Policy Type: Clinical
Definition: Policy
Owner Group: Operations

Birmingham East and North NHS Primary Care Trust

Policy for the Care of Patients with Central Venous Catheters (CVC)

Applicable To: Nursing and Therapy Staff
Communication Method: Line Manager
Consequence of Non Adherence: Disciplinary

Policy Author/Source: District Nurse CPT
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## Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversity Statement for Clinical Policies</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>Rationale</td>
<td>5</td>
</tr>
<tr>
<td>Specific Responsibilities and Accountability:</td>
<td>5</td>
</tr>
<tr>
<td>Trust Responsibilities</td>
<td>5</td>
</tr>
<tr>
<td>Staff Responsibilities</td>
<td>6</td>
</tr>
<tr>
<td>Skills and Training</td>
<td>6</td>
</tr>
<tr>
<td>Definitions</td>
<td>6</td>
</tr>
<tr>
<td>Types of Catheters</td>
<td>7</td>
</tr>
<tr>
<td>Hickman Line (Skin Tunnelled Catheter)</td>
<td>7</td>
</tr>
<tr>
<td>Groshong Line</td>
<td>7</td>
</tr>
<tr>
<td>Peripherally Inserted Central Catheters (PICC Line)</td>
<td>7</td>
</tr>
<tr>
<td>Infection Control</td>
<td>8</td>
</tr>
<tr>
<td>General Asepsis</td>
<td>8</td>
</tr>
<tr>
<td>Catheter Tube Care</td>
<td>8</td>
</tr>
<tr>
<td>General Principles for Catheter Management</td>
<td>8</td>
</tr>
<tr>
<td>Dressing of the Hickman/Groshong Catheter</td>
<td>10</td>
</tr>
<tr>
<td>Equipment</td>
<td>10</td>
</tr>
<tr>
<td>Procedure</td>
<td>10</td>
</tr>
<tr>
<td>Suture Care at Entry and Exit Site</td>
<td>11</td>
</tr>
<tr>
<td>Care of Wounds at Entry and Exit Site</td>
<td>12</td>
</tr>
<tr>
<td>Blood Sampling from Hickman/Groshong Catheter</td>
<td>12</td>
</tr>
<tr>
<td>The Discard method</td>
<td>12</td>
</tr>
<tr>
<td>Equipment</td>
<td>12</td>
</tr>
<tr>
<td>Procedure</td>
<td>13</td>
</tr>
<tr>
<td>Flushing the Hickman/Groshong Cather</td>
<td>14</td>
</tr>
<tr>
<td>Equipment</td>
<td>14</td>
</tr>
<tr>
<td>Procedure</td>
<td>14</td>
</tr>
<tr>
<td>Assessment of the Patient with a CVC Prior to Discharge</td>
<td>15</td>
</tr>
<tr>
<td>Potential Problems Associated with CVC</td>
<td>16</td>
</tr>
<tr>
<td>References</td>
<td>19</td>
</tr>
<tr>
<td>Appendices</td>
<td></td>
</tr>
</tbody>
</table>
1. Care of long term central venous catheters

2. Competencies and Associated Underpinning Knowledge for Long Term Central Venous Catheters

3. Care of Long-Term Central Venous Catheters – Record of supervised practice

4. Reflective Exercise

5. Pan Birmingham Cancer Network – Flushing and dressing a peripherally inserted Catheter: A guide for district nurses


7. Central venous catheter care for district nurses (complications)
Diversity Statement for Clinical Policies

This policy endeavours to deliver care in such a way as to treat patients fairly and respectfully regardless of age, gender, race, ethnicity, religion/belief, sexual orientation and/or disability.

The care and treatment provided will respect the individuality of each patient.

Birmingham East and North Primary Care Trust (BEN PCT) is caring, committed and competent in its core values and these will be developed to ensure equality and fairness becomes the working culture.

In line with the BEN PCT’s strategy and plans for race and equality all clinical policies and protocols are reviewed against the values, standards and targets contained within the strategy for fairness and equality.
1.0 **INTRODUCTION**

1.1 Central venous catheters (CVC’s) or lines are tunnelled catheters intended for long-term access, inserted into the superior or inferior vena cava or right atrium or a large vein leading to these vessels.

1.2 Patients with cancer and other illnesses may require intravenous therapy over a long period. Insertion of a central venous line will enable them to receive treatments such as chemotherapy, total parental nutrition, blood products, fluids, medications and blood sampling without the need for multiple venepunctures.

1.3 Catheters are inserted in hospital and many patients and carers are taught to be self-caring prior to discharge. The community nurse may be involved with some patients in caring for their catheter.

2.0 **RATIONALE**

2.1 The purpose of these guidelines is to ensure that all trained staff involved in the care of the patient with a central line have the skills expertise and knowledge in the care and management of the line. The policy also endeavours to ensure that practice across the trust is safe and based on current best practice guidelines.

