PERIPHERAL VENOUS CATHETER CARE POLICY FOR ADULTS

Amendments

<table>
<thead>
<tr>
<th>Date</th>
<th>Page(s)</th>
<th>Comments</th>
<th>Approved by</th>
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<tbody>
<tr>
<td>28.01.08</td>
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<td>6.9 and 10.2 additions made in line with MHRA guidance (Dec. 07)</td>
<td>Michaela Morris</td>
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<tr>
<td>Feb. 2010</td>
<td></td>
<td>Updated in line with the Trust's Policy Writing &amp; Ratification Policy</td>
<td>Caroline Becher, Chief Nurse</td>
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<tr>
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<td>Suzanne Rankin, Chief Nurse</td>
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Compiled by: The Infection Control Team
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Reviewed by: Linda Fairhead
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Impact Assessment carried out by:
Linda Fairhead, Consultant Nurse, Infection Prevention & Control

Comments on this document to:
Linda Fairhead, Consultant Nurse, Infection Prevention & Control
Peripheral venous catheters (PVC) are devices that are inserted intravenously usually inserted into the veins of the forearm, the hand and occasionally the lower limbs of patients. They are used to administer intravenous fluids, drugs, TPN or blood products.

2. PURPOSE

This policy outlines measures that shall be implemented to reduce the risk of infectious and non-infectious complications in any adult with a PVC. Therefore a Peripheral Cannula Insertion Pack must be used when inserting a PVC. The exception being an emergency situation.

3. BACKGROUND

Intravascular catheter-related infections are systemic infections which have a vascular access device (VAD) catheter as the source. Every year in the UK an estimated 6,000 patients develop a catheter-related blood stream infection (CR-BSI) (Eliot, 2001). The infections are associated with a high morbidity and mortality, particularly in hospitalised patients.

Catheter Related Blood Stream Infection’s (CRB-SI’s) are caused by micro-organsims, such as Staphylococcus aureus and Staphylococcus epidermis. These organisms found on the patient’s skin contaminate the catheter during insertion, or migrate along the catheter track. Contaminated fluids and equipment, cross infection and colonised hands are also factors implicated in catheter related infection.

4. SELECTION OF CATHETER

Select the correct catheter size for the purpose and length of infusion (Appendix 1)

Twenty gauge or smaller catheters should be used for most PVC’s.

A minimum 20 gauge catheter is required for infusion of peripheral TPN.

Use 1% lignocaine as a local anaesthetic prior to insertion for a cannula greater than 20 gauge. Only one PVC device will be used for each cannulation attempt.
5. **SELECTION OF CATHETER INSERTION SITE**

The preferred insertion site for PVC’s is the upper extremities. Veins in the lower extremities should not be used routinely due to risk of embolism and thrombophlebitis (Dougherty 1999). Site selection should avoid areas of flexion (Dougherty, 1999) although this may not always be possible in an emergency situation such as during resuscitation when the antecubital fossa is recommended.

**Subsequent cannulation** should be made proximal to the previously cannulated site (Weinstein, 2000).

**Sites to avoid:** The individual inserting the line shall avoid pre or post-operative sites, areas that are oedematous, injured or damaged and the arm on the same side as a past or potential mastectomy or dialysis fistula (exception shall be made for diagnosis purposes, e.g. fistulogram).

6. **CATHETER INSERTION**

**Tourniquets:** A disposable tourniquet must be used. Do not use a disposable glove.

**Hand Hygiene:** Wash hands with liquid soap and water followed by alcohol hand sanitiser before insertion. See Hand Hygiene policy.

**Technique** Aseptic non touch technique (see Aseptic Technique Policy).

**Skin preparation:** Shaving of the skin should be avoided. If hair removal is required hair should be clipped using a disposable clipper head. Cleanse the skin for at least 30 seconds with a 2% chlorhexidine gluconate/70% isopropyl alcohol applicator (SEPP or FREPP) and then leave to dry for 30 seconds before the insertion of the cannula (Dougherty, 1999). DO NOT REPALPATE THE VEIN ONCE THE SKIN HAS BEEN CLEANED.

**Insertion of PVC:** See Procedure for insertion of PVC.

**Securement of lines:** Secure the catheter in position using a transparent, semi permeable polyurethane peripheral cannula dressing. A PVC may be further secured for the confused patient by use of a bandage. This, however, should not be undertaken routinely. The date of insertion should be recorded on the cannula dressing.

**Cannula site dressing:** The dressing shall be changed when it becomes damp, loose, soiled or if the patient develops problems at the site that require further inspection. **Exception:** For patients who have skin breakdown or oozing, an occlusive gauze dressing may be used and changed when soiled or every 24 hours. Gauze dressings may also be used for patients who do not tolerate a semi-permeable transparent dressing and changed when soiled or every 24 hours. Transparent semi permeable polyurethane dressing should remain in place for up to 72 hours, after this time the cannula should be resited. The review day sticker in the cannulation pack must be applied to the dressing.

**Flushing of lines:** Once the PVC is in place the catheter shall be flushed with 5 mls 0.9% Sodium Chloride and capped with a Bionector device.

