| Venous Access Device (VAD) Policy  
(Not Applicable to Infants Under 1 Year) |
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<td>Post holder responsible for Policy</td>
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Please specify standard/criterion numbers and tick ✓ other boxes as appropriate

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<tr>
<th>Monitoring Information</th>
<th>Strategic Directions – Key Milestones</th>
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<td>Patient Experience</td>
<td>Maintain Operational Service Delivery ✓</td>
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<tr>
<td>Assurance Framework</td>
<td>Integrated Community Pathways ✓</td>
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<tr>
<td>Monitor/Finance/Performance</td>
<td>Develop Acute services ✓</td>
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<tr>
<td>CQC Fundamental Standards - Regulation: 8,9,10,11,12</td>
<td>Infection Control ✓</td>
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Venous Access Device Policy

Ratified by: Infection Control & Decontamination Assurance Group: 24 January 2017
Review date: July 2021
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1. **INTRODUCTION**

1.1 This policy is applicable to all health care professionals caring for patients with a Venous Access Devices (VAD) and address insertion, access, maintaining patency, venous sampling and general care of a range of VAD. They should be used in conjunction with the Royal Devon and Exeter NHS Foundation Trust (hereafter referred to as the Trust) Intravenous Therapy Policy.

1.2 **Failure to comply with this policy could result in disciplinary action.**

2. **PURPOSE**

2.1 The purpose of this policy is to ensure that:

- Health care professionals undertaking any aspect of care relating to a VAD will have the appropriate knowledge and skills and be competent in practice.
- the most appropriate type of VAD is used for the patients' needs
- Risks associated with VAD insertion are recognised and minimised.
- on-going care is provided to minimise risk of complications
- VADs are removed at the earliest opportunity

2.2 Whilst the principles identified in this policy are relevant across the Trust, additional guidance is contained within local guidance documents in the following specialist areas:

- Paediatric Oncology
- Renal unit
- NNU

3. **DEFINITIONS**

3.1 A **venous access device** is any device that is inserted into the venous system for either diagnostic, central venous pressure monitoring or therapeutic purposes.

Appendix 1 summarises the types of venous device used in this Trust and provides key information in relation to indications, dwell time, advantages and disadvantages.

3.2 **Peripheral Venous Cannula (PVC)** - A peripheral cannula is a short, hollow, flexible tube placed in a peripheral venous blood vessel for the administration of fluid or drug therapy

3.3 **Midline** - A midline is a peripherally inserted long catheter with the tip terminating in the proximal portion of the upper extremity at or below the level of the axilla.

3.4 **Central Venous Catheter (CVC)** - A CVC is a catheter placed within the superior or inferior vena cava or other large central vein. Ideal tip placement is the distal innominate vein or proximal superior vena cava (SVC). Exceptions to this are with CVCs that are placed in the femoral veins and, in children, where tunnelled lines can be placed in the right atrium (this practice was approved by Trust Governance Committee November 2004).
In this policy and the associated procedures, the term CVC includes:

- short term, non-tunneled CVCs,
- peripherally inserted central catheters (PICCs),
- long term tunnelled line with cuff (e.g. Hickman line)
- totally implanted venous access devices (TIVAD) also known as ports

3.5 **Monovette system** - the Sarstedt S-Monovette® is an enclosed multiple-sampling blood collection system that collects blood using either an aspiration or vacuum principle of collection.

4. **DUTIES AND RESPONSIBILITIES OF STAFF**

4.1 The **Chief Executive** and the **Board of Directors** are responsible for:

- Ensuring that relevant medical staff are aware of this policy
- Ensuring that medical staff who insert or access VADs have received training and are competent in the relevant procedures

4.2 **Assistant Directors of Nursing** and **Senior Nurses** are responsible for:

- Ensuring that all relevant nursing staff are aware of this policy
- Supporting the Matrons to identify the venous access device training and development needs for nursing staff in each ward/unit and plan how these will be met
- Ensuring that an appropriate complement of nursing staff have been assessed as competent in the care of patients with VAD used in the wards/units in their area of responsibility

4.4 The **Infection Prevention and Control Team (IPCT)** are responsible for:

- Supporting the Assistant Directors of Nursing and Senior Nurses to implement elements of the Venous Access Device Policy pertinent to the prevention of infection
- Contributing to the future review and development of the VAD policy and procedures
- Analysing the results of CVC and PVC care bundles audits
- Undertaking surveillance of VAD related bacteraemias, identifying areas of high incidence and working with the clinical teams to develop practice improvement plans
- Contributing to the education and training of the multidisciplinary team in care of venous access devices
- Acting as a resource for best practice
- Providing expert input to the Medical Equipment and Products Group when trial or introduction of new products associated with vascular access are requested/being considered and ensuring that other specialists/stakeholders views are sought prior to decision making.

4.5 **Matrons** are responsible for:

- Ensuring that nursing staff inserting/removing VADs, accessing VADs and/or dressing insertion sites have received appropriate training and been assessed as competent.
- Ensuring that use of the Visual Infusion Phlebitis (VIP) tool is fully implemented in their ward/unit
- Promoting the use of relevant VAD care plans for patients with a vascular device
- Ensuring that the relevant equipment, devices, skin prep solutions and dressings are available on their wards/units

### 4.6 Vascular Access Team (VAT) are responsible for:

- Supporting the Assistant Directors of Nursing, Senior Nurses and Matrons to implement the Venous Access Device Policy
- Leading future review and development of the VAD policy and procedures
- Contributing to the education and training of the multidisciplinary team in care of venous access devices
- Providing a service for patient assessment and insertion of midlines and PICCs
- Providing expert advice and support
- Supporting collection and collation of CVC and PVC care bundle audits
- Providing expert input to the Medical Equipment and Products Group when trial or introduction of new products associated with vascular access are requested/being considered and ensuring that other specialists/stakeholders views are sought prior to decision making

### 4.7 Learning and Development Service are responsible for:

Provision of appropriate education and training courses relating to insertion and care of VADs, utilising the specialist expertise of the VAT and IPCT and others involved with VAD management.

