

## 05450/ Proc: Peripheral Intravenous Cannulation, Venepuncture and Infusions - Adult and Paediatrics

### Background

Peripheral cannulae provide necessary intravenous access to support patient hydration and the delivery of intravenous (IV) medications and diagnostic agents. Peripheral intravenous cannulation is an invasive procedure therefore increases the patient's risk of local and/or systemic complications which have the potential to result in patient morbidity and mortality, increased healthcare costs and length of stay.

- This procedure covers adults and paediatrics. For neonates and infants within Women's and Newborn Services refer to the procedures [05451/Proc: Intravenous Therapy Management, Neonate](#) and [21610/Proc: Blood Culture Collection, Neonate](#).

Venepuncture (the act of puncturing a vein) is necessary for the purpose of withdrawing blood for laboratory analysis and diagnosis. It is a short invasive procedure with low complication risk however poor knowledge in methodology and equipment may result in risk of needle exposure to the health care worker, trauma to the patient and unnecessary and erroneous collection increasing the risk to the patient and cost to the hospital.

- N.B The procedure on venepuncture only relates to adult patients.

### Purpose and intent

This document provides users with the best practice standards for peripheral intravenous cannulation (PIVC) and venepuncture and management of the peripheral intravenous device and infusions. The procedure provides:

- an outline of the minimum education, training and assessment required to be deemed competent to insert a peripheral intravenous cannula or perform venepuncture
- processes to support safe insertion and management of peripheral vascular access to meet the patient's needs for treatment and hydration
- guidance regarding assessment and monitoring of the PIVC site/site surround and the need for the device
- direction for safe venepuncture and accurate specimen collection to minimise *no-tests* and delays to patient pathology results.

### Scope and target audience

This procedure applies to Royal Brisbane and Women's Hospital (RBWH) Registered Nurses, Midwives, Nurse Practitioners, Medical Officers, Radiographers and Nuclear Medicine Technologists who are competent to perform PIVC and/or venepuncture and management of the Peripheral Intravenous Cannula. Enrolled Nurses who may be monitoring IV Therapy.

Venepuncture, except for specialised areas (e.g. Oncology, Departments of Intensive Care and Emergency Medicine and Coronary Care), will only need to be performed outside phlebotomy hours or under exceptional circumstances such as urgent pathology diagnostics for an unwell patient.

## Mandatory Requirements

PIVC insertion is performed by medical officers, registered nurses/midwives, nuclear medicine technologists and radiographers who have successfully completed the [MNHHS Peripheral Intravenous Cannulation and Venepuncture Resource Package 4014/MN\\_RP](#).

**If the patient has ongoing issues with difficult or limited venous access:**

- **this should be highlighted in the patient's clinical records**
- **should only be attempted by an experienced cannulator**
- **consider training and supervision of practice by the specialised vascular access team**

If the inserter has one failed attempt and does not feel confident in succeeding on the second attempt contact a more experienced staff member with current competence in PIVC insertion or if appropriate

- Total number of attempts is four i.e. maximum of two (2) attempts per person. After that further patient review is required to determine appropriate course of action. Repeated attempts at cannulation increase the risk of complications, deplete available access and contribute to patient pain, anxiety and needle phobia.

PIVCs are to be routinely reviewed by:

- nursing/midwifery staff at minimum once per shift,
- medical staff on a daily basis and at each medical review.

This review is to include:

- ongoing need for the cannula (does the patient have IV medications prescribed?, is the patient clinically stable?, does the patient need continuous IV fluid administration?)
- status of dressing (is the cannula stable?, is the dressing appropriate and well adhered?, is there blood or fluid accumulated under the dressing?)
- presence of phlebitis
- cannula patency.

PIVCs are to be removed as soon as they are no longer required or replaced at least every 72 hours unless there are extenuating circumstances<sup>1</sup>. Such circumstances may include:

- The PIVC is likely to be needed for another 24 hours or less
- Replacement of PIVC is likely to be difficult and judged to be a greater risk than retention
- Patient refuses to have routine replacement of cannula.

If the PIVC is to be retained beyond 72 hours, there must be no symptoms or signs of inflammation or other site complication and a written directive and rationale must be clearly documented daily in the patient's clinical record. Refer procedure [74110/Proc: Documentation in the Patient Record](#).

PIVCs inserted without full aseptic procedure (e.g. emergency situation) or whereby adherence to asepsis could not be determined (e.g. another hospital, ambulance, or no documentation of insertion) are to be removed as soon as practical, certainly within 24 hours and replaced if ongoing peripheral intravenous access is required.

All staff must comply with [infection prevention and control principles](#)<sup>4</sup> and aseptic, non-touch technique during PIVC insertion, management and removal.

