



Peripheral intravenous device insertion and management (PIVC) - Paediatric

TARGET AUDIENCE and SETTING

This procedure is applicable to all Monash Health staff caring for paediatric patients (less than 19 years of age) under the care of Monash Health (excluding neonates under the care of Monash Newborn).

This includes Registered Nurses, Medical Officers, Nuclear medicine technologists (NMTs) and Medical imaging technologists (MITs) who have successfully completed 'Peripheral intravenous cannulation (PIVC) (Paediatric)' on Latte.

Staff with cannulation accreditation from other institutions must provide evidence of competency to receive recognition of prior learning.

PURPOSE

To describe:

- The specific requirements for peripheral intravenous cannulation (PIVC) insertion and care in children
- The specific equipment required for PIVC insertion describe why the procedure is required and the outcomes expected.

DEFINITIONS

Aseptic technique: the infection prevention principles applied when undertaking invasive procedures to protect the patient from infection. Refer to [Aseptic Technique](#)

Extravasation: accidental infiltration of a vesicant medication or fluid into the tissue surrounding a venepuncture site.

Infiltration: when a medication or fluid infiltrates tissue surrounding a venepuncture site. Occurs when the tip of a catheter slips out of the vein and passes through the vein wall or when a blood vessel wall stretches allowing fluid to infuse into surrounding tissue.

Key Parts: component of a device that must remain aseptic throughout a clinical procedure. Eg. key parts include catheter hub, needleless connector, syringe hub and needle.

Key Sites: the area on the patient that must be protected from microorganisms, Eg. IV insertion site.

Peripheral IV device: a cannula/catheter inserted into a small peripheral vein for therapeutic purposes such as administration of medications, fluids and/or blood products.

Phlebitis: a sign of vessel damage in the form of inflammation. The cause can be chemical (due to the osmolarity of the solution), mechanical (from trauma at insertion or movement) or infective (microorganisms contaminating the device). Signs include swelling, redness, heat, induration,

purulence, a palpable venous cord (hard vein) and pain related to local inflammation of the vein at or near the insertion site.

PRECAUTIONS/CONTRAINDICATIONS

This procedure covers the insertion and care of PIVC. See [Central Venous Access Device Management \(CVAD\) - Paediatrics](#) and [Paediatric and Neonatal Central Venous Access Device \(CVAD\) Requests](#) for peripherally inserted central catheter devices (PICCs), extended peripheral catheters ('long lines') or central venous access devices (CVAD).

- Check for allergies or intolerances:
 - If a chlorhexidine allergy exists use povidone and iodine (Betadine®) instead
 - If patient intolerant of lidocaine 25 mg/g and prilocaine 25 mg/g (EMLA®) cream use tetracaine (amethocaine) (Local AnGel®) gel instead
- Rare cases of methaemaglobinaemia have been linked to the use of lidocaine 25 mg/g and prilocaine 25 mg/g (EMLA®) cream - Ensure dosing instructions are followed and apply for less than 4 hours. In infants under the age of 6 months, for application time, please refer to the lidocaine 25 mg/g and prilocaine 25 mg/g (EMLA®) cream full product information.
- Do not use hot water contained in a glove in an attempt to warm insertion site and increase peripheral perfusion prior to cannulation. This has been associated with burns to infants and children. Methods such as the use of a warm blanket or applying clothing are preferable.
- It is the responsibility of the person inserting the cannula to ensure that sharps are appropriately disposed of.
- If a patient's ID band is removed to gain access to an insertion site, the person removing it **must** replace it as soon as the PIVC is inserted and secured.
- **Prevent trauma**
 - There is no evidence to recommend the regular re-siting of PIVC cannula in children, compared to the practice of re-siting adult PIVC. A cannula only needs to be replaced when it falls out, show signs of phlebitis or becomes blocked.
 - Do not use a tourniquet for prolonged periods as it can lead to excessive stretching of the smooth muscle layer of the vein. This may cause the vein to appear to collapse and affect the ability to see and feel the vein.
 - Take time and care when removing tape from skin to avoid the risk of skin tears.
 - If use of scissors cannot be avoided, care must be taken to prevent harm to paediatric patients (use safety scissors if available).
- **Minimise the risk of infection:** Indwelling vascular devices provide a portal of entry for microorganisms which may cause serious or life-threatening infections. To prevent infection the following criteria are to be adhered to:
 - Only insert a PIVC when it is absolutely necessary
 - Manage with **aseptic** technique – a new sterile safety cannula **must** be used for every cannulation attempt.
 - Maintain a **closed** system
 - Remove as soon as it is no longer required
- Prior to inserting a PIVC into a child, evaluate the need for distraction techniques and analgesia.

