



SECTION 2: DRUG AND INTRAVENOUS (IV) THERAPY

2.3 Intravenous (IV) Therapy

2.3.5 Monitoring and Maintaining Intravenous (IV) Access and IV Tubing Safety

Aims

1. To prevent complications associated with peripheral intravenous catheters through appropriate assessment of the IV site.
2. Timely intervention should complications occur.
3. To maintain patient safety during infusion therapy.

Background

Phlebitis and infiltration are relatively common complications associated with intravenous catheters. If left unchecked phlebitis and infiltration have the potential to cause significant patient injury.

Preventive measures, early identification of phlebitis and infiltration, and appropriate interventions are essential in reducing the potential for harm.^{1, 2} The Peripheral Intravenous Assessment Scale (PIVAS) is the tool used at PMH to stage the signs and symptoms of phlebitis.³ (see [Appendix](#))

Key Points

- The care described in this document is to be used in conjunction with [PNPM 2.3.2](#) Peripheral Intravenous (PIV) Access – Principles and Management.
- Use aseptic non touch technique for all care and maintenance of the intravenous catheter (IVC).^{4, 5}
- Only a clear transparent, semi-permeable dressing should be in place directly over the IVC site.⁴
- Avoid covering the site to allow for visual inspection and early detection of complications. If use of a covering is unavoidable, remove completely for inspection of the IVC site.
- The date/time and location of IVC insertion/removal must be documented in the patients' medical record.¹
- IVC's are not routinely replaced in children, however should be removed at the earliest indication of phlebitis or infiltration.^{1, 5-7} [Extravasation](#) warrants medical attention as treatment *via* the IVC may be required.
- IVC's that are no longer required for treatment should be removed as soon as possible.^{1, 5}

- Document the status of the IV site on the patient's fluid balance chart using the Peripheral Intravenous Assessment Scale (PIVAS³ - see [Appendix](#)) as clinically indicated.

Definitions

Phlebitis:

Inflammation of the internal vein wall as a result of mechanical irritation, chemical irritation or infection. Venous inflammation increases the risk of rupture resulting in leakage of solutions into the surrounding tissue.

Infiltration:

Inadvertent administration or leakage of a *non-vesicant* solution into the tissue surrounding the vein. If left unchecked can cause significant swelling and compression of surrounding structures (ie. acute compartment syndrome).

Extravasation:

Infiltration of a *vesicant* fluid into the surrounding tissue having the potential to cause 'chemical' burns, necrosis and tissue damage. Examples of common vesicant solutions include chemotherapy agents, inotropes, dextrose >10%, strong potassium, parenteral nutrition and Vancomycin. Central IV access is preferred for vesicant fluids.^{8,9}

Signs and symptoms:

phlebitis:	infiltration:	extravasation:
<ul style="list-style-type: none"> • Tenderness/pain at the IV site or along the vein path • Redness and/or hardness along the vein path • Infection <ul style="list-style-type: none"> – discharge at the site, – elevated temperature 	<ul style="list-style-type: none"> • coolness or blanching at the cannula insertion site • swelling • tenderness/discomfort • taut or stretched skin • leakage of fluid at the insertion site • change in quality and flow of the infusion or injection • reports of numbness, tingling or "pins and needles" 	<p>As for infiltration plus:</p> <ul style="list-style-type: none"> • burning, stinging pain • redness may occur followed by blistering, • tissue necrosis and ulceration^{8,9} <p>Warrants medical attention. Hot/cold compression will depend on type of vesicant and the need to either localise or dissipate the fluid.⁹</p>

CHECKING THE IVC SITE (including central venous catheters)

- Inspect the IVC insertion site:¹⁰
 - At least once per shift.
 - Before and after administering any medication or fluid.
 - Hourly when a continuous infusion in progress.
 - Whenever the patient complains of pain at or near the site.
 - Consider more frequent observation if the patient is receiving vesicant solutions.
- Use the PIVAS tool to perform site checks. For inpatients document this number first in the 'Comments/IV site' column on the daily Fluid Balance Record. For all patients (including HiTH) record status of the IV site and any actions taken in the patients' medical record.
- If a covering in situ, remove *completely* to perform an assessment of the IVC at the site; observe the limb above and below the site. Explain to patient/carer the importance of removing the covering.
- Observe skin around securement tape for signs of irritation, skin tears, blistering and infection.
- If the PIVAS score is equal to or greater than 1 notify the shift coordinator and the medical officer.
- If *extravasation* is suspected, stop the infusion immediately and seek medical/pharmacy advice. See [PNPM 2.3.2](#) Peripheral Intravenous (PIV) Access – Principles and Management. For cytotoxic agents refer to [PNPM 2.8.6](#) for management.

