VELINDRE NHS TRUST

Guidelines for the insertion and management of a peripheral venous cannula.

This information is issued by the Medicines Management Committee on the understanding that it is the best available from the resources at our disposal at the time of preparation.

These guidelines are intended to support clinical judgment. The clinician must use his discretion when following them.

Written by:	Meinir Hughes
Reviewed by:	Rachel Hill ANP; Hayley Jeffries Infection Control Nurse; Hannah Russon Clinical Nurse Educator.
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Definition

Peripheral Venous Cannulation (PVC) is defined as “the process of inserting a hollow tube made of plastic into a peripheral vein to enable the administration of drugs or fluids” (Doherty 1999)

Statement of Intent

Velindre NHS Trust is committed to providing high standards of care for any patient who requires PVC. We endeavor to provide good quality training to any practitioner which in turn will provide an efficient and safe service for our patients.

We will give full support to help any individual to achieve a high level of competency.

Purpose

The following guideline aims to:

- Provide a guide for practitioners to insert and manage a PVC safely and efficiently·
- Reduce the risks and complications associated with PVC.
- Ensure that every PVC is undertaken in a safe and consistent manner.

Scope

This guideline will apply to practitioners who perform PVC according to their own scope of practice within their professional organisation. Healthcare Support Workers can perform PVC within the organisation following the appropriate training and assessment programme available within the Cancer Centre but will be under the guidance and supervision of the registered practitioner who is responsible for delegating the task.

Accountability

Each practitioner has a responsibility for their own professional practice and to their own professional body and will be advised to act in such a manner as to:

- Promote and safeguard the interests and wellbeing of the patient
- Be responsible for his/her own practice
- Ensure no action or omission on his/her part, or within his/her sphere of responsibility, is detrimental to the interests, condition or safety of patients and clients.

- Maintain and improve his/her professional knowledge and competence
- Acknowledge any limitations in practice and decline any duties or responsibilities unless able to perform them in a safe and skilled manner
- Assist other colleagues in the context of his/her own knowledge and experience
- Ensure that their own practice is up to date according to recent guidelines

All practitioners must use this guideline in conjunction with all relevant Trust Policies and guidelines relating to PVC including the following:-

- Health, safety and welfare policy
- Policy for the management of occupational exposure to blood and high risk body fluids
- Guidelines for the prevention and management of extravasation
- Policy for the Standard Infection Control and Transmission Based Precautions
- Sharps safety policy
- Sharps Injury/Needlestick Policy
- Epic3 guidelines: National Evidence-based guidelines for preventing healthcare associated infections in NHS hospitals in England.

Health Care Support Workers (HCSW)

The code of conduct for healthcare support workers in Wales and the Code and Practice for NHS Employers (2011) outline the responsibilities for HCSWs to achieve a set standard which they are expected to meet and to fulfil the requirements of their role. Despite this, registered practitioners have the responsibility to delegate duties to HCSW therefore will be ultimately responsible for their practice (NMC 2016). The 'All Wales Guidance for Health Boards/Trusts in Respect of Medicines and Health Care Support Workers' (2015) assert that all HB's/Trusts will accept responsibility for this delegation. In relation to peripheral venous cannulation inclusive of a flush with Normal Saline, Velindre Cancer Centre (VCC) as a Trust are able to support this practice being undertaken by HCSWs as VCC comply with the description of a specialist area. Intravenous saline flush can only be given using a prefilled syringe. The guidelines recommend that any HCSW who performs this task should complete an identified specific accredited education unit CQFW Level 3 as a minimum.

Training and assessment

The careful planning and implementation of a PVC training programme can improve patient care. It is well recognised that the skill of the practitioner is relevant to the anxiety of the patients during PVC (Weinstein 1993). With continuing development of skills and regular practice, it is imperative that this competency based skill is taught in the clinical environment with a sound educational background.

Patients requiring PVC have the right of access to a professional who has been trained to a high standard.