EQUIPMENT

All equipment must be appropriate for the size of the patient's veins and the purpose of the cannula.

Item	Qty	Comments
Local anaesthetic cream (such as lidocaine 25 mg/g and prilocaine 25 mg/g (EMLA®) cream or tetracaine (amethocaine) (Local AnGel®)		Must be ordered on EMR
Occlusive dressing	1	
Clinell wipes	1	For cleaning the trolley/work surface
Rubbish bag	1	
Sharps container	1	
Personal protection equipment (PPE)		Refer to Precautions transmission based Protective eyewear is mandatory for PIVC insertion
Sterile gloves		
Intravenous <i>safety</i> cannula		Appropriate size for child and purpose
Steri-strips™		Sterile steri-strips™ for securing the cannula
Arm board	1	
Paediatric IV starter pack	1	If not available collect all equipment separately including a dressing pack (see below)
Single patient use tourniquet	1	
Basic dressing pack	1	
Gauze	2	
Swabstick (isopropyl alcohol 70% and chlorhexidine 2%) **	1	
Sodium chloride 0.9% 10 mL for injection ampoule	1	
5 mL luer lock syringe	1	
Minimum volume extension set	1	With inbuilt one-way pressure valve
10mL luer lock syringe	Qty	If required for blood taking
Sterile field/drape	1	Located within dressing pack
Cotton balls	2	
Transparent occlusive dressing	1	'Teddy Bear' Tegaderm™ preferred
Pressure pad	1	
Document label	1	Located with 'Teddy Bear' dressing or Tegaderm™ (if using paper document), or locate EMR site

** If using povidone and iodine (Betadine®) due to chlorhexidine allergy, a sterile dressing pack will also be required to decant the skin cleaning solution.

STANDARD REQUIREMENTS

When undertaking any clinical interaction with a patient, staff are expected to:

- Perform routine hand hygiene. Refer to the [Hand Hygiene Procedure](#).

- Introduce yourself to the Patient and Carer/ Family if in attendance.
- Explain what you do and what you are there for
- Check patient identification. Refer to the [Patient Identification Procedure](#).
- Obtain consent as per the [Consent to Medical Treatment Procedure](#).
- Keep the patient/carer informed and involve them in decision making.
- Document interaction in the Electronic Medical Record or health record using black pen; including date, time, signature and designation.

PROCEDURE

Pre-procedure

- Determine the clinical requirement for PIVC:** There are a number of considerations when deciding on whether to insert a PIVC in a child and when identifying a suitable location.
 - Expected duration of care (see table 1 below)
 - Proposed primary purpose for the PIVC. The vein must be able to accommodate the size and length of the catheter, and the required prescribed therapy.

Table 1: Paediatric Intravenous Access Decision Guideline

*Please note the table provided serves as a guideline. Upon referral a decision will be made regarding the most appropriate line

Paediatric Intravenous Access Decision Guideline								
Monash Health Paediatric and Neonatal CVAD Committee								
Estimated time for which venous access is needed		1-3 Days	3-5 Days	7 Days	14 Days	4 Weeks	6 Weeks	6 Weeks +
Therapy compatible with Peripheral Venous Access	Patient Age							
	3 years+	PIVC		LPC #		PICC		Surgically inserted CVAD*
	0-36 months	PIVC		LPC		Tunnelled CVC		Surgically inserted CVAD*
	NICU	PIVC		PICC				Tunnelled CVC

Estimated time for which venous access is needed		1-3 Days	3-5 Days	7 Days	14 Days	4 Weeks	6 Weeks	6 Weeks +
Therapy Requiring Central Venous Access - TPN, inotropes, solutions with pH<5 or >9 or osmolality > 900 Osm/L, Infants	Patient Age							
	3 years+	CVC			PICC			Surgically inserted CVAD*
	0-36 months	CVC			Tunnelled CVC			Surgically inserted CVAD*
	NICU	CVC			PICC			Tunnelled CVC

*Surgically Inserted CVAD - (i) a tunnelled, cuffed central line, e.g. Powerline™, Broviac™, Hickman™ or (ii) a portacath

Definitions		Lines suitable for HITH
PIVC	peripheral intravenous cannula	Tunnelled CVC
LPC	long peripheral cannula	PICC
CVC	central venous catheter (internal jugular, subclavian, femoral, umbilical)	Surgical
PICC	peripherally inserted central catheter (usually in upper limb, but also lower limb or scalp in a neonate)	LPC (# only in older children, in limited circumstances)