### 4.8 Other Medical and Nursing Staff are responsible for:

- Assessing the patients requiring a VAD and ensuring that an appropriate device is selected
- Providing clear documentation of any VAD they insert
- Assessing the insertion site of VADs, using the VIP tool where appropriate.
- Documenting the findings of assessments and action taken
- Ensuring that a care plan relevant to the type of device is implemented, reviewed and evaluated appropriately
- Removing relevant VADs at the earliest opportunity
- Identifying their own training needs and maintaining competency

### 5. PRINCIPLES OF PRE-INSERTION CARE

#### 5.1 Patient Assessment and Device Selection

5.1.1 It is essential to choose the right device for the individual patient and the intended use. See Appendix 2: Guidance on selection of the appropriate venous device

See Appendix 3: Guidance on selection of appropriate PVC size

5.1.2 Assessment should include:

- Length and frequency of intended use
- Requirements/proposed therapy
- Frequency of therapy
- Previous surgery, radiotherapy, VAD, fractured clavicle which may affect access to vein
- Venous access history
- Future requirement for venous access for dialysis
- Haematology profile, including full blood count (FBC) and clotting (INR)
- Patient preference and lifestyle
- Allergy status

5.2 Patient Consent

5.2.1 Obtain written or verbal consent in non-emergency situations and document in the patient’s notes. Patient information leaflets are available for patients undergoing insertion of a long-term VAD.

5.3 Medication Related to VAD Insertion

5.3.1 Antibiotic prophylaxis is not recommended as routine, but may have a place in significant immunosuppression or particular infection risk. Microbiological advice should be sought as required.

5.3.2 Patients on anticoagulants are at increased risk of bleeding. The danger of stopping anticoagulants must be weighed against the risk of bleeding. Discussion with the Clinician placing the line must be sought. Refer to the Trust’s Anticoagulation Policy.

5.4 Insertion Site Preparation

5.4.1 A topical transdermal cream, such as Ametop 4%, can be used for any needle phobic patients prior to insertion of a device. Warm water may be used to help dilate veins for peripheral cannulation.

5.4.2 Avoid shaving, which can cause microscopic damage and microbial colonisation. If hair removal is necessary use surgical clippers.

5.4.3 If the site is visibly dirty, clean with soap and water then dry thoroughly prior to skin disinfection.

6. PRINCIPLES FOR INSERTION AND ONGOING CARE

6.1 Procedures for insertion and ongoing care of VADs are available by clicking on the links below:

- Procedure for Insertion of a PVC
- Procedure for Insertion of a Midline
- Procedure for Insertion of a Short Term CVC
- Procedure for Insertion of a Peripherally Inserted Central Catheter (PICC)
- Procedure for Insertion of Tunneled Central Venous Catheter with Cuff (E.G. Hickman Line)
- Procedure for Insertion of a Totally Implanted Venous Access Device

6.2 Preventing Infection

6.2.1 Aseptic technique reduces the risk of potentially pathogenic microorganisms being introduced into the blood stream at the point of insertion or during ongoing care/access and connector/dressing changes. Adherence to infection control principles is key to reducing risk of VAD-related infection.

6.2.2 The complexity of the procedure and, to a certain extent, the competence and experience of the individual inserting/accessing the device or dressing the VAD site informs whether an aseptic non-touch technique (ANTT) or surgical aseptic
technique is required. It is identified in the procedures detailed when it is appropriate to adopt an ANTT.

6.2.3 2% chlorhexidine gluconate in 70% alcohol must be used to disinfect the insertion site and surrounding skin and allowed to dry completely. For patients with chlorhexidine sensitivity, alcohol alone can be used for PVC insertion or 5% povidone iodine in alcohol for CVC insertion.

6.2.4 Maintenance of a closed system (i.e. by using needle free connectors, minimising use of connectors with multiple ports, minimising disconnection) minimises the introduction of microbial contaminants.

6.2.5 Prior to disconnecting infusions or accessing any part of the system, the access port or connection must be disinfected thoroughly, using 2% chlorhexidine in alcohol, ensuring a 30 second contact time and allowed to dry.

6.2.6 The insertion site for any VAD must be inspected at least daily and each time it is accessed for signs of phlebitis and infection. The subsequent score must be documented on the prescription chart and action (if any) must be documented in the nursing care plan. (see Appendix 4)

6.3 Securing Device and Site Dressings/Care

6.3.1 All VADs must be securely fixed to reduce migration and trauma to the exit site and to prevent movement of the line which may allow organisms to migrate into the wound. For PVC this will be by the application of a transparent dressing (e.g. IV3000 1- Hand), for other VADs it may be with sutures or a securing device (e.g. stat-lock). Refer to Appendix 5 for device specific information.

6.3.2 If the line has migrated contact Vascular Access Team for advice. If it is Out of hours contact Yarty ward / Yeo for inpatients. Parenteral Nutritional patients contact Nutritional support team via the main switchboard.

6.3.3 If there is likely to be oozing of haemoserous fluid (usually 24-48 hours post insertion) sterile gauze secured with a sterile transparent dressing should be applied, but changed daily.

6.3.4 A transparent semi-permeable IV dressing (e.g. IV3000 Frame delivery), should be applied when area is dry, and changed every 7 days or more frequently if dressing is no longer intact or if moisture collects at site.

