



Government of **Western Australia**
Department of **Health**

Insertion and Management of Peripheral Intravenous Cannulae in Western Australian Healthcare Facilities Policy

Title: Insertion and Management of Peripheral Intravenous Cannulae

1. Background

Peripheral intravenous cannulae (PIVC) provide direct access to the patient's bloodstream and therefore pose a serious risk for infection from microorganisms introduced either at the time of insertion or while the cannula is in situ. PIVC related infections are associated with increased morbidity and mortality, prolonged hospital stay and additional healthcare costs. Infections associated with PIVC are considered preventable adverse events.¹⁻⁴

The National Safety and Quality Health Service (NSQHS) Standard 3 requires healthcare facilities (HCFs) to develop and implement systems for the use and management of invasive devices.⁵

Data from Healthcare Infection Surveillance WA (HISWA) shows that the majority of healthcare associated *Staphylococcus aureus* bloodstream infections (HA-SABSIs) occur as a result of intravascular devices (IVD), with a large percentage of IVD related HA-SABSI attributable to PIVCs.⁶ This finding is despite the availability of clinical practice standards, policies and guidelines in place within WA HCFs.

In response to HISWA data, the NSQHS Standard 3.8 was chosen as an appropriate criterion in the 2014 WA Point Prevalence Survey (WAPPS) to assess compliance against recommended infection prevention strategies for the management of PIVC. Results from this survey identified a need for a state-wide policy that described standardised practices to minimise the risk of PIVC complications.⁷

Prevention of PIVC related infection requires a combination of processes including avoiding insertion of unnecessary catheters, and strong clinical governance in relation to provision of training and education and support for infection prevention practices utilised during insertion and management of these devices.

2. Scope

This policy applies to all HCFs within the WA health system (refer definition).

3. Policy Statement

All HCFs within the WA health system are to align their policies for the insertion and management of PIVCs with this document to ensure a standardised level of care and to minimise the risk of patients developing infective complications from PIVC.

Appendix A provides detailed information to assist HCFs with the implementation of this policy and Appendix B includes specific requirements for the management of PIVC in neonates and paediatrics. The following are mandatory requirements of this policy:

- All PIVC insertion must be performed by, or under the direct supervision of, a Health Care Worker (HCW) working within their scope of practice experienced in PIVC cannulation. Following a workforce risk assessment, the HCF may require HCWs to complete a theoretical and practical assessment. The assessment must include the ability to demonstrate sound theoretical knowledge of vasculature and PIVC associated complications, and practical skill in aseptic technique. The practical

assessment is to include two successful supervised insertions.⁸

- The HCW inserting the PIVC is to seek assistance from a more experienced HCW after two unsuccessful attempts. Where this is not possible the HCW must assess the risk of further attempts against the risk of a delay in treatment. Consider the use of ultrasound guidance to locate veins. Alternatives are to be considered where further attempts have been made by the most senior HCW.
- A PIVC is only to be inserted if deemed clinically necessary and other alternatives are not an option, e.g. oral medication.
- If venous access is required, ensure the most appropriate venous access device is chosen e.g. when repeated or prolonged administration of vesicant or irritant solutions, such as potassium chloride, flucloxacillin or vancomycin, is required, central venous access should be considered, to avoid peripheral vein damage.⁹
- Prior to insertion, HCWs are to confirm patient identity and obtain verbal consent in accordance with local HCF policy.
- The use of local anaesthetics to reduce the pain of insertion should be considered before the insertion of any PIVC, regardless of PIVC size and age of patient.¹⁰⁻¹²
- Strict adherence to hand hygiene and aseptic technique is required for the insertion of PIVC. Sterile gloves are to be used and skin antisepsis is to be achieved with the use of a 2% chlorhexidine in 70% alcohol solution, except in the case of a documented allergy or in neonates.⁸
- All PIVC are to have an extension set attached, e.g. j-loop, except for those PIVC utilised for short stay therapy in an outpatient, emergency or procedural setting, where the use of a needleless valve is acceptable. Extension sets help maintain stability and reduce trauma to the vein.
- Documentation of insertion site, date, time, the name of the HCW who performed the cannulation, removal date and time and the reason for removal is to be recorded in the patient medical record.
- All PIVC are to have a peripheral intravenous assessment score (PIVAS) performed at least every eight hours while the PIVC is insitu and continued for 48 hours post removal. Any ongoing PIVC site issues are to be documented in the patient's medical record.
- All PIVC are to be reviewed daily or when clinically indicated, for ongoing need and removed as soon as no longer required. If continued access is required all PIVC are to be re-sited at 72 hours or more frequently if clinically indicated.^{9, 13-15}
- All PIVC inserted by ambulance services or in an emergency situation, e.g. cardiac arrest, are to be replaced as soon as the patient's condition has stabilised or within 24 hours of insertion.
- All PIVC related BSIs are to be reported in accordance with the HCFs clinical incident reporting process and the WA health system policy on Clinical Incident Management.¹⁶ These events are to be subject to root cause analysis and findings fed back to relevant stakeholders in order to facilitate improved patient safety and outcomes.¹⁷