**A long peripheral cannula (LPC) is a catheter inserted into the forearm or upper arm that exceeds the standard length

2. Determine the proposed purpose of the PIVC: A range of IV fluids and medications cannot be given via a PIVC because they are irritating to the vein. Therefore, alternative access (eg CVC, PICC etc) is required when:

- Peripheral access is poor or limited due to conditions such as: severe dehydration, oedema, obesity, thrombosis, phlebitis, sclerosis or fibrosis (due to previous PIVC).
- A long term cannula is required and peripheral vein patency needs to be preserved.
- Any of the following types of medications or fluids need to be delivered:
 - Sclerosant, eg. chemotherapy, any medication with pH less than 5 or greater than 9, antibiotics known to be irritant
 - Vasoactive agents, eg. adrenaline (epinephrine) and noradrenaline (norepinephrine) (NB – a PIVC may be used for emergency access when giving adrenaline during a resuscitation)
 - Total Parenteral Nutrition (TPN), as the high osmolarity of the fluid may result in sclerosis of peripheral veins
- The device is to be used for:
 - Invasive monitoring
 - Haemodialysis or filtration
 - Infusion of large fluid volumes at a high flow rate
 - Administration of multiple medications, likely to compete for time to delivery and where incompatibility is a risk

3. Decide who is most appropriate to insert the PIVC based on an evaluation of the patient's age, vein availability, cannula to be inserted and clinician skill level:

- Assess the patient's condition, age and diagnosis, vascular condition, history of previous access devices, type and duration of therapy.
- Only the following staff are permitted to perform PIVC insertion in children at Monash Health:
 - Medical Officer (MO) (medical staff do not follow the below accreditations – they are to continue their normal accreditation process)
 - Accredited Registered Nurse (RN)
 - Accredited Endorsed Nurse (EN)
 - RN/EN undertaking the practical accreditation component of the Peripheral intravenous cannulation (PIVC) (Paediatric) competency – who must do so under the direct supervision of an MO or accredited RN.
 - Accredited Medical Imaging Technologist (MIT)
 - Accredited Nuclear Medicine Technologist (NMT)

PIVC insertion restrictions

- A maximum of 2 attempts (in total) is permitted by an EN/RN/MIT/NMT, after which a doctor (Registrar or higher) must be called.
- A maximum of 2 attempts is permitted by a Registrar, who must then call a senior clinician if they are unsuccessful.

PROMPT Doc No: SNH0020941 v14.0		
Date loaded on PROMPT: 09/08/2011	Page 5 of 18	Review By: 31/01/2029
Version Changed: 31/01/2025	Document uncontrolled when downloaded.	Last Reviewed Date: 31/01/2025

Tier 1 accreditation EN/RN/MIT/NMT	May only attempt to cannulate if the child: • is over the age of 6 years • has clear, palpable veins • has no previous history of difficult cannulation and • is haemodynamically stable
Tier 2 Accreditation RN	May only attempt to cannulate if the child: • is over the age of 6 months • has clear, palpable veins • has no previous history of difficult cannulation and • is haemodynamically stable
Tier 3 Accreditation	Accredited in the use of basic peripheral ultrasound cannulation
Infant scalp veins	Only a medical officer may insert a PIVC to the scalp

Tier 1 Accreditation Requirements:

x2 successful cannulations under supervision in the following age groups before being accredited:

- 6 to 9 years old
- 10 to 14 years old
- 15 and above

****note:** Once accredited for a specific age group, you are authorised to independently perform cannulation in that age group. Full accreditation across all age groups is not required prior to independent cannulation.

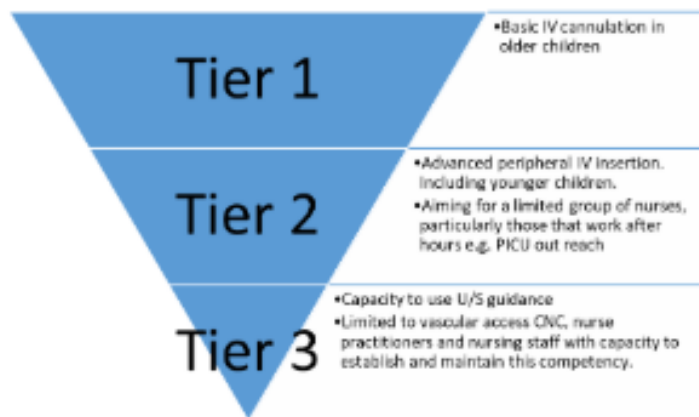
Tier 2 Accreditation requirements:

- For selected Registered Nurses – e.g. ANM's, Clinical Support Nurses, Clinical Nurse Specialists, PICU Outreach CNC's and RN's working within the Emergency Department.
- Once full Tier 2 accreditation complete, Nurse to be accredited to cannulate all children 6 months and above
- Nurse to complete Neonatal Peripheral Cannulation package on Latte
- Individual nurse to maintain log book of all successful/unsuccessful cannulations
- Nurse to complete at least 2 to 3 successful supervised cannulations in the following age groups:
 - 6 to 12 months
 - 12 months to 2 years
 - 2 years to 6 years

Tier 3 Accreditation requirements:

Please reach out to the Paediatric Vascular Access Clinical Nurse Consultant (PVA CNC) regarding the suitability of pursuing tier 3 accreditation.