6.3.5 A CHG dressing (e.g. Tegaderm CHG) should be used for patients receiving parenteral nutrition or haemodialysis patients.

6.3.6 The use of sterile gauze should be avoided as this prevents the site being observed. However, if unavoidable this should be changed every 48 hours and when visibly soiled. As the site cannot be observed, it should be palpated firmly, through the dressing, daily and if painful the dressing must be removed and the site examined.

6.3.7 The site must be cleaned at every dressing change to reduce microbial colonisation using 2% chlorhexidine gluconate in 70% alcohol (e.g. Chloraprep 3ml) or 5% povidone iodine in alcohol for patients with sensitivity to Chlorhexidine.

6.3.8 If there is a reaction or allergy to the dressings such as IV3000 refer to the flowchart for an alternative.
6.3.9 The dressing and connector change will usually be undertaken weekly as a single procedure; however, there may be circumstances when either will need to be done as a stand-alone intervention e.g.

- Every 48 hours if a gauze dressing is used
- If dressing appears soiled
- If connector is faulty
- If the connector has been removed for any reason
- If connector is leaking or if blood is seen in connector

6.3.10 Refer to the Procedure for Dressing and IV Needle-free Connector Change.

6.3.11 Dressing change or observation must be documented including site condition, dressing used and action taken if complication has arisen.

6.4 Accessing a VAD via a Needle free Connector

6.4.1 When accessing the device for any reason an Aseptic Non Touch Technique (ANTT) must be used, the key parts being:

- Tip of syringe
- Hub of needle
- Seal of IV connector

6.4.2 Refer to the Intravenous Therapy Policy for detailed procedures for administering medication or fluids by bolus or infusion.

6.4.3 Refer to the Procedure for Accessing a TIVAD using a Non Coring Needle (Huber Needle)

6.5 Maintaining Patency

6.5.1 VADs require flushing to:

- To maintain patency of venous access device where intravenous administration is intermittent
- To prevent interaction between two drugs

6.5.2 Sodium Chloride 0.9% is used for flushing VADs (exception - TIVAD and long term tunnelled line - refer device specific flushing information at Appendix 6

6.5.3 Flush VADs using the push–pause (or pulsed). This causes turbulence within the catheter lumen, removing any debris from the internal catheter wall.

6.5.4 Information for maintaining patency of specific devices is at Appendix 6

6.6 Preventing Damage of the VAD

6.6.1 Artery forceps, scissors and harp edged clamps must not be used near VADs because of the risk of damage to the catheter.

6.6.2 Syringes smaller than 10ml exert too great a pressure and should not be used. (Neonatal and Paediatric areas should refer to local guidelines)
7. **POST INSERTION COMPLICATIONS AND MANAGEMENT**

The risk of infection is common to all VADs. If infection is suspected, refer Section 10.

7.1 **PVC:**

- Complications include phlebitis, infiltration (tissued) and extravasation injury.
- Observe for infiltration, extravasation or pain when first flush to check patency or starting first bolus or infusion. Thereafter the site must be checked at least daily and a VIP score recorded.
- When used for IV drug administration or infusion the site must be checked prior to each access.
- Once infiltration identified, the cannula must be removed and documented.
- If extravasation injury is sustained, immediate action must be in accordance with the extravasation procedure (part of Intravenous Therapy Policy).

7.2 **Midline**

7.2.1 As for PVC and in addition, for the immediate post insertion period:

- The level of post-insertion monitoring will depend on the type of anaesthetic, general condition of the patient, existence of any complications, duration of the procedure and the patient’s haematology profile.
- Mild analgesia may be required
- Excessive movement of the arm (on the side the line was placed) should be avoided for 24 hours to reduce the risk of bleeding, but normal movement should be maintained.

7.3 **CVC**

- The potential complications are outlined in the Appendix 7
- The level of immediate post-insertion monitoring will depend on the type of anaesthetic, general condition of the patient, existence of any complication, duration of the procedure and the patient’s haematology profile.
- Mild analgesia is usually required, especially with long-term catheters, and occasionally stronger analgesia is needed (particularly after insertion of a totally implanted venous access device).
- Catheter tip position should be determined radiographically. Trained and competent staff must review and document correct tip placement prior to use.
8. **BLOOD ASPIRATION THROUGH A VAD**

8.1 Blood must not be taken from a catheter dedicated for parenteral nutrition infusion unless catheter related infection is suspected and blood cultures through the line are required.

8.2 Blood can be aspirated from all other VADs including a peripheral venous cannula only on insertion. However, it is often not possible to aspirate blood from a midline - seek advice from Vascular Access Team.

8.3 The principles of infection control and aseptic technique must be applied (Refer to the Procedure for Blood Aspiration from a CVC).

8.4 The Monovette system is the preferred method for blood aspiration.

8.5 When blood sampling from a CVC, first stop any infusions. If a multi lumen catheter is in situ try to keep one lumen for sampling and the others for infusions/drug administration. If this is not possible, flush the catheter before sampling to avoid contamination - this is particularly important when obtaining a sample for drug levels.

8.6 Refer to Venepuncture Guidelines for information on order for filling and labelling of blood bottles.

9. **REMOVAL**

9.1 Prompt removal of VADs reduces the risk of infection. Regular assessment of the need for the device must be made on a frequency relevant to the type of device and reason for insertion. For short term devices assessment will be at least daily.

9.2 Dwell times for VADs are included in the table at Appendix 1. If these dwell times are exceeded due to poor venous access or for one further treatment, this is safe to do so as long as frequent monitoring is undertaken and no complications are observed. The rationale for extending the dwell time must be clearly documented and, for midlines/PICCs, discussed with the Vascular Access Team.

