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Standard Operating Procedure for Insertion and Management of Power PICC (Peripherally Inserted Central Catheter) Solo using Ultrasound and Sherlock 3CG Guidance

Introduction and Aim

This standard operating procedure (SOP) is intended for staff trained, or in training to place PICC lines in Cardiff and Vale University Health Board (UHB). It is meant to act as a resource and a step-by-step guide for PICC insertion, including Power PICC Solo insertion, with ultrasound guidance and Sherlock 3CG. This SOP aims to enhance the patient experience and nursing practice.

Objectives

- Provide a standardised approach in PICC placement
- Support clinical decisions in PICC placement

Scope

This procedure applies to all Haematology Directorate (including the Teenage Cancer Trust Unit) staff who are in training, trained and competent in PICC placement within in Cardiff and Vale UHB.
This SOP is inclusive of patients aged 14 years and over who are treated on the Teenage Cancer Trust Unit, and all adult patients in the Haematology Directorate.

Equality Impact Assessment	A Equality Impact Assessment (EIA) has been completed and is attached
Health Impact Assessment	A Health Impact Assessment (HIA) has been completed and is attached
Documents to read alongside this Procedure	Waste Management Policy Health and Safety Policy Medical Equipment Policy
Approved by	Haematology QSPE
Accountable Executive or Clinical Board Director	Specialist Services Clinical Board Director
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Disclaimer

If the review date of this document has passed please ensure that the version you are using is the most up to date either by contacting the document author or the Governance Directorate.

Summary of reviews/amendments			
Version Number	**Date of Review Approved**	**Date Published**	**Summary of Amendments**
1	10.06.16	TBA	Ratified SOP to include Sherlock 3CG, Securacath and updates as per South Wales PICC Guideline
2	03.05.18		Removal of Groshong lines
3	28.12.18		Update title and content. Include documentation, competencies, remove probe power. Review by PICC group, Microbiology, Consultant lead, Infection Control Team
4	28.07.19	28.07.19	Update to Appendix 8 and placement form in accordance with NatSSIPs.

Content **Page**

Executive Summary

This document comprises information pertaining to the placement of a PICC using Ultrasound guidance and Sherlock 3CG. This document is needed to reduce the risks and complications associated with all aspects of PICC insertion by standardising best practice for all practitioners to follow.

This is a Nurse Led Initiative in the Haematology Directorate at Cardiff and Vale UHB.

Scope of guideline

The guideline applies to all healthcare practitioners who place PICCs using Ultrasound and Sherlock 3CG guidance in the Haematology Directorate at Cardiff and Vale UHB.

Aim

The aim of this guideline is to provide an overview of the concept of ultrasound and to describe the process of placing a PICC using ultrasound guidance and Sherlock 3CG. This document is based on empirical evidence and expert opinion within this field. This will ensure that the standard of practice will be consistent throughout the Haematology Directorate within the UHB and that the delivery of care concerning the insertion of PICCs will be of a high standard.

Statement

All personnel within Cardiff and Vale UHB staff involved in the development and implementation of this guideline document are committed to providing the best possible care for patients who require central venous access. The UHB is also committed to working in collaboration with other Trusts or Health Boards in Wales and throughout the United Kingdom to ensure that the guideline is updated according to recent research and expert opinion.

A full list of all contributors to this document can be found in Appendix 1.

I. Introduction

PICCs can be used for the administration of a variety of intravenous medications in the field of Haematology. Only personnel suitably trained and assessed by the intravenous access nurse specialist in the Cardiff and Vale UHB or a BARD nurse trainer can place PICCs using Ultrasound guidance and Sherlock 3CG.

Clinical criteria for PICC placement, includes:

- Ambulatory chemotherapy
- Bone marrow transplant patients or patients receiving on-going intensive chemotherapy
- Poor venous access
- Patient choice
- Medication specified by the manufacturer to require central access
- Infusate:
    - Intravenous medication or infusion toxic to the endothelial cells of the vein. PH < 5 (acidic) > 9 (alkaline). Osmolality >500mOsm/L
    - Infusional DNA binding vesicant
    - Infusions causing venous pain

Referrals should be made using the electronic referral form available on clinical portal

II. Patient Referral & Assessment

Patients treated in the Haematology Directorate (including the Teenage Cancer Trust Unit) from the age of 14 are eligible for PICC placement in the Haematology PICC service. Referrals should be made using the electronic referral form (appendix 2) which should be emailed to centralvenous.access@wales.nhs.uk. All referrals will be scrutinized by the PICC team for appropriateness and urgency within 24 hours of (Monday to Friday service).

PICCs are associated with a higher risk of thrombosis and central line associated blood stream infection in hospitalised patients (INS, 2016) and so may not be the most suitable central line choice for all patients. The PICC team will advise medical personnel on the most appropriate venous access device for the individual patient, following referral.

All patients requiring PICC placement will need an assessment by a competent PICC practitioner to determine if they are fit to undergo the procedure. Any concerns outside the PICC practitioner's experience must be discussed with a more senior practitioner or haematologist.

Patient assessment undertaken by the PICC practitioner will be documented on the PICC Placement Record. This electronic record will be made available on Welsh Clinical Portal (see appendix 3).

Patient assessment factors should include:

- Patient identification: check name, address and date of birth of patient and cross reference with the patient electronic referral form and medical notes
- General wellbeing of the patient
- Discussion and advice about lifestyle

- Allergies: Specific allergy status to nickel or dressings should be identified. Where allergy to nickel is confirmed or suspected, the securacath device must not be placed
- Take observations: Escalate high NEWS score to on call Doctor or Senior Practitioner
- Sepsis: if a patient is exhibiting signs of sepsis and is febrile, PICC placement is not recommended
- Recent infection: if a patient has positive blood cultures or rising CRP, PICC placement is not recommended. Discuss with microbiology and haematologist. MRSA status should be obtained (see section III, 4).
- Blood counts (see section V)
- Medication history, particularly anticoagulation therapy (see section V)
- History of mediastinal disease: review CT/ PET reports for lymphoma patients with mediastinal mass. If present, discuss with responsible consultant and/or radiologist before proceeding. If there is evidence of SVC obstruction or compression do not proceed with PICC placement and seek advice from the responsible consultant
- Past medical history, in particular:
    - injuries to shoulders, arms which have resulted in restriction of movement
    - CVA, thromboembolic events
    - cardiac conditions, pacemaker / internal defibrillator
    - respiratory conditions
    - renal disease/fistula formation, (PICCs should be avoided in patients with chronic kidney disease due to central vein stenosis and occlusion as well as venous depletion causing fistula constriction (INS, 2016))
    - lymphodema
    - radiotherapy
- **Patients with arrhythmias will not be suitable for ECG placement confirmation.**
- Previous PICC / CVC placement: identify if patient developed infection, dressing allergy or thrombosis. Identify any previous placement related complications in the patient notes.
- Skin integrity

<u>Appropriateness of the placement:</u>

It is the responsibility of the PICC practitioner to ensure that the PICC placement is appropriate and justified by following the assessment criteria below:

- If poor venous access is the reason for PICC referral, are the peripheral veins suitable for peripheral cannulation?
- Is a PICC the best central venous access device? Refer to the 'Haematology Vascular Access Decision Tree' (appendix 4)
- Does the therapy prescribed or intended necessitate the need for a PICC?
- Does the therapy prescribed or intended necessitate the need for a single or dual lumen PICC?

III. Patient preparation and consent

1. Preparation

Patients should be given a PICC information leaflet preferably prior to attendance at the placement clinic or admission to the ward. An explanation of the following must be provided prior to obtaining consent:

- reason for PICC
- placement
- time frame of the procedure
- after care
- potential complications
- contact numbers for patient concerns and reporting complications. All patient to be given a PICC alert card and written information
- appropriate venous assessment prior to insertion

Prior to consent, all patients should receive a copy of the latest 'Patient Information on PICCs' leaflet to read. Following this, consent should be taken by the PICC practitioner (where possible) and patients, or any person accompanying the patient, should have the opportunity to ask questions. All patients must verbally consent and sign the written consent form. If the patient lacks capacity, best interests' decisions should be made or consent obtained by legal proxy (National Infusion and Vascular Access Society (NIVAS), 2013.)

Assessment of physical and psychosocial maturity of the younger patients should be undertaken by the PICC placer (i.e those aged 14-17 years). Due to the nature of the insertion procedure, younger patients (those under 16 years) should be assessed to establish Gillick competence (or not). Those without Gillick competence should be discussed with and referred back to the Paediatric Oncology Team for line placement.

2. Blood Monitoring

Prior to placement patients should have the following blood tests performed:

- FBC
- U&E
- CRP (if neutropenic or previous infection)
- Coagulation screen (if history of bleeding, concerns regarding presence of coagulopathy e.g. DIC)
- INR (only if on warfarin)

NICE (2015) recommend that platelet counts of $>10x10^9/L$ are sufficient for PICC or midline catheters. Patients may require platelet transfusion to achieve this. This number should also be viewed in the clinical context of the patient; for example, patients with veins in close proximity to the artery or who are bleeding may require platelet transfusion prior to insertion despite an adequate platelet count. Discussion with Haematology SpR should take place if concerns over thrombocytopenia.

3. Anticoagulation

Oral Anticoagulation (the advice below comprises local set guidelines):

- Warfarin does NOT need to be stopped prior to PICC insertion. An INR should be measured 24-72 hours prior to PICC insertion. The INR should be stable and < 3.5 prior to placement.

- Direct Oral Anticoagulant (DOAC) e.g. Rivaroxaban, Dabigatran, Apixaban, Edoxaban
    - Continue to take usual dose of medication. No interruption required.

- Clopidogrel or Aspirin (single agent therapy or dual anti-platelet therapy)
    - Continue to take usual dose of medication. No interruption required.

Parental anticoagulation:

- Subcutaneous Low Molecular Weight Heparin;
    - Thromboprophylactic dose – wait at least 12 hours since last dose prior to insertion of PICC.
    - Therapeutic dose – wait at least 18-24 hours since last dose prior to insertion of PICC
- Use of intravenous Unfractionated Heparin should be discussed with the coagulation team

4. Infection Prevention

All patients should have an MRSA swab (nose, groin and any wounds) within the seven days prior to line insertion. Results should be available to the practitioner prior to insertion. Patients who have a positive for MRSA swab should not have the procedure unless the Consultant Haematologist concludes that the urgency for the PICC outweighs the risk of MRSA systemic infection. Any patient with a positive MRSA screen should have decolonization treatment as soon as possible following the UHB MRSA guidelines.

IV. Ultrasound

Ultrasound Locating Devices can be used to improve outcomes when inserting Central Venous Catheters (Stokowski 2009, Simcock 2008, Krestenic et al 2008)

There are many benefits to the use of Ultrasound in relation to the insertion of Peripherally Inserted Central Catheters (PICCs):

- Increases the success rate of first attempt placement by locating the precise location of the vein (Parkinson et al 1998) and avoiding arterial puncture
- Decreases the incidence of complications such as mechanical phlebitis and thrombosis (Simcock 2008)
- Reduction in number of needle punctures (INS, 2016) causing trauma to the vessel
- Provides assessment of the integrity of the vein – detects thrombosis within the vessel
- Reduction in the overall cost of complication management and multiple attempts
- Improves the infusion rates of ambulatory chemotherapy pumps – PICCs may be placed away from the cubital fossa

- Enables PICC practitioner to measure how much space the PICC will take up in the vein

NICE have published guidelines relating to the benefits of using ultrasound guidance to place Central Venous Catheters (NICE 2002). This document advises that 2D Ultrasound guidance 'should be considered in most clinical circumstances where Central Venous Catheter insertion is necessary'. This is a **mandatory** requirement for PICC placement within Haematology.