## Principles

Peripheral intravenous cannulation is for short-term access for intravenous therapy and diagnostic tests. If a patient requires ongoing, and high volume/high frequency IV therapy consideration should be given to insertion of a central venous access device at the outset.

PIVC and/or venepuncture are performed by medical officers, registered nurses/midwives, nuclear medicine technologists and radiographers who have successfully completed the [MNHHS Peripheral Intravenous Cannulation and Venepuncture Resource Package 4014/MN RP](#) and theoretical/practical workshop.

- Venepuncture is to be considered as an advanced skill for Registered Nurses or Midwives and is not intended to replace routine collection by Queensland Pathology staff.
- Paediatric cannulation is only relevant to healthcare workers where it is identified as necessary with their defined roles.

All procedures are to be explained to the patient. Consent is to be obtained in accordance with procedure [76005/Proc :Patient Consent, Public and Private Patients](#)

For patient safety always confirm correct patient identity and correctly match to the intended procedure, prior to commencement in accordance with the procedure [80502/Proc: Patient Identification and Procedure Matching](#). For mental health patients refer to the MNHHS [Patient Identification and Procedure Matching within Metro North Mental Health](#).

- Review for site restrictions and confirm correct side and site in accordance with the procedure.

Multimodal strategies should be implemented within PIVC, venepuncture and peripheral IV infusions to support application of standard precautions to mitigate the risk of infection transmission. [81003/Proc: Standard Precautions](#) outlines these combined measures:

- Clinical hand washing is to be done in accordance with *QH Hand Hygiene 5 Moments of Hand Hygiene* and undertaken as required throughout the procedure. Refer procedure [81004/Proc: Hand Hygiene](#)
- Appropriate use of Personal Protective Equipment (PPE).

Apron/gown, gloves and eye protection (goggles) must be worn for PIVC and Venepuncture

- All clinical equipment and environmental surfaces are to be cleaned / decontaminated prior to and after use in accordance with procedures [82610/Proc: Decontamination – Patient Care Equipment](#) and [82606/Proc: Environmental Cleaning and Disinfection](#).
- Patient-dedicated equipment.

Only PIVCs with a needle safety device and blood control are to be used for routine cannulation. The stylet must not be withdrawn from the cannula without activating the safety mechanism nor reintroduced back into the cannula as there is risk of introducing pathogens and cannula fragments into the blood stream and damaging the cannula.

Only approved venepuncture equipment with needle safety device are to be used for routine venepuncture. Needle and syringe are **not** to be used for venepuncture as there is risk of injury to the vein, haemolysis of blood sample and needle exposure to the healthcare worker.

**The blood control cannulae must not be used for blood sampling** at time of insertion nor post-insertion unless in an emergency as there is increased risk of:

- infection
- inadvertent culture contamination
- compromised blood sample
- compromised cannula
- unnecessary and avoidable blood exposure to the healthcare worker

Registered Nurses/Midwives can, and should initiate removal of a PIVC that is redundant or assessment indicates there is clinical reason to do so. Prior to elective removal of a PIVC confirm with the medical team there is no longer a clinical need.

Always use veins in the upper extremities before using lower extremity sites. Veins of the lower extremities are only used at the discretion of the Medical Officer.

Avoid sites of restriction. Restricted sites include:

- Limbs containing an anterior venous fistula
- Hemiplegic side
- Limb(s) with lymphoedema
- Feet of diabetic patients
- Limb(s) with known vascular disorder
- Trauma / burns.

## Management

### Potential Complications of Peripheral Intravenous Cannula

Local	Systemic
<ul style="list-style-type: none"> <li>• Infiltration/Extravasation</li> <li>• Phlebitis (mechanical, chemical or bacterial) caused by or after insertion</li> <li>• Post-infusion phlebitis*</li> <li>• Nerve, tendon or ligament damage</li> <li>• Infection</li> <li>• Bleeding and/or haematoma</li> <li>• Patient pain or discomfort</li> </ul>	<ul style="list-style-type: none"> <li>• Septicaemia</li> <li>• Catheter embolism</li> <li>• Pulmonary embolism</li> <li>• Air embolism</li> </ul>
	Other
	<ul style="list-style-type: none"> <li>• Needle-stick injury</li> <li>• Exposure to bodily fluids</li> </ul>

\* Post-infusion phlebitis occurs within 48 – 96 hours of PIVC removal

## Procedure / process

### [1. Procedure Bundle](#)

### [2. PIVC Insertion](#)

#### [2.1 Paediatric PIVC Insertion](#)

### [3. Venepuncture](#)

### [4. Blood Cultures](#)

### [5. Site Inspection and Care](#)

### [6. Flushing PIVC's](#)

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## 1. Procedure Bundle

The Bundle<sup>2,3</sup> components are key strategies that must be adhered to, and performed collectively and reliably during PIVC Insertion or venepuncture as they have been proven to improve patient outcomes.