4. Roles and Responsibilities

Executive Directors of each HCF are responsible for:

- the implementation of this policy
- ensuring all HCWs who have responsibility for the insertion and management of PIVC are deemed competent in this procedure and that a register of competent HCWs is maintained
- the promotion of safe practices for the insertion and management of PIVCs within their HCFs
- ensuring investigation and reporting of PIVC related complications.

Healthcare Workers are responsible for ensuring:

- they comply with standard and additional precautions, including the application of the 5 moments of hand hygiene¹⁸ and the safe use and disposal of sharps at all times
- their educational requirements in relation to aseptic technique and PIVC insertion and management are completed in accordance with this policy and relevant HCF requirements
- insertion and management of PIVC is in accordance with this policy and HCF requirements
- all documentation requirements are undertaken in accordance with this policy.

5. Compliance

Compliance with this policy is mandatory for all hospitals within the WA health system that includes staff members and all other employees of health service providers and non-government entities that provide health services under a contract to the State.

6. Evaluation

Evaluation of this policy is to be carried out by the following means:

- The Healthcare Associated Infection Unit (HAIU) will review and report all identified HA-SABSI related to a PIVC at a state-wide level and by individual HCF to identify areas of concern and effect change as relevant.
- All HCFs are to review PIVC associated BSI data and document when breaches in insertion and management occur and what corrective action has been undertaken.

7. Abbreviations / Definitions

Antiseptics	Antimicrobial solutions that are applied to the skin to reduce the number of micro-organisms e.g. alcohol, chlorhexidine, iodine.
Aseptic technique	A technique that aims to prevent microorganisms on hands, surfaces and equipment being introduced to susceptible sites.
Attempt	The number of times a HCW punctures the patient's skin for the purpose of peripheral intravenous cannulation.
Healthcare Worker (HCW)	Any registered medical doctor, nurse, midwife or enrolled nurse, anaesthetic technician, or a student in any of those fields.
Competent	A HCW who has completed a training program and can demonstrate the necessary ability, knowledge and skills in the insertion of PIVCs.
Disinfection	A process that reduces the number of pathogenic microorganisms to a level at which they are not able to cause harm.
Extravasation	Infiltration of fluid into the surrounding tissue, having the potential to cause 'chemical' burns, necrosis and tissue damage e.g. inotropes, chemotherapy agents, parenteral nutrition and some antimicrobials.
Healthcare associated infection (HAI)	An infection that occurs in a healthcare facility or as a result of a healthcare intervention and may manifest after the patient is discharged from the HCF.
Intravenous therapy	The infusion of solutions and medications directly into a vein.
Peripheral intravenous cannula (PIVC)	A device that is designed to be inserted into and remain within a peripheral vein (excludes peripherally inserted central line catheters).
Peripheral intravenous assessment score (PIVAS)	A validated tool for evaluating and documenting the status of PIVC sites.
Phlebitis	Inflammation of the vein.
Safety engineered medical device (SEMD)	Invasive devices that have been designed with built-in safety features to reduce the risk of sharps injury.
Thrombophlebitis	Phlebitis (vein inflammation) in association with thrombosis (blood clot) of the vein.
WA health system	Is comprised of a) The Department; and b) health service providers (North, South, East Metropolitan, Child and Adolescent and WA Country Health Services) and non-government entities contracted to provide health services to the State (Joondalup and Peel Health Campuses, Saint John of God Midland Hospital and haemodialysis services).

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9. Relevant Legislation (optional)

- 9.1 Health Service Act 2016.
- 9.2 National Health Reform Act 2011.
- 9.3 Western Australia Occupational Safety and Health Act 1984 and Occupational Safety and Health Regulations 1996.

10. Related Documents

- 10.1 Operational Directive 0611/15 Clinical Incident Management Policy (2015). Department of Health, Western Australian.
- 10.2 Operational Directive 0647/16 National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines. Department of Health, Western Australian.
- 10.3 Operational Directive 0527/14 Healthcare associated Infection Surveillance in Western Australian Healthcare Facilities. Department of Health, Western Australian.
- 10.4 National Safety and Quality Health Service Standards. Australian Commission on Safety and Quality in Healthcare.