- Complete PoCUS: Ultrasound guided (USG) PIVC on Latte
- Additional resources to be given to individual by PVA CNC
- In class practise and clinical time to be arranged individually with PVA CNC
- Nil defined number of cannulations required for this accreditation as it will be varied on skill level
- All USG cannulations will be done under supervision until individual notified by PVA CNC



- Difficult Intravenous Access score (DIVA) may be useful when evaluating who can attempt PIVC insertion. A score of 4 or more means a greater than 50% chance of a failed initial attempt and ultrasound guided insertion may be required.

Predictor	0 points	1 point	2 points
Visible vein	Visible	-	Not visible
Palpable vein	Palpable	•	Not palpable
Age	<u>over</u> 36 months	12 to 35 months	under 12 months

- For patients meeting above criteria please escalate to the Paediatric Vascular Access CNC

Escalation to Paediatric Vascular Access CNC

You may refer to the Vascular Access CNC for:

- Previous difficult access/use of ultrasound guided cannulation
- X 2 failed attempts by nurse or doctor**
- Patient requires a long peripheral cannula for up to 10 days
- A DIVA score of 4 or greater.

**If the patient still has visible/palpable veins, escalate to the registrar first

Referral Process

The PVA CNC will be available Monday to Friday from 0800 to 1630. There are 3 ways in which you can contact the Vascular Access CNC. If you require assistance outside of these

hours please contact the anaesthetist in charge.

If admission to hospital for a patient with known difficult cannulation is being organised or an in-patient meets above referral criteria and you need the assistance from the paediatric vascular access CNC:

1. Future referrals- email paedvascaccessCNC@monashhealth.org with patient details, date and time of admission, specify the assistance needed and reason for referral. A care plan can be made in advance to best suit the patient and to ensure positive outcomes.
2. Current referrals- Assistance is required for an inpatient on the same day, send a Baret message to the Vascular Access CNC with all relevant details. This can be done by either nursing or medical staff. The Vascular Access CNC will work with the care team to coordinate the required care for this child.
3. Urgent referrals-For all Urgent Enquiries please contact the CNC by phone on 0428 378 270.

Email: paedvascaccessCNC@monashhealth.org

4. Prepare the child and parent for the procedure:

- Use age appropriate techniques to explain the procedure to the child.
- Explain procedure to the parent or support person, including how the parent can help (where appropriate) and approximately how long it will take.
- **Obtain verbal consent** from the parent. Use an interpreter for NESB patients and parents.
- Position the child for comfort and ensure the patient will not move during the procedure. This includes:

Age	Method
Infant under 3 months	Give parent or carer the option to hold infant during the procedure (ensure they understand what is required) Encourage breast feeding during the procedure or Oral sucrose. Refer to Medication initiation by Registered Nurses/ Midwives and Pharmacists
Child	Use distraction techniques to minimise discomfort and promote compliance with the procedure. Consider calling Child Life therapy. Ensure local anaesthetic cream is applied 45 minutes prior to procedure (if used) Consider oral sucrose for infants less than 18 months of age.
Older child or adolescent	Consider use of local anaesthetic cream and apply 45 minutes prior to procedure

Utilise distraction techniques

Procedural steps

1. Perform hand hygiene.
2. Apply tourniquet.
3. Assess veins and choose one appropriate for intended cannula usage. Site choice considerations include:
 - i. **Characteristics of a good peripheral vein for cannulation** include:
 - Well filled
 - Elastic (bouncy) (Refills when depressed)
 - Well supported
 - Straight
 - Large diameter
 - ii. To prevent injury to the *Tunica Intima*, choose the smallest cannula available that will accommodate the prescribed therapy.
 - A minimum 22G cannula is required for imaging procedures using a pressure injector or where a rapid bolus of fluid is required (maximise gauge to maximise flow).