- All practitioners undertaking PVC **for the first time** must complete the PVC workbook and workshop prior to performing the skill within the clinical environment. This will aim to address the theoretical aspects of PVC.
- A period of clinical supervision will take place where support and guidance will be provided to achieve mastery of the skill
- A competency pathway is provided (appendix 1)
- A formal theoretical and practical assessment will take place in order to deem the individual competent of performing PVC independently. This will be performed by a recognised assessor in Velindre Cancer Centre.
- For staff who are new to VCC and have experience of PVC in another organisaton, they do not necessarily have to attend the workshop but will have to complete the workbook and practice under supervision until deemed ready for a formal assessment. This will be performed by a recognised assessor. Where practice is not deemed to be at an acceptable level despite supervision, the practitioner will need to attend the workshop.
- **Re-assessment of registered VCC staff should be performed every 3 years.**
- **Competency assessment of HCSW will be required on an annual basis. Yearly assessment have to be preceded by the completion of the PVC workbook.**
- All practitioners must be able to recognise PVC complications and be aware of how to avoid and treat.

1. Site selection

The site selection of PVC is an important consideration as the inappropriate location of a cannula can lead to phlebitis, extravasation and inadvertent removal (McCallum and Higgins 2012).

The assessment for selecting the most appropriate site should begin distally (away from the heart). If access is made below a recent unsuccessful placement or old cannula site, there is a risk of infiltration at the earlier site (Terry et. al 1995). PVC should where possible be avoided in areas of joint flexion such as the antecubital-fossa or the wrist due to the increase risk of phlebitis as a result of movement (RCN 2016). These locations may be used where infusions are short in duration; venous access is urgently required or access in another location is not possible. However chemotherapy vesicant agents must NOT be administered in the antecubital fossa or the inner aspect of the wrist or the lower limbs (Guidelindes for the prevention and management of extravasation of cytotoxic drugs, VCC).

<u>Areas to Avoid:</u>

The table below outlines the areas to avoid and gives the rationale as to why it is not recommended to choose that location for PVC.

Area to avoid where possib	**Rationale**
Veins in close proximity to art	The practitioner may inadvertently puncture an artery.
Antecubital fossa (inner elbov	This is an area of joint flexion and therefore is prone to continuous movement. This movement can result in damage to the endothelium as a result of friction from the cannula (Higgins and Parry 2
Lower limbs	The distance between the lower limbs and the heart is significant in that the valves of the veins are placed under more strain ar become weak. The inability of the valve to function normally will cau pooling of blood within the vein. The drug may therefore also pool vein and cause damage to the endothelial layer and increase th of

	infection (RCN 2016)
Fractured arms	Veins may have sustained damage
Arms post axillary node clear	See note below
Limbs with areas of broken sk	Risk of infection due to open wound
Inner aspect of the wrist	This is an area of joint flexion and therefore is prone to continuous movement. This movement result in damage to the endothelium as a result of friction from the cannula. Additionally, the endoth layer of the vein is very fragile in this location and is at risk of spontaneous venous rupture.

Breast cancer patients:

Breast cancer surgery can involve two methods of node removal; an Axillary Node Clearance (ANC) or a sentinel node biopsy. Patients post ANC have an increased risk of developing lymphoedema and despite the lack of credible empirical evidence, the best practice guidelines currently is to avoid using the arm post ANC for PVC in a routine event. In the event that treatment is urgent or necessary to avoid morbidity or death this can be considered under the guidance of the Consultant teams and senior nurses. Routine peripheral cannulation of breast cancer patients must be performed in the non-ANC arm. In cases where patients have undergone bilateral ANC there are two options, both to be discussed in the outpatient clinic at consultation with the Specialist Breast Care Nurse or Consultant prior to starting intravenous therapy: a) Placement of a Tunneled Cuffed Catheter (Hickman) to be organised prior to therapy. b) Where the placement of a Tunnelled Cuffed Catheter is not appropriate or the patient's choice, a clear description of the conversation with the patient outlining the reasons for not placing the catheter and that the patient has received information concerning the risks of lymphedema needs to be documented in the electronic patient notes. In addition, a decision should be made and documented concerning the preference of which ANC side to place the peripheral cannula if there is a preference in relation to time since surgery or number of nodes removed.