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Appendix A Insertion and Management of PIVC

1. PIVC site selection

- 1.1 PIVC are to be routinely sited in the distal areas of the upper limbs. Subsequent PIVC are to be inserted, where possible, proximal to the previous site. Select the most appropriate vein for insertion of the PIVC with consideration of:
- indication and expected duration of PIVC
 - size and condition of patient's veins
 - position of patient during any planned procedure(s)
 - utilising the patient's non-dominant forearm if practical
 - utilising basilic or cephalic veins on the posterior (dorsal) forearm if possible.
- 1.2 If possible, avoid the use of veins in the following sites:
- the anterior (ventral) forearm veins, especially the cephalic vein, in patients with chronic renal failure, as these may be required for fistula formation for dialysis
 - areas of flexion, e.g. antecubital fossa, or bony prominences due to increased risk of BSI and discomfort for the patient
 - areas below previous cannulation sites, bruised or phlebotic areas due to poor venous return and possibility of clots being dislodged
 - a limb with an arteriovenous fistulae or shunt as this may compromise access for haemodialysis
 - an arm on the same side as a previous axillary clearance, mastectomy or affected by a cerebrovascular accident
 - an infected limb, e.g. with cellulitis, due to increased risk of infection
 - a limb with a PICC or implanted venous access device
 - lower limbs due to the risk of deep vein thrombosis, reduces access, patient comfort and mobility.¹³

2. PIVC selection

- 2.1 The use of PIVC that are classed as safety-engineered medical devices (SEMDs) is preferred. The exceptions to this are PIVC required for specialised procedures for which no SEMD is available or where the use of a SEMD interferes with provision of care.
- 2.2 The size of the PIVC is to be determined by the intended use, e.g. hydration, blood products, the condition of the patient's veins and the insertion site. The PIVC is to be the shortest and smallest gauge that is suitable for the anticipated clinical need (refer Appendix C).¹³

3. Local anaesthesia

- 3.1 Local anaesthetic, e.g. subcutaneous lignocaine, EMLA cream or numbing devices are to be used by HCWs prior to insertion of any PIVC to reduce discomfort during insertion, particularly in children.^{10, 19} EMLA cream can leave a lipid residue that may create a focus for microbial growth therefore prior to skin decontamination residual topical anaesthesia should be removed with soap and water.¹⁹

4. Prophylactic antimicrobials

Prophylactic antibacterial or antifungal agents (topical, oral, intranasal, or parenteral) are not recommended to prevent catheter colonisation or BSI.^{8, 19}

5. Aseptic technique

- 5.1 Hand hygiene with an antiseptic solution is to be performed immediately prior to the insertion of PIVC.
- 5.2 Aseptic technique is to be utilised at all times during the insertion and ongoing management of the PIVC.¹⁴
- 5.3 A sterile PIVC starter pack or sterile dressing pack and associated sterile equipment are to be used to insert all PIVC.
- 5.4 Sterile gloves are to be utilised for insertion, to assist in maintaining aseptic technique in case re-palpation of the insertion site following skin disinfection is required and while connecting the hub of the cannula to the extension set.

6. Skin preparation

- 6.1 Use clippers to remove hair at the insertion site if necessary.
- 6.2 Clean the skin with neutral soap and water if the insertion site is visibly soiled.
- 6.3 Perform skin disinfection of the site using 2% chlorhexidine gluconate in 70% isopropyl alcohol by liberally swabbing a large area of skin around the chosen insertion site to ensure the site for the dressing is also disinfected.
- 6.4 Allow skin antiseptic to air dry to ensure sufficient contact time. Do not wipe or blot skin dry.
- 6.5 For patients with a history of chlorhexidine sensitivity / allergy, use povidone iodine 10% in 70% ethyl alcohol, and allow to air dry. If alcohol is contraindicated, use an aqueous 10% povidone-iodine solution.

7. Securement and dressing management

- 7.1 Use a sterile, transparent semi-permeable dressing to secure the PIVC, extension set, or needleless valve if short stay device, to stabilise and secure the PIVC, allow continuous observation of the site and protect the insertion site from contamination.
- 7.2 Secure the dressing, taking care not to contaminate the adhesive part of the dressing, where the cannula hub and the extension set connect and ensuring the dressing is firmly adhered to the skin.
- 7.3 The insertion site should remain visible for inspection, therefore, do not place opaque tape directly over the insertion site.
- 7.4 Record the date and time of insertion and the signature of the inserter on the adhesive strip of the IV dressing.
- 7.5 The dressing is to be replaced if it becomes wet, soiled or loose using an aseptic technique.
- 7.6 If a PIVC becomes accidentally or inadvertently partially withdrawn or dislodged, the PIVC is to be removed and a new PIVC inserted as soon as practical.¹⁹

8. PIVC Assessment

- 8.1 All PIVCs are to be assessed for patency and for any signs of complications each time the device is accessed.
- 8.2 The need for the PIVC is to be reviewed daily or when clinically indicated, and the PIVC removed as soon as it is no longer required.
- 8.3 Nursing / midwifery staff are responsible for recording a PIVAS each shift by assessing the PIVC site for patency, erythema, swelling, pain or tenderness. Any actions taken are to be documented in the patient's medical record.