Age group	Preferred sites
Infant	Dorsal surfaces of feet (ideally this site is only used in infants or young children as it reduces mobility)
Child to young adult	Do NOT cross a joint Start with a distal site and work proximally Avoid the dominant arm where possible * Ideally choose the longest, straightest and widest vein. Use: • Back of hands • Forearm* • Cubital fossa

*Preservation of upper limb veins is critical for children with chronic disease. Arterio-venous fistula may be required in the future. Ideally PIVC are placed on the dorsum of the dominant hand. Forearm veins are to be avoided if possible.

4. Remove tourniquet
5. Apply local anaesthetic cream to the intended cannulation site and cover with a transparent occlusive dressing. Allow at least 30 minutes for full activation of the local anaesthetic before proceeding with cannulation.
 - Application time in under 6 months is to be discussed with senior clinician only and must not exceed 1 hour total time on the skin.
6. Prepare environment to ensure success.
 - Use a procedure room where possible, to reduce the risk of the child associating their room with painful procedures. Consider patient and family/carer preference.

- If performing the procedure in the child's room, ensure that you have all equipment ready before entering the room.
7. Ensure:
 - Sharps container is within easy reach of clinician (and not within reach of the child)
 - Lighting is adequate
 - Chair or trolley/bed is at the required height for easy accessibility to patient and selected vein.
 - You are in a comfortable position to protect your back (position may be sitting or standing)
 8. Apply PPE.
 - Perform hand hygiene and apply non-sterile gloves
 - Clean procedure trolley with Clinell™ wipes
 - Remove gloves and perform hand hygiene.
 - Gather equipment and place on lower shelf.
 9. Open the sterile field on top of the procedural trolley and open the required sterile equipment onto the field. Leave non-sterile equipment on the bottom of the trolley (eg swab stick packet).
 10. Utilising aseptic technique, and without removing the protective cap, prime the extension set with sodium chloride 0.9% and leave the syringe attached. Place the key part (extension set) on the sterile field.
 11. Position patient for cannulation, e.g. arm on pillow, lying on the bed with parent assisting hold.
 12. Remove the transparent dressing and local anaesthetic cream if used and wipe the area clean.
 13. If using an assistant, ask them to stabilise the limb by holding above and below the joint.
 14. Apply the tourniquet above the intended insertion site and re-assess the veins in the selected area.
 - Tourniquet is not to be placed greater than 10 to 15cm above insertion point on the selected vein.
 - Ensure the tourniquet can be easily released
 - **Do not** leave tourniquet on for more than 2 minutes at a time
 15. Release the tourniquet pressure, but leave in place beneath the limb.
 16. Perform hand hygiene.
 17. Open the swab-stick packet and clean the intended cannula insertion point and surrounding area.
 - i. Apply the antiseptic solution liberally and firmly in a circular motion, starting at the intended insertion site and working outward to a diameter of approximately 8cm (at least all of the skin that will be covered by the dressing)
 - ii. Allow adequate time to fully air dry.
 - iii. **Do not** re-palpate insertion site after cleaning
 18. Apply protective eyewear if not already insitu.
 19. Perform hand hygiene.
 20. Prepare the remaining equipment on the sterile field. Open sterile gloves onto a separate clean surface (not the sterile field used for key parts).
 21. Reapply the tourniquet in the appropriate location
 22. Perform hand hygiene.
 23. Put on sterile gloves and place drape beneath the patient's limb without contaminating gloves. Re-palpate the vein if necessary.

24. **Stabilise vein:** Vein stabilisation is the most important factor in successful cannulation. This involves applying gentle pressure to the vein below the intended insertion site and pulling the skin taut, to anchor the vein and facilitate cannula entry.

- Use the non-dominant hand to stretch the skin below the intended insertion point (opposite to the direction of insertion), prior to penetrating the skin.
- Positioning of your hand when stabilising the vein will depend on the vein chosen, the proximity to a joint and personal preference.
- Do not position fingers above the insertion site when stabilising the vein (this increases the risk of needle stick injury).
- To prevent contamination of the insertion site, keep hands to a minimum of 3 cm (in any direction) from the intended insertion point when stabilising the vein.