**Bionector devices:** A Bionector is a needless system used to cap off vascular access devices. These devices come in individual bungs, single or double lumen for PVC’s. Peripheral insertion packs have the double lumen. All PVC’s must have a Bionector device.
attached. PVC’s used for peripheral TPN should have a minimum of one hub between infusion line and PVC to minimise the risk of infection. For patients who require intravenous therapy and administration of intermittent intravenous drug administration a double lumen octopus Bionector should be used. Clamps should be applied to lumens/lines when not in use to prevent backtracking.

**Documentation:** Document line placement by placing the sticker in the cannulation pack on the peripheral cannula insertion record chart.
- Date and time device inserted
- Insertion site
- Name of person inserting device
- Consider documentation of product number and gauge for traceability.

7. **SITE ASSESSMENT**

Patients shall be encouraged to report any changes in their catheter site or any new discomfort to medical staff. Ensure patient or relative has been given the patient leaflet titled “Advice for Patients with a Cannula”.

A nurse shall assess PVC site at least 8 hourly for signs of infiltration, phlebitis or infection; including pain, redness, swelling, induration, disruption of flow or lack of blood return.

If a gauze dressing is being utilised, assess for phlebitis and infection at time of dressing change.

Phlebitis shall be graded based on the following criteria of the Visual Infusion Phlebitis (VIP) score in Table 1.

**Table 1 Visual Infusion Phlebitis Score tool for Vascular Access Devices**

<table>
<thead>
<tr>
<th>Observations</th>
<th>Score</th>
<th>Judgement</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Absence of erythema and no purulent discharge</td>
<td>0</td>
<td>No signs of phlebitis</td>
<td>OBSERVE CANNULA</td>
</tr>
<tr>
<td>• Slight Pain at IV site or Slight Erythema at IV site</td>
<td>1</td>
<td>Possible first signs</td>
<td>OBSERVE CANNULA</td>
</tr>
<tr>
<td>• Two of the following are evident</td>
<td>2</td>
<td>Early stage of phlebitis</td>
<td>REMOVE CANNULA</td>
</tr>
<tr>
<td>• Pain at IV site</td>
<td></td>
<td></td>
<td>RESITE CANNULA IF STILL REQUIRED</td>
</tr>
<tr>
<td>• Erythema</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Swelling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Increased Erythema, Pyrexia, Pain, Purulent Discharge from the IV site</td>
<td>3</td>
<td>Phlebitis</td>
<td>REMOVE CANNULA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SEND TIP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SEND BLOOD CULTURES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RESITE CANNULA IF REQUIRED</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CONSIDER TREATMENT</td>
</tr>
</tbody>
</table>

VIP Adapted from A Jackson, 1997, Specialist Nurse, IV Therapy and Care, Rotherham General Hospitals
If a localised infection is suspected at the PVC insertion site, medical staff must be informed. Health care practitioners with a cannulation insertion competency may remove and resite the PVC. (NB. Following a risk assessment it may be necessary to insert the new cannula before removing the original). Once medical staff have been informed a health care practitioner with a PVC removal competency may remove an infected cannula. On removal of the line if an infection is suspected using the VIP score 3, a bacterial culture of the site should be sent as well as the cannula tip.

VIP score shall be documented on the Peripheral Cannula Insertion Record. All patients with a peripheral cannula in situ must also have a peripheral core care plan which must be evaluated and documented per shift.

8. ACCESSING LINES

Before accessing the Bionector port must be decontaminated using a 2% chlorhexidine gluconate/70% isopropyl alcohol cloth (Sani-Cloth CHG 21 for medical devices). The port shall be left to dry before connecting a syringe.

If at any time a Bionector device is disconnected from vascular catheter it should be discarded and a new device attached.

9. FLUSHING OF LINES

Checking blood return: Blood return shall be checked prior to the administration of drugs that are caustic to the vein.

Type of syringe: A syringe no smaller than 10mls shall be used to withdraw or flush.

Drawing blood for Specimens: Blood may only be drawn immediately following insertion of a PVC using a closed vacutainer system by individuals with specialised training.

Flushing of PVC in IV drug administration: Flushing with 0.9% sodium chloride solution, to ensure and maintain patency, shall be performed before, between and after the administration of incompatible medications and/or solutions. The minimal volume of 0.9% sodium chloride shall be 5 mls.

Flushing technique: A pulsated push-pause and positive pressure method should be used. Positive pressure with the lumen of the catheter should be maintained to prevent reflux. (Marsden Manuel 2008).

Documentation: All 0.9% sodium chloride solution flushes shall be prescribed on the patient’s treatment card.

10. CONNECTION TUBING

Frequency of change of administration sets:
- The type of solution administered via an administration set should dictate whether the administration set is changed more frequently than 72 hours. For TPN the administration set shall be changed using an aseptic technique using sterile gloves every 24 hours. For drugs that have the potential to be absorbed by infusion administration sets such as insulin and fionan, the administration set should be changed every 24 hours. The administration set should be labelled with an expiry date.
• **Blood transfusion administration sets:** Shall be changed after infusion of 2 units of blood.