### **Hand Hygiene**

Hand hygiene is to be undertaken as part of the [Hand Hygiene Australia 5 moments for Hand Hygiene](#). Health professionals are to wash their hands with an antiseptic-containing soap solution, or use an alcohol-based waterless cleanser. Patients and their carers may also require education about the importance of hand hygiene. Refer procedure [81004/Proc: Hand Hygiene](#).

The moments of hand hygiene are performed before first touch of the patient, throughout set-up and preparation of equipment, **immediately before gloving to perform the insertion** and after completion and clean-up.

### **Aseptic Non-Touch Technique (ANTT)**

PIVC insertion and venepuncture is usually performed using the Standard ANTT approach as the equipment can be managed on a general aseptic field utilising micro-critical aseptic fields (e.g. sterile caps or inside of sterile packaging) to protect key parts. Non sterile gloves are usually worn for standard ANTT procedures. However if the inserter is required to touch the Key Site (e.g. insertion site) after skin preparation then sterile gloves must be worn. Refer procedure [81000/Proc: Aseptic Non Touch Technique \(ANTT\)](#).

### **Skin Preparation**

#### **I) Cannula Insertion**

Prior to cannula insertion the skin must be prepared with an antiseptic single-use swab containing 2% Chlorhexidine Gluconate (CHG) with 70% Alcohol, unless contraindicated. For known allergy to CHG then alcoholic povidone iodine may be used to cleanse the skin. Skin cleansing must be performed for minimum 30 seconds with an up and down or side to side motion with light friction and allowed to air-dry (allow at least 1 minute). The area cleansed should be an area larger than the final dressing (or minimum 5 x 5 cm).

## II) Venepuncture

Prior to venepuncture the skin can be prepared with 70% alcohol as dwell time is very brief however in the event of blood culture draw the skin must be prepared with 2% CHG with 70% Alcohol (unless contraindicated).

### **Dressing**

The correct sterile IV dressing must be placed over the cannula insertion site (as per manufacturer recommendations). The dressing is to be transparent, semipermeable and self-adhesive:

- with advanced border and inclusive securement strips (including date) for all inpatients
- simple, small and without border for short stay <24hrs and/ or diagnostic procedures.

Fix the line additionally with tape strip if required (do not encircle limb as it creates a tourniquet effect). Do not apply coverings that cause vascular compression (such as crepe bandage or tubigrip) as it increases the risk for infiltration, extravasation and phlebitis. The insertion site must be visible for monitoring however if there is a clinical reason (such as confusion or phobia) for concealment, use a loose non-elasticised tubular dressing and document the intervention in the patient's clinical record. Monitoring frequency must be increased if the site is no longer visible. [See Section 2. Site Inspection and Care.](#)

Remove hair (with clippers) at the insertion site only if it is likely to impede the adherence of the occlusive dressing.

After venepuncture apply light pressure with gauze pad/ball to stem bleeding. If no visible sign of bleeding tape the pad/ball in place or alternatively apply an adhesive IV haemostatic pad. Instruct patient when to remove.

Use small or Paediatric IV dressing for paediatrics. Therapeutic restraint such as a splint applied correctly is recommended to prevent the child removing the cannula (Refer to [MNHHS Peripheral Intravenous Cannulation and Venepuncture Resource Package 4014/MN RP](#) for details on how to apply splint).

### **Documentation**

Documentation must comply with the medico-legal needs of the patients, the hospital and the health professional performing the clinical skill in accordance with [74110/Proc: Documentation in the Patient Record](#). If more than one person has an attempt (on the same patient) then each inserter must document individually (even if it was a failed attempt). Documentation of insertion/blood collection must include, but is not limited to:

- Patient consent
- Date of insertion/blood collect
- Insertion/collection site (vein description, including if Right or Left side)
- Use of local anaesthetic
- Number of all attempts
- Name and designation of person inserting/collecting
- Skin antiseptic preparation
- Note any restrictions
- Cannula Gauge (PIVC only)
- Name of medical officer ordering **initial** insert (PIVC only).

## 2. PIVC Insertion

The technique of PIVC insertion is covered by training and education resources and assessment. (see: [MNHHS Peripheral Intravenous Cannulation and Venepuncture Resource Package 4014/MN\\_RP](#))

Consideration is to be given to whether a local anaesthetic is required for the patient.

The **antecubital fossa site must not** be used in adults unless there is no other viable access and reason must be documented in the patient healthcare record. This site should be preserved for emergency access for resuscitation, venepuncture, PICC insertion and for medical imaging procedures

(It is also a very difficult site at which to preserve a patent PIVC.)

All connectors/additions must be luer lock. Additional lumens are to be kept to a minimum.