Ultrasound is a series of high frequency sound waves that are sent into the body and then reflected back to create an image. On the ultrasound screen, fluid filled structures appear black and surrounding tissues appear as various shades of grey. Vessels such as veins and arteries appear well defined. Ultrasound cannot penetrate air or bone so acoustic gel is used in order for the probe to transmit the high frequency sound wave.

Sound waves are converted into an image on the ultrasound machine screen. The image can be magnified to show different depths under the skin surface on the screen, thus showing more or less anatomical structures captured in the ultrasound frequency as required by the practitioner. The depth markings are clearly identified on the screen in centimeters. It is recommended that scanning should start with the 3cm setting, and then if the vessel is superficial, increase the magnification to 1.5cm. This setting will magnify the vessel to twice its normal size.

<u>The Ultrasound Device</u>

Two ultrasound devices are currently available for PICC placement in Haematology:

- BARD SiteRite 8 with built in Sherlock 3CG
- BARD SiteRite 5 with Sherlock 3CG available

Exposure time to the ultrasound during the procedure to place a PICC should be as low as reasonably achievable (IR(me)R 2000/6). In practice, ultrasound exposure would not normally exceed 30-60 minutes.

Probe (Linear Transducer):

The probe should be held at a 90 degree angle on contact with the skin, and perpendicular to the vessel (across). This can also be described as 'out of plane' or 'short axis'. This is the recommended position of the probe during venous cannulation. A light and steady touch should be maintained in order to view the images. A longitudinal position of the probe can be used where the probe is placed along the length of the vein. This can be described as 'in plane 'or 'long axis'.

V. Vessel identification and selection

<u>Identification</u>

A vein is a non-pulsatile vessel and easily compresses with the ultrasound probe; i.e. the vein will collapse easily when pressure is applied by the probe. An artery is a pulsatile structure that is difficult to compress with the ultrasound probe

Once the vessel has been accessed, the practitioner must observe the flow of blood from the needle to ascertain if the vessel is a vein or an artery. Blood flow from an artery will pulsate and will be under pressure.

Vein Selection

Vein assessment should be undertaken without application of a tourniquet (single patient use).

Before placement begins, ultrasound should be used to choose the optimal site for access. The choice of site should include factors such as vessel size, depth, course, surrounding structures, proximity to the axilla and antecubital fossa and adjacent pathology (such as overlying cellulitis). The vessel should be assessed for patency and other anatomic issues such as vein valves. Vessel health should examine the whole of the peripheral length of the target vein in the assessment, looking for thrombosis, phlebitis and general anatomical structures. Veins that are compromised (including, bruised, infiltrated, sclerosed, corded or engorged) should be also avoided (INS, 2016).

It is extremely important to choose a vein away from arteries and nerves where possible. The selected vein should be of adequate size for catheterization, which will vary depending on the gauge of the catheter being placed. A small catheter gauge may be required for smaller vessels. A venous site should be selected where the catheter fills less than 45% of the vessel is recommended (Infusion Nurses Society (INS), 2016). Vessel size (and percentage catheter fill) can be determined using Site Rite Sherlock 3CG equipment.

The veins of choice for the placement of a PICC when using ultrasound guidance are the basilic veins in the upper arm. The basilic vein is preferred as it offers the largest diameter of upper extremity vessels and affords a non-tortuous entry into the subclavian vein away from arteries and nerves. If the basilic vein is not suitable in one arm, the next vessel of choice is the basilic vein the other arm (unless contraindications apply). If neither basilic vein is suitable cephalic veins should be considered, providing it is large enough.

A brachial vein which is precariously close to the brachial artery should also be avoided unless the practitioner feels positioning will allow a safe placement. Care must be taken cannulating the brachial veins due to their proximity to the brachial artery and the median nerve. Sometimes nerve clusters can be identified on ultrasound, and should be avoided when cannulating a vein.

VI. Micro-Introducer Technique

The micro-introducer technique is needed when using the ultrasound equipment to cannulate a vein that is not palpable. The procedure is a modified Seldinger technique which involves the insertion of a small gauge needle into the vein followed by the introduction of a wire. The needle is removed leaving the wire in place and dilator then is then inserted over the wire to make a channel to accommodate the PICC.

- A wire should never be forced.
- The wire should never be removed through the needle, due to the risk of severing the wire on the tip of the needle.
- Replace the introducer if it is damaged prior to or during placement

VII. Sherlock 3CG

The Sherlock 3CG tip confirmation system is recognised by NICE (2015) as a method for insertion of PICCs in adults (aged 18+). Patients who do not show a P wave on electrocardiogram (such as, patients with atrial fibrillation), a chest X-ray will be needed to confirm tip location of the PICC (NICE 2015).

As the Sherlock 3CG is not licensed for those aged under 18 years, patients aged 14-17 will also require a chest x-ray to confirm tip position of the PICC.

VIII. Infection control

Patient Factors

All patients should have a shower (including hair) on the morning prior to PICC placement, and wear clean clothes. If patients are too unwell to shower, they should receive a wash prior PICC placement.

All PICCs must be placed using strict sterile maximal barrier precautions following epic 3 guidelines (Loveday et al 2014) and using a surgical aseptic non touch technique (ANTT). This includes:

- Cleansing the site with chlorhexidine 2% in 70% alcohol single use applicator 3mls in an area of approx. 8cm squared around the proposed exit site and allowed to dry for 2 minutes and inspected to ensure visibly dry. (The site will be cleansed twice prior to commencing the insertion procedure)
- Top to toe draping
- PICC placer to undertake thorough nail scrubbing, hand-washing and drying with sterile towels
- Wearing hat, mask and gown and double gloving with sterile gloves
- Assistant to wear hat, apron, gloves and non-sterile gloves to open the PICC pack and apply sterile gloves to open the internal packaging
- The use of sterile equipment placed onto a sterile field

Observe for any pooling of the chlorhexidine. Spread out any pooling of the fluid to avoid ignition where electrical equipment is used. If any electrical equipment is used during placement or PICC cleansing, the chlorhexidine must be left to dry for 3 minutes.

Patients with an allergy to Chlorhexidine should receive Betadine swab skin prep.

Environment

The environment in which the PICC placement will take place must be suitable for a sterile procedure to be performed, with adequate space around the bed / trolley to ensure the maximal barrier precautions are not compromised. Ideally this should be within a designated procedure room.

There may be rare occasions when PICC placement may occur at the patient's bedside when the patient's clinical condition is not stable enough to transfer to a designated procedure room. In this

instance, the PICC practitioner must take all reasonable steps to ensure that the maximal barrier precautions are not compromised.

Emergency equipment and personnel should be accessible throughout the PICC placement, should they be required.

IX. Lidocaine Injection

Lidocaine hydrochloride 1% (20mg in 2mls solution) is a local anaesthetic solution that is used prior to placement. It is normal practice that the PICC placer would administer in increments of 0.2mls, drawing up a total of 2mls at the start of the procedure. The maximum dose of lidocaine, as a single agent for local infiltration is 200mg i.e. 20mls of 1% solution for an adult. This dose must not be exceeded. Children and elderly or debilitated patients require smaller doses, commensurate with age and physical status.

The administration of lidocaine must be preceded by a withdrawal technique to verify that a vessel had not been inadvertently punctured.

Adverse symptoms (as outlined in the Patient Group Direction) relating to the use of lidocaine may be delayed post administration, so each patient must be observed for 20 minutes post injection by the PICC practitioner.

The lidocaine will be prescribed prior to the procedure or issued as part of a Patient Group Directive.

<u>Administration:</u>

Lidocaine anaesthetic injection is administered intra-dermally or subcutaneously prior to inserting the venipuncture needle.

- Place the orange needle into the subcutaneous tissue and withdraw very gently on the plunger to verify that the needle is not in a vein
- Insert the needle at a shallow angle, and raise the skin slightly, withdraw and inject slowly into the subcutaneous space. If lidocaine anaesthetic is given prior to needle insertion, another injection may be required in order to anaesthetise deeper within the subcutaneous tissue using ultrasound guidance to identify the location of the needle tip in relation to the vein. Care must be taken not to inject the lidocaine too close to the surface of the vein as this will cause the vein to collapse.
- Leave the lidocaine to become effective, noting maximal effect is after 3-5 minutes.
- Test the effectiveness with the tip of the needle prior to needle insertion.
- When preparing the equipment on the sterile field, the lidocaine injection must be drawn into a smaller syringe than the saline in order to clearly distinguish between the two. Both the saline and the lidocaine should be clearly labelled to distinguish between them.

For very superficial vessels where venous constriction following lidocaine injection is a concern, topical transdermal local anaesthesia may provide alternative and adequate anaesthesia.

X. Cannulation

When inserting the needle into the vein, the probe can be held perpendicular (across) or longitudinal (along) the vein. The needle should be placed slowly into the skin. When the needle approaches the vessel target, the anterior wall will indent. A swift insertion into the vein at this time will prevent excessive collapse of the vein wall. Once cannulation has taken place, the vessel returns to normal shape. Always watch for blood return from the needle or cannula. As with any venous cannulation it is recommended that a maximum of 2-3 attempts at cannulation are made by each individual. The PICC practitioner should also be aware of the increased risk of thrombosis with multiple attempts.

XI. Inadvertent arterial puncture

The inadvertent puncture of an artery can be avoided by:

- Recognising the position and location of all main and aberrant arteries
- Assessing for excessive or pulsatile bleeding
- If the vein accessed is close to an artery, this will be highlighted on the X-ray form (if X-ray required for tip position confirmation)
- Arterial placements will bleed excessively and this must also be documented on the X-ray form (if X-ray required for tip position confirmation)
- Any patient whose PICC has been placed in a vein close to an artery or where excessive bleeding is noted must be assessed further by identifying the placement of the PICC in the vein using Doppler ultrasound – for further confirmation a colour Doppler ultrasound procedure can be requested by the radiographer.

XII. The procedure

The PICC placement procedure is a two person procedure (at a minimum 1 qualified PICC placer and an appropriately trained Health Care Support Worker (HCSW)) to ensure strict asepsis and maximal barrier precautions are obtained.

HCSW involved in PICC placement will complete the in-house training and competency package (see Appendix 5).