9.3 Procedures for removal of VADs are available by clicking on the links below

- Procedure for Removal of a PVC
- Procedure for Removal of PICC and Midline
- Procedure for Removal of a Short-Term CVC

10. **DIAGNOSIS OF CATHETER-RELATED INFECTION**

10.1 Exit Site Infection and Tunnel Infection

10.1.1 *Signs of infection*

- Pain at site
- Inflammation
- Cellulitis/tracking (within 2 cm of exit site = exit site infection; at a distance of >2 cm of exit site and along subcutaneous tract or the catheter = tunnel infection)
- Exudate/pus at site
- Fever

N.B: These signs may be absent in a neutropenic patient.
10.1.2 Specimen collection

- If exit site/tunnel infection is suspected, swab the exit site for MC&S. A swab with charcoal medium should be used; in the absence of pus/exudate, pre-moisten swab with sterile saline.

- If VAD is removed due to infection, the tip needs to be cut off placed in a clear specimen pot and sent for MC and S.

10.2 Systemic Infection

10.2.1 Signs of infection:

- Fever (usually >38°C)
- Malaise
- Rigors (particularly on flushing)
- Chills
- Hypotension

The patient may become shocked and close observation is indicated.

10.2.2 Specimen Collection

- Obtain 1 set of blood culture from a peripheral vein if PVC associated bacteraemia suspected
- Obtain 2 sets of blood cultures if CVC associated bacteraemia suspected: one from a peripheral vein and one from the CVC. Label forms clearly to indicate whether cultures are peripheral or from CVC.
- When collecting blood cultures from a CVC, as above, do not discard the first ‘draw’. Send this for culture as above.
- If VAD is removed due to infection, the tip needs to be cut off placed in a clear specimen pot and sent for MC and S.

10.3 Reporting

Any sign of infection must be documented and reported (see Appendix 8 for information cascade). Assess whether antibiotic treatment and/or line removal is indicated. Refer to local guidance in oncology/haematology or to medical staff in other areas.

NB. Topical antiseptics or topical antibiotics are not recommended for CVC site infection. In addition, topical preparations in a polyethylene glycol base must not be applied as polyethylene glycol will damage the integrity of the catheter.

11. DOCUMENTATION

11.1 PVC

Document in the patient’s prescription chart or medical notes using the Trust’s designed cannulation insertion VIP sticker.

11.2 Midline and CVCs

11.2.1 Document in medical notes:

- Date of insertion
- Reason of insertion
• Name of placer
• Type of consent obtained
• Skin preparation used
• Personal Protective Equipment used
• Insertion site
• Number of attempts and locations
• Whether ultrasound scan was used
• Catheter type
• Which local anaesthetic and amount used
• Length of catheter inserted
• Presence of blood return and ability to flush
• Manufacturer lot/batch number
• For all lines except PVC and Midline: method of verifying catheter tip location and radiographic confirmation of catheter tip.
• Date removed and reason for removal (and if tip sent of MC&S, if bacteraemia suspected)

11.2.2 Any complications must be documented, including action taken and the outcome. Inform the Vascular Access Team of any complications.

12. AUDIT / SURVEILLANCE

12.1 Audit is important for evaluating and improving IV practice. As well as periodic audits of VAD standards, the following specialities engage in ongoing audit of all VAD:

• **Oncology & Haematology Patients:** All central venous catheters must be entered into the CVC audit (contact JACIE Haematology Coordinator)
• **Renal Patients:** All CVCs require an audit form. Refer to the Renal IV Access Nurse Specialist.
• **Paediatric Oncology:** CVCs audited by Oncology Nurse Specialist.
• **Vascular Access Team (VAT):** PICCs inserted by a member of the VAT.

12.2 If planning audit of any aspect of VAD management, please consult the infection prevention and control team or Clinical Audit Department to ensure consistency of data collection.

13. TRAINING

13.1 Health care professionals must not undertake any part of the procedures described in the preceding sections of this guidance unless they have the necessary knowledge, skills and competence.

13.2 The Learning and Development Service can provide details of training opportunities and competency assessments relevant to these procedures e.g. Cannulation training, CVC workshops and IV Therapy study days.

14. ARCHIVING ARRANGEMENTS

The original of this policy will remain with the author, Senior Vascular Access Nurse Specialist, Vascular Access Team, Critical Care. An electronic copy will be maintained on the Trust Intranet, A-Z – P – Policies (Trust-wide) – V – Venous Access Device. An electronic copy will be stored on the Trust's “archived policies” shared drive, and will be held indefinitely. A paper copy (where one exists) will be retained for 10 years.
15. **PROCESS FOR MONITORING COMPLIANCE WITH AND EFFECTIVENESS OF THE POLICY**

15.1 In order to monitor compliance with this policy, the auditable standards will be monitored as follows:

<table>
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<tr>
<th>No</th>
<th>Minimum Requirements</th>
<th>Evidenced by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Staff involved with insertion and care of vascular access devices are competent</td>
<td>Review of datix incident reports</td>
</tr>
<tr>
<td>2.</td>
<td>Most appropriate site is selected for vascular access devices</td>
<td>Annual audit of central vascular access devices</td>
</tr>
<tr>
<td>3.</td>
<td>Aseptic procedures used insertion and care of vascular access devices</td>
<td>Datix incident reports by Vascular Access Team for any poor unsafe practice seen.</td>
</tr>
</tbody>
</table>

15.2 **Frequency**
In each financial year, the Vascular Access Team will audit yearly to ensure that this policy has been adhered to and a formal report will be written and presented at the Infection Prevention & Assurance Group.