**Flush** the PIVC with 10mL 0.9% Sodium Chloride using a positive pressure technique immediately after insertion. Secure extra IV lines so as not to pull on the PIVC or dressing.

### For patients with Chronic Kidney Disease (CKD):

- **Do not cannulate the arm with an AVF insitu**
- Where possible, cannulate a hand vein, preserving forearm and upper arm veins for future arterio-venous fistula (AVF) formations.
- If cannulation options are limited, contact the vascular or renal team for advice.

### 2.1 Paediatric PIVC Insertion

Cannulation is considered one of the most painful and stressful procedures for Paediatric patients therefore the department must have proper strategies in place and the inserter must be organized and pre-prepared. The principles of PIVC including the [Insertion Bundle](#) apply to Paediatric cannulation procedures however the following strategies must also be implemented. For full details see [MNHHS Peripheral Intravenous Cannulation and Venepuncture Resource Package 4014/MN\\_RP](#).

- Distraction therapy/aids must be available, age appropriate and implemented
- Pain management must commence prior to the procedure and continue until the procedure is completed
- Use of visualization aids such as (cold) fibre optic light is recommended. Do not use light that generates heat as it can burn a child's skin
- The procedure must be explained to the child and parents/guardians and consented
- Therapeutic restraint must be discussed and negotiated with the child and parents/guardians and gain agreement on how this will be executed prior to commencing
- The assisting healthcare worker must be ready and available as soon as the procedure is ready to commence
- The parents/guardians must be given the option as to whether they will be present or not
- Parents/guardians must only participate as a comfort 'Hug Holder' and not assist with therapeutic restraint or any other part of the procedure.

The inserter must have equipment prepared before the child is present. The insertion must not occur in the child's bed or in the room where diagnostic procedures such as imaging will take place. There should be a separate dedicated room/area.

## Insertion Sites

The veins of the hand, forearm, feet and scalp can be used although the preferred sites are the dorsum of the nondominant hand and the long saphenous veins. Only experienced medical officers should cannulate scalp veins.

Avoid:

- Thumb sucking hand
- Foot in ambulant child
- The antecubital fossa in dwell > 24 hrs as a child who cannot bend their arm can become frustrated and try to remove the cannula

## 3. Venepuncture

The technique of blood taking or venepuncture is covered by the [MNHHS Peripheral Intravenous Cannulation and Venepuncture Resource Package 4014/MN\\_RP](#) training and education resources and assessment.

The best sites for venepuncture in adults are the superficial veins of the upper limb, primarily the veins of the ante cubital fossa (ACF). The safest vein of choice in the ACF is the median cubital as it has less tendency to roll, while circumventing the brachial nerve and artery.

Avoid limbs with intravenous therapy to avoid collection contamination; if another site is not available the intravenous therapy must be turned off for a minimum of 3 minutes. If the infusion cannot be turned off ensure collection is from an entirely different vein and preferably below the infusion site.

For patient identification and procedure matching (procedure [80502/Proc: Patient Identification and Procedure Matching](#) always compare the patient identifier on the pathology request forms with the patient (verbally and by comparison to identification (ID) band) and ensure specimens are labelled at the bedside immediately after collection.

The pathology request form must be completed by a medical officer or nurse practitioner who verifies that the correct patient details are added to the request. The collector should not proceed if there are any omitted details or details do not match the patient ID band or patient verbal confirmation.

A separate *Transfusion Request Form* is required for a Group and Hold (GPH). Refer to MNHHS policy Blood and Blood Products

<http://qheps.health.qld.gov.au/metronorth/policy/procedures/polmnhsblood.pdf> If there is a request for transfusion then it is preferred that samples are handwritten however patient labels will be accepted only if completed correctly.

If using patient ID pathology stickers, collector's signature/initials, date and time of specimen collection must also be completed on the label. Refer [21605/ Proc: Blood Collection \(Adult\)](#).

To reduce risk of *No Tests* ensure correct tube for the test request and fill to minimum volume level specific to test requirements. Some test will accommodate under fill but check first on Pathology Queensland to avoid re-collection. ([Pathology Queensland: Test List](#))

Blood specimens must be drawn in a specific order to avoid cross contamination of additives. The recommended order of draw is:

1. blood cultures (aerobic and anaerobic bottles),
2. sodium citrate
3. serum
4. lithium heparin
5. EDTA
6. Fluoride Oxalate

#### 4. Blood Cultures

Blood culture sets comprise of two bottles collected at the same time - one Aerobic and one Anaerobic Fan™ bottle. Fan™ bottles contain an absorbent material which neutralises some antibiotics but ideally blood cultures should be collected before antibiotics are administered.

Collection of blood cultures from peripheral veins prior to antibiotics gives the greatest sensitivity and positive predictive value. Avoid collection through venous catheters due to the low positive predictive value and specificity.

