

14.6.1 Peripheral Intravenous Line Insertion Policy



Purpose

The purpose of this Clinical Procedure is to outline the safe and effective insertion, management, (including line changes) and removal of a Peripheral Intravenous Cannula (PIVC) for Clients at Intensive Care at Home (ICAH).

Audience:

- Registered Nurses

Considerations:

Prior to insertion of a PIVC consideration must be given to the appropriate choice of vascular access device tailored to the client's treatment plan including type of intravenous fluid, intravenous medication, vascular assessment and length of anticipated dwell duration.

PIVC insertion requires the use of Standard Aseptic Technique. In the event that there is a break in aseptic technique, the procedure should be ceased and a new aseptic procedure started. Where the PIVC has been inserted in an emergency situation (e.g. Medical Emergency Team (MET) call or by ambulance service) where standard aseptic technique cannot be assured, the cannula must be replaced within 24 hours, in order to prevent infection.

Clear documentation or information referring to date plus/minus time of the PIVC insertion is necessary. An undated PIVC or no evidence of insertion date must be replaced and then removed.

All other PIVC must be replaced **WITHIN 72 hours of insertion**. This must occur earlier when there are local or systemic signs of inflammation/infection.

Exceptions:

- Paediatrics – the line remains in until no longer required, unless there are local or systemic signs of inflammation/infection.
- In life threatening situations where a PIVC older than 72 hours has remained insitu and is functional and alternative appropriate access has not yet been obtained, the reason for retaining this PIVC beyond 72 hours must be clearly documented in the Client's medical records. For Clients requiring a PIVC for ongoing treatment or management e.g., Intravenous (IV) Antibiotics, fluid resuscitation, DO NOT REMOVE the existing PIVC until a new one is successfully sited, especially if the Client is a difficult intravenous IV access (DIVA). Collaborate with the Care team for DIVA Clients and ensure such indication is on the Client's Care plan.

PIVC Insertion:

The size of the PIVC should be determined by the intended use, the condition of the Client's veins, likely length of time PIVC is expected to remain in situ and the insertion

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site. The PIVC should be the shortest and smallest gauge that can meet the anticipated clinical needs.

Please note: a maximum of two attempts at PIVC insertion is permitted; in the event of two failed attempts, notify the Clinical Team.

Equipment:

- Dressing trolley/ clean surface
- IV starter pack/IV starter supplies (includes 70% alcohol with 2% chlorhexidine swab stick) or basic dressing pack ; plus 70% alcohol with 2% chlorhexidine swab stick or equivalent and transparent securement dressing. *Note: For Clients with a history of chlorhexidine sensitivity/allergy, use: either 5% alcohol-based povidone-iodine swab; ≥70% alcohol; >10% aqueous povidone-iodine (suitable for Clients in whom alcohol is contraindicated). Also consider Client's sensitivities and allergies to securement devices/tape.*
- Peripheral Infusion device (safety cannula preferable)
- Positive needleless connection valve
- Extension set with needleless connection valve or safe valve.
- Syringe 5mL to 10mL (children require less volume)
- Drawing up needle
- Prefilled Sodium chloride 0.9% (0.9% Sodium Chloride) syringe or Sodium Chloride 0.9% ampoule
- IV giving set (if required)
- Infusion pump (if required)
- Single Client use tourniquet (only if not using IV starter kit or Client is bariatric as there is a disposable tourniquet in IV starter kit)
- Tape for securement of extension set (for paediatric Clients)
- Sterile gloves
- Safety goggles or protective face shield
- Alcohol based hand rub (ABHR).

Procedure

- Perform hand hygiene
- Explain the procedure to the Client and obtain informed verbal consent
- Clean trolley and gather procedure equipment
- Perform hand hygiene
- Position Client comfortably, supporting proposed area of insertion. Place the underpad as required.
- Apply tourniquet, select vein then release tourniquet. *Note: do not leave on for > 1 minute at a time. If you're having difficulty finding a vein, remove the tourniquet and alternate arms with each attempt.*
- Select vein for insertion. Points to consider for appropriate PICV selection:
 - Client activity level
 - Size and condition of veins
 - Indication for PIVC and expected duration of PIVC
 - Use non-dominant forearm if practical.
 - Use basilic or cephalic veins on the posterior (dorsal) forearm if possible.

