



Peripheral Venous Cannula (PVC) Management Guidelines

This procedural document supersedes: PAT/T 45 v.2 – Peripheral Venous Cannulation (PVC) Insertion and Management Guidelines



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Author/reviewer: (this version)	Carol Scholey. Lead Nurse Infection Prevention & Control
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Target audience:	Clinical Staff Trust Wide

Amendment Form

Please record brief details of the changes made alongside the next version number. If the procedural document has been reviewed **without change**, this information will still need to be recorded although the version number will remain the same.

Version	Date Issued	Brief Summary of Changes	Author
Version 3	4 May 2017	<ul style="list-style-type: none"> • Change of title to cover Management of PVCs only • Removal of insertion of PVC • Management of PVC added • Removal of Appendix 1 & 7 	Carol Scholey, Lead Nurse IPC
Version 2	25 June 2014	<ul style="list-style-type: none"> • Introduction of safety cannula • Revised Visual Infusion Phlebitis Score • Revised care sheet • Addition of Trouble Shooting table – see Appendix 6 	L.Lowry, Lead Nurse IPC – Lead for Intravascular Devices Dr D Northwood
Version 1	July 2009	This is a new policy, please read in full.	Louise Lowry

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1. INTRODUCTION

Peripheral Venous Catheters (PVC) are now an essential part of medical care and their management has an important effect on the incidence of catheter associated infections. Although the incidence of local or blood stream infections associated with PVC is low, serious complications can occur because of the frequency in which the PVC is used (RCN 2016, NICE 2013). Through the application of best practice, complications and infections can be reduced.

2. PURPOSE

The purpose of this policy is to provide a framework on the maintenance of Peripheral Venous Cannula (PVC) in line with best practice, in order to reduce the risk of infection and other complications to our patients.

For insertion of PVCs please refer to the Clinical Skill Training Package, Peripheral Venous Cannulation on the Intranet.

It is recognised that in emergency situations, adherence to this policy may be compromised. In this case, all compromised devices should be replaced following the correct procedure within 24 hours.

3. DUTIES AND RESPONSIBILITIES

Operator – should be competent practitioner following appropriate training and revalidation of skills.

Matrons – are responsible for ensuring any deficits identified and escalated, will be addressed to comply with guidance.

Ward and Department Managers – are responsible for ensuring implementation within their area, and for ensuring all staff who work within the area adhere to the principles at all times.

Consultant Medical Staff – are responsible for ensuring their junior staff read and understand this policy, and adhere to the principles contained in it at all times.

General Managers Care Groups – are responsible for monitoring implementation of this guidance, and for ensuring action is taken when staff fail to comply with the policy.

Board of Directors – their role is to support the implementation of a Board to Ward culture to support a Zero Tolerance approach to Healthcare Associated Infections.

4. PROCEDURE

Once sited the peripheral venous cannula should be flushed using a pulsatile flush, ending with positive pressure. The cannula should be secured using a clean securing transparent dressing. Non sterile tape should not cover the insertion site. The insertion site should remain visible through the dressing. The securement of the device is essential to reduce the risk of dislodgement and other complications. Transparent dressings particularly moisture permeable dressings, should not be bandaged as the visibility and moisture permeability are obscured. Please refer to the Royal Marsden for further information (Dougherty & Lister 2015).

4.1 Ongoing Care of a Peripheral Vascular Cannula (PVC)

- The use of 2% chlorhexidine in 70% isopropyl alcohol to decontaminate the access port and allow to dry before and after accessing the device is to be used.
- A peripheral cannula should be flushed before and after each use to check for patency prior to administration of a medication, and at least daily if not in use, using 0.9% sodium chloride.
- The dressing should be changed as required, if it becomes loose, damp or soiled or at 7 days if still remains insitu.
- The site should be monitored at each intervention and the VIP score (see APPENDIX 1) recorded at least (minimum) daily see APPENDIX 4. The site should be inspected for signs of infiltration, extravasation, leakage and using VIP score for signs of phlebitis (Loveday et al 2014).

Please refer to APPENDIX 2.

