

Peripheral Intravenous Cannulation (PIVC)

Purpose

To provide guidance to staff on appropriate site selection, safe insertion, management and care of PIVC.

Scope

The peripheral IV cannulation course is open to all Registered Medical Practitioners, Trainee Interns, Registered Nurse /Enrolled Nurse, Midwives, Anaesthetic Technicians, MITs, and IV Technicians.

Certification Requirements for RN, EN, RM, IV and Anaesthetic Technicians

- All Registered Nurses, Enrolled Nurses, Midwives, IV and Anaesthetic Technicians, and MITs must be recommended by their CNM/Manager to become certified in peripheral cannulation.
- Nurses/Midwives/ENs, Anaesthetic technicians, IV technicians* must successfully complete the requirement for the following courses:
 - Venepuncture certification prior to requesting endorsement in Cannulation. (Note: MITs are exempt from this)
 - Extravasation of non-cytotoxic HealthLearn course **RGMS012** (this course does not apply to IV technicians)
<https://www.healthlearn.ac.nz/course/view.php?id=1085>
- Endorsement for a first time cannulator requires successful completion of the HealthLearn course **CAMS002**.
<https://www.healthlearn.ac.nz/course/view.php?id=301>
- Pre-course activities involve SLP, theory test, attendance at an IV Cannulation workshop and practical cannulation skills assessment within their clinical area. This must be completed within eight weeks from attending the workshop.
- In-house cannulation training may be via an approved workshop pathway (according to location). Staff and must comply with the policy and protocol for insertion and management. This includes completing the **CAMS002** HealthLearn course and **RGMS012**
- Peripheral IV cannulation is a permanent endorsement. It is the individual's responsibility to maintain their cannulation clinical practice skills.
- Practical skills assessment will be measured by regular audits.
- **NOTE:** Staff who have previous cannulation experience from another healthcare facility may qualify for the recognition of prior learning (RPL) pathway on supplying confirmation of evidence from their previous employer. This is in HealthLearn under **Cannulation Endorsement CAMS002**.

Patient Engagement

All healthcare professionals who insert PIVC are responsible for providing patient education on their PIVC. PIVC Patient Information leaflets are available in [English](#) and [Te Reo](#) for this purpose. Patient engagement leads to improved outcomes for PIVC.

Vein Assessment

Prior to cannulation, a comprehensive vein assessment should be undertaken considering planned therapy.

Table 1 - Peripheral Vein Assessment Tool

Grade	Vein quality	Definition of vein quality	Insertion management*
1	Excellent	4-5 palpable/visible veins suitable to cannulate	Cannula may be inserted by trained/ authorised healthcare practitioner
2	Good	2-3 palpable/visible veins suitable to cannulate	Cannula may be inserted by trained/ authorised healthcare practitioner
3	Fair	1-2 palpable/visible veins suitable to cannulate (veins may be small, scarred or difficult to find and require heat packs to aid vasodilation)	Cannula may be inserted by trained/ authorised healthcare practitioner but may require Infrared Viewer or ultrasound
4	Poor	Veins not palpated/visible (requires ultrasound assistance or Infrared Viewer)	Cannula may be inserted by an experienced practitioner [†] in cannulation. Use Infrared Viewer, ultrasound, transillumination or other aids
5	None identifiable	No visible (naked eye or aids) or palpable veins	Peripheral cannulation should not be performed *

***Patient to be assessed by vascular access expert who will recommend the most appropriate IV device**

Note: Adapted from the Vessel Health and Preservation Framework (Hallam et. al., 2016)

Difficult IV Access (DIVA) patients

Recent literature suggests that approximately a third of adult patients and half of children in the hospital meet DIVA criteria (Whalen et al., 2017; Witting, 2015). DIVA is characterised by non-visible and non-palpable veins, with or without tourniquet, where a highly experienced operator requires the aid of vein finding technology to successfully insert a device. (Sebbane et al., 2013).

Local guidelines limit the number of PIVC insertion attempts to two to minimise patient distress and preserve vessel health. The [DIVA pathway](#) allows appropriate escalation of DIVA patients to the VIVA team (Christchurch Hospital Campus) or vascular access experts on other sites.

PIVC Insertion

Staff certified in peripheral intravenous cannulation are to follow guidance outlined in this section.