2.2 The aim of this procedure is to prevent infection, maintain a closed intravenous system, maintain patency and prevent damage to the device.

3.0 **SPECIFIC RESPONSIBILITIES AND ACCOUNTABILITY**

3.1 Trust Responsibilities

- All staff involved in the care of a CVC have access to a policy document.
- Provide appropriate training and updates to all relevant staff groups
- Staff have access to equipment required for the care and maintenance of the CVC.
- Staff are made aware of any policy changes and the need for new skills update followed by the appropriate training.

3.2 Staff Responsibilities

- To practice within their professional competency.
- To adhere to the trust policy, in the care of the CVC.
- To identify any areas for skills update or training requirement as detailed in the guidance notes for maintaining competency in appendix 1.
• To obtain patient consent prior to any procedure being carried out, according to the consent policy.

4.0 SKILLS AND TRAINING

• Qualified nurses caring for patients with a CVC should be trained and assessed as competent in the care and management of a CVC (see appendices 1-7).

• Nurses must feel confident and competent that their skills and knowledge are maintained.

• Advice and ongoing support is available from the MacMillan Primary Care Cancer Nurses on 0121 465 5652/5660 or the specialist hospital staff. All community staff have a responsibility to access this support to update regularly.

• In order to maintain clinical competency regular theoretical updates are to be organised by the Trust, and provided by the MacMillan Primary Care Cancer Nurses.

• Care and management will be taught regarding the prevention of infection and to safely manage a central venous catheter. (Nice guidelines)

5.0 DEFINITIONS

• AYLiffe Technique
  A six-step hand washing technique. (See infection control Hand washing guidelines)

• Bacterial Handwash – Spirigel Or Hydrex
  (Rubbed to dryness)

• Bionector
  Closed needle less system, attached to the end of the catheter, which must be changed after one hundred uses or every seven days, whichever is sooner.

• Luerlock Cap
  For single use, attached to the end of the catheter, to prevent risk of air embolism and accidental disconnection.

• Positive Pressure Technique
  Maintaining pressure on the syringe plunger when clamping the line and disconnecting the syringe from the luer-lock bung. (Dougherty & Lamb 2000).

• Push-Pause Technique
  Pushing 1ml at a time into a catheter to create turbulent flow within the lumen, thereby decreasing the risk of fibrin and platelets becoming adhered to the internal wall of the CVC and minimising
occlusion. (Dougherty & Lamb 2000).

- **VALSALVA MANOEUVRE**
  Patient placed in the supine or tredelegenbort position, which increases venous filling. He/she is asked to breathe in and then tries to force the air out with the mouth and nose closed (i.e. against a closed glottis). This increases the intrathoracic pressure so that the return of blood to the heart is reduced momentarily. (Ostrow 1981).

6.0 **TYPES OF CATHETERS**

6.1 Hickman Line (Skin Tunnelled Catheter)

A silicone skin – tunnelled catheter intended for long term access, inserted into the superior or inferior vena cava or right atrium or a large vein leading to these vessels. These lines have clamps for use, when accessing the line to prevent air embolism and/or blood loss. Available in single, double and triple lumen, usually colour coded. The red or brown lumen is usually larger in size and is used for blood sampling.

6.2 Groshong Line

A translucent or blue silicone, thin walled, blunt tipped, cuffed skin – tunnelled catheter. The line has a radiopaque stripe and an attachable suture wing. The line has a patented three-position valve, which prevents the need for a clamp. Available in colour coded single and double lumen. The red lumen is used for blood sampling.

Heparin solution is not required when flushing Groshong lines.

6.3 Peripherally Inserted Central Catheters (PICC Lines)

There are 2 types of PICC lines in common usage.

1. Bard Groshong PICC lines

   A translucent silicone, thin walled, blunt tipped catheter. The line has a radiopaque stripe and depth markings and an attachable suture wing. There is an attachable suture wing for skin fixation. The line has a 3-position valve, which prevents the need for a clamp.

2. Vygon PICC lines.

   A polyurethane, thin walled, open-ended catheter. The line is depth marked 60 cm catheter.

6.4 Alternative Ports

If alternative devices are being used for example implantable venous access systems i.e. Port-A-Cath or Vascuports; the Community Nurse must liaise with the Acute Trust linked to the patient’s care or seek specialist advice from BENPCT’s Community Children’s Nurses based at Bloomsbury Health Centre as these devices are more usually used in paediatric care.
7.0 INFECTION CONTROL

7.1 General Asepsis

An aseptic technique must be used for catheter site care and for accessing the system.

Before accessing or dressing central venous catheters, hands must be decontaminated either by washing with an antimicrobial liquid soap and water, or by using an alcohol handrub.

Hands that are visibly soiled or contaminated with dirt or organic material must be washed with soap and water before using an alcohol handrub.

Following hand antisepsis, clean gloves and a no-touch technique or sterile gloves should be used when changing the insertion site dressing.