Where patients have undergone sentinel node biopsy only, both arms can be used for PVC for intravenous therapy. The recommendation is that, where possible alternating arms from the onset is advisory in order to minimise the effects of phlebitis and thrombophlebitis.

2. Vein Selection

When assessing the condition and suitability of the vein itself, it is important to assess the veins in each arm thoroughly where possible. It is imperative to choose a healthy vein in order to prevent the exacerbation of an injured vein.

A good vein will be soft, bouncy and well supported by surrounding tissues. Avoid veins which are hard, bruised, thin or painful.

3. Device selection

The general rules of cannula selection are: smallest gauge cannula able to deliver the prescribed therapy in the largest vein (Macklin 2003). This allows greater haemodilution around the catheter and cause less discomfort for the patient. Identifying the flow rate of the cannula will indicate the volume of therapy which can be infused via the cannula. A 24 gauge cannula is not suitable for the infusion of blood products **or** to obtain a blood specimen. A ported cannula increases the risk of infection and must only be used where necessary i.e. in an emergency situation.

As a guide; 22g cannulas should be routinely placed in all in-patients as they are less likely to occlude or fall out, however, 24 gauge cannulas can be used in the in-patient setting where PVC is difficult due to poor venous access. Patients receiving out-patient therapy should routinely be cannulated with 24gauge cannulas. However, patients can be cannulated with 22gauge cannulas if, post assessment, the skin is difficult to penetrate; the vein is deep; there is previous history of severe reaction to a specific intravenous medication or the administration of viscous therapy – for example blood transfusion.

4. Infection Control

The majority of cannula related infections are caused by the micro- organisms present on practitioners hands, therefore good hand hygiene technique is essential (WHO and World Alliance for Patient Safety 2007; Maki 1986).

The use of well-fitting gloves is required as part of standard precautions. This will also reduce the risks associated with blood contamination and needle-stick injuries (Loveday et al 2014). The site must be cleansed for at least 30 seconds with a solution containing chlorhexidine 2% in alcohol 70% and left to dry (O'Grady et al 2011). The patient must be assessed for any chlorhexidine allergy prior to use. It is considered best practice NOT to palpate the cannulation site after cleansing (O'Grady 2011). If this is necessary, sterile gloves can be worn.

Aseptic Non Touch Technique (ANTT)

ANTT can be described as a standardised aseptic technique where key parts are identified and protected in order to prevent the introduction of infection. The key elements are; to perform effective hand hygiene, institute a non-touch technique and to wear only the appropriate personal protective equipment according to the type of procedure. It incorporates the essential infection control measures in preventing pathogenic micro-organisms on hands, surfaces or equipment from being introduced to susceptible sites during clinical practice (Rowley, 2001).

One key principal of ANTT is to protect the 'key parts' which are at risk of introducing micro-organisms. Examples include: cannulae tip, injectable ports, hubs of catheters and syringe tip (Rowley, 2001). The step by step PVC procedure will be described using ANTT principles (appendix 2).

All practitioners undertaking cannulation are advised by Occupational Health to be immunised against Hepatitis B and know their antibody level.

Single-use tourniquets are recommended for use in Velindre Cancer Centre as part of the PVC pack (Golder et al 2000). Gloves must not be used as tourniquets as they are not designed for the purpose.

Body hair may pose a problem when securing the cannula. Shaving is not recommended as it allows micro-organisms to colonise in micro-abrasions (Goodinson 1990a). If hair removal is required then disposable clippers must be used.

5. Sharps safety:

All peripheral venous cannulas used in VCC must be safety cannulas (HSE 2013). A sharps bin must be taken to the patient's side and the needle disposed of immediately upon removal from the cannula. The transportation of needles in a tray must not take place.

