>
<tr>
<td></td>
<td>- Easy to palpate</td>
</tr>
<tr>
<td></td>
<td>- Small in size</td>
</tr>
<tr>
<td></td>
<td>- Limited veins, eg: some sclerosed</td>
</tr>
<tr>
<td></td>
<td>- Long term IV therapy</td>
</tr>
<tr>
<td>Level 4</td>
<td>- Veins difficult to see</td>
</tr>
<tr>
<td></td>
<td>- Can be palpated</td>
</tr>
<tr>
<td></td>
<td>- Clients previous IV therapy has resulted in poor veins</td>
</tr>
<tr>
<td></td>
<td>- Elderly client &gt;70</td>
</tr>
<tr>
<td>Level 5</td>
<td>- Cannot see veins</td>
</tr>
<tr>
<td></td>
<td>- Cannot palpate veins</td>
</tr>
<tr>
<td></td>
<td>- May need to utilize several techniques to fill and visualize veins</td>
</tr>
<tr>
<td></td>
<td>- Client had central venous access for previous IV treatments</td>
</tr>
</tbody>
</table>
Site Preparation:
Prepare the site for insertion of a PVAD in one of three ways:
1. Chlorhexidine gluconate without alcohol – friction rub for 2 minutes.
2. Chlorhexidine gluconate 2% with alcohol – friction rub for 30 seconds and allow to dry.
3. 70% isopropyl alcohol - apply for a minimum of 30 seconds. Does not have long lasting bactericidal effect.
4. Povidone-iodine – friction rub for two minutes. Do not apply alcohol as a second antiseptic agent such as alcohol will negate the iodine’s effect

Hair should be clipped with clippers or scissors.

Selecting the Cannula:
The nurse will select the PVAD based on:
- Client condition
- Prescribed therapy
- Duration of the therapy
- Insertion technique
- Catheter material
- Catheter care and maintenance

Select the smallest gauge and shortest length catheter for the prescribed therapy.

<table>
<thead>
<tr>
<th>20-24 gauge catheters</th>
<th>Recommended for most medical surgical clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-24 gauge catheters</td>
<td>Recommended for older adults</td>
</tr>
</tbody>
</table>
An individual vascular access device is only used for one insertion attempt.

**Tourniquets:**
Use tourniquets once and discard. Use a latex free tourniquet.

**Dressing:**
Apply a transparent semi-permeable membrane (TSM) dressing over the PVAD once inserted. The dressing is changed with site rotation or whenever moist or no longer adhering.

**Dwell Time:**
Change peripheral IV sites every 72 hours and whenever red, swollen, painful, leaking or interstital. If the site is free from inflammation and the client has limited sites available for a peripheral restart then the nurse may choose to delay restarting the IV; the reason for the delay and the condition of the site must be documented on the Vascular Access: Peripheral IV Flow Sheet and Progress Note. Ongoing assessment of the site must be performed.

**Attempts:**
No more than 2 attempts at vascular access placement should be made by one nurse.

### Procedure

**Equipment:**
- IV cannula (must be safety-engineered)
- Alcohol or iodine or chlorhexidine swabs
- Injection cap (with extension tubing, if supplied)
- 3 cc syringe with saline
- Tourniquet
- Sharps container

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G-19

Section: Intravenous Therapy Procedures

P&P: *Peripheral Vascular Access Device – Insertion*

- Non-sterile gloves
- Tape
- TSM dressing (i.e. Tegaderm, Opsite)

**Procedure:**
1) Obtain and review orders.
2) Perform hand hygiene.
3) Assemble equipment.
4) Explain procedure to client (benefits, care management, potential complications)
5) Perform hand hygiene.
6) Attach injection cap to extension set and prime with saline using syringe.
7) Apply the tourniquet ensuring the radial pulse remains palpable.
8) Perform hand hygiene and don non-sterile gloves.
9) Select the most appropriate insertion site.
10) Wash intended insertion site with soap and water (as required)
11) Remove excess hair from insertion site with clippers or scissors (as required)
12) Ask the client if the client is allergic to any component of the antiseptic you have chosen.
13) Prepare skin with the appropriate antiseptic (see *Site Preparation* above). Start from the center and work outward in a back and forth motion. An area 10-20 cm in diameter should be covered. Allow site to dry. Do not blow or blot area dry.
14) Prepare catheter by ‘breaking the seal’ between catheter and stylet by rotating the catheter 360 degrees around the stylet. Be sure to **never** advance the catheter above stylet as the stylet is sharp and could puncture the catheter.
15) Stabilize vein below intended venipuncture site with non-dominant hand by keeping the skin taut. This helps anchor the vein and prevents it from rolling.
16) Insert the catheter bevel up, through skin at a 10 to 30 degree angle depending on the vein's depth. Decrease the angle when the skin has been penetrated.

17) Observe for blood return within flashback chamber. When blood has been obtained advance catheter 1/16 inch, and then slightly pull stylet back, advancing catheter gently into vessel. Continue to advance catheter into vein until the catheter hub is against the skin.

18) Release tourniquet.

19) Occlude tip of catheter by pressing finger of nondominant hand over vein to prevent blood spillage.

20) Activate safety needle safety device and remove stylet. Connect IV administration set or injection cap to cannula. Begin infusing solutions slowly. Observe insertion site for any signs of swelling. If the catheter is for intermittent therapy use, flush slowly with 3ml of 0.9% sodium chloride solution.

21) Secure the catheter with securement device and/or apply transparent dressing

22) Label dressing with date, time, gauge and length of catheter, and name of nurse inserting catheter

23) Discard stylet in sharps container.

24) Remove gloves and perform hand hygiene.

25) Document the procedure including the anatomical location, vein used for insertion, the number of successful and unsuccessful insertions, any complications, and the gauge and length of the catheter on the Vascular Access: Peripheral IV Flow Sheet.