25. **Enter vein.** Hold the cannula in whatever position gives you the most control over its movement

- i. Insert the cannula at a 15 to 30 degree angle.
 - ii. Ensure the stylet is bevel-up when you insert the cannula as this facilitates insertion, reduces trauma to the vein & the risk of piercing the posterior wall of the vein.
 - iii. Use a quick, confident movement to pierce the skin and enter the vein.
 - iv. Insert into the vein in the direction of venous flow.
 - v. Observe flashback chamber (presence of blood will indicate the needle has entered the vein).
 - a) You may feel a decrease in resistance as the cannula pierces the vein wall and enters the lumen. Stop inserting at this point (and observe for flashback if not already seen).
 - b) Once flashback appears, reduce cannula angle to 10 degrees or parallel to skin.
 - vi. Maintain traction on the skin and advance both the cannula and stylet approximately 2 – 3mm to ensure that the cannula tip has also entered into the vein. Successful entry into the vein is evidenced by an increased backflow/flashback of blood into the cannula hub as you advance.
 - vii. Advance cannula while withdrawing the needle.
 - viii. A slight resistance caused by contact between the stainless steel safety clip and needle will be felt.
 - ix. The cannula will advance smoothly if it is in the vein.
 - x. Resistance may indicate a failed cannulation.
 - xi. Whilst advancing, observe the insertion area for signs of haematoma formation (swelling) – indicating that the stylet has pierced the posterior wall of the vein.
- **NB - Call someone else to attempt cannulation if two (2) attempts are unsuccessful.**

26. **Remove stylet.**

- i. Continue stabilising the vein to prevent excess movement or accidental dislodgement whilst removing stylet and connecting the catheter extension tubing.
- ii. If **no** blood collection required, release the tourniquet before removing the stylet.
- iii. Keep the hub stable and ensure aseptic non-touch technique of insertion site and tip of cannula whilst removing stylet.
- iv. Listen for an audible click that indicates that the stainless steel safety clip has automatically attached to the needle as the tip exits the cannula hub. Dispose stylet in sharps container.
- v. Flush the cannula:
 1. Attach primed extension tubing; ensure line is unclamped

PROMPT Doc No: SNH0020941 v14.0		
Date loaded on PROMPT: 09/08/2011	Page 11 of 18	Review By: 31/01/2029
Version Changed: 31/01/2025	Document uncontrolled when downloaded.	Last Reviewed Date: 31/01/2025

2. Connect 5 mL of sodium chloride 0.9% (for injection)
3. Position free hand on in-line clamp
4. Commence flushing using a pulsatile technique
5. Clamp as the last 1 mL of fluid is being injected i.e. clamp whilst continuing to flush.
6. Remove syringe and discard.

- **If blood collection is required:**

- Occlude vein distal to the cannula tip using middle finger whilst removing the stylet.
- Attach appropriate sized syringe and withdraw blood.
- Remove tourniquet before releasing digital pressure on the vein.
- Flush cannula.

27. Secure the IV cannula:

Infants and children:

- Use steri-strips included in the Teddybear Tegaderm™ IV packet to secure. **do not wrap around hub of catheter
- Create an 'x' pattern over hub, keeping insertion site on view



- Consider placing a small piece of sterile cotton wool ball or gauze underneath the hub of the cannula to prevent pressure areas.
- Apply a sterile, transparent, semi-permeable dressing over the entire catheter site.
- If available, to use Teddybear Tegaderm™ IV and over hub of cannula, keeping extension line free of dressing



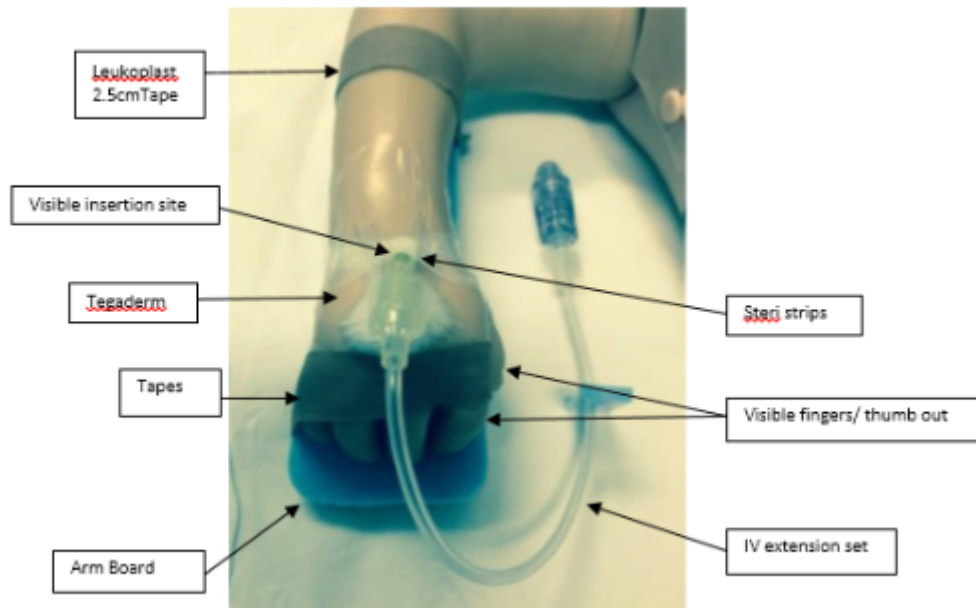
- Create anchor with Leukoplast™ tape to secure cannula and extension to decrease risk of accidental removal.