15.3 ** Undertaken by**
Senior Vascular Access Nurse Specialist and team members

15.4 **Dissemination of Results**
At the Infection Control & Decontamination Assurance Group: which is held quarterly

15.5 **Recommendations/ Action Plans**
Implementation of the recommendations and action plan will be monitored by the Infection Control & Decontamination Assurance Group: which meets quarterly.

15.6 Any barriers to implementation will be risk-assessed and added to the risk register.

15.7 Any changes in practice needed will be highlighted to Trust staff via the Governance Managers’ cascade system.

16. **REFERENCES**


### APPENDIX 1: TYPES OF VENOUS ACCESS DEVICE

<table>
<thead>
<tr>
<th></th>
<th>Peripheral venous cannula</th>
<th>Mid line</th>
<th>Short-term non-tunnelled CVC</th>
<th>Peripherally inserted (PICC)</th>
<th>Tunnelled and cuffed e.g. Hickman line</th>
<th>Totally implanted venous access device (TIVAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended dwell time</strong></td>
<td>96 hours</td>
<td>4 weeks</td>
<td>Up to 10 days.</td>
<td>Up to one year</td>
<td>&gt;30 days. No maximum dwell time recommendation. Follow manufacturer’s recommendations.</td>
<td>No maximum dwell time recommendation.</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Short term intravenous fluids or medication</td>
<td>Mid length IV drug therapy Poor venous access Patient preference</td>
<td>CVC - Monitoring CVP. Administration of large volume fluid Administration of irritant, hyperosmolar solutions</td>
<td>Administration of irritant, hyperosmolar solutions Long term IV drug therapy Poor venous access Needle phobia</td>
<td>Administration of irritant, hyperosmolar solutions Long term IV drug therapy Poor venous access Needle phobia</td>
<td>Administration of irritant, hyperosmolar solutions Long term IV drug therapy Poor venous access Needle phobia</td>
</tr>
<tr>
<td><strong>Placement</strong></td>
<td>Placed by trained competent practitioner.</td>
<td>Procedure room preferred but can be placed at bedside. Placed by competent practitioner</td>
<td>Theatre or procedures room preferred Ward/department in emergency Placed by doctor or other competent practitioner</td>
<td>Procedure room preferred but can be placed at bedside. Placed by competent practitioner</td>
<td>Theatre or procedures room Placed by radiologist, vascular surgeon or other competent practitioner</td>
<td>Operating Theatre Radiology Placed by vascular surgeon or radiologist</td>
</tr>
<tr>
<td><strong>Site selection</strong></td>
<td>See Appendix 2</td>
<td>Basilic vein or brachial complex vein rarely cephalic vein, utilising ultrasound</td>
<td>Internal jugular vein preferred as low risk of mechanical complications) however, subclavian vein is associated with lower risk of infection. Avoid femoral veins where possible due to high infection risk.</td>
<td>Basilic vein or brachial complex vein rarely cephalic vein, utilising ultrasound</td>
<td>Subclavian vein preferred (low risk of infection) Internal jugular vein Avoid femoral or axillary veins due to high infection risk</td>
<td>Internal jugular Subclavian vein</td>
</tr>
<tr>
<td><strong>Features/advantages</strong></td>
<td>Can be inserted at bedside. No X-ray needed to</td>
<td>Alternative to repeated cannulation Can be inserted</td>
<td>Provides central access for short-term use. Multi-lumen catheters</td>
<td>Alternative to repeated cannulation</td>
<td>A subcutaneous tunnel is created between skin exit of</td>
<td>Device is tunnelled under skin. A subcutaneous</td>
</tr>
<tr>
<td>Venous Access Device Policy</td>
<td></td>
<td></td>
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<td>----------------------------</td>
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<tr>
<td>Ratified by Infection Control Operational Group: 24th January 2017</td>
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</tr>
<tr>
<td>Review date: July 2021</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Peripheral venous cannula</th>
<th>Mid line</th>
<th>Short-term non-tunnelled CVC</th>
<th>Peripherally inserted (PICC)</th>
<th>Tunnelled and cuffed e.g. Hickman line</th>
<th>Totally implanted venous access device (TIVAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>confirm placement</td>
<td>at bedside. No X-ray needed to confirm placement</td>
<td>available but use only if essential due to increased infection risk. Antimicrobial or antiseptic impregnated catheters are available which reduces infection risk Can be used for blood aspiration.</td>
<td>Low risk of infection/ other complications Can be used for blood aspiration, if not having parenteral nutrition (see section 8).</td>
<td>the catheter and vein insertion. A cuff promotes tissue growth to anchor catheter in place and inhibit migration of bacteria. Single and double lumen available Can be used for blood aspiration, if not having parenteral nutrition (see section 8).</td>
<td>port/reservoir with a self-sealing septum is accessed with a non-coring needle through the skin. Single and double lumen available. Lower infection rate than Hickman. Improved patient image Patient is able to maintain activities such as swimming when port is not accessed.</td>
</tr>
<tr>
<td>Disadvantages</td>
<td>No irritants or hyperosmolar solutions. Not suitable for blood aspiration</td>
<td>Usually not suitable blood aspiration. Risk of being mistaken for a PICC. High risk of VTE</td>
<td>Highest infection risk of all VADs (see above) Pneumothorax risk on insertion (especially using subclavian) Internal jugular catheters difficult to secure</td>
<td>VTE Infection</td>
<td>Specific port needles required to access General anaesthetic may be required for insertion/ removal but can be inserted under local. Cost of insertion and device</td>
</tr>
</tbody>
</table>

 Venous Access Device Policy
 Ratified by Infection Control Operational Group: 24th January 2017
 Review date: July 2021
APPENDIX 2: GUIDANCE ON SELECTION OF APPROPRIATE VENOUS ACCESS DEVICE