1. Collect the equipment required:

- Portable Ultrasound machine
- Sherlock 3CG for ECG guided placements
- Ultrasound conduction gel (for non-sterile assessment)
- PICC pack including; line, probe cover, micro-introducer, gown, syringes, needles, sterile gel
- Sterile gloves x 3
- Green (Cook) needle x 1 (if required)
- Securacath
- Chloraprep 3ml x3
- Lidocaine injection 1 %
- Normal saline 0.9% 10ml vials (quantity will vary depending on number of lumens requiring flushing. Each lumen should be flushed with 20mls post insertion)

- Sterile forceps
- Additional sterile drapes
- Disposable or new tourniquet
- Face mask
- PPE for HCSW/ assistant; hairnet, apron, non-sterile gloves, sterile gloves

2. Non-sterile vessel assessment with ultrasound

1. Instruct the patient on the purpose of the ultrasound procedure and explain the ECG process for placing a PICC using Sherlock 3CG
2. Position the patient with the arm supported using a side table and pillow
3. Ensure that the ultrasound machine is in a suitable location for optimum visualisation by the practitioner
4. Activate depth markings
5. Apply tourniquet around arm – do not tighten at this point
6. Scan the patient with a non-sterile technique to determine the location, depth and patency of the vein and arteries
7. Select the appropriate needle guide that corresponds to the appropriate vessel depth if using
8. Identify the area where placement will take place
9. Lower bed rails (when appropriate)

3. Preparation

A. Determine the length to be inserted:

1. Patient to lie supine
2. Place the arm at a 90 degree angle to the body. Use antecubital fossa crease as an anatomical landmark
3. Ascertain the length of the catheter by using the height of the patient as part of the Lum formula (Lum, 2004 – see appendix 6) or by measurement.
4. Measure from AC fossa to axillary crease
5. Axillary crease to the right clavicular head
6. Right clavicular head to the sterna border of the third intercostal space. Note this measurement
7. Observe depth of vein on ultrasound and add to measurement
8. Add at 6cm to the measurement (for the external portion of the PICC) to ensure length to place securacath device

B. Determine P wave present:

1. Prepare Sherlock 3CG for PICC tip tracking and confirmation
2. Place sensor in cover remove adhesive backing from sensor cover, place the covered sensor directly on the patient's skin, and place the sensor as flat as possible and high on the patient's chest.
3. Attach electrodes to lead wiresand monitor and apply to patient – black lead to right shoulder and red lead to left hip.
4. Check that the patient has an identifiable P wave
5. Ensure no metal, or mobile phones are in the area where the sensor is be placed

C. Prepare the sterile field:

1. Put on hat and mask
2. Wash hands and arms using a surgical scrub technique with hibiscrub. Use a nail brush for first scrub of the day
3. Assistant to wash hands and put on hat, apron and gloves. Assistant to open PICC pack onto cleaned sterile trolley. Assistant to then remove gloves and replace with sterile gloves to open PICC pack and place on two pairs of sterile gloves and chloraprep single use applicator on to the sterile field
4. Practitioner to dry hands with sterile towels in the pack
5. Put on gown
6. Put on sterile gloves x2
7. Draw up the normal saline (10ml syringe) and label using enclosed adhesive sticker.
8. Draw up lidocaine injection (5ml syringe) and label if using Power PICC Pack. Label syringe using enclosed adhesive sticker.
9. Prime both lumens of the PICC with saline without touching the PICC with your gloves. Add a connector to the lumen without the guidewire and leave the saline syringe attached to the other lumen on port from guidewire.

D. Prep the patient:

1. Place sterile towel underneath the arm using a non-touch technique
2. Decontaminate the skin at the insertion site (within an approx. 8cm square area surrounding the insertion site) with a single-use application with 2% chlorhexidine gluconate / 70% isopropyl alcohol for 60 seconds followed by a continuation of the cleansing outwards approximately another 3-4cm square. Allow to dry. The skin should be cleaned using an up and down, to and fro friction rub. Work outwards to clean the upper arm.
3. Carefully place the sterile drape onto the patient, securing the adhesive window to the appropriate arm. Unfold the drape to cover the patient.
4. Cleanse the skin in the window thoroughly for a second time with the chlorhexidine applicator from the inside out as above. Allow to dry

E. Drape the probe for sterile use:

1. Allow the assistant to place the probe in the side arm holder on the stand and apply a layer of non-sterile ultrasonic gel on the acoustic window of the probe
2. Place the sheath over the probe head being careful not to wipe off the gel.
3. Cover the probe and cable with the sheath ensuring sterile field maintained.
4. Smooth the sheath over the acoustic window of the probe head and remove any air bubbles
5. Use a sterile elastic band to hold the sheath in place.
6. Place the probe safely onto the sterile drape

4. Insertion of the PICC

A. Anaesthesia

1. Apply sterile gel onto the skin at the intended site of cannulation
2. Assistant to tighten tourniquet – not too tightly
3. Locate the site of the suitable vein for cannulation using the ultrasound machine
4. Place the needle guide onto the probe (if using)
5. Administer intradermal lidocaine at the proposed cannulation site using the guide described above in section V.

B. Access the vein

6. Place the probe on the skin at the intended access site and hold the probe perpendicular to the vein. Realign the vein on the centre dot marker (on the ultrasound screen).
7. Cannulate the vein. When cannulating the vein with a needle, the probe is held perpendicular to the vein. The needle should be placed slowly into the skin with the bevel facing up. When the needle approaches the vessel target, the anterior wall will indent. A swift insertion into the vein at this time will prevent excessive collapse of the vein wall. Always observe for a blood return from the needle or cannula.
8. Slowly and carefully introduce the wire into the needle, 'floppy tip' entering the vein. The wire must glide into the needle and vein without resistance, if any resistance is encountered, STOP – never force a wire. **Take extreme care not to lose the wire into the bloodstream, never turn your back on a free wire and allow at least 15cm outside of the patient. Make a knot or bend in the wire to prevent migration.**
9. Assistant to loosen tourniquet
10. Remove needle or cannula (leaving wire in situ)

C. Prepare for line insertion

11. Make a 1-2mm incision in the skin at the entry site with the blade from the PICC pack. Take care if vein in close proximity to artery or superficial vein
12. Verbally prepare patient for sheath and dilator insertion, and then advance the sheath and dilator over the wire and insert into the vein. **Take extreme care not to lose the wire into the bloodstream, allow at least 15cm outside the sheath and dilator. Make a knot or bend in the wire to prevent migration.**
13. Dispose of sharps or place in separate tray within the sterile field.
14. Check measurement from antecubital fossa to insertion site. Deduct this measurement from your first measurement, then add up to 6cm. Assistant to record this measurement on the Site Rite machine.
15. Remove top layer of gloves.
16. Using clean second gloves to prepare the PICC line. Careful handling of the line should occur to ensure that the length of the line that will remain inside the patient is not handled. Use the forceps to manipulate the catheter length if required.
17. Unscrew and retract the entire T-lock connector and second guide-wire (contained within the PICC). Ensure ample length of the catheter is free from the second guidewire, so that the PICC can be cut without causing damage to the second guide-wire. Do not entirely remove the second guide-wire from the catheter.
18. Using sterile scissors cut the catheter at measured length, only handling the part of the line that will be discarded
19. Advanced the second guide-wire back into the catheter and secure the T-lock connector into the original position, at the end of the PICC. Screw the connector to the PICC hub.
20. The second guide wire will now be advanced outside of the proximal PICC end. Gently retract the wire through the T-lock connector rubber port until the entire guide-wire is contained within the catheter. Bend over the second guidewire at the end of the connector to prevent migration.
21. Uncoil PICC using sterile forceps to handle, and attach the lead connected to guide-wire, to fin on sensor (on patient's chest) maintaining asepsis.

D. Insert the line

22. Take the PICC in the sterile plastic tray to the patient, ensuring the line only becomes in contact with the sterile plastic tray, sterile forceps and sheath (around dilator).
23. Remove wire with the dilator, place thumb at the end of sheath to reduce blood flow.
24. Insert PICC tip into sheath, again ensuring the line only becomes in contact with the sterile plastic tray, sterile forceps and sheath (around dilator).
25. When positioned, select calibrate immediately prior to PICC insertion.
26. Using the forceps, insert PICC until the magnetic navigation shows guide-wire icon moving consistently downward and depth gage on Sherlock 3CG indicates low depth. Continue to **slowly** advance PICC until the PICC is fully inserted.
27. Peel away the sheath and discard and insert PICC to the external measurement 0cm.

E. Tip confirmation

28. At this point the PICC may need to be flushed to stabilize the waveform. Flush PICC with saline and wait for intravascular ECG waveform to stabilize.
29. Verify that the P-wave on the intravascular ECG waveform is still present. Select 'Freeze' to save the current ECG wave forms on the reference screen. Slowly adjust the PICC 1 cm at a time to maximum P-wave amplitude. Freeze and then print.
30. If depth gage, navigation guide-wire or p wave not confirmatory of position chest X-ray should be requested to confirm PICC line placement.
31. Remove the guide-wire and T-lock assembly, attach needle-free connectors, withdraw blood and flush PICC.
32. Secure with securacath – fold base of securacath device until it comes together. Hold fold and insert securacath feet down catheter path, perpendicular to PICC. Rotate base to best orientation around PICC and insert feet 2mm. Release fold to ensure securacath fully inserted and gently withdraw base to a gap returns between base and PICC. If patient has allergy to nickel, use statlock to secure PICC.
33. Secure the entire catheter under a dressing of sterile gauze and clear, transparent and semi-permeable dressing.
34. PICC line is ready to use.

XIII. X-ray requesting and interpreting

All PICC practitioners will be encouraged to review PICC X-rays with middle grade doctors (Specialist Registrars) unless individuals are deemed competent to chest X-ray interpretation for line placement. All X-rays at time of placement will be reported by a radiologist. If an immediate report is not available, the chest x-ray should be reviewed by the competent practitioner, Specialist Registrar in Haematology or Radiology to review the whole film and review any incidental findings. PICC practitioners who have demonstrated and approved competence at X-Ray interpretation will be able to review PICC tip position. The Vascular Access nurses will ensure that all reports are checked at a later date, confirming initial chest x-ray interpretation of the competent practitioner.

The location of the tip of the PICC should be ideally in the junction between the Superior Vena Cava and the Right Atrium at the cavo-atrial Junction (INS, 2016). The PICC should not be placed above the mid SVC at placement. Tip position at original placement will be documented in the medical notes and on the electronic record.

XIV. Malposition

Very occasionally, despite Sherlock 3CG technology and accurate measurement, the catheter may be in a suboptimal position within the SVC/RA. When catheter malposition will be evident on the post PICC placement X-ray, re-positioning of the PICC following the guidance below:

1. Calculate the number of centimetres to be removed by identifying the distance from the first point of malposition to the PICC tip – add 1-2cm to this measurement. You will need: Large dressing towel, 2 x sterile gloves, semi-occlusive clear dressing, sterile gauze, chloraprep and apron.
2. Wash hands and don apron and non-sterile gloves.
3. Remove the dressing and gauze with non-sterile gloves and apron.
4. Wash hands again and put on new apron and sterile gloves.
5. Place the large dressing towel under the arm.
6. Open the securacath, remove gloves.
7. Decontaminate hands and place new sterile gloves on.
8. Whilst maintaining sterility remove or insert the PICC using the pre-determined measurement – ensure no contact between the PICC and the patients' skin or gloves.
9. Replace the securacath. Clean with chloraprep if blood ooze, allow to dry.
10. Re-dress.
11. Re X-ray (if >2cm manipulation)

When the above procedure fails to correct the malposition fluoroscopy can be used to re-position the catheter under the direction of a radiologist.