Please refer to the VCC policy for guidance on sharps safety and management of sharps injury: http://howis.wales.nhs.uk/sitesplus/972/opendoc/286456

6. Needle-free connectors

It is advised that all cannulas inserted for in-patient stay require an extension line with a needle-free connector integral to that extension line. This device will need priming prior to attaching it onto the cannula. Only day case patients receiving intravenous therapy with a high risk for anaphylaxis should have a needle-free connector attached to a cannula.

An obturator can be used for cannulas where therapy is delayed.

7. Performing Peripheral Venous Cannulation (PVC)

Measures must be taken to ensure the correct identity of the patient prior to PVC by asking the patient to relay their details to the practitioner without prompting. Where the patient is unable to relay details, the identification band must be checked. Ensure that the correct device is used for the prescribed therapy for that patient.

Verbal consent must be obtained where possible. An informed consent requires the practitioner to explain the reason for the PVC; the procedure and possible complications.

Procedure for Inserting the Cannula – a step by step guide using ANTT principles

1. Wash hands
2. Put on apron
3. Collect tray and clean with antiseptic wipes and allow to dry
4. Collect all the equipment required and place in the clean tray: cannulation pack; cannula; non-sterile gloves and needle free connector if required.
5. Place the tourniquet 6-8 inches above the desired site of cannulation to restrict venous return. Identify a suitable vein for use by palpation
6. Use measures to aid venous filling if required:
    i. Gentle stroking of the vein (avoid tapping or slapping as this may cause the vein to constrict)
    ii. Apply heat pads or immerse the arm in warm water
    iii. Ask the patient to open and close their fist
7. Release the tourniquet
8. Once the appropriate vein and site is chosen, clean the skin with the Sepp (2% chlorhexidine in alcohol 70% applicator) and allow to dry!
9. Re-apply the tourniquet
10. Put on non-sterile gloves. If you need to re-palpate the vein, you will need to use sterile gloves. This is a key site and contamination will take place if you palpate with non-sterile gloves after cleaning.
11. Apply skin traction to anchor the vein
12. Insert the cannula into the vein at an angle of 15-20 degrees and advance a few millimeters into the vein
13. Observe blood in the flash chamber, ensure that the chamber fills freely and fully.
14. Holding the flashback chamber to immobilise the needle, advance the whole length of the cannula gently into the vein. If there is resistance – STOP. Do not at any time re-introduce the needle into the catheter as this can cause fragmentation of the cannula and risk causing a catheter embolus!
15. Release the tourniquet

16. Apply digital pressure to occlude the vessel at the cannula tip
17. Remove the introducer needle and dispose of safely into a sharps bin
18. Flush the cannula with a bolus dose of normal saline 0.9% using a syringe that is no less than 5ml. A pre-filled syringe in the pack is ideal. Smaller syringes exert more pressure therefore could damage the vein (Conn 1993)
19. Secure the device with an appropriate cannula dressing

8. Stabilising the Cannula

Any dressing used for securing a peripheral cannula must be sterile, semi-permeable with good adhesive properties and provide good visibility of the site and surrounding area (RCN 2016; Campbell and Carrington 1999). These factors are essential to prevent cannula movement which could result in phlebitis, infiltration, extravasation, infection and premature dislodgement of the device.

Bandages must only be used when the patient is at high risk of inadvertent removal such as when there is a confused or disorientated state (Dougherty and Lister 2008). The cannula must be completely covered by the bandage and removed prior to each use.

9. Advanced Practice

Difficult cannulation can pose a problem for practitioners. In the event that standard technique has failed, peripheral venous cannulation using ultrasound guidance can be performed by specifically trained personnel. Only practitioners identified and trained by the Intravenous Access Nurse specialist or ANP/PICC placer can perform this procedure. Two techniques can be used with ultrasound guidance. Cannulation with a peripheral cannula and cannulation using a modified seldinger technique. This procedure is described in appendix 3.