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- Avoid use of veins in the following sites:
 - The metacarpal veins on the dorsum of the hand are easier to visualise but are more liable to clot, difficult to stabilise, and prone to vessel damage. (Note: These are a preferred site for children).
 - Areas of flexion, e.g. antecubital fossa, or bony prominences (Vein easily damaged, Uncomfortable)
 - Areas below previous cannulation site (Vein may be damaged)
 - Bruised or phlebitic areas (Poor venous return, Pieces of clot can be dislodged into the system)
 - Do not Cannulate a limb with an arteriovenous fistulae or shunt (May compromise haemodialysis access)
 - An arm on the same side as a previous lymph node dissection, mastectomy or affected by cerebrovascular accident(Poor venous and/or lymphatic return)
 - An infected limb e.g. with cellulitis
 - A limb with a peripherally inserted central catheter (PICC) or implanted venous access device (portacath)
 - Limbs (with the exception of infants) a) Risk of deep vein thrombosis b) Limits access, patient comfort and mobility
- Perform hand hygiene
- Open IV starter kit /dressing pack and prepare general aseptic field.
- Perform hand Hygiene
- Prepare insertion site as required e.g. If necessary, remove hair at the insertion site (prior to antiseptic application) using clippers, to improve adherence of the dressing. *Note: Clean the skin with neutral soap and water if the insertion site is visibly dirty.*
- Perform Hand Hygiene.
- Place a sterile towel under the selected area using a non touch technique.
- Using a non touch Technique, clean a 5x5 cm area around the insertion site with gentle friction in a cross-hatching motion, for 30 seconds with an impregnated swab stick.
- Allow the skin to air-dry for at least 30 seconds. Do not wipe, fan or blot dry the area. Do not re-palpate the vein after skin preparation.
- Reapply tourniquet
- Perform Hand Hygiene.
- Don sterile gloves.
- Insert cannula ensuring vein is punctured, visualising 'flashback' at the hub of the cannula. Advance plastic cannula and withdraw the stylet.
NOTE: Abort procedure if failed 1st attempt and recommence from beginning. Do not reinsert or re-use.
- Release tourniquet, attach extension set with needleless injection cap to the hub of the cannula and flush cannula with 0.9% Sodium Chloride to confirm placement.
- Secure the IV cannula with Transparent dressing, covering the hub of the cannula.
- Insertion site should remain visible at all times.
- Remove gloves and perform hand hygiene.
- Clearly record the date and time of insertion of the PIVC on the tape or occlusive transparent dressing.
- As soon as possible after the insertion of the PIVC, document in the Client's clinical records, the date, time, site and size of cannula.

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Paediatric specific securement

Paediatric Clients will require additional securement of the cannula, with tape using an under / over technique, prior to applying the occlusive dressing.

1. Ensure the extension tubing attached to the cannula is secure to minimise the risk of the cannula being pulled out.
2. Use an elasticized tape to secure the limb to the appropriately sized and positioned board ensuring the tape is as far away from the cannula while still being effective and not obstructing flow.
3. Immobilise the joint with a suitably sized splint if the PIVC is inserted into the antecubital fossa.
4. Apply protective tubular net dressing over cannula site and tubing ensuring that insertion site is still visible.

Post Insertion Observation and Management

The PIVC insertion site must be observed and documented in the Venous Access Monitoring Form 14.6.2 and clinical notes each shift and/or whenever the PIVC is accessed for IV medication. The site should be checked to ensure the PIVC site is phlebitis and infection free, therapy has not infiltrated the tissues, the site is clean, dry and the dressing is intact.