X-rays are required for all repositioning of PICCs >2cm manipulation.

XV. Over-wire Exchange Procedure

An exchange of a PICC over a wire allows the practitioner to maintain central venous access when removal of an indwelling catheter is required for certain indications, without causing delay in waiting for a new line to be placed. An over-wire exchange may be suitable for some individuals when no other central venous access options are available, however should be performed with caution as can lead to increases in line colonisation (Loveday et al, 2014).

Prior to undertaking an over-wire exchange procedure, the practitioner should undertake a patient assessment (as per section II) and assess the risks and benefits of the procedure. The practitioner should consider additional factors that may compromise the success of the procedure, including but are not limited to, immune status, length of time remaining on infusion therapy, characteristics of infusion therapy (e.g., osmolarity), detection of 'pinch off' syndrome, and evidence of line migration (INS, 2016).

<u>1. Indications for over-wire exchange procedure include:</u>

- Catheter malposition – the PICC tip is no longer central (Hughes, 2014, INS, 2016)
- Catheter damage – urgent intervention required to reduce the risk of complications (INS, 2016). Catheter damage increases the risk for catheter fracture and embolization, air emboli, bleeding, catheter-lumen occlusion, and bloodstream infection (INS, 2016).

- Need for a dual lumen PICC for therapy when a single in is situ (Hughes, 2014)
- Proximal intraluminal occlusion not resolved by urokinase administration using a 3 way tap (with proven evidence of no thrombosis) (Hughes, 2014)
- Withdrawal occlusion (Hughes, 2014)

2. Advantages of an over-wire exchange:

- Allows the re-insertion of a PICC when removal of the indwelling PICC is necessary (Hughes, 2014)
- Allows the insertion of a PICC when no other venous access sites are available (INS, 2016)
- Prevents the trauma caused by a second insertion
- Less discomfort for the patient
- Less time consuming than a routine placement

3. Exclusions for over-wire exchange procedure:

- Evidence of catheter related blood stream infection (Loveday et al 2014, INS 2016), or exit site infection (Hughes, 2014)
- Evidence or suspicion of a venous thrombosis (Hughes, 2014)

4. Precautions with an over-wire exchange:

- Extreme care must be taken to observe the wire in order to prevent accidental migration into the venous system (Hughes, 2014)
- Never force a wire into a vein or remove under force (Hughes, 2014)
- Do not force the PICC into the vein (Hughes, 2014)
- The PICC placing set includes a 'floppy' tipped wire. Ensure that this end of the wire is placed into the in-situ PICC. The wire used is found in the BARD Power PICC Solo pack.
- The procedure must be a two person procedure
- The procedure must only be carried out by personnel that have been trained in over-wire exchange and are competent PICC placers
- This procedure describes the process involved in over-wiring a BARD PowerPICC solo, where the valves are at the distal end of the PICC line. Due to this, the line should be clamped prior to and during cutting to minimize risk of inadvertent air-embolism, using forceps.
- Maximal barrier precautions must be adhered to as per PICC insertion (INS, 2016).

5. Procedure for over-wire exchange of PICC line:

A. Collection the equipment required:

- As per PICC insertion (see Section XII) and
- Sterile forceps x1
- Plastic sterile clamp x1
- Steri-strips
- Additional sterile down, sterile towels and gloves.

B. Preparation (adapted from Hughes, 2014):

1. Establish an indication for an exchange over a wire

2. Ensure that the patient has no history of infection or thrombosis
3. Prepare the patient by positioning as per usual for a PICC insertion procedure, lying supine with arm at 90 degree angle to the body (refer to section XII)
4. Take note of trimmed length of in-situ catheter to calculate trimmed length for exchange
5. Flush the PICC thoroughly – if dual lumen, flush both (this is to ensure patency)
6. Place a warm pack on the arm along the path of the vein – **take extreme care not to burn the skin**. Protect the skin beneath the pack.
7. Prepare Sherlock 3CG for PICC tip tracking and confirmation, attach ECG sticker and sensor, check patient has identifiable P wave (refer to section XII)
8. Wash hands and put on non-sterile gloves. Remove the complete dressing and securacath, using local anaesthetic as per PGD if required. Secure line with a steri-strip to prevent complete migration of catheter.

C. Prepare the sterile field (as for PICC insertion, refer to section XII):

1. Practitioner 1 to put on hat and mask. Wash hands and arms using a surgical scrub technique with hibiscrub. Use a nail brush for first scrub of the day
2. Practitioner 2 to wash hands and put on hat, apron and gloves. Practitioner 2 to open PICC pack onto cleaned sterile trolley and clean second sterile trolley for additional gown/glove preparation. Practitioner 2 to then remove gloves and replace with sterile gloves to open PICC pack and place on sterile gloves, chloraprep single use applicator, sterile forceps and sterile clamp on to the sterile field, then to open surgical sterile gown pack on second trolley and place additional gloves.
3. Practitioner 1 to dry hands with sterile towels in the pack, put on gown and then sterile gloves
4. Practitioner 1 to draw up the normal saline (10ml syringe) and label using enclosed adhesive sticker. Draw up lidocaine injection (5ml syringe) and label if using Power PICC Pack. Label syringe using enclosed adhesive sticker. Prime both lumens of the new (sterile) PICC with saline without touching the PICC with your gloves. Add a connector to the lumen without the guidewire and leave the saline syringe attached to the other lumen on port from guidewire.

D. Prepare the patient:

1. Practitioner 2 to position line end/ lumens away from insertion site (without touching insertion site) to minimise bulk in preparation area.
2. Practitioner 1 to place sterile towel underneath the arm using a non-touch technique
3. Decontaminate the skin at the insertion site with 2% chlorhexidine gluconate / 70% isopropyl alcohol as per section XII. Take extra care to clean line within field. Allow to dry. Work outwards to clean the upper arm.
4. Carefully place the sterile drape onto the patient, securing the adhesive window to the appropriate arm and securing the PICC line underneath the adhesive strip so minimal PICC line is left in the sterile window and the bulk of the line/ lumens are underneath the drape, outside of the sterile field. Unfold the drape to cover the patient.
5. Cleanse the skin in the window thoroughly for a second time with the chlorhexidine applicator as previous, taking time to clean around the PICC line that is visible. Allow to dry.
6. Practitioner 2 to then put on hat and mask. Wash hands and arms using a surgical scrub technique with hibiscrub and nail brush (if first scrub of day), dry hands using additional sterile towels and don gown then sterile gloves.

E. Overwire exchange procedure for PICC replacement (adapted from Hughes, 2014):

1. Practitioner 1 to use sterile gauze to hold the PICC, then withdraw the PICC, leaving 7 cm in the vein
2. Practitioner 2 to clamp PICC line close to exit site with sterile clamp, occluding line and reducing risk of inadvertent air embolism and migration. Pressure to be maintained to occlude PICC line continuously.
3. With line occluded, practitioner 1 to cut the PICC at 13 cm – allowing approximately 6cm externally
4. Practitioner 1 to insert the 'floppy tip' of the guidewire into the PICC – **never the stiff end of the wire.**
5. When wire within PICC line, practitioner 2 to release pressure on the clamp to allow practitioner 1 to gently insert the wire through the PICC line, taking care to maintain the external PICC length at around 6cm.
6. Practitioner 1 to advance the wire approx 5-6cm into the vein, **take great care to ensure that the wire does not migrate into the venous system**
7. Practitioner 1 to withdraw the old PICC slowly over the wire whilst ensuring that the wire remains in situ. To prevent migration, both the wire and PICC line must always be visible to the practitioner. When the PICC line is completely removed, the wire alone will remain in place. Allow at least 15cm of free wire outside of the patient. **Take extreme care not to lose the wire into the bloodstream, never turn your back on a free wire. Make a knot or bend in the wire to prevent migration.**
8. At this point you may administer lidocaine at the PICC entry site around the wire and leave to work.
9. Then follow steps from section XII, **C '11'** onwards to complete PICC insertion.

XVI. Post X-ray management and documentation

A tubular bandage will be placed over the PICC to protect and must not be tight.

Documentation in the medical notes using the PICC insertion sticker (appendix 7) and will include:

- Date
- Written consent gained
- Name of practitioner
- Vein used
- Arm used
- number of attempts
- Account of any complications i.e. malposition, difficult placement, nerve injury
- Measurement of PICC advanced
- Personnel interpreting the X-ray
- Length adjusted post X-ray
- External measurement of PICC post repair
- Location and date of first dressing

XVII. Patient discharge

All patients will be:

- Given an appointment for a first dressing in the Haematology or Teenage Cancer Trust Day Unit 24-48hrs after placement. In circumstances where patients have difficulty attending hospital – the community nurse can perform the first dressing; however this should not happen routinely
- Referred to the community nurse and provided with equipment for one dressing, community nurse letter, Patient PICC Passport for care and maintenance of a PICC, saline and a signed prescription for saline.
- Given an alert card(s) containing information on Power PICC Solo and Securacath and outlining the reasons to call and the numbers to call if they experience problems.
- Given a prescription request to obtain a protective sleeve for showering (Limbo sleeve request) from the GP.
- Advised to move the arm and to inform the appropriate Day Unit if they are admitted into another hospital with a PICC in situ.
- Upload electronic record to Welsh Clinical Portal.

XVIII. Care of the ultrasound equipment

Cleaning:

Cleaning the Ultrasound machine (IV Scanner): Dampen a non-abrasive cloth in warm water or rubbing alcohol and wipe the surfaces gently.

As per UHB guidance on Decontamination of Ultrasound Transducers (Cardiff and Vale UHB, 2015) the transducer involved in skin to skin contact should be cleaned with Cleanisept wipes. **Do not use hot water on the probe.**

Testing and charging the battery:

For instructions on testing the probe and charging the battery see operators manual.

XIX. Training

Prior to embarking on placing PICCs using Ultrasound guidance, the practitioner must:

- Familiarise themselves with the Ultrasound machine and attempt to identify vessels on a healthy volunteer
- Be able to identify the location of the structures in the upper arm and distinguish between a vein and an artery using ultrasound guidance
- Perform the procedure under the guidance of an experienced practitioner until deemed competent
- Read the guidelines document and relevant articles and complete on-line company training package

- Pass a competency assessment which includes a theoretical and practical evaluation performed by the intravenous access nurse specialist.
- Within Haematology Directorate all theoretical and first final competency assessment is provided by BARD, however training is supported by the UHB PICC team and annual competency will be reviewed by peer assessment using the competency document in Appendix 8. A centralized log of training records will be held by the Vascular Access CNS.
- Individual practitioners are responsible for maintaining their own competence.

XX. Audit

Data will be collated on a daily basis identifying difficulties with the equipment or the procedure, duration of the procedure, the number of attempts, and failed attempts. A spreadsheet will be maintained by PICC practitioners to record procedural data for audit and record of practitioners' activity. This will include; demographic issues, risk factors, catheter insertion location/ date/ site, reason for catheter, success of procedure, confirmation of tip position and complications.

Datix incident reporting will be utilised by the PICC team to capture events during placement and beyond, including; arterial puncture, embolisation of guidewire, acute allergic reactions, stuck wires.