(NICE guidelines 2003)

7.2 Catheter Site Care

- If there is profuse oozing, a sterile gauze dressing is preferable to a transparent dressing. Gauze dressings should be changed if damp, loosened or soiled and be assessed daily. The gauze dressing should be replaced to a transparent dressing as soon as possible.

- An alcoholic chlorhexidine gluconate solution should be used to clean the catheter site during dressing changes, and allowed to air dry. An aqueous solution of chlorexidine gluconate should be used if the manufacturer recommendations prohibit the use of alcohol with the product. Individual sachets of solution and individual packages of swabs or wipes should be used.

(NICE Guidelines 2003)

7.3 General Principles for Catheter Management

- The injection port or catheter hub should be decontaminated using either alcohol or an alcoholic solution of chlohexidine gluconate before and after it has been used to access the system.

- In-line filters should not be used routinely for infection prevention.

- Antibiotic lock solutions should not be used routinely to prevent catheter-related bloodstream infections (CRBSI).

- Systemic antimicrobial prophylaxis should not be used routinely to prevent catheter colonisation or CRBSI either before insertion or during the use of a central venous catheter.

- A single lumen catheter should be used to administer parenteral nutrition. If a multilumen catheter is used, one port must be exclusively dedicated for total parenteral nutrition, and all lumens must be handled with the same meticulous attention to aseptic technique.
• A sterile 0.9 % sodium chloride injection should be used to flush and lock catheter lumens when recommended by the manufacturer or treating oncology unit. However, open ended catheter lumens should be flushed with 0.9% sodium chloride and locked with a heparin sodium IV flush solution.

• To minimise the risk of infection, blood withdrawal prior to routine flushing is not recommended (Maki 2002).

• When recommended by the manufacturer, implanted ports or opened-ended catheters lumens should be flushed and locked with heparin sodium IV flush solutions.

• Systematic anticoagulants should not be used routinely to prevent CRBSI.

• If needle-less devices are used, the manufacturer’s recommendations for changing the needleless components should be followed.

• When needle less devices are used, the nurse should ensure that all components of the system are compatible and secured, to minimise leaks and breaks in the system.

• When needle less devices are used, the risk of contamination should be minimised by decontaminating the access port with either alcohol or an alcoholic solution of chlorohexidine gluconate before and after using it to access the system.

• In general, administration sets in continuous use need not be replaced more frequently than at 72-hour intervals unless they become disconnected or a catheter-related infection is suspected or documented.

• Administration sets for blood and blood components should be changed every 12 hours, or according to the manufacturer’s recommendations.

• Administration sets used for total parenteral nutrition infusions should generally be changed every 24 hours. If the solution contains only glucose and amino acids, administration sets in continuous use do not need to be replaced more frequently than every 72 hours.
8.0 DRESSING OF THE HICKMAN/GROSHONG CATHETER

The initial dressing should be left between 24 and 48 hours to prevent the introduction of organisms to the exit site.

Wherever possible, the patient should flush and redress their own catheter using a clean technique. Once the catheter cuff has granulated and the sutures have been removed, the catheter should be looped and taped to the skin. The exit site can be left without a dressing once the suture has been removed or depending on the condition of the exit site. E.g. redness, oozing, (Guidelines for Preventing Health Care Associated Infections in Primary and Community Care, 2003).

8.1 Equipment

- Trolley or clean tray for aseptic technique
- Basic dressing pack/sterile towel
- Dressing – preferably a sterile, transparent, semi permeable polyurethane dressing should be used to cover the catheter site, though if a patient has profuse perspiration or if the insertion site is bleeding or oozing a sterile gauze dressing is preferable (NICE 2003)
- Chlorhexidine solution – An alcoholic chlorhexidine gluconate solution should be used if the manufacturers recommendations prohibit the use of alcohol (NICE 2003)
- Bacterial hand rub
- Sterile gloves

8.2 Procedure

- Explain the procedure.
- Clean tray or trolley with soap and water and dry with paper towel.
- Wash hands prior to start of procedure with soap and water. Rinse and dry using Ayliffe method (Ayliffe Lowbury et al 1992). Alternatively an alcohol rub can be used on clean hands (Guidelines for Preventing Health Care Associated Infections in Primary and Community Care, 2003).
- Prepare sterile field as per local policy, pour small amount of chlorhexidine based solution into sterile container and open up new dressing.
- Remove old dressing if not already removed. Wash hands again.
- Put on sterile gloves.
• Place sterile towel underneath the catheter. If the site is red or discharging, take a swab for bacteriological investigation and inform the GP and relevant secondary care team.

• Using gauze, clean the skin with chlorhexidine solution, moving from the area around the line outwards in a circular action. Leave to dry.

• Use either sterile gauze or semi occlusive dressing to cover the catheter site (according to condition of site, and local policy).