- When dressing a peripheral IV ensure:
 - All toe and/ or finger tips are visible
 - A minimal amount of taping is used to secure the cannula
 - The cannula and attachments are secure
 - The site is visible so that it can be monitored for phlebitis and infiltration/extravasation
 - The infant/child cannot injure themselves on the connections
 - The infant/child cannot remove or dislodge the IV
 - Tapes are not too tight, to prevent a tourniquet effect
 - Ensure the skin is clean and dry before applying the dressing

Ward set up:

PROMPT Doc No: SNH0020941 v14.0		
Date loaded on PROMPT: 09/08/2011	Page 13 of 18	Review By: 31/01/2029
Version Changed: 31/01/2025	Document uncontrolled when downloaded.	Last Reviewed Date: 31/01/2025



PICU set up:



If necessary, apply arm board. Arm boards are part of the dressing for PIVC and ensure the cannula is not dislodged by a child's movement;

- Position and strap with the limb in a natural position to prevent restricting blood or nerve supply
- After securing the IV cannula, a Tubifast™ sleeve can be applied for extra protection and ease of viewing insertion site of the cannula.
- Inspect arm boards regularly and change if soiled by blood or fluid leakage.

Post procedure

PROMPT Doc No: SNH0020941 v14.0		
Date loaded on PROMPT: 09/08/2011	Page 14 of 18	Review By: 31/01/2029
Version Changed: 31/01/2025	Document uncontrolled when downloaded.	Last Reviewed Date: 31/01/2025

28. Dispose of waste in appropriate bin. Clean remaining equipment. This is the responsibility of the staff member who inserted the PIVC.
29. Remove PPE.
30. If blood specimens are taken, label according to the [Pathology labelling requirements](#)
31. Clean procedure trolley.
32. Document insertion in EMR – Lines and Devices, including date of insertion.
33. Provide education to the patient and parent or guardian, including:
 - The anticipated length of therapy
 - The reasons the cannula/IV infusion is required (clarify as this information is to be given prior to verbal consent)
 - What to expect
 - How to protect the IV site
 - When to call the nurse
34. Perform hand hygiene.

Ongoing Management

35. Only change the occlusive dressing if it becomes insecure or if there is blood or fluid leakage from around the cannula site.
36. Inspect the IV site hourly to ensure that the:
 - IV is secure
 - Site is visible and free of phlebitis, infiltration, infection. Document hourly assessment in EMR – Lines and Devices.
 - Child cannot injure themselves on the connections or dislodge the IV (eg. Infants instinctively swipe their face with their hands, potentially causing injury if a line is insitu).
 - Tapes are not too tight, to prevent tourniquet effect
 - IV board/splint is positioned and strapped with the limb in a natural position to prevent restricting blood flow or nerve supply.
37. Document the following hourly, on the fluid balance or PICU documentation charts:
 - Peripheral IV site – see point 49 above.
 - If NOT using a Smart Pump, document pump pressures for each IV line where available. IV pump pressure needs to be set at:
 - Ward patient – maximum of 250mmHg
 - PICU patient – minimum of 100mmHg and a syringe driver pressure of 1.
 - Infused volume
38. Ensure all IV lines are labelled per [Labelling of Medicines, Fluids and Lines](#)

Flushing

39. Equipment

- Sodium chloride 0.9% 10mL ampoule
- 10 mL syringe
- Chlorhexidine 2% alcohol swab

40. Procedure

- Perform a positive pressure flush with sodium chloride 0.9% 4-6 hourly when the cannula is not connected to continuous IV fluid.
 - Draw up 10mL sodium chloride 0.9%.

- Open the extension set clamp, swab access port with chlorhexidine 2% and allow to air dry.
- Connect the syringe to the access port, draw back on the syringe gently and visualize backflow of blood to confirm placement in vein.
- Commence flushing in a gentle pulsatile manner.
- Position free hand on the in-line clamp, and close as final 1mL of fluid is injected i.e. clamp whilst continuing to flush. Do not allow the syringe plunger to 'bottom out' before closing the in-line clamp.
- Remove and discard syringe.
- Document all flushes on the medication and fluid balance charts (in EMR).

Intermittent infusions

41. Disinfect hubs with 2% chlorhexidine swab prior to accessing.
42. Do not disconnect IV devices for the convenience of the operator, e.g. to transport patient, showering, dressing patient, blood collection.
43. Disconnect IV lines between doses of medication if fluids are not being given.