4.2 Removal of PVC

A recent Cochrane Review published in 2015 found no evidence to support changing PVCs every 72-96 hours. Therefore PVCs are now only changed if clinically indicated. However PVCs should still be removed if no longer clinically indicated or there are signs of inflammation (see VIP criteria APPENDIX 1).

Removal of the PVC should be an aseptic non touch technique. The device should be removed carefully using a slow steady movement and pressure should be applied until haemostasis is achieved. This pressure should be firm and not involve any rubbing movement. A haematoma will occur if the device is carelessly removed, causing discomfort and a focus for infection (Loveday 2014). The site should be inspected to ensure bleeding has stopped and should then be covered with a sterile dressing (Loveday 2014). The cannula integrity should be checked to ensure the complete device has been removed RCN 2016).

Documentation of the removal of the PVC is also required (RCN 2016). This documentation ensures adequate records for the continued care of the device and patient as well as enabling audit and gathering of statistics on rates of phlebitis and infiltration. APPENDIX 4.

Please refer to APPENDIX 3.

4.3 Complications

Phlebitis – this is inflammation of the vein wall.

The most common causes are;

- Mechanical – related to irritation and damage to a vein by large gauge cannulas, sited where there is movement, for example antecubital fossa, not secured adequately or increased dwell time.
- Chemical – related to chemical irritation from drugs such as antibiotics and chemotherapy.

- Bacterial – when the site becomes infected due to poor hand washing or aseptic technique.

Prevention is key and includes appropriate device and vein selection,

- Diluting as per manufacturers recommendations and administering them at the correct rate.
- Ensure that the cannula is secured using the correct method for the dressing used.
- Make sure an aseptic non touch technique is used during insertion and ongoing accessing of the PVC.

Infiltration/extravasation – occurs when there is leakage from the vein, and the infusate enters the surrounding tissue. In severe cases necrosis (tissue death) can occur.

Prevention includes:

- Good insertion technique.
- Good fixation technique, clip excess hair and secure cannula properly.
- Do not cannulate over a joint.
- Use the smallest size cannula for the purpose of the PVC.
- Check for swelling around the cannula tip.

Infection – can occur at the insertion site or systemically.

Prevention includes:

- Adopt good IPC principles during insertion and when accessing the cannula
- Renew dressing when damp, loose or soiled or at 7 days.
- Assess the site at each intervention and record VIP score at least daily.

Thrombosis – happens when a blood clot on the cannula wall of the vein becomes detached and enters the pulmonary circulation.

Prevention:

- Use the smallest size cannula to adequately do the job required.
- Avoid using veins in legs.
- **Do not flush the cannula if thrombo-embolism is suspected.**
- **Seek medical attention immediately.**

Please see APPENDIX 5 for trouble shooting.

5. TRAINING/ SUPPORT

Staff will receive instructions and direction regarding the management of PVCs used in the Trust from a number of sources:-

- Trust Policies and Procedures available on the intranet.
- Ward/department/line manager.
- All Staff new to the skills of PVC insertion should complete the Clinical Skills Training Package and only when deemed competent continue to insert PVCs on patients. Management only is covered in this document.

- Education update sessions which can be delivered by a number of formats e.g. face to face, clinical skills and eLearning.
- Infection Prevention & Control Link Practitioners meetings are utilised to provide education sessions about the policy.
- The Royal Marsden Hospital of Clinical Nursing Procedures.

6. MONITORING COMPLIANCE WITH THE PROCEDURAL DOCUMENT

The Infection Prevention & Control Team will review this policy in the following circumstances:-

- Every three years routinely.
- If the latest evidence requires changes to practice.

What is being Monitored	Who will carry out the Monitoring	How often	How Reviewed/ Where Reported to
The procedural document will be reviewed in the following circumstances.	IPCT	Every three years routinely unless: <ul style="list-style-type: none"> • New National or international guidance are received • When newly published evidence demonstrates need for change to current practice • Action required from Post Infection Review or Serious Incident Investigation Report 	Policy will be approved and ratified by the Patient Safety Review Group.
Audits – Phlebitis rates	IPCT Ward Sister	Spot check audits will be performed to establish incidence of phlebitis rates. Should periodically monitor VIP scores and act on raised issues.	Prevalence study will be performed annually as part of the Infection Prevention & Control Point Prevalence Surveillance. Reports disseminated to all clinical leads. Deficits identified will be addressed via agreed action plans to comply with guidelines.