• If a gauze catheter site dressing is used it must be replaced when the dressing becomes damp, loosened or soiled or when inspection of the insertion site is necessary.

• The need for a gauze dressing should be assessed daily and replaced by a transparent dressing as soon as possible (NICE 2003).

• Semi occlusive dressings should be renewed according to the manufacturer’s recommendations.

• Fold up sterile field, place in yellow clinical waste bag and remove gloves. Disposal of waste as per local policy.

• Wash hands at end of the procedure, and document care given.

9.0 SUTURE CARE AT ENTRY AND EXIT SITE (HICKMAN/GROSHONG CATHETER)


• Observe or encourage the patient to observe the catheter for signs of redness, swelling, soreness, discharge and report immediately to an appropriate health care professional. (Guidelines for Preventing Health Care Associated Infections in Primary and Community Care, 2003).

9.3 Entry site sutures should be removed on day seven. Exit site sutures should be removed at twenty one days.

9.4 The patient may take advice to run clear water over site at the end of showering, but it is not advised to immerse the catheter in bath water or to swim.

10.0 CARE OF WOUNDS AT EXIT AND ENTRY SITE

10.1 Principles of asepsis must be maintained.
10.2 All CVC dressings should be changed between 24 and 48 hours after insertion or if their integrity is compromised. (RCN 2003). Use either sterile gauze or a transparent dressing to cover the exit site. (DOH 2001).

10.3 Each time the dressing is changed the exit site should be assessed for any signs of infection if site is red or discharging, then take blood cultures and a line swab for bacterial investigations and inform medical team. The exit site should be cleaned with chlorhexidine and allowed to dry (RCN 2005).

11.0 BLOOD SAMPLING FROM HICKMAN/GROSHONG CATHETER

11.1 To obtain a blood sample it is essential that all equipment is prepared in advance and within easy reach. This is required in order to prevent occlusion of the catheter post blood sampling.

11.2 Blood samples should not be taken through a lumen that has recently been used for the administration of drugs or fluids, as it could result in inaccurate blood results. Therefore infusions that are running should be stopped prior to blood sampling (RCN 2003).

11.3 The Discard Method

This is the standard accepted method where the first 6-10ml of blood is withdrawn and discarded (Cella & Watson 1989). This ensures removal of any heparin or saline solution but may result in excessive blood removal.

11.4 Equipment

- Clean trolley or tray
- Basic dressing pack/sterile towel
  - 10ml syringe(s) (nothing smaller than a 10 ml capacity syringe should be used as the pressure created may damage or split the line)
- Sharps bin
- Vacutainer system – shell & adaptor
- Heparin IV solution (if applicable)
- Sodium Chloride 0.9% (10mls)
- Sterile luer lock cap/bionector
- Blood bottles
- Chlorhexidine solution or alcohol wipe
- Bacterial hand rub
11.5 Procedure

- Blood test forms
- Sterile gloves

- Explain the procedure to the patient & check identity with blood forms.
- Clean trolley/tray
- Wash hands thoroughly using the Ayliffe method prior to start of procedure.
- Open up dressing towel onto clean tray or trolley, place other equipment – sterile gloves, syringes, bionector or luer lock cap, chlorhexidine solution or alcohol wipe onto this. Draw up saline & heparin flush (if applicable) maintaining sterile environment and place on sterile field
- Put on sterile gloves.
- Place sterile towel under catheter.
- Using alcohol wipe or chlorhexidine solution, clean the clamp and end of the Bionector (change every 7 days or after one hundred uses, which ever is sooner) or remove luer lock cap and clean end of catheter (NICE 2003), allow to dry for at least twenty seconds.
- Ensure catheter is clamped prior to removal of luer-lock cap.
- Connect empty 10ml syringe, remove clamp and withdraw 5-10ml of blood from the line, reclamp and discard syringe into sharps bin. **Do not use a syringe less than 10 ml in capacity as the pressure created will damage or split the line.**
- Attach vacutainer or 10ml syringe, remove clamp and using bottles/syringe collect samples needed then reclamp and remove vacutainer.
- Attach 10ml saline flush to the end of the catheter, open clamp flush line using push-pause method.
- Attach heparin IV flush solution (if applicable) and flush using positive pressure technique.
- Remove all sharps/equipment as per Trust Policy and NICE guidelines (2003).
- Wash hands at the end of the procedure.
- Label all specimen bottles with patient details & check information
against blood request forms and with the patient. Send samples to laboratory.

**Flushing the Hickman/Groshong Catheter**

11.6 Equipment

- Clean trolley or tray
- Basic dressing pack/sterile towel
  - Sterile gloves
    - 10ml syringes (nothing smaller than a 10 ml capacity syringe should be used as the pressure created may damage or split the line)
  - Heparin IV flush solution (if applicable)
  - Sodium chloride 0.9% (10ml)
  - Bionector/luer lock cap
  - Chlorhexidine solution or alcohol wipe
  - Sharps bin

11.7 Procedure

- Explain procedure to patient.
- Clean trolley/tray thoroughly prior to start of procedure using soap and water.