Information on post insertion complications (including infection, migration and thrombosis) will be audited by the vascular access team. All complications should be reported via email central.venousaccess@wales.nhs.uk to the vascular access team, using the Venous Access Audit Tool (Appendix 9).

XXI. References

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Sofocleous C. et al (1998) Sonographically Guided Placement of PICCs: Review of 355 procedures. AJR 170 1613-1616

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XXII. Appendix 1

List of contributors

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XXIII. Appendix 2

PICC referral form (electronic)

Cardiff and Vale University Health Board	Filename: PICC Referral Form Author: D. Powell Ratified by: B. Ingram	Version: 1 Date of issue:1/2/16 Page 1 of 1

REFERRAL FORM FOR PICC INSERTION

E-mail ALL referrals to: Centralvenous.Access@wales.nhs.uk

PATIENT DETAILS			
Name:		**Date of birth:**	
Hospital Number:		**NHS Number:**	
Address:			
		Post Code:	
Telephone:			
General Practitioner:		**Consultant:**	

Blood results:		**YES**	**NO**	**Sample date**
	Platelets >10 (if <10 discuss with Senior PICC placers)	☐	☐	
	Neutrophils >1 (if <1 discuss with Senior PICC placers)	☐	☐	
	Hb >8	☐	☐	
	INR <4	☐	☐	
	Fibrinogen >1	☐	☐	
	APTT and PT Normal within normal range	☐	☐	
	CRP	**Result:**		
	MRSA Screen	**Result:**		

Reason for Referral	Select Other, please specify:
Chemo Regimen:	Select Other, please specify:
PICC Type Required	Select

MEDICAL HISTORY			
Diagnosis:	Select Other, please specify:		
Other diagnoses:	Previous Thrombosis:	☐ YES	☐ NO
	Renal disease/ fistula:	☐ YES	☐ NO
	Radiotherapy/ chest mass:	☐ YES	☐ NO
	Pacemaker/ Internal defib:	☐ YES	☐ NO
	Allergies (including latex):	☐ YES	☐ NO
Details of allergies (if any):			
Other important information:			

MEDICATION	
Anticoagulants:	
Thromboprophylaxis:	
Other:	

Advice re anticoagulation: Please ensure a coagulation screen is performed prior to line insertion for patients receiving anticoagulation, newly diagnosed acute leukaemia, known clotting disorder or patients who are unwell / bruising / bleeding	• If on prophylactic low molecular weight heparin, omit on day of insertion. • If on therapeutic low molecular weight heparin, omit 12 hours prior to insertion and discuss with Haematology Coagulation SpR on call. • APTT/ PT out of range, discuss with Haematology Coagulation SpR
Patient Information Leaflet:	**YES** ☐ **NO** ☐
Ideal Insertion date:	**Approximate** ☐ **Definite** ☐

Referred by:	**Position:**
Hospital (or Consultant):	**Date:**

FOR URGENT REFERRAL PLEASE SUBMIT FORM AND PAGE: 07623906238

TO BE COMPLETED BY PICC TEAM	
Agreed insertion date:	**Approve by Name:**
Date patient contacted:	**Position / Contact details:**

E-mail/fax completed form back to referring clinician as confirmation: Date sent: Sent by: ☐ E-mail ☐ Fax
Print copy of completed form and file in UHW medical record

Approved by:	Date of approval:
It is the responsibility of the user of this document to confirm that this is the current version by checking on the Cardiff and Vale UHB intranet site	

XXIV. Appendix 3

PICC Placement Record

Cardiff and Vale University Health Board	Filename: HAEM-FORM-01 Author: Bethan Ingram Ratified by: Rachel Davies	Version: 1 Date of issue: 29.07.19 Page 1 of 1

PICC PLACEMENT RECORD

PATIENT DETAILS					
Name:		Date:		ID Check	☐
Hospital Number:		Referrer:			
Address:		Diagnosis:	Select		
		Consultant:			
Date of birth:		Reason for referral:	Select		
PMH:		IV access device:	Select		

History:		YES	NO	Details
	Previous thrombosis	☐	☐	
	Thromboprophylaxis	☐	☐	
	Allergies	☐	☐	
	Previous renal disease/ fistula	☐	☐	
	Previous radiotherapy/ chest mass	☐	☐	
	Pacemaker/ internal defibrillator	☐	☐	

Date:		Date:		Date:	
Hb >8		INR <4		Temp	°C
WBC		Fib >1		BP	
Neut		APTT		HR	
Plt >10		CRP		RR	
MRSA	Select	Other		Sats	%
Comments:					

INSERTION			
Pre-measurement:	cm	Catheter size:	Select
PICC line cut to:	cm	Site and Vein:	Select Select
Consumables:		**Placement Confirmation:**	
Catheter:	Lot no:	Sherlock 3CG placement:	☐ Yes - ECG confirmation ☐ No
	Expiry:		
Insertion needle:	Select	Chest X-ray requested:	Select
	Lot no:	CXR reviewed by:	N/A ☐
	Expiry:	Misplacement:	Select
Skin preparation:	Select	Adjustments:	Insert cm
	Lot no:		Withdraw cm
	Expiry:	Final Tip Position:	Select
Local anaesthetic:	Select	External length:	cm
	Lot no:	Inserted to:	cm
	Expiry:	Line ready to use?	Select
Flush:	Sodium Chloride 0.9% Select	Line inserted by:	
	Lot no:	Number of attempts:	Select
	Expiry:	Veins used:	
Securing:	Select	Guide-wire removed?	Select
	Lot no:	Date:	29/07/2019
	Expiry:	Time:	
Insertion complications:			

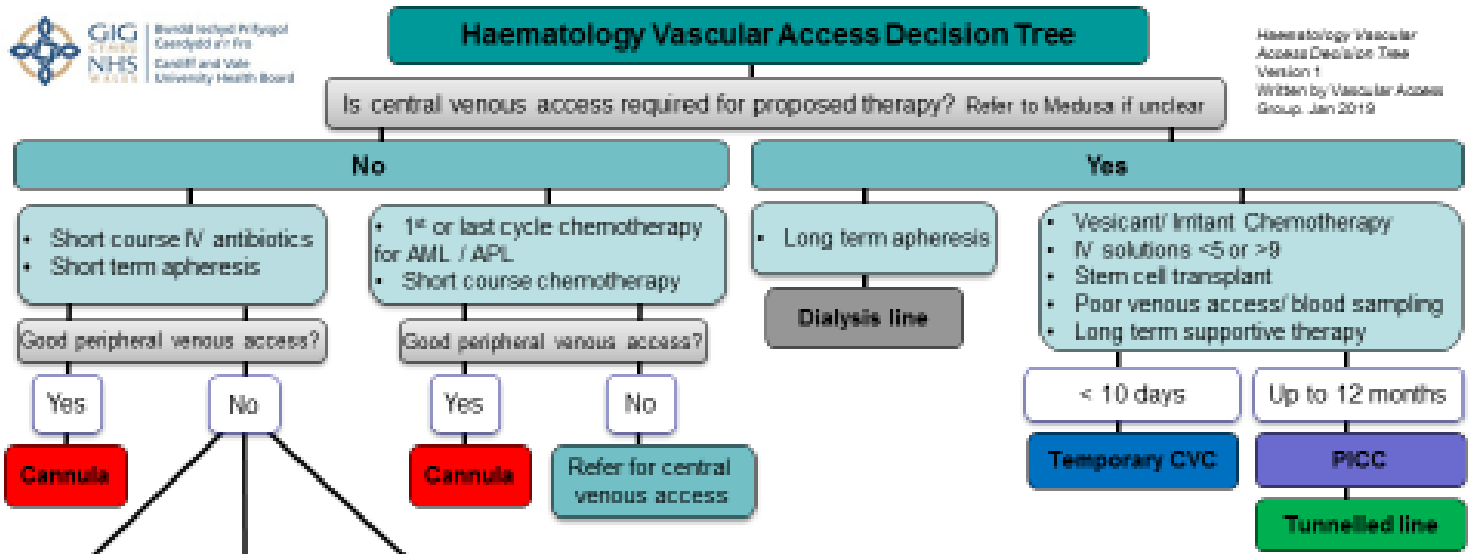
FOLLOW UP:			
1st dressing change:		Location:	
Ongoing line care:			

COMPLETED BY:			
PICC Inserter:		Date:	
Designation:		HCSW Name:	

Approved by:	Date of approval:
It is the responsibility of the user of this document to confirm that this is the current version by checking on the Cardiff and Vale UHB intranet site	

XXV. Appendix 4

Haematology Vascular Access Decision Tree



CVAD	Advantages	Disadvantages
PICC	Ease of insertion, removal, access. Small catheter size.	Risk of infection, thrombosis. Self care not possible. Restrictive to ADLs.
Tunnelled Line (Hickman/ Broviac)	Lower infection risk. Self care possible. High flow rate.	Risk of thrombosis. Restrictive to ADLs. Large catheter size. More invasive insertion/ removal.

Referral

PICCs/ Power Glides: Email referral Centralvenous.Access@wales.nhs.uk
Broviac/ Hickman/ Dialysis catheters: Refer to the Radiology Department

Peripheral access should be provided in:
- Newly diagnosed APL patient, ALL induction, SVCO risk. If peripheral access poor, discuss with consultant for vascular access plan

PICC lines contraindicated so refer for tunnelled line in:
- Bone marrow infusion/ transplant, renal disease/ fistula formation, axillary lymph node resection, lymphoedema

PICC lines cautioned in:
- History of thrombosis, multiple line related infections, shoulder injury, previous radiotherapy, internal pacemaker / defibrillator, skin lesions/ poor skin integrity
- Avoid affected arm if breast cancer lymph node resection, lymphadema, CVA/ limb paralysis

Power-Glide Midlines caution if:
- Frequent blood sampling required. Only to be used for modified peripheral parenteral nutrition.

References:
Flynn et al. (2014) Cancer Therapy Venous Access Device Decision Guide. UKONS. Available from: www.ukons.org. Accessed 07.01.2019

XXVI. Appendix 5

HCSW Competencies

Assisting with PICC insertion

Introduction

This document has been is to be used by any Health Care Support Worker (HCSW) being trained to assist with the insertion of Peripherally Inserted Central Catheters (PICCs). You will be trained by a PICC line placer with assistance from other trained HCSWs.

Section two of this document details the PICC insertion process and informs you what is required at each step. This is only a guide to the procedure and you must be aware that there may be extra tasks required of you from time to time.

The procedure requires the use of surgical Aseptic Non-Touch Technique (ANTT) through the use of sterile equipment used to prevent infection. You will be required to use sterile gloves and open sterile equipment ensuring they do not touch anything non-sterile. You may need to practice this, and we will support and guide you in how to do this accurately.

Section three of this document is a set of competencies that you and your assessor must both sign as a record of your competence.

1. PICC Insertion Process

Before the procedure

The PICC trolley, site-rite ultrasound machine, sterile drapes, hair nets, etc should be collected from the PICC cupboard. Water for the patient to drink should also be collected

All equipment should be taken to the PICC placement room and the bed, table and trolley all cleaned with Clinell Universal wipes. Leave to dry and place clean pillow cases/ sheet/ cover on

Assist the patient into a comfortable position on the bed with the correct arm extended onto table with pillow to support

Perform a set of baseline observations and record on observations form

Enter patient's details onto Site-Rite ultrasound monitor

Attach ECG stickers to patient and ensure a trace is present on Site-Rite monitor for placer to view

Ensure long sleeved clothing and jewelry are removed. Place mobile phones away from the patient. Place tourniquet on positioned arm loosely.