Ensure proper [Skin Preparation](#) for drawing blood cultures. Blood culture bottle tops are not sterile, so prior to filling clean each culture bottle with 70% alcohol swab. To prevent re-contamination the alcohol swab should remain resting on the bottle top (rubber membrane) until ready for filling.

A safety butterfly with blood transfer adaptor (e.g. vacutainer™) is the preferred equipment of choice for culture as it allows for direct collection of blood into the blood culture bottles which is associated with decreased risk of contamination.

To give greatest sensitivity and positive predictive value **collect:**

- minimum of 10mLs per bottle (e.g. anaerobic and aerobic) is optimum for sensitivity (in adults)
- if venous access is difficult and the collect is less than 10mL then the draw volume must be written on the culture bottle and form. Do not collect less than 5mL
- two (2) separate sets of peripheral bloods (approximately 90% sensitivity)
- prior to commencement of antibiotics
- first draw of blood (do not discard) and fill the aerobic (green top) culture bottle first as the equipment is primed with air

Three (3) sets of collects will increase sensitivity to approximately 98%. Bacterial endocarditis is best investigated by collection of three sets prior to commencement of antibiotics. Do not collect more than 3 sets.

If a central venous access device (CVAD) is the suspected source of infection then culture bloods may be drawn successively from each catheter lumen collectively with peripheral bloods however for reliability priority should be given to peripheral bloods (if access is viable).

\* Consider added risk for febrile neutropenia as drawing bloods from a CVAD increases risk of infection and septic shower.

A separate form must accompany each set of blood cultures.

Write on the pathology request form, where blood(s) were collected from e.g. peripheral or CVAD

If the CVAD is a multiple lumen device then provide specifics on each individual pathology form to identify which lumen the blood was collected from e.g. proximal, medial, distal or alternatively write the catheter hub colour e.g. red lumen.

The forms and culture bottles must have time of collection.

Patient ID label should be placed so as not to obscure the barcode area.

Carefully peel the removable barcode label from the bottle(s) and place horizontally on the request form. If the label is torn or cannot be removed because it is completely covered by the Patient ID label the barcode number must be clearly written on the request form.

**Never** draw cultures through peripheral cannulae; this includes at time of insertion or later as the risk of contamination is very high.

Blood Cultures **must** be drawn from a peripheral vein and ideally a direct fill into the culture bottles.

Inspect the insertion site at the start of every shift and before, during and following IV administration and additionally at a frequency determined by individual patient assessment and by the nature of fluids being infused (notably, known irritants or vesicants).

Observe PIVC position and inspect for signs of infiltration and/or phlebitis and ask the patient, where appropriate about symptoms of tenderness, burning or pain, explaining that such symptoms is to be reported.

Hypertonic solutions or IV medications with a pH of less than five (5) or greater than nine (9) (e.g. vesicant) must be infused through a central venous access device (CVAD). During the administration of **irritant** IV medications the PIVC site is to be monitored at a minimum hourly.

Assess the security and adherence of the semi-permeable transparent dressing.

All PIVCs must have an extension (with clamp) attached at time of insertion with exception of areas where patients are known to be short stay (day) procedures. Assess any add-on extra's and if they are not required, remove – they are an additional infection source risk.

If the dressing is soiled, wet or not fully adhered, remove with care and redress using an [Aseptic Non Touch Technique](#). Clean with a swabstick impregnated with 2% Chlorhexidine Gluconate in 70% isopropyl alcohol; apply a new dressing with a label date, taking care not to obscure the insertion site.

If there are any signs of infiltration, phlebitis or infection, blockage or leaking, **turn off** the infusion(s) and do **not** attempt administration of any medication; see following section (Flushing).

## 6. Flushing PIVC's

If a PIVC has no continuous infusion running and has had no medications administered for 8 hours, check the patency by flushing with 5-10mL 0.9% Sodium Chloride using a pulsatile positive pressure technique.

Flush before and after the administration of every prescribed IV medication to ensure PIVC patency and to prevent the mixing of incompatible solutions.

Prior to attaching the syringe to the needleless connector, clean thoroughly and vigorously from tip and always with a sterile single-use 70% alcohol-impregnated swab for 5 seconds and allow to air dry.

No written order is required for a routine flush; if the patient is on a strict fluid balance regimen, enter flushes onto their Fluid Balance Chart.

## 7. Managing an Occluded PIVC

Occlusion is determined by inability to flush the PIVC. Occlusion may be mechanical in origin or caused by site complications such as phlebitis, thrombophlebitis, haematoma, induration or dislodgement. Perform a thorough assessment to determine possible cause.