10. Documentation

Documentation of the PVC procedure should include the following:

- Name of placer
- Cannula gauge size
- Anatomical location of the vein
- Date and time placed
- Any complications during the procedure
- Therapy required
- Presence of a flashback

- ANTT elements completed: handwashing, wearing of gloves and cleansing with chlorhexidine solution (DOH 2011)

Documentation and evaluation of cannula care including signs of phlebitis should be recorded at least each shift.

11. Accessing the cannula and maintaining patency

Prior to accessing the cannula for intravenous infusion a thorough assessment of patency and correct location within a vein must be undertaken (Jackson 1998). If there is any doubt concerning the correct position of the cannula, intravenous infusion must not take place and the cannula should be removed (Higginson and Parry 2011).

The needle-free connector; port or cannula opening must be decontaminated with chlorhexidine 2% in alcohol 70% prior to use and be allowed to dry i.e.clinell. It should be cleaned vigorously for 15 seconds (Loveday et al 2014). If a needle-free connector is removed, it must be discarded and another sterile connecter applied.

A cannula must be flushed to verify patency prior to use with Normal Saline 0.9% 5mls and again after use (ensure this is compatible with the intravenous medication given). If the cannula is not in regular use, flush 8 hourly (Fuller and Winn 1998). Alternatively, when a cannula is not in use for over 8hrs an obturator can be used in order to maintain patency.

Any patient who is discharged home with a cannula for community or outreach therapy should be made aware of the steps to take if the cannula is inadvertently dislodged. The cannula has to be completely secure and covered with gauze and a loose fitting bandage. No patient should be sent home to the community with a cannula that is exhibiting any signs of complications.

12. Cannula removal

Cannulas should be removed without delay if they are no longer required (STOP campaign 1000 lives 2012). At the first sign of inflammation, tissue infiltration, signs of infection, pain or cannula damage, the cannula should be removed! Routine replacement of PVC is not recommended. Removal should be based on clinical assessment of: symptoms of phlebitis; dislodgement; pain; signs of infection or no indication for PVC to remain in situ (Rickard and Ray-Barruel 2017). Removal of the cannula needs to be prompt on completion of the required therapy or when there are signs of complications (Marsh et al 2015).

When removing a cannula, ensure that hands are washed, put on non-sterile gloves, apply sterile gauze at the site and press gently to aid haemostasis for 1 full minute – when patients are at risk of bleeding i.e on medication such as warfarin or heparin, pressure should be applied for 2 minutes.

13. Taking a blood sample from a cannula.

It is not recommended that a blood sample be taken from a cannula routinely as it may lead to a haemolysed sample. A sample should NOT be taken from a yellow 24g cannula. Blood sampling from a 22g (or larger) cannula can take place at time of cannula placement and not when a cannula is in situ. Prior to taking the sample, a waste of aprox 1mls of blood must be taken and the procedure must be performed without delay using the vacutaner method.

14. Insertion complications

a. Haematoma

The main reason for the development of a haematoma during cannulation is that the needle has penetrated through the vein wall at a site other than the insertion site. However, a spontaneous haematoma can occur especially in the elderly due to the thinning of the endothelial wall of the vein.

Action

In this event, remove the tourniquet immediately and apply direct digital pressure onto the site for 2 minutes. This site should be avoided until all symptoms of the haematoma have subsided.

b. Nerve Damage

Nerve damage can occur as a result of inadvertent puncture of a nerve during the cannulation procedure. The symptoms of nerve damage are: tingling, shooting pain and numbness.

Action

If any of these symptoms should develop during cannulation, discontinue the procedure immediately and seek medical advice. Patients will need monitoring for any deterioration in the function of the limb.

c. Inadvertent Puncture of the Artery

If an artery is punctured, the cannula site may bleed profusely in a pulsitile action. If arterial puncture is suspected, release the tourniquet, remove the needle and apply direct pressure for at least 5 minutes.

d. Failure to Cannulate

Any practitioner should refer to another cannulator (preferably a more experienced practitioner) **after 2 failed attempts**. Alternative access devices should be considered if subsequent attempts fail due to poor venous access.