During

Ensure long sleeved clothing and jewelry are removed. Place mobile phones away from the patient. Place tourniquet on positioned arm loosely.

Washes hands and puts on hair net, apron and non-sterile gloves

Cleans trolley and, when dry, opens PICC pack onto it

Take off non-sterile gloves; apply hand gel, put on sterile gloves

Touching only the outside, open the PICC pack

Your gloves will now be considered non-sterile and you may use them for the rest of the procedure.

Open sterile gloves of appropriate size and additional sterile drapes onto the open PICC pack

Assist the PICC placer to put on their sterile gown

Empty saline bottles into the pot on the trolley. Showing PICC placer the expiry dates

If required pour any extra equipment, such as Cook needle, 3 chlorpreps and forceps onto trolley, ensuring expiry dates shown and that the trolleys sterile field is not touched by anything non-sterile

Show expiry date of lidocaine to PICC placer, open and hold for PICC placer to withdraw the solution

The PICC placer may need assistance applying the sterile drapes to the patient. As you have non-sterile gloves on, ensure you only touch the underside of the drape

If requested by PICC placer, tighten the tourniquet that is on the patients arm by reaching underneath the sterile drape. Ensure you do not touch the top of the drape

Apply ultrasound gel to the site-rite probe and pass to the PICC placer ensuring the probes lead does not touch the sterile drapes until the sterile cover is fully applied

During the procedure the PICC placer my require further equipment which you can gently drop onto the sterile PICC pack on the trolley, without compromising the sterile field

As the PICC placer removes a needle you may need to assist by loosening or releasing the tourniquet

When requested change the screen on the Site-rite ultrasound machine to the ECG display. You will be asked to press the "freeze" button to capture the ECG reading.

You may need to change the measurement details on the Site-rite machine and may be asked to print the display

After

Once completed you will need to assist with clearing the space and assisting the patient up from the bed. Clean all hard surfaces down (including the Site-Rite equipment, trolleys, pillow, etc) thoroughly using Clinell Universal wipes.

Follow up appointments with day unit and ensure patient has:

- PICC passport and PICC information for the procedure
- Emergency contact numbers
- Spare elasticated tubing bandage
- Prescription request for Limbo sleeve

All expiry dates and batch numbers for lidocaine, saline, securacath and PICC will need to be documented onto the PICC activity log sheet

The trolley and site-rite should be returned to the PICC cupboard and the trolley restocked

2. Assisting with PICC insertion: Competencies

COMPETENCY	DATE ACHIEVED	SIGNED by HCSW and assessor
Completed online E-Learning module on ANTT and Surgical ANTT via ESR		
Is up to date with BLS and AED training		
Is able to set up the correct equipment for PICC insertion. Including: • PICC line pack • Sterile drapes • Sterile gown • Sterile gloves • Non-sterile gloves and aprons • Waste bags and bins • Ultrasound gel • Site-Rite machine • Hair nets • Lidocaine • Chlorprep • Securacath • Sterile Forceps • New blue tourniquet • Sodium Chloride 0.9% • Cook insertion needle		
Identified the location of the nearest phone, fire escape, oxygen, suction and resuscitation trolley		
Correctly checks patient identity		
Knows how to input patient data into ultrasound machine, and checks the printer is attached, working and has paper inside.		
Effectively cleans all equipment with correct wipes, including trolley, bed and table		
Is aware how to assist the patients position to ensure comfort and position arm in appropriate place for PICC insertion		
Knows how to put on all PPE including: • Hair net, non-sterile gloves, apron • Sterile gloves – ensuring they are put on correctly and do not touch anything that is not sterile • Assists PICC placer to put on sterile gown		
Using sterile gloves, opens PICC pack only touching the outside of the cover		
Using appropriate gloves can open equipment and empty them onto the sterile field ensuring they do not touch any non-sterile objects. Expiry dates of all equipment should be read out loud.		
Opens lidocaine, reads out expiry date and holds bottle so PICC placer can draw out the drug.		
Assists PICC placer, if required, to attach ECG components, checking the ECG trace is showing on the ultrasound monitor		
Assists applying sterile drape to patient using underside of drape only		
Ensuring the sterile top of the drapes is not touched, tightens the tourniquet around the patients arm		
Puts ultrasound gel onto the ultrasound probe and passes to PICC placer, ensuring the ultrasound probe lead doesn't touch the sterile drapes		
Is able to loosen/ undo tourniquet when required without touching the top of the sterile drape		
Is able to change to the appropriate screen on the ultrasound monitor when asked, knows how to "freeze" the ECG reading, alter the measurements on screen and print		
Can complete the appropriate paperwork with patient details, PICC length etc		
Cleans all equipment correctly and restocks trolley after use		

XXVII. Appendix 6

PICC measurement tool

Based on Lum (2004) 'Formula based measurement guide for optimal positioning of central venous catheters. 2.5cm deducted from original formula (measured from ACF).

Right side: Height x3 / 10 - 2.5cm = insertion length
Left side: Height x3 / 10 - 2.5 + 4cm = insertion length

Height		Insertion length	
Metres	**Feet. Inches.**	**Left side insertion**	**Right side insertion**
1.47	**4' 10"**	45.6	41.6
1.50	**4' 11"**	46.5	42.5
1.52	**5' 0"**	47.1	43.1
1.55	**5' 1"**	48	44
1.58	**5' 2"**	48.9	44.9
1.60	**5' 3"**	49.5	45.5
1.63	**5' 4"**	50.4	46.4
1.65	**5' 5"**	51	47
1.68	**5' 6"**	51.9	47.9
1.70	**5' 7"**	52.5	48.5
1.73	**5' 8"**	53.4	49.4
1.75	**5' 9"**	54	50
1.78	**5' 10"**	54.9	50.9
1.80	**5' 11"**	55.5	51.5
1.83	**6' 0"**	56.4	52.4
1.85	**6' 1"**	57	53
1.88	**6' 2"**	57.9	53.9
1.90	**6' 3"**	58.5	54.5

XXVIII. Appendix 7

PICC insertion sticker

PICC Insertion Information

PICC Information given, safety explained: ☐

Procedure explained, risks and alternatives discussed, consent form signed: ☐

Chloraprep skin preparation: ☐ Surgical ANTT: ☐

Ultrasound: ☐ Sherlock 3CG: ☐

Volume of Lidocaine 1% subcutaneous via PGD used: _____mls

Arm: Left ☐ Right ☐

Vein used: Basillic ☐ Brachial ☐ Cephalic ☐

Number of attempts: _____ Number of sites accessed: _____

Blood return: Yes ☐ No ☐ Flushed 20mls 0.9% Saline: ☐

Catheter size: 4fr ☐ 5fr ☐ Catheter trimmed length:_____

Guidewires removed: 1 ☐ 2 ☐ Securacath sited: 4fr ☐ 5fr ☐

Sherlock 3CG tip confirmation: ☐ Chest X-ray tip confirmation: ☐

Final tip confirmation: CAJ ☐ Mid SVC ☐ High SVC ☐

Any complications during placement: _____

External measurement at placement: _____

Name and signature of placer:_____

XXVIX. Appendix 8

PRACTICAL TRAINING COMPETENCY DOCUMENT FOR ANNUAL RE-ASSESSMENT OF PICC PLACERS

Name of placer: ……

Name of Assessor: …….

Date: ……

Statement:

All practitioners new to PICC placement must successfully complete the formal assessment prior to practicing independently using Sherlock 3CG technology. This competency document will assess the knowledge and skills required to place, track and confirm PICC tip position using Sherlock 3CG technology. This is currently provided by BARD but supported by experienced PICC placers.

The PICC practitioners will regularly place PICCs which will be demonstrated on the PICC database. Practicing PICC practitioners must be re-assessed for competency annually. If a period of time over 3 months has lapsed since placement of a PICC, the practitioner will need to complete a formal peer assessment competency prior to being able to practice independently. A theoretical and practical assessment will need to be completed as part of the overall assessment of competency. Practitioners will pass or be referred. A certificate of competency will be given to the practitioner once the placer has been deemed competent.

PICC placers will also be part of the Haematology PICC placer group and will be expected to attend the regular team meeting for updates and changes. PICC placers may also have opportunity to participate in external events regarding vascular access to continue their professional development.

1. Theoretical preparation

To be familiar with the following documentation:

Document	Signature
C&V SOP for PICC insertion	
Patient Group Direction – Lidocaine	
IR(me)R guidelines	
C&V Consent Policy	
BARD PICC Placement Workshop Information BARD Sherlock 3CG Manual	
EPIC3 guidelines	
PICC care and management guidelines	

To have up to date training on:

Training	Signature
EIDO consent training (online) or equivalent	
Mental Capacity Act Training	

Consent in under 18s session with Mental Capacity Manager	
ANTT Training	
Basic Life Support Training	

2. Practical Assessment

The practitioner will demonstrate competency in the following:

a. Patient Assessment and preparation

	Achieved	Not achieved
Patient Identification	Signature & date	

Review of the medical notes & discussion with patient, to assess:
• Planned therapy
• Single or dual lumen line required
• Co-morbidities
• Past medical History
• Drug history, including allergies
• Potential contra-indications for PICC placement including:
  ○ chest mass
  ○ thrombosis
  ○ pacemaker/ internal defibrillator
  ○ renal disease/ fistula
  ○ lymphadenopathy
  ○ known infections
  ○ cardiac arrhythmias
• Anticoagulation therapy and its management pre-PICC
• Any history of previous PICCs – investigate previous complications
• Social history & hobbies		

Clinical assessment of the general condition of the patient, including: • Diagnosis • Review of FBC, Clotting • CRP, U&E • Imaging reports, if appropriate • MRSA screen results		
Patient education • Procedure • Catheter choices • PICC Care • Safety		

b. Procedural preparation

	Achieved	Not achieved
Assembling all the equipment required, including: • Sherlock 3CG • Input patient & practitioner data into Sherlock 3CG		
Positioning the patient for placement, including: • Correct positioning of the Sherlock 3CG electrodes and sensor		
Adhering to a strict maximal barrier precautions		
Attention to Health and safety and sharps safety		
Appropriate measuring technique: • Measure patient for catheter tip location, maximum vessel depth may be added to the external measurement		
Identify external baseline ECG waveform and verify that the P-wave is present, identifiable, and consistent		

c. *The practitioner will demonstrate competency in the following*:

	Achieved	Not achieved
The location of the veins and arteries in the upper arm using ultrasound guidance		
Demonstrate procedure to alter gain and depth on US device		
Clear distinction between artery and vein during ultrasound assessment		

d. PICC placement

	Achieved	Not achieved
Site preparation – cleansing		
Observing strict principles of asepsis throughout – surgical ANTT		
Appropriate use of the tourniquet		
Appropriate steps taken to minimise blood loss and air entry		
Prime catheter with saline		
The appropriate use of lidocaine injection.		
Needle insertion technique		
Introducer insertion technique		
Trim catheter		
PICC insertion technique		
Placing the appropriate length of PICC		
PICC confirmation using Sherlock 3CG at maximum 'P' wave		
Application of the securacath device and dressing		
Safe disposal of all sharps and equipment		