9. PIVC blood collection

- 9.1 Blood samples may be drawn from a PIVC directly after insertion, but not at other times. Do not routinely aspirate blood samples directly from PIVC due to potential risk of haemolysis. Exceptions are in an emergency when the patient has limited vascular access or is at increased risk of bleeding or receiving thrombolytic therapy.^{13, 19, 20}
- 9.2 Except in neonates, infants and children (refer Appendix B) collection of blood cultures at time of insertion of a PIVC is not encouraged due to the increased risk of contamination at the time of collection. If the procedure is performed, a second set of blood cultures collected by venepuncture are to be collected.^{20, 21}

10. Needleless access ports

- 10.1 As closed intravenous access systems are associated with fewer BSIs than open systems, needleless access ports are to be used on all lumens.⁹ Stopcocks are to be end-capped with a needleless access port when not in use.
- 10.2 All PIVC access ports are to be disinfected by rubbing with a single-use 70% alcohol-impregnated swab and allowed to dry prior to accessing the system. A 2% alcoholic chlorhexidine swab can be utilised, however 70% alcohol has significant and immediate antimicrobial activity and reduces unnecessary exposure to chlorhexidine as the residual activity of chlorhexidine is not required on inanimate surfaces.^{8, 9, 19, 22}
- 10.3 All access ports are only to be accessed with a sterile single-use device.
- 10.4 When an access port is removed from a PIVC or extension set, it is to be discarded and a new sterile access port attached.

11. Management of administration sets

- 11.1 Administration sets, including all tubing, connections, extensions sets and needleless valves are to be changed when the PIVC is re-sited at 72 hours.
- 11.2 Administration sets are to be changed more frequently if contamination or accidental disconnection occurs or a blood reaction is suspected.
- 11.3 When blood or blood products have been infused, change the administration set, including all IV tubing and connections immediately after completion of the infusion or every 12 hours, whichever comes first.²³
- 11.4 Administration sets are single use devices and if they are disconnected from the intravenous cannula for any reason, e.g. intermittent medication dosing, the set is to be discarded and a new administration set connected using aseptic technique.²⁴

11.5 Administration sets are not to be disconnected for routine care, e.g. showering, but may be disconnected for transient, controlled disconnections, e.g. changing IV access or infusions in operating theatres or medical imaging departments.

11.6 Label all administration sets attached to the PIVC with an intravenous line label in accordance with the National Standard for User-Applied Labelling of Injectable Medicines, Fluids and Lines.²⁵

12 PIVC Flushing

12.1 Where possible, PIVC are to have a continuous flow of IV fluids through them.

12.2 If the patient is receiving intermittent injections or infusions, flushing under positive pressure is recommended to promote and maintain patency and prevent the mixing of incompatible medications and solutions.

12.3 PIVC are to be flushed with 5-10mls of sterile 0.9% sodium chloride for injection using a 10ml Luer-lock syringe or commercially available pre-filled syringe to help avoid excessive pressure.

12.4 HCWs are to flush PIVC, using a pulsatile motion (push-pause):

- after the PIVC is inserted and prior to use to confirm placement
- before each medication or infusion is given to ensure the PIVC is still patent
- after each injection / infusion to remove irritant material from the vein
- between multiple infusions or medications to prevent interactions and incompatibilities
- prior to and after blood drawing (refer section 9. Blood collection)
- at least every 12 hours if the PIVC is not in use (strong consideration should be given to removing the PIVC if it has not been accessed for 12 hours).

12.5 Disconnecting the flush syringe can allow reflux of blood into the tip of the catheter to displace the space occupied by the syringe. To prevent this source of occlusion, HCWs should clamp the extension set or withdraw the syringe while administering the last 0.5 ml of flush (positive pressure technique).

13. Duration and Resiting of PIVCs

13.1 All PIVC are to be removed as soon as they are no longer required and are in adults are not to remain in situ longer than 72 hours.

13.2 The responsible medical officer is to review the need for PIVC access daily, and if ongoing access is required past 72 hours, planned resiting of the PIVC is to occur.

13.3 Remove the PIVC if PIVAS is ≥ 2 , or fever $>38^{\circ}\text{C}$, or signs of sepsis are evident.

13.4 Remove PIVCs that may have been inserted without adherence to aseptic technique e.g. resuscitation as soon as practical and within 24 hours of insertion.