Attempt resolution of mechanical cause:

- Ensure clamp/ tap is in *open* or *on* position
- Check infusion lines and extension for kinks
- Reposition limb if in site of flexion (cannula may be kinked)
- Ensure adequate securement
- Establish cannula dwell within the vein (resite if dislodged)

After repositioning of the limb gently massage the proximal vein then attempt a gentle pressure flush with sterile 0.9% sodium chloride using only a luer-lok ® syringe. Discontinue if resistance is felt; any further attempts may result in vein damage, pain and clot dislodgement. If complication is noted then remove cannula, determine ongoing clinical need and explain to the patient a new cannula is necessary.

## 8. Resiting a PIVC

The PIVC is to be resited at 72 hrs routinely or whenever there is clinical indication to do so, unless there are extenuating circumstances. Such circumstances may include:

- The PIVC is likely to be needed for another 24 hours or less
- Replacement of PIVC is likely to be difficult and judged to be a greater risk than retention
- Patient refuses to have routine replacement of cannula.

If the PIVC is to be retained beyond 72 hours, there must be no symptoms or signs of inflammation or other site complication and a written directive and rationale must be clearly documented daily in the patient's healthcare record.

PIVCs inserted without full aseptic procedure (e.g. emergency situation) or whereby adherence to asepsis could not be determined (e.g. other hospital, ambulance, or no documentation of insertion) are to be removed as soon as practical, certainly within 24 hours and replaced if ongoing peripheral intravenous access is required.

In the event of PIVC failure, remove it immediately to reduce risk of phlebitis, thrombophlebitis, infiltration, infection and discomfort.

Prompt removal of PIVC on cessation of intravenous therapies or pending discharge is required (discuss with medical officer first). Early recognition and management of a non-patent PIVC will reduce the:

- risk of complications, catheter-related bloodstream infection and associated morbidity
- delay in the administration of prescribed IV fluids and / or medications

## 9. PIVC Removal

- Check the patient's identification, explain the procedure to the patient and apply PPE (e.g. gloves, disposable apron and goggles)
- Have ready sterile gauze or swabs, tape and a clinical waste bag
- Carefully remove dressing. Place a cotton wool ball or small swab over the insertion site and with the other hand, withdraw the PIVC and place it directly into clinical waste bag
- Apply gentle pressure on the insertion site for 60 seconds or until bleeding stops
- Use non-allergic tape to secure a clean cotton wool ball to the insertion site
- Advise the patient to observe for and report any further bleeding or swelling
- [Document](#) PIVC removal in patient healthcare records.

## 10. IV Therapies

Infusions **MUST NOT** be stopped, disconnected or removed from pumps specifically for the purpose of patient transfer, unless clinically indicated. Clinical decisions to disconnect are to be documented in the patient's healthcare record.

Continuous infusions are recommended where possible; intermittent disconnection presents an increased contamination risk. If the patient does require disconnection of the line then prior to connection of a new IV line or syringe, clean the needleless connector thoroughly and vigorously from tip and away with a sterile single-use 70% alcohol-impregnated swab for 5 seconds and allow to air dry.

Use a burette with a one (1) litre bag of IV fluid for the administration of intermittent IV medications;

- Two or more intermittent IV medication infusions per day are to be administered via burette with a continuous infusion (e.g. antibiotic(s) given twice daily over 30min)
- Four or more IV push/bolus medications per day are to be administered via burette with a continuous infusion (e.g. Four times a day antibiotic that can be given over 3-5min)

Do **not** use 100mL bags of 0.9% Sodium Chloride unless specifically indicated. This reduces the requirement to disconnect lines, maintains PIVC integrity and longevity, reduces infection and considerably reduces waste and the cost of consumables.

When using a burette to administer an intravenous additive, ensure the upper clamp between the flask / bag and burette is closed.

For intermittent IV medications that are unable to be administered through a burette which:

- are premixed by the manufacturer
- require a dilution volume greater than the burette e.g. 150mL

then the recommended set-up to prevent repeat disconnection / reconnection is to use:

1. [Double Adaptor](#) or [Triple Adaptor](#) for single or multiple medications
2. If the IV medication is not compatible with the maintenance IV fluid the set up should be connected to
  - a. The Y-site of the incompatible maintenance fluid using the [Y-Site Configuration](#)

- Label burette to clearly identify medication additive is being administered
- Flush the burette and line with 20mL from the 1litre Y-site (compatible) IV fluid bag before and after administration of the medication to avoid mixing with the incompatible solution
- When administering intravenous medication clamp the incompatible maintenance fluid line
- No need to flush spike adaptor following medication administration
- Leave bag/bottle hanging to maintain a closed circuit until next dose is due
- Do not remove line and discard - this poses an infection risk and significantly increases cost.