➢ wash hands using the Ayliffe method or use bacterial hand rub.

- Open up dressing towel onto clean tray or trolley, place other equipment – sterile gloves, syringes, bionector or luer lock cap, chlorhexidine solution or alcohol wipe onto this. Draw up saline & heparin flush (if applicable) maintaining a sterile environment and place syringes on the sterile field.
- Put on sterile gloves.
- Place sterile towel under the catheter.
  - Using chlorhexidine solution or alcohol wipe clean end of bionector and clamps if applicable (change bionector every 7 days or after one hundred uses, whichever is sooner) or remove luer lock cap and clean end of catheter. Allow to dry for a minimum of twenty seconds.
- Attach 10 ml syringe with normal saline 0.9% to catheter or hub of bionector, release clamp and flush using push pause technique and reclamp.
- Repeat as above with heparin IV flush solution – if applicable using a positive pressure technique.
- Apply a new leur lock cap at each flush or change bionector weekly.
- Remove all sharps/equipment as per trust policy.
- Wash hands at end of procedure, and document care given in the patient’s records.

12.0 ASSESSMENT OF THE PATIENT WITH A CVC PRIOR TO DISCHARGE

12.1 Prior to discharge from hospital, patients and their carers should receive both verbal and written education regarding the care of the CVC line.

12.2 Patients and carers should be made aware of possible problems associated with the catheter, and should be given a hospital contact number to obtain immediate advice if a problem occurs.

12.3 Qualified practitioners involved in the care of a patient with a catheter will require training in the care of a patient with a CVC prior to the patient’s discharge. It is essential for the nurses involved in the care of the patient to possess the relevant skills and training to undertake the procedure.

12.4 Care and management will be taught regarding the prevention of infection and to safely manage a central venous catheter. (Nice guidelines – infection control 2003).

12.5 The nursing staff must consistently adhere to the infection prevention practices described in the NICE guidelines (2003).

12.6 Follow-up training and support should be available to patients, carers and practitioners involved in the care of patients with central lines.

12.7 Ensure the patient is able to care for the CVC when discharged or that a carer is able to assist with the maintenance of the device.

13.0 POTENTIAL PROBLEMS ASSOCIATED WITH CVC

It is important that patients, carers and nurses are aware of the possible complications that may occur. The appropriate health care professional must be informed and advice and management be sought. All problems should be recorded in the patients’ notes according to the NMC Guidelines for Record Keeping, 2007. For further in-depth information on the potential complications associated with CVC’s see appendix 8
REFERENCES


11. University College London Hospitals Central Venous Catheter Care Guidelines: Management of Complications

Guidance Notes:

Following completion of your Care of Long –Term Central Venous Catheter Theory you now need to undertake sufficient episodes of supervised practice until you are ready for final assessment of competence. (Minimum of 5 episodes of supervised practice is recommended)

1) If care of long term central venous catheters is identified as a definite service need, a plan of action is required to ensure optimum opportunities are identified and used to achieve competence within 3 months of the date of the theory

Competence to be achieved within 3 months.

Failure to achieve competence within this time scale will result in the following:

1) If it is not a service need - the individual to be stopped from pursuing this skill. *(Insufficient opportunity to obtain competence may mean insufficient opportunity to maintain competence).*

2) If it is a service need, the period of supervised practice to be recommenced.

Whilst undertaking your supervised practice:

1) Follow the steps as laid down in the BENPCT protocol and pan Birmingham guidelines.

2) Read relevant articles, and reflect on acquired learning from the theory session to enable you to meet the requirements set out in the final competency document.

3) Obtain agreement from supervisor when you are ready for final assessment.

4) Once a minimum of 4 supervised practices have been undertaken and you and your supervisors are satisfied that you are competent and ready for assessment, you will then have 1 supervised practice session with the assessor and then complete the competency document with your assessor.

5) Copies of all documents to be filed as follows:

   a. Personal file.
   b. Your professional Portfolio.
   c. Primary Care Cancer Nurses records.
Maintaining Competence

If you are regularly practicing this competence the trust advises that you contact your assessor every 12 months to update yourself and take part in one supervised practice.

If you have not practiced this clinical skill for more than a 6 month period skill and this skill is identified as a service need, the trust advises that you contact your assessor and arrange for additional supervised practice and an update to renew your competence.

If you have not practiced this skill for over 12 months you are advised to follow the full guidelines needed to obtain competency.

If at any time you feel you would like to access supervised practice please contact Primary Care Cancer nurses who will arrange for a competent practitioner to support you.