13.5 If prolonged IV therapy is likely to be required, consideration for a central catheter should be given rather than multiple replacements of PIVCs.

13.6 If extravasation occurs special precautions are required prior to removal of the PIVC. Refer to local HCF guidelines.

- 13.7 Routine culturing of PIVC tips is not recommended unless infection is suspected.
- 13.8 Document removal of PIVC in the patient's medical record, including the time and date and the condition of the site post removal.

14. Removing the PIVC if Infection Suspected

- 14.1 If infection is suspected, inform the treating medical officer. Two sets of blood cultures are to be collected. Blood culture samples are to be drawn from another peripheral vein. Blood must not be drawn from the existing PIVC. Ensure aseptic technique during sampling.
- 14.2 Any PIVC site discharge should be swabbed and sent for culture.
- 14.3 On removal of the PIVC send catheter tip for culture in a sterile screw top container NB: blood cultures must accompany tip.
- 14.4 All actions are to be documented in the patient's medical record.
- 14.5 Report significant local and PIVC related site infection, in accordance with the HCF incident reporting processes and the Department of Health Western Australia, Clinical Incident Management Policy 2015.¹⁶

15. Documentation of PIVCs

- 15.1 All documentation in relation to a PIVC is to be recorded as part of the patient's medical record and maintained as a permanent record. Each HCF can determine site specific documentation, however, examples are provided in Appendix D and E that meet the requirements of this policy.
- 15.2 For each PIVC inserted, the documentation is to include date and time of insertion, anatomical site of insertion and the name of the HCW inserting the PIVC, the removal date and time and the reason for removal e.g. treatment complete, pain, dislodgement, PIVAS greater than 2, extravasation, vessel hardness or emergency insertion. Documentation is to address a PIVC that has been inserted in an emergency situation or when there have been failed insertion attempts.
- 15.3 The use of an IV insertion label, noting date and time of insertion and signature of HCW inserting the PIVC, is to be used as a visual prompt on the PIVC dressing. They are to be placed on the external transparent dressing, so that they are visible but will not interfere with assessing the PIVC site.
- 15.4 A PIVAS is to be recorded for each PIVC site, each shift for the duration the PIVC is insitu and for 48 hours following removal to detect post- removal complications (Refer Appendix D). Ongoing PIVC site issues beyond 48 hours are to be documented in the patients' medical record.
- 15.5 All clinical interventions for each PIVC site are to be recorded in the patients' medical record.

16. Patient Education

Ensure patients are provided with information in relation to their PIVC and possible complications (Refer Appendix F). HCWs are to have a discussion with the patient, when mentally competent, to ensure they understand the information provided to them.

Appendix B Neonate and Paediatric Considerations

1. Definitions

Neonate: infant less than 28 days old	Infant: 1 month to 12 months old
Preterm infant: < 37 weeks gestational age	Child: for the purpose of this document – refers to children aged one to 16 years.
Term infant: >37 weeks gestational age	

2. PIVC site preferences

It is preferable to utilise veins in the hands and feet and to choose veins that run straight, fill and empty and are easy to splint, although sites such as the scalp in neonates and infants can also be used.

3. Insertion

Neonates

- 3.1 Standard tourniquets are not used. Occlusion of the vein can be achieved with gentle pressure applied to the vein proximal to the insertion site.
- 3.2 SEMDs are generally not used due to the complexity and difficulty of the procedure.
- 3.3 A 24g cannulae is to be utilised.

Infants, children and adolescents

- 3.4 A single-patient use tourniquet of the appropriate size is recommended.
- 3.5 SEMDs, where available, are recommended to reduce the risk of sharps injury.

4. Skin disinfection

Neonates

- 4.1 Less than 28 weeks gestation, utilise Povidone-iodine 10% solution and allow to air dry. Remove antiseptic solution with sterile saline or sterile water before proceeding with the procedure. It is recommended to avoid the use of chlorhexidine in extremely low birth weight babies due to the risk of chemical burns.¹
- 4.2 Greater than 28 weeks gestation, utilise 1% chlorhexidine gluconate in 70% isopropyl alcohol and allow to air dry before proceeding with the procedure.¹

Infants and children

- 4.3 For term infants, children and adolescents 2% chlorhexidine gluconate in 70% isopropyl alcohol can be utilised. Alternatives as stated above can be used for patients with skin sensitivities. Refer to HCF specific protocols for advice for patients with multiple sensitivities.