- Explain the procedure to the Client.
- Perform hand hygiene.
- Observe the dressing ensuring that the dressing is dry and intact.
- Palpate the insertion site for tenderness; ask the Client if it is painful and or observe for nonverbal cues.
- Check that the date of insertion of the PIVC is legible on the dressing and when the PIVC requires changing.
- Observe for any signs of infiltration, extravasation, inflammation, swelling and redness before and after access and/or each shift.
- If there are any signs of adverse reactions, e.g. phlebitis, infiltration, pain, tenderness, infection, the PIVC needs to be removed and reported to the Clinical team along with an incident report. *NOTE: A Microswab of the site may be required if the client is symptomatic.*
- Redress the PIVC site if required (see steps below).
- Bandages should not be used in adult Clients except when protection of the PIVC insertion site from interference is required.

Redressing the site

The PIVC site should be redressed if the dressing becomes soiled, damp or loose.

Equipment

- Sterile basic dressing pack
- 70% alcohol with 2% chlorhexidine swab stick / applicator
- Transparent securement dressing

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- Secura swab if required to increase adhesion of dressing
- Splint or elasticised net, if required (insertion site needs to be visible at all times)
- Underpad
- Non Sterile and Sterile gloves
- Protective goggles or protective face shield
- ABHR
- Injection tray/or kidney dish
- 1 x 10mL ampoules 0.9% Sodium Chloride for injection and 10mL syringe x 1 and drawing up needle or pre filled 0.9% Sodium Chloride syringe
- Alcohol chlorhexidine swabs to scrub the PIVC hub

Procedure:

- Explain the procedure to the Client and gain consent.
- Position the patient comfortably.
- Place underpad and Support the Iv Cannula site.
- Perform Hand hygiene
- Prepare Sterile Field and equipment.
- Apply required PPE
- Perform Hand hygiene
- Don Non-Sterile Gloves.
- Remove and discard the soiled dressing.
- Remove Non Sterile gloves
- Perform Hand hygiene.
- Observe the PIVC site for signs of inflammation, infection or infiltration.
NOTE: Remove the PIVC if these conditions are apparent and report to the Care team and fill out an incident report.
- Don Sterile gloves
- Clean around the site (if required) with 0.9% saline and allow it to air dry for 30 seconds.
- 'Scrub the hub' with the pre medicated swab and allow it to air dry for 30 seconds. *NOTE: scrubbing the hub is a vital step in minimizing contamination and reducing the incidences of catheter related bloodstream infections (CRBSI). It is recommended to swab in a twisting motion with friction for at least 30 seconds.*
- Re-secure the IV cannula with transparent securement dressing.
- Remove sterile gloves and perform Hand hygiene.
- Clearly record the date of insertion of the PIVC on the tape or occlusive transparent dressing.
- The insertion site should remain visible at all times.
- Document the date and time of redressing of cannula in Client's clinical notes and Venous access Monitoring form.

Flushing of a PIVC

Flushing of PIVC in situ maintains PIVC patency, minimises risk of adverse reactions and prevents thrombus formation. Flushing of a PIVC must be performed for the following:

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- Pre and post administration of all forms of intravenous therapy.
- Pre and post medication administration
- Pre and post routine blood administration and
- If TKVO is not running, flush 6th hourly to keep the vein patent.

When preparing for flushing of a PIVC, collect equipment and place it in a clean injection tray or similar item.

- Explain procedure to patient and obtain consent.
- Don protective eyewear.
- Perform Hand hygiene
- Don Non Sterile gloves
- Check the PIVC site for signs of infiltration and /or phlebitis or infection. *If signs are present, arrange for insertion of a new PIVC prior to removal of the old PIVC.*
- Use a pre pre-filled 0.9% Sodium Chloride syringe or draw 0.9% Sodium Chloride solution into a 10mL syringe using a drawing up needle (label as per National Standard).
- Remove Protective Cap.
- 'Scrub the hub' - of the needleless injection valves with a 70% alcohol with 2% chlorhexidine swab and allow it to dry for 30 seconds.
- Slowly inject the 0.9% Sodium Chloride to flush the PIVC to ensure accurate placement and patency
- Scrub the hub .
- Replace Protective cap.
- Digard soiled equipment.
- Perform Hand hygiene
- If the patient experiences pain or tenderness review before considering removing and re-siting PIVC

Changing Administration Sets

The process and frequency for changing administration sets on PIVC is listed in table 1. below. IV administration sets include both the IV line and any additional attachments such as 3-way luer locks, Y connections and extension tubing that may be added.