Further information and advice is available from the Primary Care Cancer Nurse Jayne Parker at:

Ashfurlong Health Centre
233 Tamworth Road
Sutton Coldfield
B75 6DX

Tel 0121 465 5660/ 5652

Email: jayne.parker@benpct.nhs.uk
## Competencies and Associated Underpinning Knowledge for Long Term Central Venous Catheters

For use with guidelines for the Care of Central Venous Catheters (CVC)

<table>
<thead>
<tr>
<th>Central Venous Catheters Competencies</th>
<th>Name ___________________________</th>
<th>Date</th>
<th>Nurse</th>
<th>Assessor</th>
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<tr>
<td>Theory session attended</td>
<td>Date __________________ Location __________________</td>
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<tr>
<td>Demonstrate proficiency in caring for a patient with a central venous catheter. To include:</td>
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<tr>
<td>Tunnelling catheters (e.g. Hickman Lines)</td>
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<tr>
<td>Non Tunnelled catheters (e.g. PICC lines)</td>
<td>A, B, C, D</td>
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<tr>
<td>Open ended catheters</td>
<td>A, B, C, D</td>
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<td>Groshung catheters</td>
<td>A, B, C, D</td>
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<td>Describe indications for use of central venous catheters.</td>
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<td>Demonstrate anatomical knowledge of potential sites for central venous catheters and discuss the advantages and disadvantages of each.</td>
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<td>Discuss the immediate complications of central line insertion. Tunnelled and non-tunnelled.</td>
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<td>Discuss longer term hazards for central venous catheters and the associated nursing responsibilities. Tunnelled and non-tunnelled.</td>
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<td>Discuss suture removal from entry and exit sites</td>
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<td>Discuss dressing choice and disinfectant choice for exit site, support with evidence.</td>
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<td>Demonstrate safe accessing of long term cvc ensuring aseptic technique.</td>
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<td>Discuss the evidence in support of disinfection of catheter lumen and choice of disinfectant.</td>
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<td>Explain the principles behind choice of syringe size when accessing and flushing CVC’S.</td>
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<td>Discuss, with reference to trust guidelines, flushing and locking the lumens of long term CVC’S.</td>
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<td>Describe the action to be taken in event that no blood can be withdrawn from the lumen( if taking a blood sample)or there is resistance to flushing.</td>
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<td>Discuss the advice that patients and carers require relating to their CVC care.</td>
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<td>Mechanical Phlebitis (PICS only)</td>
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<td>D</td>
<td>Catheter Migration</td>
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<td>Torn or Damaged Catheter</td>
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<td>Catheter Displacement</td>
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Demonstrate accurate documentation of care given associated with CVC.

Date competency achieved -----------------------------------------------

Signature of assessed -----------------------------------------------

Signature of assessor -----------------------------------------------

Comments

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## Care of Long-Term Central Venous Catheters – RECORD OF SUPERVISED PRACTICE

Name: ………………………………………………………………………………………………….

Base/Ward: ……………………………………………………………………………………………….

Date Course Attended: ……………………………………………………………………………….

Target Date of completion of Competence Assessment Document: …………………………….
*(Within 3 months of completion of Care of Long-Term Central Venous Catheters Course)*

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Document Key learning required before next supervised practice is undertaken.
To be completed by Supervisor

Is the learner now ready for final assessment of competence? Yes / No

Please add any comments to support your decision:

Name of Supervisor: 
Signature of Supervisor: 
Date: 
Signature of Candidate: 
Date: 

Copy to Line Manager to check and put in Personal File

Copy to Candidate’s Portfolio
Additional Supervised Practice Undertaken.

Name: ………………………………………………………………………………………………………

Ward/Area: ………………………………………………………………………………………………………

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Additional Supervised Practice Undertaken

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Appendix 4

REFLECTIVE EXERCISE

WHAT I HAVE LEARNED FROM THIS TRAINING EXPERIENCE

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HOW WILL THIS HELP ME TO DEVELOP MY PRACTICE AND BENEFIT PATIENT CARE?

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HOW WILL I MAINTAIN MY KNOWLEDGE, SKILLS, AND COMPETENCE IN SUPPORT OF THIS AREA OF MY DEVELOPING PRACTICE?

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Flushing and Dressing a Peripherally Inserted Central Catheter: A Guide for District Nurses

Pan Birmingham Cancer Network

Appendix 5
Your patient had a Peripherally Inserted Central Catheter (PICC) inserted on... at (hospital).

**Definition**
A PICC is a Peripherally Inserted Central Catheter. It is a thin flexible tube that is inserted into a vein, usually in the bend of the arm.

The tip of the lumen is positioned in the superior vena cava and requires a strict **aseptic technique** whenever accessing or dressing the device. The end of the PICC exits the body at or near the elbow (ante-cubital fossa).

There are 2 types of PICC used: **please tick type of PICC in situ**:  

1. **Groshong PICCs** - have a pressure sensitive two-way valve at the internal end of the PICC. This valve opens outwards to allow fluid to be injected into the catheter and inwards to allow blood to be withdrawn. When not in use the valve remains closed, thus preventing blood from flowing back into the catheter and air entering the venous circulation. **Clamps or switches are not required**.