1. Patient Assessment
   Is peripheral access possible?
   - Yes
     2. Duration of therapy and need for IV access
       - Less than 1 week
       - Between 1 and 6 months
       - Greater than 6 months
       - PICC catheter up to 1 year
     3. Does infusate meet criteria for peripheral line?
       - Yes
         IV cannula
       - No
         PICC catheter
     4. Does infusate meet criteria for single lumen access?
       - Yes
         No PICC or Tunnelled non cuffed catheter
       - No PICC or Multi lumen tunnelled cuffed catheter
     Is permanent fixation required?
       - Yes
         Tunnelled cuffed catheter e.g. Hickman
       - No
         Implanted access device
     Is body image and/or a lower risk of infection a priority?
       - Yes
         No Single lumen tunnelled cuffed catheter e.g. Hickman
       - No
   - No

2. Duration of therapy and need for IV access
   - Between 1 week and 1 month
   - Greater than 1 month
     3. Does infusate meet criteria for peripheral line?
       - Yes
         Midline catheter up to 4 weeks
       - No
         PICC catheter
     4. Does infusate meet criteria for single lumen access?
       - Yes
         No PICC or Multi lumen tunnelled cuffed catheter
       - No PICC or Multi lumen tunnelled cuffed catheter e.g. Hickman

1. Patient Assessment
   Diagnosis, prognosis, all medical conditions, condition of vasculature, history of venous access devices.

2. Duration of Therapy
   Determine length of time IV access required. Consider diagnosis and likelihood of therapy extensions or addition of new therapies.

3. Infusate Criteria for Peripheral Lines
   - Final osmolality < 500mOsm/L
   - pH between 5 and 8
   - Not an irritant or vesicant for continuous infusion

4. Infusate Criteria for Single Lumen Catheter
   - Dedicated TPN
   - No risk of adverse drug interaction
APPENDIX 3: GUIDANCE ON SELECTION OF APPROPRIATE PVC

Cannula Size

<table>
<thead>
<tr>
<th>Size and colour of cannula</th>
<th>Most common applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 gauge (Yellow)</td>
<td>Paediatrics, neonates or oncology patients undergoing chemotherapy</td>
</tr>
<tr>
<td>22 gauge (Blue)</td>
<td>Paediatrics and adults</td>
</tr>
<tr>
<td>20 gauge (Pink)</td>
<td>Large volumes fluids, viscous fluids, diagnostic procedures e.g. injection of contrast media</td>
</tr>
<tr>
<td>18 gauge (Green)</td>
<td>Patients undergoing surgery, receiving blood transfusions or receiving large volumes of fluid</td>
</tr>
<tr>
<td>16 gauge (Grey)</td>
<td>Rapid transfusion of whole blood or components</td>
</tr>
<tr>
<td>14 gauge (Orange)</td>
<td>Rapid transfusion of blood</td>
</tr>
</tbody>
</table>

Selection of vein

- Use distal veins first
- Subsequent cannulation should be made proximal to the previously cannulated site
- Use veins that feel soft and resilient
- Use large veins where possible
- Use a straight vein suited to the length of cannula
- Use veins on patient’s non-dominant limb

The following should be avoided:

- Arm of a patient who has undergone mastectomy and/or axillary node dissection/radiotherapy
- Limbs with fistulae or awaiting fistula formation
- Limbs with fractures
- Small, visible but impalpable veins
- Veins on the palm side of hands
- Median cubital veins
- Limbs affected by lymph node dissection or radiotherapy
- Veins that feel hard and sclerosed
- Areas of joint flexion
- Veins in close proximity to arteries/arterial lines
- Veins in upper arms
- Veins in lower limbs
- Previously cannulated veins
APPENDIX 4: VISUAL INFUSION PHLEBITIS SCORE (VIP)

All patients with an intravenous access device in place must have the IV site checked at least daily for signs of infusion phlebitis. The subsequent score and action(s) taken (if any) must be documented in the nursing care plan.

The cannula site must also be observed when:

- Bolus injections are administered
- IV flow rates are checked or altered
- IV infusion started and after half an hour to check cannula site and rate of infusion
- Solutions containers are changed

If a VIP score of 2 or above is observed the cannula must be removed.

<table>
<thead>
<tr>
<th>IV site appears healthy</th>
<th>0</th>
<th>&gt;</th>
<th>No signs of phlebitis</th>
<th>OBSERVE CANNULA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>One</strong> of the following is evident</td>
<td>1</td>
<td>&gt;</td>
<td>Possible first signs of phlebitis</td>
<td>OBSERVE CANNULA</td>
</tr>
<tr>
<td>- Slight pain near IV site or</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Slight redness near IV site</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Two** of the following are evident | 2 | > | Early Stage of phlebitis | RESITE CANNULA |
| - Pain at IV site | | | | |
| - Erythema | | | | |
| - Swelling | | | | |

| **All** of the following signs are evident | 3 | > | Mid stage of phlebitis | CONSIDER TREATMENT |
| - Pain along path of cannula | | | | |
| - Erythema | | | | |
| - Induration | | | | |

| **All** of the following signs are evident and extensive | 4 | > | Advanced stage of phlebitis or start of thrombophlebitis | CONSIDER TREATMENT |
| - Erythema | | | | |
| - Induration | | | | |
| - Palpable venous cord | | | | |

| **All** of the following signs are evident and extensive: | 5 | > | Advanced stage of thrombophlebitis | INITIATE TREATMENT RESITE CANNULA |
| - Pain along path of cannula | | | | |
| - Erythema | | | | |
| - Induration | | | | |
| - Palpable venous cord | | | | |
| - Pyrexia | | | | |
APPENDIX 5: SECURING AND SITE DRESSINGS/CARE - DEVICE SPECIFIC ISSUES

Midlines

A securing device e.g. StatLock is used to secure the midline in place. There is one puncture site which should be covered with a transparent IV dressing.