NOTES:

- Changing of an Intravenous Line is a STANDARD Aseptic Technique procedure.
- When re-siting a PIVC, the administration set and all additional attachments, fluids etc. must be changed at the same time.
- IV tubing sets should not be disconnected for routine care. When unavoidable and tubing sets have been disconnected, replace the entire IV tubing.
- Best practice states that once disconnected, IV tubing should not be reconnected. However, a health care professional can risk assess the situation in case of urgent therapy.

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- Standard fluids are less irritant to veins whilst antibiotics and other chemicals have the ability to cause additional harm.

Table 1.

Line Use	Frequency of administration set changes
Standard fluids used continuously and not disconnected	Every 72 hours
Used to infuse blood or blood products	When transfusion is complete or after a maximum of 2 units and not left up longer than 12 hours
Neutropenic Clients	Every 24 hours
Main lines with additives	Every 24 hours
Side lines and syringe lines for intermittent medications e.g antibiotics	Single use
Lipid containing substances (not recommended for PIVC)	Every 24 hours
Cytotoxic/immunotherapeutic agents	Single use

Equipment

- IV administration set(s)
- IV therapy as ordered
- 70% alcohol with 2% chlorhexidine swab
- extra gauze as necessary
- Non Sterile gloves
- ABHR

Procedure

- Explain procedure to the Client and obtain consent
- Perform all rights of medication administration as per policy
- Perform Hand Hygiene.
- Using Non touch aseptic technique assemble equipment, prime lines including all associated connections with IV fluids, ensuring no air is present within the administration set and close clamp.
- Hang newly primed administration set and fluid on an infusion stand.
- Perform Hand Hygiene
- Don non sterile gloves.
- 'Scrub the Hub' of the needleless injection cap with 70% alcohol with 2% chlorhexidine and allow it to dry for 30 seconds.
- Adhering to standard aseptic technique principles, attach IV giving set to needleless injection cap.
- Open the clamp to the Client; ensure flow and set rate of infusion.
- Discard equipment and remove gloves.
- Perform Hand hygiene.

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- Ensure that all lines are labelled with the date of commencement of infusion and the type of infusion and document in clinical notes and medication administration record.

PIVC removal

Staff are to review the requirement for the PIVC at minimum daily and document in the clinical record the indication for the ongoing use of the PIVC (e.g. continue IV fluids or IV antibiotics) or requirement to have the PIVC removed. Other indications for removal include inflammation, infection, infiltration.

Equipment

- Gauze swab
- Transparent occlusive dressing
- Injection site pressure pad
- Protective eyewear
- Non sterile Gloves
- Underpad
- Specimen container, if required for +/- Microswab
- ABHR

Procedure:

- Explain the procedure to the Client and obtain consent.
- Apply protective eyewear
- Perform Hand Hygiene
- Cease the intravenous therapy if in progress.
- Perform Hand hygiene
- Prepare equipment.
- Perform Hand hygiene
- Don Non sterile gloves
- Loosen the occlusive dressing and tapes - use skin adhesive removal wipes for fragile skin or as required.
- Grasp the hub firmly and slowly withdraw the PIVC, check that the PIVC is complete on removal. Ensure none has been retained within the patient.
- Immediately apply firm pressure to the PIVC site with a gauze swab until bleeding ceases.
- Inspect the PIVC site for signs of inflammation or infection.
- If PIVC site is suspected of being infected, collect a swab of the insertion site as directed. Complete an incident report.
- Observe PIVC site for fluid leak or ooze.
- If no signs of infection present and bleeding has ceased apply injection site pad or either gauze and adhesive tape.
- Remove gloves
- Perform Hand Hygiene.
- If intravenous fluids were in progress up to the time of the PIVC removal, calculate the volume of fluid and adjust the Client's intake in the fluid balance chart.

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- Document in the Client's clinical records that the PIVC has been removed.
- Document in the Clients clinical records if a swab of the insertion site has been sent to pathology.

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