Maintenance of this PICC will require a weekly flush with 10mls of N/Saline and a dressing change at least weekly or as required. **Heparin is not required for flushing this device**. The procedure for flushing and dressing the PICC are outlined on the next page.

Valved PICC’s are normally **blue** in colour.

2. **Open ended PICCs** – have no valve at the end so the clamp on the outside of the PICC must be used.

Maintenance of this PICC will require a weekly flush with 10mls of N/Saline and Heparin and a dressing change at least weekly or as required. **Heparin is required for flushing this device**. The procedure for flushing and dressing the PICC are outlined overleaf.

Open ended PICC’s are **normally clear** and always have a clamp on the outside.
Nursing care following PICC placement
The patient should be monitored for the following potential complications:

Bleeding from insertion site
If this occurs, apply a sterile gauze pressure dressing to the site for 24 hours. Observe the site, then change to a transparent dressing such as IV 3000 or Tegaderm.

Bruising at insertion site
This may be related to vein trauma at insertion. Monitor this for any changes.

Inflammation, oedema and/or tenderness above site
This may be related to trauma and possible chemical or dressing reactions and may involve the anti-cubital fossa region of the arm. Change dressing to another occlusive type and monitor. If problems persist, please contact the appropriate hospital for advice.

Mechanical phlebitis
This is inflammation of the vein caused by the body’s response to the catheter and may involve the inner proximal region of the arm. This occurs more commonly during the first 7 days post insertion, but may be a delayed response. Please contact the appropriate hospital for advice.

This is not an infection process.

If mechanical phlebitis is suspected:
We advise patients to:
- Take analgesia as required
- Perform light arm exercises
- Monitor their temperature during this period, and to contact the appropriate hospital if abnormalities are detected
- Apply warm compresses intermittently (for example, 20 minutes at a time for 48 hours).

This will dilate the vein and encourage blood flow, and may need to be continued until the reaction settles.
Introduction
The PICC will need to be flushed once a week. If it needs to be flushed more than once a week you will have been informed of this.

You will need the following items which will be given to the patient, by the hospital staff:

- A sterile dressing pack containing gloves and a paper towel
- Chlorhexidine in spirit
- 2 large IV 3000 dressings (10cm x 14cm) or a transparent occlusive dressing
- 10ml syringe(s). If you need to flush the PICC with saline, you will have 1 syringe for each lumen. If you need to flush the PICC with saline and Heparin, you will have 2 syringes for each lumen. Do not use anything smaller than a 10ml syringe when flushing a PICC
- Green needle(s). If you need to flush the PICC with saline, you will have 1 needle. If you need to flush the PICC with saline and Heparin, you will have 2 needles
- 10mls of 0.9% saline
- Heparin flush e.g. cannulas 200 units in 2ml (if you do not need to flush the PICC with Heparin, the patient will not have been given this)
- 2 large alcowipes
- A sterile bung / needle free connector e.g. a bionnector
- Sterile gauze pieces
- Steri-strips
- A sharps bin.

Flushing a PICC

1. Identify your work area; this surface should be thoroughly cleaned to reduce the risk of infection.
2. Wash your hands thoroughly and then open the sterile dressing pack.
3. Open and place all of the other items onto the sterile dressing pack.
4. Wash your hands again and put on the sterile gloves.
5. Draw up the saline with a needle into a syringe. **If you also need to flush the PICC with Heparin, draw up the Heparin into a separate syringe.**

6. Pick up and clean the end of the PICC with an alcowipe.

7. If the PICC has a clamp, ensure that this is shut.

8. Place the PICC onto the sterile towel. If the end of the PICC is very short, wrap the sterile towel around the patient’s arm and place the end of the PICC on top of it.

9. Pick up the PICC with a new alcowipe:

   - **If a needle free bung is in place** leave this on and clean it thoroughly with the Chlorhexidine using the gauze swabs provided in the sterile dressing pack.

   - **If a sterile bung is in place** remove and discard this - clean the end of the PICC with the Chlorhexidine using the gauze swabs provided in the sterile dressing pack.

**If the PICC will not flush:**

   - Check if the catheter is kinked, twisted or bent. If so, straighten it and try again

   - If the PICC has a clamp, check that it is open

   - If these fail, please contact the hospital nursing team for advice

   - Never force solution into the PICC.

To flush the PICC attach the syringe of saline.

10. If the PICC has a clamp, open it and slowly flush in the solution using a pulsating action (stop / start).
If the PICC has a clamp, close it whilst injecting the final 1ml of saline.

11. **If Heparin flush is also required** attach the syringe of Heparin.

   If the PICC has a clamp, open it and slowly flush in the solution using a pulsating action (stop / start).

   If the PICC has a clamp, close it whilst injecting the final 1ml of Heparin.