- Select an appropriate vein in the 'Green Zone' as shown in Figure 1. Avoiding points of flexion to minimise complications and maximise dwell time.
- PIVC placement in the antecubital fossa (ACF) is used in specific circumstances e.g. for light sedation, short-term cannulation for diagnostic imaging purposes, acute resuscitation and/or trauma management.
- PIVC placed in the ACF should be removed in a timely fashion after procedure or replaced in the green zone i.e. stable forearm within 24 hours once the patient is stabilised due to high complication risk associated with this location.
- Select a smaller (22g or 20g) peripheral IV cannula where possible to avoid vein trauma (excluding emergencies)
- To maintain asepsis during insertion, use the approved 3M cannulation insertion kit
- Aseptic non-touch technique must be used during skin preparation, insertion of the peripheral IV cannula and application of the dressing.
- The selected insertion site must be thoroughly cleaned in either a grid or circular technique using 2% chlorhexidine & 70% alcohol.
- An approved peripheral IV cannula dressing must be used to dress and secure a cannula (appropriate equipment is included in the 3M cannulation kit).
- After two unsuccessful cannulation attempts, seek assistance and refer to the VIVA team as per the Difficult Intravenous Access (DIVA) Pathway

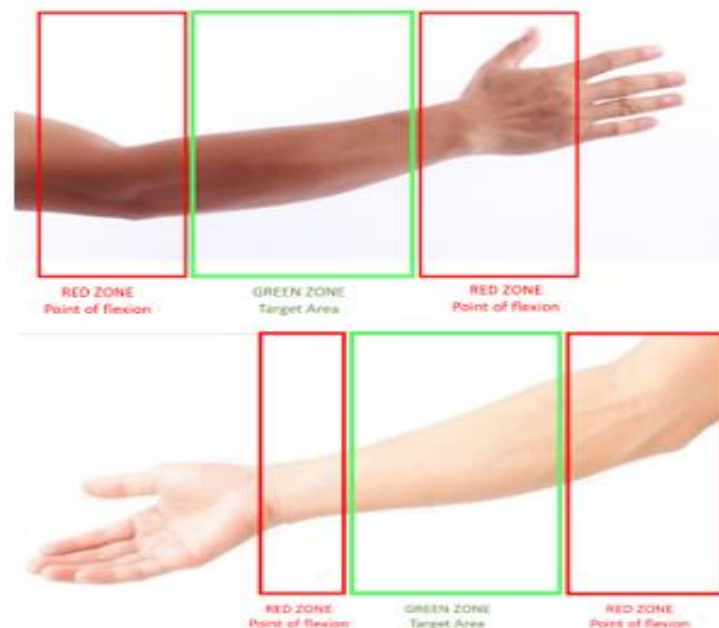


Figure 1 Forearm Optimal Zone Insertion

- Cover the site with an appropriately sized Tubifast (tubular bandage) for additional security and protection. **Do not use Tubigrip or tight bandages** that can restrict blood flow

HAND HYGIENE	PERSONAL PROTECTION	ANTT
<ul style="list-style-type: none"> • Do not touch IV cannula or equipment unless you are compliant with the IPC Hand & Nail Hygiene Policy • Use the 5 moments and ANTT 	<ul style="list-style-type: none"> • Gloves are required when performing procedure • The choice of sterile or non-sterile gloves depends on level of confidence and expertise 	<ul style="list-style-type: none"> • During any subsequent interaction with IV cannula • Protected key parts of equipment from touch contamination
VEIN SELECTION	SKIN PREPARATION	INSERTION
<ul style="list-style-type: none"> • Select a suitable forearm vein in the GREEN ZONE • The dorsal basilic vein is also a good option 	<ul style="list-style-type: none"> • Clean skin with 2% Chlorhexidine & 70% alcohol for 30 seconds • Circular or Grid method are appropriate • Allow skin to dry before commencing the insertion procedure 	<ul style="list-style-type: none"> • Protect key parts of equipment at all times • Observe for blood flash back during insertion to confirm vein access
DRESSING	FLUSHING	DOCUMENTATION
<ul style="list-style-type: none"> • Ensure dressing is applied correctly and IV cannula is stable • Secure extension set • Cover IV cannula dressing with either Tubifast or Netlast to protect site 	<ul style="list-style-type: none"> • Flush IV cannula using 0.9% sodium chloride. (Posiflush) • Use a gentle pulsatile technique to avoid flipping of IV Cannula in vein 	<ul style="list-style-type: none"> • Document Peripheral IV cannula insertion found under Clinical Notes CORTEX • If not available use patient track or approved organisational methods