15. Consequences of poor practice

Poor Practice	**Consequence**	**Good practice**
Poor attention to the approach of the needle into the intended location.	Inadvertent puncture of a nerve or artery. Long term nerve damage leading to difficulty with dexterity and pain. Arterial puncture could lead to significant blood loss.	Attention to the accurate recognition of the vein prior to needle insertion – no probing with the needle.
Poor skin cleansing	Systemic infection leading to bacteremia	Cleanse the skin for 30 seconds and leave to dry.
Re-insertion of the needle into the cannula during the cannulation process	A portion of the cannula can be severed at the tip causing it to enter the bloodstream potentially leading to a foreign body entering the heart	NEVER re-insert the needle once it has been pulled out of the cannula during the procedure
Not establishing a blood flashback	Cannula could be located in the tissues rather than the vein causing extravasation and possible tissue necrosis.	Always establish a good flashback of blood into the chamber – if not, abandon the cannulation.
Choosing the wrong size cannula for the patients' needs	Highly viscous infusion such as blood transfusions must be infused into a cannula 22g or larger. When administered into a smaller gauge cannula, the fragile blood cells can be damaged.	Use the appropriate size cannula according to the guidelines
Poor dressing security	Cannula may fall out or dislodge from the vein	Always secure the cannula dressing

	into the sub-cutaneous tissue.	effectively using ANTT principles.

16. Complications of a Cannula Insitu

a. Phlebitis

Phlebitis is the inflammation of the vein due to damage to the endothelial wall of the vein (Ray Barruel et al 2014). Phlebitis can be septic, chemical or mechanical.

- *Chemical* – results from infusion fluids or medication which have an acid pH, high osmolarity or irritant constituents.
- *Mechanical* – associated with poor securement of the cannula, allowing movement within the vein and consequent irritation of the endothelium.
- *Septic* – caused from infection at the cannula site due to poor infection control measures such as not cleansing for the recommended time, with the recommended solution and not leaving to dry during insertion or maintenance.

Signs of phlebitis include: redness, swelling pain or tenderness along the vein. If symptoms of phlebitis are present, the cannula will have to be removed.

Phlebitis can be avoided by reducing trauma during insertion, appropriate cannula choice, good securement of the cannula and by regular observation of the site. Infusate that causes damage to the endothelial cells may need to be given centrally. Cannula assessment should take place every shift in order to identify symptoms of phlebitis.

b. Infiltration/extravasation

Infiltration or 'tissuing' refers to the inadvertent leaking of non-damaging infusate into the subcutaneous tissue. This can occur as a result of venous damage during cannulation or from damage to the endothelial wall of the vein during the dwell period of the cannula. Extravasation is a term used for the infiltration of damaging infusate into the subcutaneous tissues. The extravasation guidelines must be followed for any extravasation of chemotherapy or non-chemotherapy medication.

The main signs of infiltration and extravasation are: swelling, pain, tenderness, redness, blanching or leaking from the site.

c. Nerve damage

A cannula can cause nerve damage whilst in situ. Infiltration or a haematoma formed during or post cannulation can cause nerve damage by compression. If any symptoms of nerve damage occur, the cannula must be removed .

d. Bacteraemia – (Blood-stream Infection)

Poor infection control measures during insertion or subsequent manipulation can lead to micro-organisms invading the bloodstream (Loveday et al 2014). The patient may become unwell and require anti-biotics.