5. Pain Management

Neonates and infants

- 5.1 Non-pharmacological interventions have been shown to be effective for pain management. Recommended practices may include breastfeeding, skin to skin contact, oral sucrose, breast milk, kangaroo care, holding, swaddling, oral sucrose and non-nutritive sucking.^{2, 3} Repeated use of sucrose should be used with caution in pre-term infants less than 31 weeks gestation.⁴

Children

- 5.2 Utilise distraction, play therapy, topical anaesthetic, 'Buzzy' device, relaxation, breathing and imagery techniques in accordance with the child's developmental stage and taking into account previous experiences and anxieties.
- 5.3 Children with severe anxiety and/or needle phobias should be referred to a paediatric psychologist and/or paediatric pain service. Refer to the Child and Adolescent Health Service protocols for procedural pain minimisation techniques.

6. Securement and dressing management

- 6.1 The type of securement for the PIVC depends upon a number of factors, including the condition of the skin, site of the PIVC, mobility of the neonate / child and risk of dermal stripping. When dressing the PIVC ensure the dressing is secure, the site is visible and that the taping is not occlusive or restrictive. Refer to HCF specific policies for dressing application and securement techniques.
- 6.2 IV boards or splints are recommended to secure PIVC placed in or adjacent to areas of flexion, to assist with immobilising the joint and minimising the risk of venous damage.
- 6.3 When using a splint, ensure it is positioned and strapped with the limb and digits in a neutral position and the taping is not occlusive or restricting circulation.
- 6.4 If securing the splint with tape, consider lightly backing any tape with cotton wool or gauze that comes into contact with skin.
- 6.5 Consider placing a small piece of cotton wool ball or gauze underneath the hub of the cannula to reduce risk of pressure injury.
- 6.6 Inspect the splint each shift and change if wet or soiled.

7. Flushing

- 7.1 For neonates, infants and children on fluid restriction, use the minimum volume of flush to clear a line and any add-on devices, of fluid, medication or blood.
- 7.2 PIVCs without a continuous infusion are to be flushed 6 to 8 hourly to ensure patency.

Neonates

- 7.3 Use a 2.0mL Luer lock syringe. The minimum volume of flush is 0.5mL.

Infants and children

- 7.4 Flush with at least 2.0 to 5.0mL before, between and after each medication administration. Consider volumes required to clear administration lines when using infusion pumps.
- 7.5 Flush solutions and volumes should be prescribed on the paediatric National Inpatient Medication Chart - refer to site-specific policies.

8. PIVC assessment

- 8.1 Inspect the PIVC insertion site at least hourly when a continuous infusion is in progress, and with each intermittent medication and flush administration, ensuring any covering is removed completely to perform an assessment of the insertion site and to observe the limb above and below the site.
- 8.2 Any adverse findings are to be documented in the patient's medical record.

- 8.3 PIVAS documentation is to be applied in the neonatal and paediatric settings.
- 8.4 Increased supervision is required for active infants/young children on continuous infusions due to the risk of entanglement with administration lines.

9. PIVC blood collection

- 9.1 Blood samples, including blood cultures, may be drawn from a PIVC directly after insertion, but not at other times.

Neonates

- 9.2 Regular routine blood sampling following PIVC insertion depends on sample volume required and should be via capillary heel prick (for volumes <1ml) or venepuncture (for volumes >1ml). An arterial line should be used for critically ill neonates requiring frequent blood sampling.⁷

Infants and children

- 9.3 If multiple blood samples are required for short term investigative procedures or emergency management a peripheral blood sampling line can be inserted.⁸

10. Duration of PIVC

- 10.1 PIVC related infections are less prevalent in children than in adults, and due to the difficulty in establishing intravenous access in this population PIVC's are not routinely replaced.

- 10.2 PIVC can stay in situ if the PIVC

- is clinically indicated
- there is no evidence of local (redness, pain, tracking) or systemic (fever and rigors) signs of infection
- is still flushing well without resistance or leakage from the insertion site.

11. Management of Administration sets

Administration sets, including all tubing, connections, extensions sets and needleless valves are to be changed when the PIVC is resited, if contamination or accidental disconnection occurs or a blood reaction is suspected.^{5, 6}

12. References

1. Ponnusamy V, Venkatesh, Clarke P. Skin antisepsis in the neonate: What should we use? *Curr Opin Infect Dis.* 2014; 27(3):244-250.
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3. Yamada J, Stinson J, Lamba J, Dickson A, McGrath PJ, Stevens B. A review of systematic reviews on pain interventions in hospitalized infants. *Pain Research & Management: The Journal of the Canadian Pain Society.* 2008 Sep-Oct;13(5):413-20
4. Neonatology Clinical Guidelines. Oral sucrose for procedural pain relief. Women and Newborn Health Service King Edward Memorial Hospital 2013.
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6. Ullman AJ, Cooke ML, Gillies D, et al. Optimal timing for intravascular administration set replacement. Cochrane Database of Systematic Reviews. 2013.
7. Women and Newborn Health Service Neonatal Directorate. Clinical Practice Guidelines Blood Sampling. January 2014.
8. PMH Clinical Practice Manuals for blood culture collection (November 2016) and blood specimen: peripheral line (March 2011).