Awareness of patient safety post procedure and follow up arrangement		

Confirmation of tip using X-ray

	Achieved	Not achieved
Provide rationale for chest X-ray (if required)		
Completing a chest X-ray request form (if NMR)		
Interpretation of the X-ray with SpR		

3. Theoretical Assessment:

Question	Correct answer
Q: Describe the pre-assessment procedure when pt has had a previous PICC? A: Assess for previous infection, thrombosis, dressing allergies. If thrombosis present review Doppler results. Review infection results and time from infection. Review FBC & Clotting, in particular platelet and neutrophil count. Review drug history – particularly anticoagulants.	
Q: Which patient cohort would not be suitable for PICC placement? A: Newly diagnosed APML, SVCO risk	
Q: Describe the pre-assessment procedure for a Lymphoma patient? A: Assess position of nodes. If mediastinal disease, review scans with Radiologist	
Q: How do you identify a healthy vein on ultrasound? A: compresses easily. Poor compression could indicate thrombosed vein.	
Q: How do you identify an artery on ultrasound? A: Pulsation – always compress and wait.	
Q: Describe the terminology used for the probe being across the vein and along the length of the vein? A: Across: Transverse. Along: Longitudinal	
Q: What is another term for the 'probe'? A: Transducer	
Q: Describe the venous and arterial anatomy of the upper arm? A: Cluster of brachial artery surrounded by two brachial veins; cephalic vein laterally and basilic vein medially	
Q: What is the maximum dose of lidocaine you can give an average 70kg person? A: 20mls	
Q: Describe 3 adverse events related to the administration of lidocaine? A: Sleepiness; Dizziness; Vertigo; Confusion; Blurred vision; Dysphagia; Tinnitus;Trembling/restlessness/irritability	
Q: What steps must you take to minimise arterial puncture? A: Careful assessment of the vessels in the upper arm to determine location of the main veins and arteries; Careful assessment of any other small tributary arteries; always compress and wait with all vessels.	
Q: What steps must you take to minimise the incidence of nerve injury? A: Assess the presence of nerves on ultrasound in relation to the brachial veins. Where nerve pathways are close avoid the brachial veins; if the	

basilic vein in not suitable in the first arm to assess the basilic vein on the other arm, when neither of the basilic veins are suitable to assess the cephalic veins on both sides. If large cephalics are present, use them prior to brachials.	
Q: What steps must be taken when symptoms of nerve injury are presented during placement? A: Stop the procedure and remove any instruments.	
Q: Describe the safety requirement of using guide wires? A: To ensure that a guide wire does not migrate into the vein; to always bend the wire to prevent migration; to never lose sight of a wire within the catheter, ensure 2 wires disposed of at the end of procedure	
Q: What is meant by the term 'referrer' according to the IR(me)R guidelines and what are the main responsibilities? A: Health professional who is entitled to request a specific examination involving ionising radiation but must supply accurate and comprehensive information, completed the NMR course and have defined scope of practice	
Q: Describe and demonstrate on an X-ray the 3 main methods of identifying the location of the catheter tip post X-ray. A: Curve of RA; Anterior ribs; 5cm down from carina	

Over-wire exchange:

Question	Correct answer
Q: Describe the assessment process prior to exchange over a wire. A: Assess for diagnosis or symptoms of thrombosis and infection; must relay that in the event of an infection or thrombosis the procedure will not be performed; flush the catheter prior to exchange; prophylactic heat pad along the arm prior to exchange.	
Q: Describe the procedure for an exchange over a wire A: Careful consideration of the wire; lidocaine to be administered after the wire is placed; when exchanging single for dual or vice versa change the securacath	
Q: What are the main safety features to observe during an exchange over a wire? A: Migration of the wire or PICC.	

Discussions:

.....

.....

Competency achieved: Pass ☐ Fail ☐ Referred ☐

Date: ……

Name of Assessor: ……..

Signature of assessor: ……

Signature of practitioner: ……

Section B

The assessment must be carried out by an approved assessor who has a recognised level of expertise in the competency.

The nurse must demonstrate his/her safety and skill in the administration of the task with the required underpinning knowledge to practice competently identifying potential complications and offering rationale for outcome.

*To be completed by Assessor (Please complete all details below)

Competency Title: PICC Insertion under ultrasound guidance

I have assessed/reassessed (Name) ……

Ward / Area ……

Name of Mentor / Supervisor's ……

In the practical and theoretical knowledge of this competence and find that he/she has demonstrated overall competence.

Signed …… Print Name ……

Qualification…… Assessor PIN number ……

Date ……..

This form is to be sent to Practice Educator & IV CNS, Haematology

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Official Use Only

Competency Register – Computer Signed: ……
Personal Staff Record Signed: ……
Cert & Memo Signed: ……
Date Issued: ……

XXVX. Appendix 9

Central Vascular Access Audit Tool

Central Vascular Access Device Audit Form

Patient's name and hospital number.

.....
.....

Information in red must be completed by the medic or Advanced Nurse Practitioner please. Forms may be completed electronically and returned to Central Venous Access at Centralvenous.Access@wales.nhs.uk or printed off and returned to an IV Access CNS, c/o B4 Haematology. Thank you.

Date line inserted:_____ Date line removed:_____ No of Days:_____

Lumens: ☐ Single ☐ Double ☐ Multi

Line type: ☐ PICC ☐ Hickman/Broviac ☐ Dialysis/Apheresis ☐ Temporary CVC
☐ Femoral ☐ Other (Please specify) .....

Location of placement: ☐ Radiology ☐ Theatres ☐ Ward ☐ Day Unit ☐ TCT ☐ Other

Name of person inserting line (if known) .....

Has that person been ANTT trained and assessed? Y/ N /Not known

Securing method: ..... Issues with skin integrity: ☐ Y ☐ N

Cleaning agent: ..... Dressing type: .....

Removal: ☐ B4 ☐ TCT ☐ CRF ☐ UHW Day Unit ☐ Llandough ☐ Other

Line removed?
If yes primary reason for line removal:

☐ No longer needed

☐ Suspected line infection

☐ Thrombosis (proven by Doppler)

☐ Mechanical complication – displaced or fell out, leaked, kinked, occlusion, fibrin sheath, blocked

☐ Patient transferred to ITU/died

☐ Other:_____

Tip sent: ☐ Y ☐ N

Result: ☐ No growth Positive:_____

Blood cultures taken: ☐ Y ☐ N

Date:_____ Site____ Result:_____

Date:_____ Site____ Result:_____

Date:_____ Site____ Result:_____

Date:_____ Site____ Result:_____

Additional comments:_____

Equality & Health Impact Assessment for

Standard Operating Procedure for Insertion and Management of Power PICC (Peripherally Inserted Central Catheter) Solo using Ultrasound and Sherlock 3CG Guidance

1.	For service change, provide the title of the Project Outline Document or Business Case and Reference Number	N/A No service change Review of SOP
2.	Name of Clinical Board / Corporate Directorate and title of lead member of staff, including contact details	Haematology Directorate Bethan Ingram/Rachel Davies Teenage Cancer Trust Lead Nurse and Vascular Access CNS 02920 746784
3.	Objectives of strategy/ policy/ plan/ procedure/ service	This standard operating procedure (SOP) is intended for staff trained, or in training to place PICC lines in Cardiff and Vale University Health Board (UHB). It is meant to act as a resource and a step-by-step guide for PICC insertion, including Power PICC Solo insertion, with ultrasound guidance and Sherlock 3CG. This SOP aims to enhance the patient experience and nursing practice.
4.	Evidence and background information considered. For example • population data • staff and service users data, as applicable • needs assessment • engagement and involvement findings • research • good practice guidelines • participant knowledge • list of stakeholders and how stakeholders have engaged in the development stages • comments from those involved in the designing and development stages Population pyramids are available from Public Health Wales Observatory[1] and the	We need a reviewed SOP to standardise insertion of PICC with Sherlock 3CG. 265 PICCs inserted in 2018 Update of previous standard operating procedure Vascular access for chemotherapy administration within the haematology directorate including teenagers and young adults. The SOP was developed from NICE guidelines and EPIC 3; NICE (2015) The Sherlock 3CG Tip Confirmation System for placement of peripherally inserted central catheters. Available from: https://www.nice.org.uk/guidance/mtg24/chapter/1-Recommendations Loveday HP et al (2014) "epic3: National Evidence-based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England". Journal of Hospital Infection 2014; 86S1 (2014) S1–S70

	UHB's 'Shaping Our Future Wellbeing' Strategy provides an overview of health need[2].	Contributory background factors include: • Staff training to ensure all staff are aware of the risks and options. • Training and increased awareness amongst senior nurses and clinical managers. • Completion of appropriate risk assessments • Adequate staffing levels so that risks are minimised and staff are safe and supported. • An atmosphere of openness to ensure staff are encouraged to discuss any plans/, issues or concerns. The outcome of these guidelines may be adversely affected by any of the above factors not being in place. Stakeholders: Alessandro Iadevaia, Vascular Access CNS/ Staff Nurse Rachel Davies, Vascular Access CNS Bethan Ingram, Ambulatory Care Nurse Lead Deborah Powell, (previous) Vascular Access CNS Faye Blackborow, Advanced Nurse Practitioner Ffion Jenkins, LED Manager for Clinical Skills Dr Heledd Roberts, Haematology SpR Dr Jaisi Sinha, Consultant Microbiologist Jennifer Proctor, Haematology Lead Nurse Dr Jonathan Kell, Consultant Haematologist Laura Ricketts, Advanced Nurse Practitioner Martin Evans, Haematology Practice Educator Mary Harness, Haematology Senior Nurse Nia Evans, Haematology Senior Pharmacist Dr Raz Alikhan, Consultant Haematologist Sarah Rowland, Chemotherapy CNS Vince Saunders, Infection Prevention Control CNS
5.	Who will be affected by the strategy/ policy/ plan/ procedure/ service	This procedure applies to all Haematology Directorate (including the Teenage Cancer Trust Unit) staff who are in training, trained and competent in PICC placement within in Cardiff and Vale UHB. This SOP is inclusive of patients aged 14 years and over who are treated on the Teenage Cancer Trust Unit, and all adult patients in the Haematology Directorate.

EQIA / how will the strategy, policy, plan, procedure and/or service impact on people?