7. DEFINITIONS

PVC – Peripheral Vascular Cannula
VIP – Visual Infusion Phlebitis score

8. EQUALITY IMPACT ASSESSMENT

An Equality Impact Assessment (EIA) has been conducted on this procedural document in line with the principles of the Equality Analysis Policy (CORP/EMP 27) and the Fair Treatment For All Policy (CORP/EMP 4).

The purpose of the EIA is to minimise and if possible remove any disproportionate impact on employees on the grounds of race, sex, disability, age, sexual orientation or religious belief. No detriment was identified. (See Appendix 6).

9. ASSOCIATED TRUST PROCEDURAL DOCUMENTS

This policy should be read in conjunction with other Trust Policies, particularly

- Hand Hygiene - PAT/IC 5
- Injectable Medicines Policy – PAT/MM 5
- Sharps Injuries Management and other blood or body fluid exposure incidents – PAT/IC 14
- Risk Identification, Assessment and Management Policy - CORP/RISK 30
- Sharps Policy – Safe Use and Disposal – PAT/IC 8
- Spillages of Blood and other Body Fluids – PAT/IC 18
- Standard Infection Prevention and Control Precautions Policy – PAT/IC 19
- Privacy and Dignity Policy - PAT/PA 28
- Clinical Skills Training Package. Peripheral Venous Cannulation. Via intranet.

10. REFERENCES

Cochrane Report 2015 replacing a peripheral venous catheter when clinically indicated versus routine replacement.

Dougherty, L and Lister, S. (2015) Royal Marsden Hospital Manual of Clinical Nursing Procedures (Professional Edition), 9th Edition, Wiley

EPIC 3 (2013) *National Evidence Based Guidelines for Preventing Healthcare- Associated Infections in NHS Hospitals in England*. Richard Wells Research Centre, University of West London (London)

Loveday HP, Wilson JA, Pratt RJ, Golsorkhi M, Tingle A, Bak A, Browne J, Prieto J and Wilcox M (2014) Epic3: National evidence-based guidelines for preventing healthcare-associated infections in NHS hospitals in England, *Journal of Hospital Infection*, 86(Supp.1), pp. S1-S70. (V)

RCN (2016) *Standards For Infusion Therapy*, 4th Edition. Royal College of Nursing. London

APPENDIX 1- VISUAL INFUSION PHLEBITIS SCORE



Doncaster and Bassetlaw Teaching Hospitals
NHS Foundation Trust

Visual Infusion Phlebitis Score

All patients with a peripheral vascular catheter (PVC) device should have the IV site checked every shift for signs of infusion phlebitis. The VIP score and action taken must then be documented in the daily plan of care sheet.

The PVC site must be observed:

- When bolus injections are administered
- When IV flow rates are checked or altered
- When solution containers are changed

Mark an X on the picture to denote site of PVC

Date of insertion: _____
 Day No.: _____
 Clinically indicated? Yes No
 Removed? Yes No
 VIP Score: _____
 Signature: _____

IV site appears healthy. No pain	0	No signs of Phlebitis OBSERVE PVC
One of the following is evident: • Slight pain near IV site • Slight redness near IV site	1	Possible signs of phlebitis OBSERVE PVC
Two of the following are evident: • Pain near IV site • Erythema • Swelling	2	Early stages of phlebitis RESITE PVC
Two or more of the following are evident: • Pain along path of cannula • Erythema • Induration • Palpable venous cord	3	Medium stages of phlebitis RESITE PVC CONSIDER TREATMENT, IF SITE DISCHARGING PUS, SEND A SWAB

(Adapted from A. Jackson 1997)

L. Lowry. CNS Invasive Devices. August 2013

WPR- Aug 2013 WHITE

Key guidance

- Always use aseptic non-touch technique
- Use smallest gauge PVC for therapy
- Insert PVC away from joints
- Secure PVC with approved dressing
- Replace loose/soiled dressings immediately
- Remove PVC as soon as no longer required

APPENDIX 2 - CARE AND MANAGEMENT OF PVC

PVC should be reviewed daily and if not accessed within the prior 48 hours, should be removed immediately.