PIVC Selection

PIVC SIZE	COLOUR	RATIONALE FOR USE
14G	ORANGE	Trauma patients Rapid, large-volume replacement
16G	GREY	High volume of fluids / Trauma patients Major surgery Intra-partum or post-partum / GIT Bleeding Multiple line access Multiple blood transfers
18G	GREEN	Rapid administration of large volumes Blood products / Viscous fluid infusions Delivery of irritant medications Multiple line access Major surgery Imaging requiring power injection of CT contrast
20G	PINK	General use / IV maintenance IV antibiotics IV analgesia
22G	BLUE	Small or fragile veins Paediatric Most types of drug therapy - continuous intermittent or bolus Cytotoxic therapy
24G	YELLOW	Small veins For slow flow rates Neonatal Cancer services

Selecting an appropriate site

- Consider the length of PIVC
- Start distally in the upper extremities
- Choose firm, round, elastic, well filled veins
- Assess the length of the vein
- Inspect and palpate for problems
- Look at or ask the patient for their previous history of cannulation (if possible).

Peripheral Intravenous Assessment Score*

Peripheral Intravenous Assessment Score (PIVAS) Assess the PIVC site each time it is accessed and ensure a PIVAS is documented each shift		
LOOK	LISTEN	FEEL
Observe the PIVC site for erythema, swelling or exudate. Is the dressing intact, clean and dry?	Ask the patient or use visual clues. Is there pain or tenderness on infusion / palpation or movement?	Palpate the site through the intact dressing. Is there any heat or vessel hardening?
PIVAS	CLINICAL ASSESSMENT AND INTERVENTIONS Always use Look, Listen and Feel observations noted above If patient has limited access or requires extended / vesicant IV therapy, consider alternative vascular access device	
0	Healthy IV site <ul style="list-style-type: none"> No signs of phlebitis No identified concerns in relation to the 'Look, Listen and Feel' Replace dressing if not clean, dry and intact. 	
1	One of the following is evident: Pain, tenderness or erythema at IV site. <ul style="list-style-type: none"> Discuss with Medical Officer and consider review of infusion rate or further dilution of medications. Replace dressing if not clean, dry and intact. Continue to observe site closely and document each shift 	
2	Two of the following signs or symptoms are evident: Pain, erythema, swelling, discharge or palpable venous cord. <ul style="list-style-type: none"> Remove PIVC immediately Inform Medical Officer and re-site only if required Document signs and symptoms, PIVAS and actions in patient's medical record Complete incident notification Continue to observe and record status of IV site until healed. 	
A PIVAS of 2 or more with associated fever not explained by other causes requires collection of 2 sets of blood cultures and the PIVC tip sent for culture		
3	3. Medium stage of phlebitis	ALL of the following are evident: Pain along path of cannula, erythema, induration and palpable venous cord. Also possibly evident: Pus, pyrexia. <ul style="list-style-type: none"> Remove PIVC immediately and inform Medical Officer If ongoing IV treatment required consider alternate venous access device e.g. PICC Document signs & symptoms, PIVAS and actions in patient medical record Initiate additional treatment as required Complete incident notification Continue to observe and record status of IV site until healed. If discharged from hospital advise GP for review.
4	4. Advanced stage of phlebitis or start of thrombophlebitis	<ul style="list-style-type: none"> Remove PIVC immediately and inform Medical Officer If ongoing IV treatment required consider alternate venous access device e.g. PICC Document signs & symptoms, PIVAS and actions in patient medical record Initiate additional treatment as required Complete incident notification Continue to observe and record status of IV site until healed. If discharged from hospital advise GP for review.
5	5. Advanced stage of thrombophlebitis	<ul style="list-style-type: none"> Remove PIVC immediately and inform Medical Officer If ongoing IV treatment required consider alternate venous access device e.g. PICC Document signs & symptoms, PIVAS and actions in patient medical record Initiate additional treatment as required Complete incident notification Continue to observe and record status of IV site until healed. If discharged from hospital advise GP for review.

