TITLE
CLIN_100 ADULT PERIPHERAL INTRAVENOUS LINE INSERTION, MAINTENANCE AND REMOVAL

APPLICABILITY
EDWARD HOSPITAL

POLICY STATEMENT(S)
To provide a standard of practice for venipuncture and management of peripheral IV lines

DEFINITION(S)
Insertion Site: Includes the entire area to be covered by the dressing.
Peripheral IV: cannula/catheter inserted into a small peripheral vein for therapeutic purposes such as administration of medications, fluids and/or blood products.
Midline Catheters: The POWERGLIDE midline catheter is a peripheral intravenous catheter measuring 8 to 10 cm. (3.1 to 3.9 inches) long that is inserted in the upper or lower arm using ultrasound guidance into the proximal basilica or cephalic veins resting below the axilla and does not enter the central veins. Solution or product infused via a midline catheter is limited to those fluids, medications and concentrations approved for peripheral infusion. Dwell time is 29 days.
Infiltration: Inadvertent administration of a solution and/or medication into the surrounding tissue
Vesicant: An agent capable of causing blistering, tissue sloughing, or necrosis when it escapes from the intended vascular pathway into the surrounding tissue.

General Principles
1. Hand Hygiene. Perform hand hygiene before and after palpat ing catheter insertion sites as well as before and after inserting, replacing, accessing, repairing or dressing a peripheral catheter.
2. Disinfect the needleless connector prior to each access.
3. Do not use peripheral catheters for continuous vesicant therapy, parenteral nutrition or infusates with an osmolality greater than 900 mOsm/L.

PROCEDURE PERIPHERAL INTRAVENOUS LINE
1. Insertion
   Note: Registered Nurses with a physician’s order may initiate peripheral intravenous lines. Registered Nurses may start IVs without a physician’s order in emergency situations. Technicians with specialized training in designated areas may start and/or discontinue intravenous lines.
   a. Perform hand hygiene and put on non-sterile gloves.
   b. Assess upper extremities for an appropriate venipuncture site.
   c. Select catheter gauge on the basis of the intended purpose and duration of use,
   d. Clean insertion site with chlorhexidine (30 second scrub)
   e. Allow chlorhexidine to completely dry (30 seconds).
   f. Insert IV and verify placement is in the vein.
   g. Never re-advance the needle into the catheter once needle has been removed.
   h. Apply transparent dressing. Initial, date and time
   i. Document catheter gauge, site, date, time and if appropriate injection of Lidocaine
   j. Discuss alternative insertion options with the charge nurse in the event of two unsuccessful insertion attempts.
   k. Consider use of vein visualization equipment.
2. Infusions
   a. To keep open (TKO)/Keep vein open (KVO) order is interpreted as 10-20 ml/hr in Adults.
b. Affix label to include start date/time and discard date/time with RN’s initials.
c. Based on Product/Solution a maximum hang time is recommended as indicated in Table 1 below.

3. Tubing
   a. Change administration sets, including add on devices and tubing, at established intervals depending on solution, when contamination is suspected, when integrity is compromised, or with new peripheral line access. (as identified in Table 1 below).
   b. Discard disinfection caps once removed and replace with a new disinfection cap.
   c. Cover the open end of IV tubing or piggyback tubing with a new/unused sterile cap (needleless connector, blunt cannula or sterile cap) when the tubing is disconnected and will be used again.