- An aseptic non touch technique (ANTT) should always be maintained whilst dealing with PVC
- Hands must be decontaminated prior to and after accessing PVC
- Personal Protective Equipment should be used when dealing with PVC
- Needle free access device should be either single or double extensions depending on clinical indications.
- IV administration sets should be changed as follows:

Clear fluids	72 hours
Lipids	24 hours
Blood or blood products	After 2 nd unit, after transfusion episode or at 12 hours whichever is sooner. (EPIC3 2013, Marsden Manual 2015).
Intermittent infusion	Administration sets to be discarded after each use

- PVC site must be visible in order to ascertain Visual Infusion Phlebitis score (VIP).
- PVC site should be inspected at least daily, and every time the PVC is accessed, or infusion rates are altered. The observation should be documented in the daily plan of care sheet (RCN 2016).
- **If the VIP is greater or equal to 2 the PVC should be removed.** If the site appears infected, a swab should be taken and sent with the tip of the PVC to Microbiology for culture and sensitivity. **Complete incident form.**
- If bandages are used as extra support to secure PVC, they should be removed at least daily and every time the PVC is accessed or infusion rates are altered in order to inspect the insertion site.
- Injection ports/hubs- **Scrub the hub** with 2% Chlorhexidine in 70% Isopropyl alcohol wipe for 30 secs before and after accessing the system
- The PVC should be flushed pre and post drug administration with 5-10mls of Sodium Chloride (0.9%) in a 10ml syringe.
- All IV bolus including flushes should be labelled in accordance with Injectable Medicines Policy (**PAT/MM 5**)
- The dressing should be changed immediately when it becomes loose, damp or soiled. **An aseptic non-touch technique** should be used when changing the dressing. The area should be cleaned with 2% chlorhexidine in 70% Isopropyl alcohol, moving from the catheter site outwards, providing it is compatible with the device (**For children under 3 months use Alcohol /Sterile Sodium Chloride 0.9%**). The area should be allowed to **dry** and a sterile peripheral dressing applied (use alternative if patient has a history of chlorhexidine sensitivity) (EPIC 3, 2013).
- A PVC should not be used for routine blood sampling. However, if necessary, blood can be drawn **ONLY ONCE immediately following insertion**. Slowly draw blood, as excess force may haemolyse the sample and cause thrombophlebitis of the vein. (Dougherty & Lister 2015, RCN 2016).

APPENDIX 3 - REMOVAL OF PVC

- **Remove PVC if;**
 - No longer required.
 - Patient has pain when fluids are infused or on flushing
 - Signs of phlebitis, infection or thrombophlebitis, VIP score of 2 or greater

- An aseptic non touch technique should be maintained while dealing with PVC.
- Always check the integrity of PVC before disposal.
- Apply pressure to site on removal of PVC to reduce risk of haematoma.
- Document removal on the PVC label found on the daily plan of care sheet.
- If site appears infected, obtain swab and send to microbiology for culture and sensitivity. Please **complete incident form**.

APPENDIX 4 - DAILY PLAN OF CARE SHEET



NHS
Doncaster and Bassetlaw
Teaching Hospitals
 NHS Foundation Trust

DAILY EVALUATION OF CARE

APRIX LABEL HERE IF AVAILABLE

NHS Number: _____
 District Number: _____
 Surname: _____
 Forename(s): _____
 Address: _____

 D.o.B.: _____

Day: _____ Date: _____ Ward: _____

Age: _____ Is the patient over 65? **OR** under 65 and judged to have complex needs because of frailty or an underlying condition e.g. Parkinsons or stroke? If **YES** complete Enhanced Care Plan **IN ADDITION** to Daily Evaluation of Care Document.