Intermittent intravenous medications are to be administered in accordance with the recommendations within the *Australian Injectable Drugs Handbook* and/or the [RBWH Reference Guide for Peripheral Intravenous Administration of commonly used drugs in general ward areas](#). **Do not use the IV Fluid order rate.**

A prescription on the *Intravenous and Subcutaneous Fluid Order Form* is required for one (1) litre bags of 0.9% Sodium Chloride used for administering intravenous intermittent medications. A specific rate to keep the vein open (TKVO) is required in the order ie.10mL/hour as a minimum rate.

Always perform a flush before commencing an IV infusion (an IV infusion itself is *not* sufficient to check patency).

- Replace crystalloid, non-lipid parenteral solutions and drug infusions every 24 hours. Change crystalloid administration sets  $\leq$  72 hourly, unless PIVC changed, in which case the administration set is to be changed also.
- Replace lipid-containing solutions and administration sets within 24 hours of hanging the solution
- Replace lipid emulsions alone within 12 hours of hanging the emulsion
- Change administration sets after each chemotherapy administration
- Infuse blood products within 4 hours unless otherwise specified and remove administration sets immediately after completion. Refer to MNHHS policy Blood and Blood Products <http://gheps.health.qld.gov.au/metronorth/policy/procedures/polmnhsblood.pdf> for further detail.
- Change syringe-driver extension tubing with every syringe change
- For specific drugs, follow manufacturer recommendations /requirements (e.g. Propofol requires a line flush after 6 hours and an administration set change after 12 hours).

See Queensland Health [Peripheral Intravenous Catheter \(PIVC\) Guideline](#).

When a PIVC has been inserted or replaced, use a new administration giving set and IV fluid bag, with the following exception:

- For blood already in progress, cap giving set aseptically and reconnect as soon as the new PIVC is inserted *if* the infusion can be completed within 4 hours and no contamination of the line has occurred.

Use volumetric pumps for continuous infusions containing additives. (An exception to this is vinca-alkaloid (chemotherapy agent) which is administered by gravity-fed IV.)

If pump availability is limited then priority should be given to high risk medications (potassium, insulin, narcotics, heparin, aminoglycosides). The availability of a smart pump should not prevent the timely administration of prescribed medication. [03703/Proc: Medication Safety Libraries for Infusion Pumps](#) page 2.

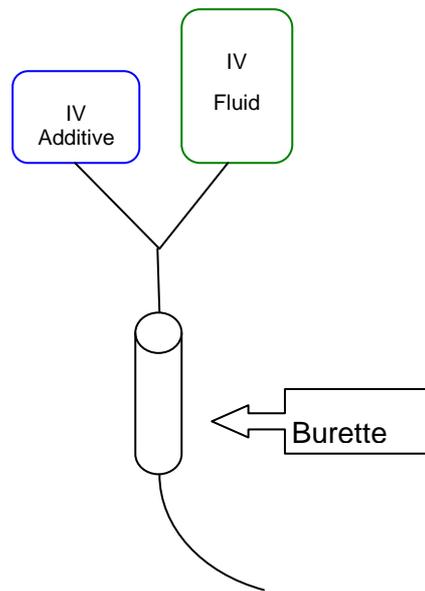
*Being time pressured or multi-tasking when dealing with infusion devices increases the risk of administration error; pause and recheck device settings and IV lines.*

Two authorised health care professionals, one of which must be a registered nurse/midwife or medical officer, must check all prescribed fluid/medication prior to intravenous administration. The second check may be performed by any other health care professional who is authorised according to their scope of practice and related Regulations; see [02002/Proc: Medications Management](#) and [02010/Proc: Medication Administration by Enrolled Nurses](#).

Check the PIVC site and flow rate of intravenous therapy every hour.

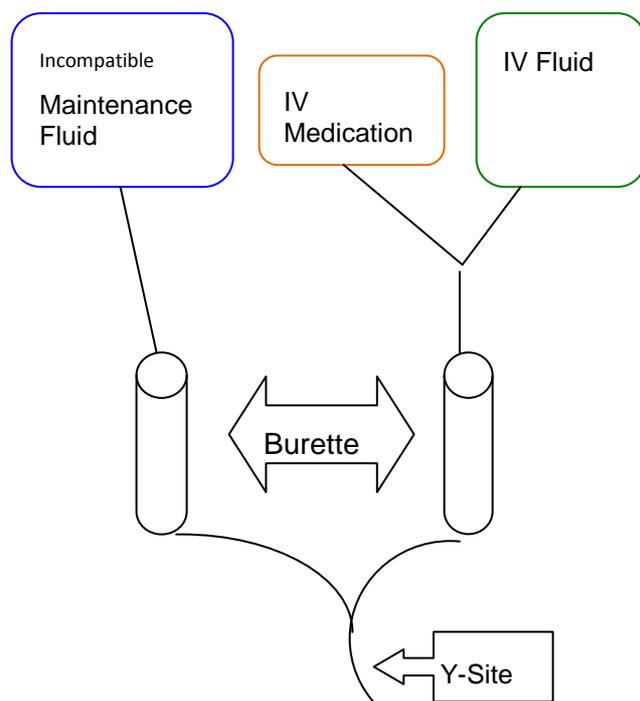
**Labelling for all infusion lines *must* comply with the [National Standard for Use-Applied Labelling of Injectable Medicines, Fluids and Lines](#) (Australian Commission on Safety and Quality in Health Care, 2015).**