Table 1: ADULT MAXIMUM HANG TIME AND TUBING FREQUENCY CHANGE

<table>
<thead>
<tr>
<th>Product/Solution</th>
<th>Maximum Hang Time</th>
<th>Tubing Frequency Change</th>
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<tbody>
<tr>
<td>Blood Products</td>
<td>4 Hours</td>
<td>Every 4 hours or after the 2nd unit (Whichever comes first)</td>
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<tr>
<td>IV Fluids mixed in pharmacy or on nursing units</td>
<td>24 Hours</td>
<td>Continuous connection: Every 96 Hours; Intermittent connection: Every 24 Hours</td>
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<tr>
<td>Commercially prepared IV solutions</td>
<td>72 Hours if continuously infusing</td>
<td>Continuous connection: Every 96 Hours; Intermittent connection: Every 24 Hours</td>
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<tr>
<td>Propofol</td>
<td>12 Hours</td>
<td>Every 12 Hours</td>
</tr>
<tr>
<td>Ativan</td>
<td>24 Hours</td>
<td>Filter and Tubing every 24 hours</td>
</tr>
</tbody>
</table>

4. Patency and flushing
   a. Confirm patency prior to medication administration and/or flushing procedure.
   b. Using a 10 ml syringe, perform saline flush procedure prior to medication administration, after medication administration and after blood sampling.

5. Site Maintenance and Dressing
   a. Rotate IV sites initiated out-of-the-hospital and/or under emergent non-aseptic conditions (Code Blue) within 24 hours (unless prior discharge pending).
   b. Rotate IV site every 96 hours and as needed based on clinical indication. Clinical indications include assessment of the patient’s condition including access site, skin and vein integrity, length and type of therapy, integrity and patency of the catheter.
   c. Obtain physician’s order in the event of documented difficult starts or anticipated discharge, to extend the IV site past 96 hours. The IV site must be free of redness, swelling, pain, or other signs/symptoms of phlebitis, infiltration, or infection. There is a maximum of one 24 hour extension.
   d. Assess insertion site every shift for signs and symptoms of infiltration and phlebitis including redness, tenderness, swelling, drainage and/or presence of paresthesia, numbness or tingling.
   e. Consider more frequent assessment for critically ill patients, patients who have cognitive/sensory deficits and patients who have catheters placed in a high-risk location (area of flexion), and patients receiving intermittent infusions of vesicants or vasoconstrictor agents.
   f. Assess insertion site with every catheter access with a locked peripheral IV catheter.
   g. Assess integrity of dressing every shift.
   h. Perform dressing changes at a minimum of every five days or if the dressing becomes damp, loosened, or visibly soiled.
   i. Discontinue infusion and remove catheter if sign and symptoms of infiltration are present.
Replace the peripheral line in the opposite extremity if able.

6. **IV Discontinuation**
   a. IVs will be discontinued by RNs with complete site assessment.
   b. Technicians with specialized training in designated areas may discontinue intravenous lines. The IV site will be assessed by an RN. Exception: Radiology Technicians will observe the IV site post removal and report significant findings to the Radiologist, radiology nurse and direct care nurse as appropriate.

7. **Documentation**
   a. Document appropriate actions in the medical record/IV record

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**PROCEDURE MIDLINE CATHETER**

1. **Indications for Midline Catheter**
   a. Prolonged IV access required for greater than 3 days (72 hours) through 29 days,
   b. Frequent blood draws
   c. Difficult or poor venous access
   d. Multiple attempts at peripheral intravenous access

2. **Insertion – Midline Catheter**
   **Note:** Nurses are not required to obtain a separate midline order once a peripheral intravenous physician's order has been obtained.
   a. Patient written consent is not required.
   b. Midline catheters are inserted by nurses competent in Midline placement.
   c. Optional: Use 0.2 ml of 2% Lidocaine (without epinephrine) or appropriate substitute injected intradermally unless contraindicated. May be repeated only once for a maximum of 2 doses = 0.4 ml. RN will enter order as per protocol, no cosign required.
   d. Apply pink wristband to indicate “Limb Alert” for Midline Catheters

3. **Infusions**
   a. To keep open (TKO)/Keep vein open (KVO) order is interpreted as 10-20 ml/hr in Adults.
   b. Affix label to include start date/time and discard date/time with RN's initials.
   c. Based on Product/Solution a maximum hang time is recommended as indicated in Table 1 above.
   d. Infuse only those fluids, medications, and concentrations approved for peripheral infusion.