Ward Round/ Medical Action Plan/Referrals/EDD

TREAT AS :

Has your patient's condition changed? (New presentation of delirium/confusion, change in mobility/continence, inpatient fall, increase in supervision required). If **YES** update Enhanced Care Plan, Level of Supervision Assessment, Safety Sides Assessment. Communicate any changes/risk with team at Handover/Safety Huddle.

Discharge/Transfer of care:

Communication with Relatives: Agreed with patient Yes No

Is the patient on IV antibiotics? Yes No

Day number: _____

Mark an X on the picture to denote site of PVC

Date of insertion: _____
 Day No.: _____
 Clinically indicated? Yes No
 Removed? Yes No
 VIP Score: _____
 Signature: _____

CANNULATION WPR136C-AUG 2016

Size of cannula (FG): _____ Batch No: _____
 Date/time of insertion: _____ Inserted by (Print): _____
 Reason for insertion: Fluids Medication Blood Other: _____
 Site: Hand L/R Wrist L/R Forearm L/R
 Antecubital fossa L/R Other (Specify): _____
 Complied with HII (PVC): Yes No (If No, replace cannula within 24 hours)

PRINT NAME: _____ Signature: _____
 Designation: _____ Time: _____

APPENDIX 5 – TROUBLE SHOOTING

Complication	Cause	Action
Ecchymosis and Haematoma on insertion	<ul style="list-style-type: none"> Infiltration of blood into the tissue. 	<ul style="list-style-type: none"> Removed PVC and apply light pressure over insertion site (RCN 2005). This can be prevented by procedure being performed by a skill practitioner.
Phlebitis- inflammation of the intima of the vein.	<ul style="list-style-type: none"> Mechanical Chemical Bacterial 	<ul style="list-style-type: none"> Infusion should be discontinued at first signs of phlebitis. Warm and cold compresses can be applied to area, to increase the flow of blood around the area and reduce the swelling. If bacterial phlebitis is suspected, remove PVC, swab site and send
Thrombophlebitis	<ul style="list-style-type: none"> Dwell time PVC material Type of infusate Poor PVC/vein ratio 	<ul style="list-style-type: none"> Stop infusion immediately and notify Drs. Cold compress can be applied to area to reduce blood flow and increase platelet adherence to the already formed clot. Then apply a warm compress. If purulent discharge present, send sample to microbiology for culture. Elevate extremity and discourage patient from rubbing or massaging area to reduce risk of embolus. Use smallest gauge PVC possible for therapy being delivered.
Infiltration- Fluid leaking into the tissue causing swelling. Fluid is cooler than surrounding body fluid and as skin temperature drops the skin becomes blanched.	<ul style="list-style-type: none"> PVC punctured vein wall Chemical irritation Poor securement of PVC Complete occlusion (pressure around PVC in vein may result in the tip increasing the hole size made on insertion) 	<ul style="list-style-type: none"> Stop infusion and notify the Drs immediately. Discuss with pharmacy to establish if any antidote and how to administer it. Assess to determine the extent of the infiltration and volume of fluid absorbed. Assess the range of sensation and movement of the patients extremity (for any sensory deficit)
Extravasation- Inadvertent administration of vesicant or irritant solution into surrounding tissue. Vesicant solution can cause blisters, subsequent result is tissue necrosis.	<ul style="list-style-type: none"> poorly sited PVC Patency not checked for before administration of solution Patient with thrombocytopenia or poor veins that cannot tolerate the volume or pressure of solution 	<ul style="list-style-type: none"> Stop infusion and inform Drs immediately. Assess to determine the extent of the extravasation Attempt to aspirate the fluid via PVC. Discuss with pharmacy to establish if any antidote and how to administer it. Elevate extremity. Potential of saline flush out technique can be used by an experienced practitioner.