CHECKING THE IV TUBING LOCATION

- Use the IV tubing assessment scale to perform IV tubing checks and document findings on the daily fluid –balance chart. Document this number second in the 'Comments/IV site' column (PIVAS/Tubing score).
- If continuous infusions are necessary for infants/ children at risk of entanglement consider the need for increased supervision.¹¹
- Always secure tubing using appropriate tape and/or Tubifast to minimise risk of injury (ie. entrapment/strangulation).
- Inspect the tubing location:
 - hourly when fluids are infusing
 - prior to the administration of intravenous medications

Related policy, procedures and guidelines.

[PNPM 2.3.2](#) Peripheral Intravenous (PIV) Access – Principles and Management.

[PNPM 2.8.6](#) Extravasation of Cytotoxic/Biotherapy Agents

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APPENDIX 1

Peripheral Intravenous Assessment Scale (PIVAS):


Clinical signs and symptoms	Score	Clinical intervention
No signs or symptoms	0	<ul style="list-style-type: none"> Observe
One of the following is evident: <ul style="list-style-type: none"> Slight pain near IV site Or Slight redness near IV site 	1	Possible first signs of phlebitis <ul style="list-style-type: none"> Remove if no longer required Observe site closely
Two of the following are evident at or near the IV site: <ul style="list-style-type: none"> Pain Redness Swelling 	2	Early stage of phlebitis <ul style="list-style-type: none"> Remove cannula Resite if cannula is still required
All of the following are evident at or near the IV site: <ul style="list-style-type: none"> Pain along the path of the cannula Redness Hardness 	3	Medium stage of phlebitis <ul style="list-style-type: none"> Remove cannula Resite if cannula if still required Complete an incident form
All of the following are evident and extensive: <ul style="list-style-type: none"> Pain along the path of the cannula Redness Hardness extending along the vein 	4	Advanced stage of phlebitis <ul style="list-style-type: none"> Remove cannula Resite cannula – avoid affected limb Complete an incident form Consider treatment
All of the following are evident and extensive: <ul style="list-style-type: none"> Pain along the path of the cannula Redness Hardness extending along the vein Purulent discharge Elevated temperature not explained by other causes 	5	Advanced stage of phlebitis or the start of a cannula related infection <ul style="list-style-type: none"> Remove cannula Resite cannula – avoid affected limb Complete an incident form Microbiology sampling Commence treatment

Adapted from Jackson A, Visual Infusion Phlebitis (VIP) Scale.1998 ³

[IV Tubing scale over the page:]

IV Tubing Assessment Scale

Clinical signs and symptoms	Score	Clinical intervention
IV Tubing not kinked or twisted around limb or body of child	0	Observe
IV Tubing kinked and twisted around limb or body of child	1	Reapply and monitor

File Name and Path:	Monitoring and Maintaining Intravenous (IV) Access and IV Tubing Safety https://healthpoint.hdwa.health.wa.gov.au/policies/Policies/CAHS/PNPM%2002.03.05%20Monitoring%20and%20Maintaining%20Intravenous%20(IV)%20Access%20and%20IV%20Tubing%20Safety.pdf		
Document Owner:	CNM Ward 5C		
Reviewer / Team:	CNC Infection Control; Ward 5C		
Document Sponsor:	Nursing Director, SSCCU		
Date First Issued:	April 1999	Version:	2
Last Revised:	17 June 2014	Review Date:	17 June 2017
Endorsed by:	Paediatric Nursing Practice Committee	Date:	19 June 2014
Standards Applicable:	NSQHS Standards: 		
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