4. **Blood draws** (except for blood cultures) can be done per device guidelines.
   **Note:** The inability to draw blood is not an indication of catheter occlusion or dysfunction if the catheter can be flushed freely without pain or swelling.
   a. PTTs are drawn on non-heparinized lumens or by peripheral venipuncture. PTTs are not recommended to be drawn on heparinized lumens however if this is not possible discard 10 to 20 ml of blood followed by 20 ml saline flush.
   b. **Equipment**
      - Non-sterile gloves
      - 2 – 10 ml prefilled saline syringes
      - Needleless blood transfer device.
      - **Note:** syringes and transfer needles will only be used for difficult aspirations. Large red top tube or syringe for waste and other appropriate vacutainer tube(s) as needed and patient label.
      - Alcohol swabs
   c. **Procedure**
      1) Perform hand hygiene
      2) Maintain sterility when opening packages
      3) Don gloves
      4) Stop infusion by detaching IV while maintaining sterility of tubing.
      5) Scrub end of needleless connectors with alcohol for 15-30 seconds and allow to dry
      6) Attach 10ml syringe with normal saline, unclamp, aspirate for blood return, flush and clamp. Wait one minute.
7) Aspirate 4-5ml of blood. Discard blood.
8) Attach needleless blood transfer device and insert blood collection tubes to obtain specimen as ordered.
9) Disinfect needleless connectors and attach syringe with normal saline.
10) Flush with normal saline.
11) Detach syringe.
12) Reinstall IV infusion.

**NOTE:** If IV infusion not being reinstalled flush with saline flush of 20ml and clamp.

5. **Tubing**
   a. Change administration sets, including add on devices and tubing, at established intervals depending on solution, when contamination is suspected, when integrity is compromised, or with new peripheral line access. (as identified in Table 1 above), Note: Do not change the extension tubing directly connected to the midline hub, it is part of the device.
   b. Change needleless connector attached to the tubing every 7 days or as needed.
   c. Cover the open end of IV tubing or piggyback tubing with a new/unused sterile cap (needleless connector, blunt cannula or sterile cap) when the tubing is disconnected and will be used again.

6. **Patency and flushing**
   a. Confirm patency prior to medication administration and/or flushing procedure.
   b. Using a 10ml syringe, perform saline flush procedure prior to medication administration, after medication administration, after blood sampling and every 12 hours if not in use.

7. **Site Maintenance and Dressing**
   a. Change dressing after the first 24 hours of placement and then every 7 days using sterile technique with a central line dressing kit.
   b. Apply Bio patch.
   c. Secure catheter with securement device for Midline Catheters and label, on the outside of the dressing using the midline label.
   d. Measure arm circumference weekly.
   e. Assess external catheter length.
   f. Assess insertion site every shift for signs and symptoms of infiltration and phlebitis including redness, tenderness, swelling, drainage and/or presence of paresthesia, numbness or tingling; In addition to pain upon flushing and/or infusion.

8. **IV Discontinuation**
   a. Dwell time is up to 29 days.
   b. Midline catheters are discontinued by specifically-trained personnel with complete site assessment.

9. **Documentation**
   a. Document appropriate actions in the medical record/IV record.

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**CROSS REFERENCE(S)**

*CLIN_251 Extravasation Management of Antineoplastic and Non-Antineoplastic Medications*

*CLIN_094, Recommended Nursing References for Procedures*

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**Policy No:** CLIN_100
**Previous Policy No.:** CLIN-1017, CLIN-1020, CLIN-1021, CLIN-1022, CLIN-1024, CLIN-1036, CLIN-1016, CLIN-1025, CLIN-1026
**Effective Date:** 03/01/2009
**Policy Creation Date:** 01/03/1985
**Most Recent Review/Revised Date(s):** 06/09/2016
**Approved by:** P & T Committee: 11/23/1999; 10/22/2001; 01/15/2014; 05/17/2016