<p>Unintended arterial cannulation</p>	<ul style="list-style-type: none"> • Pulsatile blood flow not present/not observed during cannulation. • Increased risk in presence of: hypotension; hypoxaemia; obesity; sedation/anaesthesia; aberrant anatomy; proximity of arteries and veins ie antecubital fossa. 	<ul style="list-style-type: none"> • If recognised immediately, or before any drugs/substances given through the cannula, remove as soon as possible. • Before removing ensure staff member available to stay with patient for at least 10 minutes. • Explain proposed management to patient. • Remove cannula and immediately apply very firm pressure for 3 minutes (enough to occlude the vessel). Release pressure gradually but maintain pressure for 2 more minutes. • Inspect wound. If still bleeding apply pressure as before. • If still bleeding re-apply pressure and call for senior help. • When bleeding stopped, apply swab firmly and secure with tape. Inspect wound after 15 minutes. Call for senior help if re-bleeds or haematoma is seen developing.
<p>Unintended administration of drug/infusion through intra-arterial cannula.</p>	<ul style="list-style-type: none"> • As above. 	<ul style="list-style-type: none"> • Stop administration of drug/infusion immediately. • Inform patient, give re-assurance, explain proposed management. <p>LEAVE CANNULA IN SITU – DO NOT REMOVE.</p> <ul style="list-style-type: none"> • Call for senior help. Inject 20 mls 0.9% saline slowly through cannula (over 10-15 minutes). • Commence 0.9% saline infusion at 1ml/kg/hr (maximum 80 mls/hr) via syringe pump. • If possible elevate the limb. • Refer to on call vascular surgical team ASAP. • Document symptoms/signs in limb distal to the cannula. Especially note capillary refill time; any sensory changes; temperature change; presence of cyanosis. Continue these observations every 30 minutes until review by vascular surgical team. • Further management may include heparinisation; regional/nerve plexus block; anti-spasmodics (ie papaverine); surgical thrombectomy; long term rehabilitation; chronic pain management.

APPENDIX 6 - EQUALITY IMPACT ASSESSMENT PART 1 INITIAL SCREENING

APPENDIX 6 - EQUALITY IMPACT ASSESSMENT PART 1 INITIAL SCREENING				
Service/Function/Policy/Project/ Strategy	Care Group/Executive Directorate and Department	Assessor (s)	New or Existing Service or Policy?	Date of Assessment
Peripheral Venous Cannula (PVC) Management Guidelines	Cooperate Nursing, Infection Prevention & Control	Carol Scholey Lead Nurse IPC	Existing	29/03/17
1) Who is responsible for this policy? Name of Care Group/Directorate: Cooperate Nursing				
2) Describe the purpose of the service / function / policy / project/ strategy? Who is it intended to benefit? What are the intended outcomes? Policy updated using latest evidence to promote the safe management of a peripheral venous cannula. It demonstrates the Trust commitment to provide staff with guidance to maintain safe practice.				
3) Are there any associated objectives? Legislation, targets national expectation, standards: EPIC 3 National evidence based guidance for preventing Healthcare associated infections.				
4) What factors contribute or detract from achieving intended outcomes? – Nil				
5) Does the policy have an impact in terms of age, race, disability, gender, gender reassignment, sexual orientation, marriage/civil partnership, maternity/pregnancy and religion/belief? Details: [see Equality Impact Assessment Guidance] - No				
<ul style="list-style-type: none"> • If yes, please describe current or planned activities to address the impact [e.g. Monitoring, consultation] - 				
6) Is there any scope for new measures which would promote equality? [any actions to be taken] – Nil				
7) Are any of the following groups adversely affected by the policy?				
Protected Characteristics	Affected?	Impact		
a) Age	No	Neutral		
b) Disability	No	Neutral		
c) Gender	No	Neutral		
d) Gender Reassignment	No	Neutral		
e) Marriage/Civil Partnership	No	Neutral		
f) Maternity/Pregnancy	No	Neutral		
g) Race	No	Neutral		
h) Religion/Belief	No	Neutral		
i) Sexual Orientation	No	Neutral		
8) Provide the Equality Rating of the service / function /policy / project / strategy – tick (✓) outcome box				
Outcome 1 ✓	Outcome 2	Outcome 3	Outcome 4	
Date for next review: March 2020				
Checked by: Carol Scholey Date: 29/03/17				