Short Term Percutaneous CVCs

Sutures remain in situ until CVC is removed. Insertion site is covered with a transparent IV dressing.

Peripherally Inserted Central Catheters

A securing device e.g. Statlock is used to secure the catheter in place. There is one puncture site, which should be covered with a transparent IV dressing.

Tunnelled, Cuffed Catheters

There are two puncture sites ‘entry’ and ‘exit’ with sutures. The top or entry site suture can be removed 7 days after insertion, once removed leave entry site exposed.

Exit (around the line) site suture should be removed no sooner than 21 days post insertion or longer if required to allow fibrosis of tissue around the Dacron Cuff to occur.

Once all sutures are removed then the line does not require a dressing and can be left exposed but secured with micro-pore, Skin fix dressing or a pouch.

Totally Implanted Venous Access Device

Immediately after insertion sterile gauze will be in place, the site should be inspected and “port” accessed as in guidance section 6.3. A sterile absorbent post-op dressing is appropriate for the first 24 hours. Once the site is dry, dress with a sterile transparent semi-permeable dressing. Sutures, if used, can be removed 7-10 days after insertion: once sutures are removed the area should be left exposed.

If huber needle in situ then transparent IV dressing is secured over and a needle free connector is attached. Dressing and connector change is then every week as per the procedure for accessing a TIVAD
APPENDIX 6: MAINTAINING PATENCY

1. PVC

Flush with 3-5 ml of Sodium Chloride 0.9% before and after intermittent use and between administrations of different drugs.

When not in use, flush twice daily using 5ml Sodium Chloride 0.9%. Consider removal if unused for 24 hours.

2. Midlines

Flush with 10 ml Sodium Chloride 0.9% before and after intermittent use and between administrations of different drugs.

3. Short term CVC

As for Midlines

If a lumen of a multi-lumen CVC is not being used it should be flushed every 12 hours even if other lumens are in use. If the catheter is not in regular use then it needs to be assessed and removed if not needed or replaced with a more appropriate device.

4. PICC

As for Midlines
If not in daily use, then it requires weekly flushing using 0.9% sodium chloride.

5. Long Term Tunnelled, Cuffed CVC

If not in daily use, then it requires weekly flushing.

Daily flushing solution: 0.9% sodium chloride 10mls
Weekly Flushing solution: Heparin Sodium flushing solution (10 units/ml) 5mls

6. Totally Implanted Venous Access Device

The line is always locked with Heparin solution when being left unused for any length of time.

Daily flushing solution: 0.9% sodium chloride 10mls
Monthly Access: Heparin Sodium flushing solution (10 units/ml) 5mls
Bi-monthly Access: Heparin Sodium Flushing solution (100 units/ml) 4mls
<table>
<thead>
<tr>
<th>Complication</th>
<th>Signs and symptoms</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumothorax</td>
<td>Dyspnoea/cyanosis</td>
<td>Seek medical advice urgently. Monitor respiratory rate and sit patient upright. Give high flow oxygen.</td>
</tr>
<tr>
<td>Venous air embolism</td>
<td>Dyspnoea/cyanosis, Hypertension/dizziness, Tachycardic/weak pulse, Anxiety, Altered consciousness</td>
<td>Seek medical advice urgently. Check all CVC connections and prevent further air entry. Place patient in left Trendelenburg position (30% head down tilt). Administer high flow oxygen. Monitor vital signs. Reassure the patient.</td>
</tr>
<tr>
<td>Arterial puncture</td>
<td>Bright red arterial blood, Syringe fills more quickly, Blood leaves in a pulsing mode</td>
<td>Apply pressure for 5 minutes to limit haematoma formation. Monitor vital signs. Document in medical notes. If tachycardia or hypotension occurs later contact medical staff.</td>
</tr>
<tr>
<td>Haematoma formation</td>
<td>Swelling, Patient complains of pressure</td>
<td>Record and monitor symptoms. Seek immediate help if condition advances.</td>
</tr>
<tr>
<td>Cardiac tamponade</td>
<td>Hypotension, Chest tightness or shortness of breath, Altered consciousness</td>
<td>Seek urgent medical help. High flow oxygen. Monitor vital signs.</td>
</tr>
<tr>
<td>Catheter dislodgement</td>
<td>External portion of catheter is longer, Sudden lack of blood return, Swelling in the arm, neck or chest</td>
<td>Do not attempt to push catheter back into place or use it. Seek expert help.</td>
</tr>
<tr>
<td>Broken catheter (risk of catheter or air embolism)</td>
<td>Leakage from line during use. Any visible damage.</td>
<td>Clamp catheter between patient and damaged area, cover with sterile gauze. Minimise patient movement; Seek expert advice: removal or repair (of tunnelled catheters) should only be undertaken by specialist staff.</td>
</tr>
<tr>
<td>Infection (local or systemic)</td>
<td>See Section 10</td>
<td>See Section 10</td>
</tr>
<tr>
<td>Thrombosis (VTE)</td>
<td>Swelling arm, hand and/or neck, Pain, Functional impairment, Parathesia, Non-specific feelings – heavy arm, leaking from site</td>
<td>If not on thromboprophylaxis start treatment. Organise ultrasound Doppler. If positive, continue thromboprophylaxis, but increase dose to treatment dose. If negative, liaise with VAT, stop thromboprophylaxis if patient low risk and not indicated. Refer to anticoagulant guidelines on HuB.</td>
</tr>
<tr>
<td>Complication</td>
<td>Signs and symptoms</td>
<td>Management</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Occlusion or resistance in lumens</td>
<td>Unable to flush lumen of line</td>
<td>Flush the lumen with 10 ml Sodium Chloride 0.9% with fast pulsatile (push pause) technique Contact VAT (or Yarty ward / Yeo ward out of hours) as urokinase may need to be instilled. Trained practitioners only to administer urokinase.</td>
</tr>
</tbody>
</table>

|
APPENDIX 8: INFORMATION CASCADE IN THE EVENT OF A VAD RELATED BACTERAEMIA

Clinical team review patient and discuss with Microbiology if required

Follow guidance in Section 10 for diagnosis and specimen collection

Clinical decision regarding salvage or removal of CVC

(Consult placing team/associated specialist as appropriate
E.g. Vascular Access Team (PICCs), Oncology or Haematology teams, Renal Access Nurse, Parenteral Nutrition team)