TABLE 2 - ESSENTIAL ELEMENTS OF PIVC INSERTION



Extravasation Staging Tool 2021.p



Management Extravasation non-c

- All peripheral IV cannula must have an extension set attached at insertion to maximise IV cannula dwell time and reduce vein trauma due to movement when accessing it.
 - Extension set exceptions: Due to short length of stay some areas may not always use an extension set e.g. Day Wards, Outpatient Departments, Birthing Suite, and ED (use as clinically indicated)
- Peripheral IV cannula are replaced as clinically indicated using the VIP score and site assessment or if no longer required.
- Record insertion, management and removal in CORTEX (or Patienttrack or other approved organisational documentation methods) NB: a green ID label not required.

TABLE 3 - ESSENTIAL ELEMENTS OF ONGOING PIVC MANAGEMENT

HAND HYGIENE	ANTT	DRESSING
<ul style="list-style-type: none"> Do not touch IV cannula or equipment unless you are compliant with the IPC Hand & Nail Hygiene Policy Use the 5 moments and ANTT 	<ul style="list-style-type: none"> During any subsequent interaction with IV cannula Protected key parts of equipment from touch contamination 	<ul style="list-style-type: none"> Ensure dressing is intact at all times Replace if lifting or soiled Consider the use of Cavilon skin protectant if skin integrity is compromised to assist with dressing adhesion and removal of dressing
VIP SCORE and INFILTRATION	WHEN ACCESSING IV CANNULA	IV CANNULA REMOVAL
<ul style="list-style-type: none"> Visually check IV cannula and vein site using the VIP score as a measure Assess for swelling or infiltration of IV solutions Know the properties of the medication 	<ul style="list-style-type: none"> Wear gloves 'Scrub the hub' vigorously Use 2% Chlorhexidine & 70% alcohol Allow to dry before attaching syringe/IV tubing 	<ul style="list-style-type: none"> Remove if no longer require If IV cannula site is red /painful VIP2 Remove community placed PIVC within 24 hours Remove PIVC in ACF within 24 hours Only replace IV cannula if IV therapy is required Document in CORTEX/clinical notes
VESICANT /IRRITANT MEDICATION	MANAGEMENT OF EXTRAVASTION	DOCUMENTATION
<ul style="list-style-type: none"> When administering irritant or vesicant drugs, visually assess IV Cannula Hourly <u>Use Extravasation staging tool as a guide</u> 	<ul style="list-style-type: none"> If an extravasation occurs, refer to the <u>Management of Extravasation Pathway</u> Initiate appropriate treatment Know where to locate your extravasation kit 	<ul style="list-style-type: none"> Document in CORTEX IV Cannula management If not available use patient track or clinical notes

Ongoing PIVC Management

- PIVC status must be checked at handover by the nurse handing over and the nurse taking on accountability for care.
- Ideally, the nurses use CORTEX or other available resources to monitor and document PIVC care during their shift:
 - VIP score and site assessment** must be carried out four to eight-hourly where continuous IV infusions are administered
 - For **irritant IV infusion** or when **known vesicant medications** are infused **hourly assessments** must be performed
 - Initiate appropriate response if the VIP score is 2 or above supporting immediate removal and /or replacement if clinically indicated.

Taking blood samples from PIVC

- It is not recommended to use PIVC for blood sampling. If indicated, blood sample/s may only be taken at time of PIVC insertion.
- Blood cultures must not be obtained via a PIVC to avoid sample contamination during collection

- A syringe must never be connected directly to the IV cannula hub to take blood samples. This increases the potential for infection.
- Use a closed system by connecting an access device or extension set to the PIVC hub.
- A blue tip vacutainer device is used for this purpose. This is connected to the access device and the blood tube/s inserted in correct order of draw.
- If blood flow is slow or aspiration is resistant, use the 5mL syringe method. Smaller syringes have less negative pressure on withdrawal. The syringe is then attached to the pink tip transfer device to prevent a needle stick injury occurring during transfer from syringe to blood tube.

Measurement or evaluation

- Point Prevalence audits
- Safety1st events
- Documentation audits of clinical records

Supporting material

Controlled Documents

- PIVC Patient Information Leaflet - English - Ref 2409712
- PIVC Patient Information Leaflet - Te Reo Māori - Ref 2410032

Supporting resources

- [Waitaha Canterbury Fluid and Medication Management](#)
- [Peripheral IV Cannula Resource Book](#)
- [Difficult Intravenous Access – DIVA Pathway](#)

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