* Adapted from: Jackson A (1998) Infection control: a battle in vein infusion phlebitis. *Nursing Times*; 94: 4, 68-71

PIVC Documentation Tool

PERIPHERAL INTRAVENOUS CANNULA OBSERVATION RECORD	ATTACH PATIENT ADDRESSOGRAPH LABEL					
Peripheral IV Cannula # _____ Insertion Date: ___/___/___ Insertion Time: _____ Cannulation site: _____ Department PIVC inserted in: _____ Inserted by (print name and designation): _____						
Date	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___
Time	AM PM ND	AM PM ND	AM PM ND	AM PM ND	AM PM ND	AM PM ND
PIVAS						
Initial						
Removal Reason: _____		Removal Date: ___/___/___		Removal Time: _____		Signature: _____
If PIVAS > 2 - Incident reporting completed <input type="checkbox"/> YES				Incident number: _____		
Peripheral IV Cannula # _____ Insertion Date: ___/___/___ Insertion Time: _____ Cannulation site: _____ Department PIVC inserted in: _____ Inserted by (print name and designation): _____						
Date	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___
Time	AM PM ND	AM PM ND	AM PM ND	AM PM ND	AM PM ND	AM PM ND
PIVAS						
Initial						
Removal Reason: _____		Removal Date: ___/___/___		Removal Time: _____		Signature: _____
If PIVAS > 2 - Incident reporting completed <input type="checkbox"/> YES				Incident number: _____		
Peripheral IV Cannula # _____ Insertion Date: ___/___/___ Insertion Time: _____ Cannulation site: _____ Department PIVC inserted in: _____ Inserted by (print name and designation): _____						
Date	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___
Time	AM PM ND	AM PM ND	AM PM ND	AM PM ND	AM PM ND	AM PM ND
PIVAS						
Initial						
Removal Reason: _____		Removal Date: ___/___/___		Removal Time: _____		Signature: _____
If PIVAS > 2 - Incident reporting completed <input type="checkbox"/> YES				Incident number: _____		

Consumer Information

Your Intravenous Cannula or 'IV'

What is an IV and why do I need it?

An IV is a small plastic tube, inserted into a vein, usually in your hand or arm.

Why do you need an IV and what is it used for?

- to provide fluids when you are dehydrated or can't drink
- to give a blood transfusion
- to give medications directly into your bloodstream. Some drugs work better this way.

Are there any alternatives to an IV?

Yes sometimes. You can discuss possible alternatives with the staff looking after you. Some treatments however can only be given, or are best given through an IV.

How is your IV put in?

Your doctor, nurse or midwife, will:

- verify your name, ask about allergies, explain the procedure and obtain verbal consent
- wash their hands and wear gloves
- clean your skin with an antiseptic and use sterile equipment
- inject a small amount of anaesthetic
- insert the IV into a vein using a fine needle, which is removed after the plastic tube is in place
- cover the IV site with a sterile dressing and write the date and time on the dressing.

Is having your IV inserted painful?

You may feel a sharp sting as the anaesthetic needle goes in, but this will soon pass

Can your IV fall out?

An IV is secured with a see-through dressing and is taped in place to prevent it falling out. Let staff know if you are concerned that the IV is not secure or if it becomes loose.

Are there any risks with having an IV?

- **Infection:** there is a risk of infection with any procedure that punctures the skin. As an IV sits directly in your bloodstream, this does increase the risk of infection, therefore frequent observation of the IV site and strict procedures to prevent infection must be followed by staff inserting and caring for your IV.
- **Bruising and vein irritation:** difficult or unsuccessful attempts to insert an IV can cause bruising and the plastic cannula may cause irritation to the vein.
- **Blockage:** sometimes the IV can become blocked by blood and may need to be removed.

Important: Let staff know straight away if you notice any redness, swelling, skin irritation or pain around your IV or if you feel hot, cold or shivery.

When will your IV be removed?

Your IV should be removed after 3 days, or as soon as you no longer require it. This is to reduce your risk of getting an infection. A new IV will be inserted if you still need it.

How will staff care for your IV cannula?

Preventing infection is very important and staff must:

- clean their hands before they touch your IV or the tubing, inject drugs or change the IV fluids
- check your IV regularly for signs of irritation, infection or blockage
- keep the dressing clean, dry and securely in place
- record the date that the IV is inserted on the dressing, to ensure staff can easily see when the IV may need to be changed.

Your IV and dressing should look similar to the picture below.



How can you help in the care of your IV?

- try not to touch the IV site or pull the tubing
- try to keep the dressing dry
- it is ok to remind staff to clean their hands before touching your IV
- your IV should not be disconnected from the fluid bag when you shower or are getting dressed, as unnecessary disconnections can increase your risk of infection
- your IV is usually removed before you are discharged from hospital. If you notice any signs of infection at your old IV site or feel hot, cold or shivery, you should contact your GP or health provider
- if you are to be discharged with an IV in place for home care, you should be given clear instructions relating to the care of the IV prior to your discharge.

This Information sheet has been developed with input from Consumers.



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