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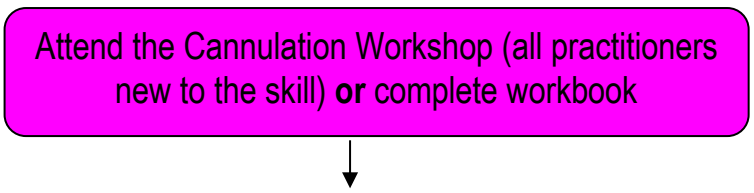
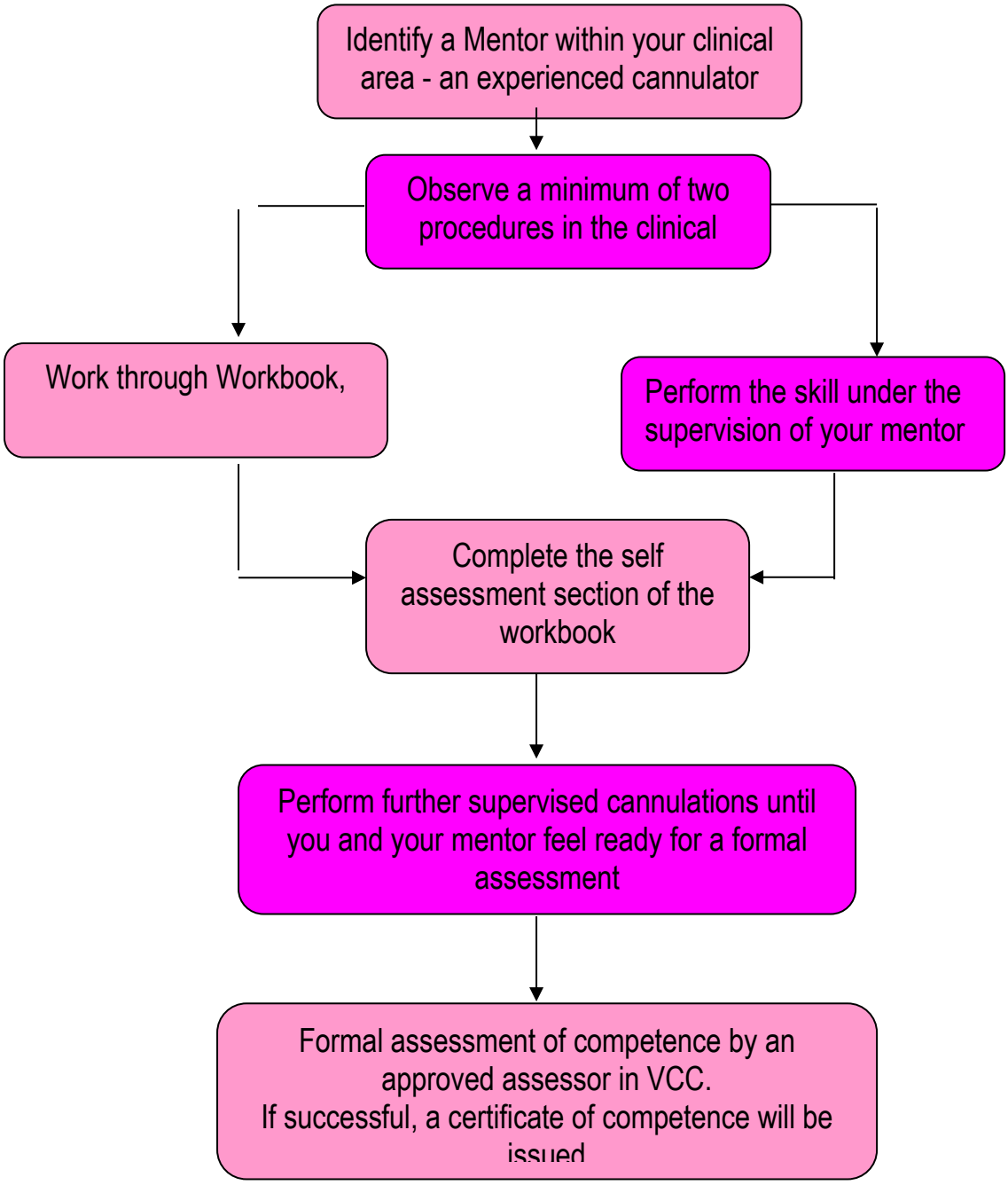
Appendix 1

Competency Pathway




Identify a Mentor within your clinical area - an experienced cannulator
Observe a minimum of two procedures in the clinical
Work through Workbook,
Perform the skill under the supervision of your mentor
Complete the self assessment section of the workbook
Perform further supervised cannulations until you and your mentor feel ready for a formal assessment
Formal assessment of competence by an approved assessor in VCC.
If successful, a certificate of competence will be issued

