

Midline Catheter (Peripheral): Care and maintenance

Site Applicability

All PHC Sites

Practice Level

Specialized: Insertion of midline catheters is restricted to Registered Nurses who have completed additional education and who work on the IV Therapy Resource Team/ Vascular Access Team.

Basic: RN/RPN/LPN: Care and maintenance of midline catheters

Requirements

1. Midline catheters are **NOT** to be used for administration / infusion of total parenteral nutrition (TPN), chemotherapy or other fluids/medications that are vesicants or that require central venous access.
2. Routine blood sampling from a midline is not recommended due to the potential issues with occlusion and thrombosis if not flushed appropriately. If all other options exhausted and if peripheral lab attempts have failed for bloodwork (lab to attempt twice), the midline can be used for bloodwork. Proceed with caution; flush midline well with 20 mL NS pre and post bloodwork.
3. Do not use the arm with the midline for taking blood pressure (BP) or taking blood. The pressure of the BP cuff/tourniquet may occlude the catheter and cause vein complications.
4. The midline catheter will be labelled or identified as a "midline" (on the catheter/clamp itself or on the dressing).
5. A midline catheter can be approved for Home IV only by the Home Infusion Program (Home IV RN) in collaboration with patient's home community.
6. Catheter exchange will not be done routinely (i.e. from midline to PICC line). A new insertion site is recommended for subsequent midline or new PICC catheter insertion.

Need to Know

1. A midline catheter is different from a "long" peripheral IV catheter (1.75" or 6cm in length). Please refer to **Ultrasound Guided Peripheral IV Catheter (USGPIVC)**.
2. A physician's/provider's order is **not** required for the insertion of a midline as long as IV therapy is ordered. The IV Team will decide to insert a midline based on vessel assessment, type and duration of IV therapy.

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3. Midline catheters are used to administer fluids and medications that are appropriate for **peripheral** infusion only.
4. A midline catheter can remain in place until therapy is complete and is no longer needed. Remove catheter if complications are identified. Please consult the Clinical Nurse Specialist (CNS)/Nurse Ed. (NE) for IV Therapy if the midline catheter is required for extended time but still temporary and appropriate for peripheral infusion.
5. Infusions through a midline catheter can be administered using an electronic infusion device (i.e. IV pump) or via gravity infusion. Do not use the IV pump on a midline for IV fluid bolus for trauma / resuscitation.
6. A midline catheter is defined as at least 8 cm (3 inches) and up to 20 cm (8 inches) long.
7. The catheter sizes range from 3Fr to 4 Fr and can be single or double lumen.
8. 2 types of catheters:
 - a. Non-valved, with integrated clamp BioFlo™ catheter (with MIDLINE imprinted on clamp). OK to flush and lock with NS only for care and maintenance.
 - b. Valved with pressure-activated safety valve (PASV™) and BioFlo™ catheter or Groshong™ catheter (No clamp, looks like a PICC). OK to flush and lock with NS only for care and maintenance.
9. The veins accessed for a midline catheter must be in **the upper arm** (above the ACF) such as the basilic, brachial or cephalic.
10. The tip location (end point) for a midline catheter must **not extend past the distal axillary vein past the shoulder**. This deems it NOT a central vascular access device or CVC that in the superior vena cava.
11. Midline catheters will routinely be secured in place at the insertion site with an engineered subcutaneous securement device (Securacath™). This does not get changed with dressing changes.
12. Complications such as infiltration and extravasation are difficult to assess for due to tip location of midline catheter. Ensure midline catheter is used only for fluids, therapies and medications are safe for peripheral administration.
13. Refer to [Appendix A](#) for medications that can be infused via midline catheter. Contact CNS/NE for IV Therapy for medications or infusates/therapies not found on the list.
14. Use of alteplase (Cathflo™) for occlusion management in midlines can be done after consultation with the CNS/NE for IV Therapy – a risk/benefit analysis must be done first to determine if occlusion management recommended over replacement with new peripheral or midline catheter.

Responsibilities:

Responsibilities	IV Resource Team or Other Specially Trained Nurse	Unit RN	Unit LPN
Insertion of Midline Catheter	YES	NO	NO
Dressing Change	YES– only PRN if required	YES	NO
Accessing / De-accessing to and from IV tubing	YES– only PRN if required	YES	YES
Flushing of midline catheter	YES– only PRN if required	YES	YES
Removal of midline catheter	YES – due to Securacath™	YES – If trained for Securacath™ removal	NO
Bloodwork from midline Not routine bloodwork; only if peripheral lab draw failed) Lab to attempt)	YES	YES – if trained for CVC bloodwork	NO

Procedure
Pre-Insertion:

1. Patient does not need to fast for insertion procedure – procedure is done at patient bedside.
2. Patient teaching regarding the insertion procedure, what to expect during and after insertion is done by nurse (IV Team) who inserts the catheter.