Checking procedures and Documentation

44. At commencement of EACH new bag, syringe or rate change, two (2) Registered Nurses must double-check:
 - Orders (prescription)
 - Line
 - Pump infusion rate
45. When using a syringe driver/pump, check and document the actual volume infused every hour.
46. Ensure all IV lines are labelled per [Labelling of Medicines, Fluids and Lines](#)

Changing syringes and IV lines

	IV bag/syringe change	IV line change
No additives in infusion	Every 96 hours	Every 96 hours
Additives in infusion*	Every 24 hours	Every 96 hours
Parenteral nutrition (with filter)	Every 24 hours	Every 96 hours
Lipid (with filter)	Every 24 hours	Every 24 hours
Other	On change of order	

*The timing of changing the bag/syringe and line for infusions with additives will depend upon the stability of the infusion.

- All IV administration sets **must** be changed following infusion of blood or blood products. Please refer to [Transfusion: Red Cell \(Neonatal and Paediatric\)](#)
- IV giving sets and IV fluids (and filters if required) are to be changed with every new cannula insertion

Removal of intravenous cannula

47. **Equipment**
 - Adhesive removal wipe
 - Pressure pad, Band-Aid, sterile cotton wool or gauze
 - Tape

48. Procedure

- Remove the taping slowly and carefully to protect skin integrity
- If it is difficult to remove tape, consider using specific adhesive removal wipes or soaking with water.
- To prevent bleeding, apply pressure with sterile gauze or cotton wool.
- Cover site with sterile pressure pad, cotton wool and tape, or a Band-Aid.
- Document removal in EMR and close dynamic group

Complications

- Complications associated with IV therapy are common. Most are preventable by attention to IV infusion equipment, aseptic technique, prescription of fluid and electrolytes. Common problems are:
- **Infection:**
 - Skin-based bacteria may enter through insertion site
 - Local cellulitis or systemic bacteraemia are possible.
 - If infection is present, remove the IV cannula immediately, swab the insertion site and contact medical team to review.
- **Phlebitis**
 - Due to the presence of the catheter/fluids or medication
 - Chronically ill patients requiring multiple and recurrent IV access.
 - Notify medical team to review and document in patient record
- **Infiltration:** If this occurs:
 - Immediately stop the infusion and disconnect the tubing as close to the catheter hub as possible.
 - Remove the catheter without placing pressure on the site.
 - Elevate the affected limb.
 - Continue to assess and document the appearance of the site and associated signs and symptoms.
- **Extravasation of fluid or medication.** If this occurs:

Review the [Paediatric Peripheral Extravasation Injuries: Initial Management and Washout](#) procedure

- Assess the Grade of extravasation Injury.
 - Most extravasation injuries are grade 1 or 2 and do not require extensive intervention to prevent long-term skin and soft tissue damage.
 - Grade 3 and 4 injuries have a greater potential for skin necrosis, compartment syndrome and the need for plastic surgery, depending on the solution extravasated.
- Assess and monitor neurovascular integrity below the injury. Refer to [Clinical Observations \(Paediatric\)](#)
- The parent or guardian is to be informed of an extravasation injury and management plan.
- Report grade 3 and 4 extravasation injury via Riskman.

RELATED DOCUMENTATION

[Peripheral Intravenous Catheter Insertion and Management \(Neonatal\)](#)

PROMPT Doc No: SNH0020941 v14.0		
Date loaded on PROMPT: 09/08/2011	Page 17 of 18	Review By: 31/01/2029
Version Changed: 31/01/2025	Document uncontrolled when downloaded.	Last Reviewed Date: 31/01/2025

[Peripheral intravenous device management for neonates in maternity](#)

[Paediatric Peripheral Extravasation Injuries: Initial Management and Washout](#)

[Clinical Observations and Assessment \(Paediatric\)](#)

REFERENCES

https://www.health.wa.gov.au/-/media/Files/Corporate/general-documents/Health-Networks/Renal/171010_PAP_VeinPreservationGuideline_V04_FINAL.pdf

<https://www.gosh.nhs.uk/conditions-and-treatments/procedures-and-treatments/vein-protection-children-and-young-people-kidney-disease/>

KEYWORDS

IV management, IV lines, paediatric, PIVC, cannula, intravenous

Document governance

Policy or Framework supported by this	High Quality Care (Policy)
Executive Sponsor	Program Director, Monash Children's Hospital
Responsible Program	Children's Program
Primary Contact	Paediatric Vascular Access Nurse, Amy Morris