• **Replacement of VAD site:** When a PVC is re-sited a new administration set, Bionector and fluid must be used.

• All giving sets that have had drugs administered via them must be disposed of in sharps containers.

**Bionector system:** Bionectors shall be used on all PVC’s. If patient is receiving continuous intravenous fluids apply a 2 lumen Bionector. For patients on intermittent intravenous drugs apply a single or double lumen Bionector. Clamps should be applied to lumens/lines when not in use to prevent backtracking.

**Manipulation of the PVC system** shall be kept to an absolute minimum in order to minimize the risk of contamination. Bionectors shall be cleaned with 2% chlorhexidine gluconate/70% isopropyl alcohol cloth (Sani-Cloth CHG 2% for medical devices) and allow time to dry before accessing the system.

**Priming of set:** All PVC administration set tubing shall be primed and inspected for the presence of air and air eliminated before use.

**Intermittent infusion sets:** All intermittent infusion sets if disconnected from patient must be discarded and NOT capped for future use.

**Disconnection of VAD tubing:** If VAD tubing becomes disconnected, the connecting port shall be cleaned with an 2% chlorhexidine gluconate/70% isopropyl alcohol cloth (Sani-Cloth CHG 2% for medical devices) and new tubing attached at the connection.

11. **ADMINISTRATION OF FLUIDS**

Except in the operating room and in emergency situations, all PVC fluids, where possible, shall be administered by infusion pump. Patients who are receiving fluids with potassium or patients who have known cardiac disease should always have fluids administered via an infusion pump.

Peripheral TPN shall be administered through a designated PVC with no additional fluids via an infusion pump.

12. **REMOVAL AND REPLACEMENT OF LINES**

Peripheral lines that have not been used for the last 12 hours in stable patients (where the risk of cardiac arrest is felt to be low) and where there is no likelihood of them being used in the next 24 hours should be removed.

PVCs should be removed and re-sited every 72 hours but sooner if signs of phlebitis. However, if the assessment determines that the cannula is not to be re-sited then this must be documented.

PVC’s inserted under non-sterile conditions during an emergency shall be removed and re-sited within 24 hours.
Document in health care records when PVC removed

13. DISSEMINATION AND IMPLEMENTATION

The policy has been written by the Infection Control Team, been agreed by the Control of Infection Committee and ratified by the Clinical Governance Committee. The updated policy will be available on TrustNet.

Infection control training sessions are included on the insertion and continuing care of these devices for Healthcare Practitioners who remove or care for PVC’s. Medical or nursing staff who insert PVCs are to be competency assessed.

14. PROCESS FOR MONITORING COMPLIANCE WITH THE EFFECTIVENESS OF POLICIES

Audits related to insertion of PVCs and associated care are undertaken to assess compliance with the policy. These are undertaken monthly by the ward/department staff using the Saving Lives High Impact Intervention audit tools. These are overseen by the matrons. The results form part of the Nursing Quality Indicators to demonstrate assurance to the Trust Board.

For poor compliance an action plan is formulated and followed up by the Matron. A three monthly prevalence audit is also carried out by the Infection Control Team and actioned in accordance with findings.

15. EQUALITY IMPACT ASSESSMENT

The Trust has a statutory duty to carry out an Equality Impact Assessment (EIA) and an overarching assessment has been undertaken for all infection control policies.

16. ARCHIVING ARRANGEMENTS

This is a Trust-wide document and archiving arrangements are managed by Quality Dept. who can be contacted to request master/archived copies.

17. REFERENCES

- Dougherty L (2008a) Obtaining peripheral access in Dougherty L. and Lamb J. Intravenous Therapy in Nursing Practice. 2nd Edition. Oxford Blackwell Publishing III.
• Elliot TSJ (2001) Guidelines for preventing intravascular catheter-related infection. Published by the Infection Control Nurses Association in collaboration with 3M Health Care.


APPENDIX 1

Guidelines for selection of vasofix safety cannula

<table>
<thead>
<tr>
<th>SIZE</th>
<th>COLOUR</th>
<th>FLOW RATE ml/min</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>14G</td>
<td>Brown</td>
<td>343</td>
<td>Rapid transfusions of whole blood</td>
</tr>
<tr>
<td>16G</td>
<td>Grey</td>
<td>196</td>
<td>Rapid transfusions of whole blood or blood components</td>
</tr>
<tr>
<td>17G</td>
<td>White</td>
<td>128</td>
<td>Infusion of large volumes of fluid or viscous fluids</td>
</tr>
<tr>
<td>18G</td>
<td>Green</td>
<td>103</td>
<td>Patients receiving blood components or large volumes of fluid</td>
</tr>
<tr>
<td>20G</td>
<td>Pink</td>
<td>61</td>
<td>Patients receiving up to 2-3 litres of fluid per day, patients on longer term medication</td>
</tr>
<tr>
<td>22G</td>
<td>Blue</td>
<td>36</td>
<td>Neonates, paediatrics, elderly patients with fragile veins or patients on long term therapy</td>
</tr>
</tbody>
</table>

Adapted from B. Braun vasofix safety and introcan safety cannula specification brochure.