Post-Insertion:

1. Assess midline catheter insertion site and catheter at least once a shift, and with every access.
2. Change dressing and needlefree connector (NC = Max Zero cap) once a week and PRN when dressing is loose, soiled or contaminated.
3. Flush and lock procedures for the midline catheter:
 - a. Flush with 20 mL NS pre and post every access for infusion/ medication administration.
 - b. Use pre-filled syringes with NS in 10 mL barrel-size for safety and to reduce generating high pressures within the catheter.

Post-Insertion Potential Complications:

ASSESSMENT	PREVENTION/INTERVENTIONS
Phlebitis <ul style="list-style-type: none"> Redness, inflammation around insertion site or along catheter or vein Ache, pain or tenderness along any portion of catheter and vein 	<ul style="list-style-type: none"> Rest and apply intermittently (every 4 hours) warm, moist heat to arm post insertion May require non-steroidal anti-inflammatory to relieve mild phlebitis If phlebitis persists after 2 to 3 days, catheter may have to be replaced.
Infection <ul style="list-style-type: none"> Local: phlebitis (see above) plus purulent drainage at insertion site Systemic: all of the above plus fever, chills, increased white blood cell (WBC) count 	<ul style="list-style-type: none"> Assess site at least once a shift, and with every access Ensure dressing is dry and intact; ensure all IV connections are intact Monitor vital signs Notify MRP if infection suspected
Thrombosis <ul style="list-style-type: none"> Edema of extremity Possible discolouration of extremity Difficulty to aspirate blood or infuse through catheter 	<ul style="list-style-type: none"> Assess arm with catheter at least once a shift, and with every access Notify MRP if thrombosis suspected Provide comfort measures based on symptoms
Catheter Occlusion <ul style="list-style-type: none"> Caused by fibrin/clot or drug precipitate formation in the lumen of the catheter or at the catheter tip May also be caused by compression/kinking of catheter Difficulty to flush or infuse through the catheter 	<ul style="list-style-type: none"> Flush catheter appropriately pre and post intermittent infusion Flush catheter in between incompatible medications/drugs Do not allow IV infusion solution containers to run dry No blood pressure or tourniquet placement on arm with catheter – may damage catheter Notify IV Team for occlusion management and possible thrombolytic (alteplase) or removal/replacement
Air Embolism <ul style="list-style-type: none"> Sudden onset of shortness of breath, chest pain May be caused by air entry from a leak or break in catheter 	<ul style="list-style-type: none"> Clamp catheter if leak or break identified Position patient on left side Start resuscitative measures Notify MRP STAT Ensure IV connections are secure and intact Flush catheter appropriately

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ASSESSMENT	PREVENTION/INTERVENTIONS
Catheter Malposition / Migration <ul style="list-style-type: none"> The dressing is loose and the white wings have moved distal from the insertion site 	<ul style="list-style-type: none"> Assess site at least once a shift, and with every access Ensure dressing is dry and intact Ensure Securacath™ and transparent dressing intact over site
Leakage – from catheter or insertion site <ul style="list-style-type: none"> Fluid or drainage noted under dressing or tear noted in catheter 	<ul style="list-style-type: none"> Identify source of leakage Cover insertion site or torn catheter with sterile adhesive dressing; notify IV Team or CNS / NE

Documentation

- In Cerner: Interactive View (I-View). Ensure documentation is under the correct Dynamic Group for the Midline under Peripheral IV.
 - For Activity: Assessment **AND** OTHER: (free text) *8activity you are doing whether connecting for infusion or flushing etc.
 - For Line Care: Choose appropriate activity / action

Patient and Family Education

Patient Education: Post-Insertion:

- Instruct patient to report any problems or concerns with the midline catheter.
- Instruct patient to not allow measurement of BP or venipuncture on the cannulated arm.

Related Documents

- [BD-00-12-40067](#) - CVC: Tunneled Central Venous Catheter (T-CVC): Basic Care and Maintenance (Adult)
- [BD-00-12-40045](#) – CVC: Non-Tunneled Central Venous Catheter (NT-CVC)-Basic Care and Maintenance (Adult)
- [BD-00-12-40054](#) – Peripherally Inserted Central Catheter (PICC) – Basic Care and Maintenance (Adult)

References

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Group Consulted:

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Appendix A – Medications safe for midline infusion

- Cefazolin
- Ceftazidime
- Cefotaxime
- Cefuroxime
- Ceftriaxone
- Clindamycin
- Dimenhydrinate
- Ertapenem (* not for long-term or home infusion)
- Fluconazole (**NOTE: Hazardous Drug Group 2)
- Furosemide
- Heparin
- Hydrocortisone
- Imipenem (* not for long-term or home infusion)
- Iron dextran
- Magnesium sulfate
- Meropenem (* not for long-term or home infusion)
- Methylprednisone
- Metoclopramide
- Pamidronate (**NOTE: Hazardous Drug Group 2)