Inform relevant Nurse Specialist (if not already aware as above) eg

Venous access Team, PN Team, Renal Access Nurse who will

Relevant Nurse Specialist to report case and results of initial investigation to Infection Prevention and Control Team, Nurse in charge of clinical area, Matron and Senior Matron

If training issues identified, relevant Nurse Specialist to liaise with

Learning & Development service (Nursing) or Infection Control Team (Medical)
THE DRESSING PROTOCOL FOR PATIENTS WHO HAVE ALLERGIES

If the patient is allergic to the IV3000 transparent dressing, substitute with Tegaderm transparent dressing. If the patient reacts to Tegaderm try Mepilex Boarderlite or hydrocolloid thin to protect the skin. If the patient is unable to tolerate Chlorhexidine use 5% povidone. (Refer to 6.3.6)

Central Venous Catheter Dressing Algorithm (document all reactions)

After Cleaning with Chlorhexidine 2% (Chloraprep) for 30 seconds leave to air dry for 30 seconds.

If 5% Povidone is used leave to dry for 3-5 mins.)

****** Adhesive and Chlorhexidine may cause a reaction.

1st Choice of Dressing for CVC’s is IV3000 transparent Dressing unless the patient is receiving parenteral nutrition or haemodialysis where Tegaderm with CHG (Chlorhexidine) GEL

Reaction Cascade

- Tegaderm (without Gel)
- IV3000 Transparent dressing
  - Unless receiving parenteral nutrition or haemodialysis, use Tegaderm with CHG GEL
- Mepilex Boarderlite or hydrocolloid thin on the skin
  - (Liaise with VAT for advice)

If reacts to all dressings and skin integrity is at risk, may need to consider alternative vascular access device.
APPENDIX 10: EQUALITY IMPACT ASSESSMENT TOOL

<table>
<thead>
<tr>
<th>Name of document</th>
<th>Venous Access Device Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division/Directorate and service area</td>
<td>Surgical Division, Critical care, Trustwide</td>
</tr>
<tr>
<td>Name, job title and contact details of person completing the assessment</td>
<td>Vicki Shawyer, Senior Vascular Access Nurse Specialist. Vascular Access Team Ext. 6427</td>
</tr>
<tr>
<td>Date completed:</td>
<td>12.01.2017</td>
</tr>
</tbody>
</table>

The purpose of this tool is to:
- identify the equality issues related to a policy, procedure or strategy
- summarise the work done during the development of the document to reduce negative impacts or to maximise benefit
- highlight unresolved issues with the policy/procedure/strategy which cannot be removed but which will be monitored, and set out how this will be done.

1. What is the main purpose of this document?
   Staff involved with insertion and care of vascular access devices are competent
   Most appropriate site is selected for vascular access devices
   Standard precautions for infection control

2. Who does it mainly affect? (Please insert an "x" as appropriate:)
   - Carers
   - Staff
   - Patients ☒
   - Other (please specify)

3. Who might the policy have a ‘differential’ effect on, considering the “protected characteristics” below? (By differential we mean, for example that a policy may have a noticeably more positive or negative impact on a particular group e.g. it may be more beneficial for women than for men)
   Please insert an “x” in the appropriate box (x)

<table>
<thead>
<tr>
<th>Protected characteristic</th>
<th>Relevant</th>
<th>Not relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>Disability</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>Sex - including: Transgender, and Pregnancy / Maternity</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>Race</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>Religion / belief</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>Sexual orientation – including: Marriage / Civil Partnership</td>
<td>☐</td>
<td>☒</td>
</tr>
</tbody>
</table>

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4. Apart from those with protected characteristics, which other groups in society might this document be particularly relevant to... (e.g. those affected by homelessness, bariatric patients, end of life patients, those with carers etc.)?

None

5. Do you think the document meets our human rights obligations? ☒

Feel free to expand on any human rights considerations in question 6 below.

A quick guide to human rights:

- **Fairness** – how have you made sure it treat everyone justly?
- **Respect** – how have you made sure it respects everyone as a person?
- **Equality** – how does it give everyone an equal chance to get whatever it is offering?
- **Dignity** – have you made sure it treats everyone with dignity?
- **Autonomy** – Does it enable people to make decisions for themselves?

6. Looking back at questions 3, 4 and 5, can you summarise what has been done during the production of this document and your consultation process to support our equality / human rights / inclusion commitments?

Ratified at Infection Control Operational group
Presented at Infection Control and Decontamination Assurance Group 24.01.2017

7. If you have noted any 'missed opportunities', or perhaps noted that there remains some concern about a potentially negative impact please note this below and how this will be monitored/addressed.

<table>
<thead>
<tr>
<th>“Protected characteristic”:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue:</td>
</tr>
<tr>
<td>How is this going to be monitored/ addressed in the future:</td>
</tr>
<tr>
<td>Group that will be responsible for ensuring this carried out:</td>
</tr>
</tbody>
</table>

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