Velindre Cancer Centre
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Appendix 2

Rocialle
Pack code RML506-016

1) Wash hands

2) Clean tray with detergent wipes and leave to dry

3) Gather equipment
PVC pack, cannula, hand gel, non-sterile gloves, sharps bin, end connector

4) Open PVC pack onto tray
Open cannula and end connector and add to tray

5) Gel hands and place sterile towel beneath arm

6) Apply tourniquet and locate vein

7) Release tourniquet

8) Pinch sepp to break vile
Clean skin site for 30 seconds, allow to dry for 30 seconds

9) Put on non-sterile gloves
Re-apply tourniquet and cannulate patient

10) Release tourniquet

11) Apply dressing strips

12) Dispose of cannula and sepp in sharps bin

13) Dispel air from syringe and flush cannula with 0.9% saline

14) Apply end connector

15) Apply cannula dressing and date label

16) Dispose of equipment and decontaminate hands

Appendix 3

Modified seldinger technique for peripheral venous cannulation.

This technique can only be performed by practitioners who have received specific training from the Intravenous Access Nurse Specialist or an ANP/PICC placer. The procedure should take place in a controlled environment with a suitable assistant present. This technique should only be used as a last resort and not as routine practice.

Anaesthetic: Ametop cream is optional if not using the cannula for chemotherapy or vesicant drugs. Lidocaine 1% has the potential to constrict a superficial vessel therefore should only be used in the rare cases where the tolerance to the 21g thin walled needle would be in question. Lidocaine should be administerd using a superficial technique.

Equipment

1 x pairs of sterile gloves; peripheral venous cannulation pack; 22g or 20g peripheral cannula (the length of the cannula is the most important consideration – the deeper the vein, the longer the cannula needs to be therefore opt for the 20g which is longer) ; needle-free connector; stainless steel guidewire (0.018 inch diameter) where possible use a short 20cm wire; 21gauge thin-walled needle (PICC placement needle); probe cover; 3 x packs 7x7 gauze; water for injection; marker pen.

Recommendation for the ultrasound machine to be on 2.2cm depth. At this setting, the vein should be no deeper than 0.55cm and no less than 0.4mm diameter.

Procedure

1. Wash hands
2. Identify the vein using ultrasound guidance and mark the area where the probe will rest with the marker pen.
3. Release the tourniquet.
4. Decontaminate hands
5. Open the peripheral venous cannulation pack and maintain a sterile field.
6. Place the following items onto the sterile field: wire, 21gauge thin-walled needle, peripheral cannula, needle-free connector, additional gauze, probe cover.

7. Pour water for injection over the one pack of gauze.
8. Place dressing towel under the patients arm.
9. Clean the skin with chlorhexidine 2% and alcohol 70% in the area below the mark - leave to dry.
10. Once the skin is dry, tighten the tourniquet.
11. Put on sterile gloves.
12. Place the absorbent towel and gauze on top of the patients arm close to the cannulation site.
13. Remove the needle/stylet from the cannula (for ease of access) and leave the cannula itself within the sterile field
14. Put on the probe cover with the help of the assistant.
15. Hold the probe with your non-dominant hand and access the vein with the 21gauge thin-walled needle using the ultrasound guidance with the needle at a superficial angle.
16. Once a blood return has been established, hold the needle still and advance the wire aprox 10cm – you should not feel any resistance – if there is resistance DO NOT continue and remove the wire!
17. Assistant to release the tourniquet. Whilst still holding the wire with the sterile gauze, advance the 22g cannula up the wire and into the vein. Make sure that the wire has not been contaminated – if so clean with a clinell.
18. Secure the cannula with the parallel strips from the cannula dressing.
19. Remove the wire whilst applying digital pressure at the cannula tip.
20. Place the needle-free connector and the cannula dressing.
21. Flush the cannula.