How will the strategy, policy, plan, procedure and/or service impact on:-	**Potential positive and/or negative impacts**	**Recommendations for improvement/ mitigation**	**Action taken by Clinical Board / Corporate Directorate.** Make reference to where the mitigation is included in the document, as appropriate
6.1 Age For most purposes, the main categories are: • under 18; • between 18 and 65; and • over 65	The SOP should have neutral impact. This SOP will cover patients aged 14 years and above only treated within Haematology Directorate. The SOP covers all age groups within haematology and the teenage and young adult service.	Currently we only have one PICC placer/member of staff that places in under 18s.	We have another placer being trained who will be able to place in both adults and under 18s.
6.2 Persons with a disability as defined in the Equality Act 2010 Those with physical impairments, learning disability, sensory loss or impairment, mental health conditions, long-term medical conditions such as diabetes	In patients with physical impairments such as shoulder surgery, mastectomy or lymph node removal we may have to place the PICC on the opposite side. This may offer less vein choice to the placer so potentially could prove a more difficult placement. For patients with learning disability, sensory loss or impairment or mental health conditions we		

How will the strategy, policy, plan, procedure and/or service impact on:-	**Potential positive and/or negative impacts**	**Recommendations for improvement/ mitigation**	**Action taken by Clinical Board / Corporate Directorate.** Make reference to where the mitigation is included in the document, as appropriate
	would assess the patient and arrange the necessary support if required. Patients with diabetes we would ensure blood sugar is within the normal parameters prior to placement and that they have taken fluids and eaten. Capacity		
6.3 People of different genders: Consider men, women, people undergoing gender reassignment **NB** Gender-reassignment is anyone who proposes to, starts, is going through or who has completed a process to change his or her gender with or without going through any medical procedures. Sometimes referred to as Trans or Transgender	No significant impact Although if a specific gender was requested we may not always be able to offer as we only have one male PICC placer within the team.	Ensure we are informed beforehand of how the patient or staff member wants to be referred to and if there are any specific gender request we can try to accommodate. This will depend on availability of the PICC placers. Effective communication and documentation is also essential.	

How will the strategy, policy, plan, procedure and/or service impact on:-	**Potential positive and/or negative impacts**	**Recommendations for improvement/ mitigation**	**Action taken by Clinical Board / Corporate Directorate.** Make reference to where the mitigation is included in the document, as appropriate
6.4 People who are married or who have a civil partner.	No significant impact		
6.5 Women who are expecting a baby, who are on a break from work after having a baby, or who are breastfeeding. They are protected for 26 weeks after having a baby whether or not they are on maternity leave.	Pregnant patients will be tilted for PICC insertion as per SOP. Breast feeding mothers will be exempt from having chemotherapy. Pregnant staff – assess case by case using the risk assessment checklist for new and expectant mothers *	We have now included a risk assessment checklist for new and expectant mothers working within the PICC team.	
6.6 People of a different race, nationality, colour, culture or ethnic origin including non-English speakers, gypsies/travellers, migrant workers	Effective communication may be difficult with patients who do not speak English.	Ensure we are aware early so that we can get appropriate translator to assist.	
6.8 People who are attracted to other people of: • the opposite sex (heterosexual); • the same sex (lesbian or gay);	No significant impact.		

How will the strategy, policy, plan, procedure and/or service impact on:-	**Potential positive and/or negative impacts**	**Recommendations for improvement/ mitigation**	**Action taken by Clinical Board / Corporate Directorate.** Make reference to where the mitigation is included in the document, as appropriate
• both sexes (bisexual)			
6.9 People who communicate using the Welsh language in terms of correspondence, information leaflets, or service plans and design Well-being Goal – A Wales of vibrant culture and thriving Welsh language	Our consent form is translated to Welsh language. Our patient information leaflet is in English only. Currently no welsh speaking PICC placers.	We would ensure either a Welsh speaking member of staff was present or arrange a translator prior to the procedure. We will ensure our patient information leaflet is available in Welsh.	
6.10 People according to their income related group: Consider people on low income, economically inactive, unemployed/workless, people who are unable to work due to ill-health	They may not be able to get transport for appointments and ongoing care.	Hospital transport is available for ongoing care. Welfare advice can be offered They can link in with community services	
6.11 People according to where they live: Consider people living in areas known to exhibit poor economic and/or health indicators, people unable to access services and facilities	No impact for placement, however ongoing care of the PICC would need to be under shared care. Hospital transport provided.	Provide shared care for ongoing maintenance of the PICC line. Ensure patients are aware of the services offered. They are given advice during the	

How will the strategy, policy, plan, procedure and/or service impact on:-	Potential positive and/or negative impacts	Recommendations for improvement/ mitigation	Action taken by Clinical Board / Corporate Directorate. Make reference to where the mitigation is included in the document, as appropriate
		consent procedure and on discharge from the hospital if they are a day case.	
6.12 Consider any other groups and risk factors relevant to this strategy, policy, plan, procedure and/or service	No significant impact.		

6. HIA / How will the strategy, policy, plan, procedure and/or service impact on the health and well-being of our population and help address inequalities in health?

How will the strategy, policy, plan, procedure and/or service impact on:-	Potential positive and/or negative impacts and any particular groups affected	Recommendations for improvement/ mitigation	Action taken by Clinical Board / Corporate Directorate Make reference to where the mitigation is included in the document, as appropriate
7.1 People being able to access the service offered: Consider access for those living in areas of deprivation and/or those experiencing health inequalities Well-being Goal - A more equal Wales	No significant impact.		

How will the strategy, policy, plan, procedure and/or service impact on:-	**Potential positive and/or negative impacts and any particular groups affected**	**Recommendations for improvement/ mitigation**	**Action taken by Clinical Board / Corporate Directorate** Make reference to where the mitigation is included in the document, as appropriate
7.2 People being able to improve /maintain healthy lifestyles: Consider the impact on healthy lifestyles, including healthy eating, being active, no smoking /smoking cessation, reducing the harm caused by alcohol and /or non-prescribed drugs plus access to services that support disease prevention (eg immunisation and vaccination, falls prevention). Also consider impact on access to supportive services including smoking cessation services, weight management services etc Well-being Goal – A healthier Wales	This would be assessed on case by case basis as in SOP depending on patient's hobbies we would decide the most appropriate vascular access device, using the vascular access decision tree found on the intranet. For IV drug users we would do a risk versus benefit and educate the patient on the care and maintenance used for their device. Their veins could potentially be damaged from substance misuse therefore this may impact the amount and quality of suitable veins for PICC placement.	We would assess on an individual basis and if need be look at other options for vascular access to allow the patient to continue their hobbies if possible.	
7.3 People in terms of their income and employment status: Consider the impact on the availability and accessibility of work, paid/ unpaid employment, wage levels, job security, working conditions	No significant impact		

How will the strategy, policy, plan, procedure and/or service impact on:-	**Potential positive and/or negative impacts and any particular groups affected**	**Recommendations for improvement/ mitigation**	**Action taken by Clinical Board / Corporate Directorate** Make reference to where the mitigation is included in the document, as appropriate
Well-being Goal – A prosperous Wales			
7.4 People in terms of their use of the physical environment: Consider the impact on the availability and accessibility of transport, healthy food, leisure activities, green spaces; of the design of the built environment on the physical and mental health of patients, staff and visitors; on air quality, exposure to pollutants; safety of neighbourhoods, exposure to crime; road safety and preventing injuries/accidents; quality and safety of play areas and open spaces Well-being Goal – A resilient Wales	No significant impact		
7.5 People in terms of social and community influences on their health: Consider the impact on family organisation	Effective communication... with primary care could cause a positive impact.		

How will the strategy, policy, plan, procedure and/or service impact on:-	**Potential positive and/or negative impacts and any particular groups affected**	**Recommendations for improvement/ mitigation**	**Action taken by Clinical Board / Corporate Directorate** Make reference to where the mitigation is included in the document, as appropriate
and roles; social support and social networks; neighbourliness and sense of belonging; social isolation; peer pressure; community identity; cultural and spiritual ethos Well-being Goal – A Wales of cohesive communities	No significant negative impacts were raised.		
7.6 People in terms of macro-economic, environmental and sustainability factors: Consider the impact of government policies; gross domestic product; economic development; biological diversity; climate Well-being Goal – A globally responsible Wales	Cost of lines versus the benefit to the patient Currently using Bard power PICCs as this is the only devise compatible with the Sherlock 3CG tip confirmation. Temperature of the room in summer could cause patient or placer to feel uncomfortable Placement location could be noisy if placed in a ward environment.	Currently looking into procurement for our PICC lines. Ensure water is provided pre and post PICC placement. During the procedure ensure communication between placer and patient is effective. If at any time the patient or placer becomes uncomfortable halt the procedure and re-evaluate.	Currently we only have one dedicated room on a Monday for our patients. Otherwise our TCT patients have an appropriate room. We are looking at other options for a dedicated room for PICC placements in future.

How will the strategy, policy, plan, procedure and/or service impact on:-	**Potential positive and/or negative impacts and any particular groups affected**	**Recommendations for improvement/ mitigation**	**Action taken by Clinical Board / Corporate Directorate** Make reference to where the mitigation is included in the document, as appropriate
		Aim to get another dedicated room.	

8.1 Please summarise the potential positive and/or negative impacts of the strategy, policy, plan or service	Patient information leaflet needs to be translated to provide information in the Welsh language. A dedicated room for PICC placement needs to be sourced. Another placer needs to be trained to place in our under 18 year old patients.

Action Plan for Mitigation / Improvement and Implementation

	Action	**Lead**	**Timescale**	**Action taken by Clinical Board / Corporate Directorate**
8.2 What are the key actions identified as a result of completing the EHIA?	Get a dedicated room to place PICC lines so that we can be more flexible to the patients' needs and treatment dates.	Rachel Davies Jennifer Proctor Mary Harness	6 months	Refurbishment commenced and our dedicated room will eventually be on Haematology day unit.
8.3 Is a more comprehensive Equalities Impact Assessment or Health Impact Assessment required? This means thinking about relevance and proportionality to the Equality Act and asking: is the impact significant enough that a more formal and full consultation is required?	Patient leaflet in welsh Development of skills for V CNS for U18s.			

	Action	Lead	Timescale	Action taken by Clinical Board / Corporate Directorate
8.4 What are the next steps? Some suggestions:- • Decide whether the strategy, policy, plan, procedur and/or service propos ○ continues unchanged as there are no significant negative impacts ○ adjusts to account for the negative impacts ○ continues despite potential for adverse impact or missed opportunities to advance equality (set out the justifications for doing so) ○ stops. • Have your strategy, policy, plan, procedure and/or service proposal approved • Publish your report of this impact assessment • Monitor and review	Currently the ward has decanted to Heulwen for t refurbishment to take place.	Jennifer Proctor	12 weeks	Refurbishment starti w/c 20.05.19

***Risk Assessment checklist for new and expectant mothers**

RISK ASSESSMENT CHECKLISTS FOR NEW AND EXPECTANT MOTHERS	
Name of member of staff:	
Department:	
Occupation:	
Pregnancy or new mother details, date of commencing maternity leave/medical certificate from GP:	
Expected/Actual date of delivery:	
Has a risk assessment of the workplace been undertaken? (MHSW1A – available on public folders, COSHH, Manual Handling) If *NO*, complete risk assessment as required – *date completed:*	*YES / NO* …….
Has a risk been identified?	*YES / NO*
Has the employee been informed of the potential risk?	*YES / NO*
Do special precautions need to be considered?	*YES / NO*
Do you need to adjust her working conditions?	*YES / NO*
Are you able to offer her suitable alternative work (if applicable)?	*YES / NO*
Is there still a potential risk to the new or expectant mother?	*YES / NO*
If *YES,* does medical suspension apply?	*YES / NO*
Date:	…….
Is referral to Occupational Health required? Date referred to Occupational Health: Response received: Action required:	*YES / NO* ……..
Name of person completing form: Designation:	…… ……