**Figure 1- Suggested Double Adaptor Configuration for single medication**



**Figure 2 – Suggested Triple configuration (without Y-site) for multiple medication/ fluid administration.**



**Figure 3- Suggested configuration for incompatible medication/ maintenance fluid with Y-Site**

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## Related documents

05451/Proc: Intravenous Therapy Management, Neonate

21610/Proc: Blood Culture Collection, Neonate.

82610/Proc: Decontamination – Patient Care Equipment

80502/Proc: Patient Identification and Procedure Matching

82606/Proc: Environmental Cleaning and Disinfection.

81000/Proc: Aseptic Non Touch Technique (ANTT)

81004/Proc: Hand Hygiene

74110/Proc: Documentation in the Patient Record

76005/Proc Patient Consent, Public and Private Patients

Australian Government National Health and Medical Research Council [Basics of Infection Prevention and Control](#)

Australian Government National Health and Medical Research Council [Aseptic, non-touch technique](#) (ANTT) accessed 18/11/2014

MNHHS Blood Management Policy

[MNHHS Peripheral Intravenous Cannulation and Venepuncture Resource Package 4014/MN RP](#)

## Relevant standards

ACSQHC – National Standard 3.1.1

ACSQHC – National Standard 3.8.1

ACSQHC – National Standard 3.9.1

ACSQHC – National Standard 3.10.1

## Document history

<b>Custodian</b>	Clinical Nurse Consultant, Vascular Access Surveillance and Education (VASE), Internal Medicine Services
<b>Risk rating</b>	High (15)
<b>Compliance evaluation and audit</b>	<ul style="list-style-type: none"> <li>Reporting and review of any incidents associated with PIVC management via PRIME, with escalation as indicated to the relevant governance Committee</li> <li>Annual National Medication Inpatient Chart Audit</li> <li>Annual Safety and Quality Bedside Audit</li> <li>Monthly Service Line clinical audits - review and report results for implementation of actions indicated/agreed</li> <li>Evaluation by Infection Management &amp; Prevention Service of all blood stream infections, with reporting to Infection Control Committee of identified source/prevalence</li> <li>Periodic/annual audit of peripheral cannula sites/management under the auspices of the VASE Unit</li> </ul>
<b>Replaces document/s</b>	<ol style="list-style-type: none"> <li>05450/Proc: Peripheral Intravenous Access and Infusion – Management of (Adult)</li> <li>21609/Proc: Blood Cultures Collection - Adult</li> </ol>
<b>Previous issue date/s</b>	<ol style="list-style-type: none"> <li>November 2014</li> <li>July 2012</li> </ol>
<b>Key stakeholders</b>	<p>Hospital Acquired Staphylococcus Aureus Bacteraemia (HASAB) Committee</p> <p>Vascular Access Surveillance Committee (VASC)</p> <p>Infectious Diseases, Internal Medicine Services</p> <p>Executive Director and Deputy Executive Directors Medical Services</p> <p>Executive Directors of Service Lines</p> <p>Executive Director Nursing and Midwifery Services</p> <p>Nursing Directors of Service Lines</p> <p>Allied Health Services</p> <p>Safety and Quality Officers of Service Lines</p> <p>Director of Anaesthetics, Surgical and Perioperative Services</p> <p>Medical Imaging</p> <p>Workforce Development and Education Unit, Centre for Clinical Nursing</p> <p>Safety and Quality Unit</p>
<b>Marketing strategy</b>	A marketing email message will be forwarded to Heads of Service Lines/Streams

<b>Key words</b>	05450/proc, 05450, Peripheral Intravenous Cannula, Peripheral Intravenous,, Infusion, Intravenous Infusion, IV, puncture, cannula, flashback, syringing, blocked, insertion, removal, Peripheral Intravenous Cannulation, PIVC, IV cannulation, RBWH Peripheral Intravenous Cannulation Resource Package, bundle, PIVC bundle.
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## Authorisation

Signature..... Date.....

Executive Director Internal Medicine Services

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## AUTHORISATION

Signature..... Date.....

Executive Director Medical Services

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The signed version is retained by Safety and Quality Unit RBWH, Metro North Hospital and Health Service.