12. **If a needle free bung is in place**, you can now remove and discard it.

13. Clean the end of the PICC again with Chlorhexidine.

14. Attach a new bung or needle free connector.

**Dressing a PICC**

1. Loosen and remove the dressing gently, starting at the bung and carefully pulling up towards the exit site ensuring the PICC remains secured by the statlock dressing (butterfly shaped dressing) – this will be changed as required by the hospital.

2. Clean the insertion site on the patients arm with Chlorhexidine using a gauze swab and allow to dry.

3. Apply steri-strips to the area just below where the PICC leaves the skin.

4. Place a gauze swab between the bung and the patient’s skin to prevent discomfort.

5. Place the transparent dressing so that it completely covers the PICC. This provides a waterproof barrier.

If you have any queries or concerns about any aspect of care and maintenance of PICCs; or if you would like to observe this procedure please contact the appropriate hospital below.
Please tick hospital to be contacted:

- Good Hope Hospital — 0121 378 2211
- Birmingham Heartlands Hospital — 0121 424 2000
- City Hospital — 0121 554 3801
- Sandwell General Hospital — 0121 553 1831
- Queen Elizabeth Hospital — 0121 472 1311
- Walsall Manor Hospital — 01922 721172

About this information

This guide is provided for general information only and is not a substitute for professional medical advice. Every effort is taken to ensure that this information is accurate and consistent with current knowledge and practice at the time of publication.

We are constantly striving to improve the quality of our information. If you have a suggestion about how this information can be improved, please contact us via our website:

http://www.birminghamcancer.nhs.uk

This information was produced by Pan Birmingham Cancer Network and was written by Consultant Surgeons, Consultant Oncologists, Clinical Nurse Specialists, Allied Health Professionals, and Patients and Carers from the following Trusts:

Good Hope Hospital Trust
Heart of England NHS Foundation Trust
Sandwell and West Birmingham NHS Trust
University Hospital Birmingham Foundation Trust
Walsall Hospitals NHS Trust

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Publication Date: December 2006

Review Date: December 2007
Flushing and Dressing Central Venous Catheters: A Guide for District Nurses

Pan Birmingham Cancer Network
Your patient had a central catheter (Hickman catheter / Groshong catheter) inserted on at (hospital).

**Definition**

A central catheter, also called a central venous catheter is a long fine hollow tube with an opening at each end. One end provides access from outside the body to the other end which is situated in a large vein in the chest. It can remain in position for several months.

There is a small dacron cuff on the part of the catheter which lies under the skin between the clavicle and the exit site where the catheter comes out.

The cuff takes about 3 weeks to knit into the tissues under the skin; it helps to secure the catheter and also acts as a barrier to help prevent infection.

![Diagram](https://via.placeholder.com/150)

There are 2 sutures in situ: one at the insertion site just below the clavicle, this suture may be removed after one week. The second suture is at the exit site and should be removed after 3 weeks when the cuff has firmly knitted in.

Whilst the sutures are in place, the catheter must be dressed weekly, more frequently if the dressing becomes loose or soiled, using full aseptic technique. The catheter must remain looped and firmly secured with an IV 3000 dressing / Tegaderm. If gauze dressings are used, the dressing will require changing more frequently as they are not
moisture permeable and will become moist and loose.

Once the sutures have been removed, formal sterile dressings are no longer required but the catheter must remain looped. Surgical tape is sufficient to support the catheter. However many patients prefer the security of a full dressing.

The catheter will need to be flushed with saline and Heparin (if applicable – see below for further information) once a week whilst the patient is at home.

The patient is allowed to shower or bath as usual, however, showers are preferable. If baths are taken, please remind the patient to tape the catheter up and ensure that the hub does not sit in the bath water.

**Tick which type of catheter is in place:**

1. *Groshong Central Catheters* - have a pressure sensitive two-way valve at the internal end of the catheter. This valve opens outwards to allow fluid to be injected into the catheter and inwards to allow blood to be withdrawn. When not in use the valve remains closed, thus preventing blood from flowing back into the catheter and air entering the venous circulation. **Clamps or switches are not required.**

Maintenance of this catheter will require a weekly flush with 10mls of N/ Saline and a dressing change at least weekly or as required. **Heparin is not required for flushing this device.** The procedure for flushing and dressing the Groshong central catheter are outlined below.

Valved catheters are normally **blue** in colour.

2. *Open ended catheters usually referred to as Hickman catheters* – have no valve at the end so the clamp on the outside of the catheter must be used.

Maintenance of this catheter will require a weekly flush with 10mls of N/ Saline and Heparin and a dressing change at least weekly or as required. **Heparin is required for flushing this device.** The procedure for flushing and dressing the catheter are outlined below.

Open ended catheters are **normally white or clear** and always have a clamp on the outside.
Flushing a Central (Hickman / Groshong) Catheter

Introduction
The central catheter will need to be flushed once a week. If it needs to be flushed more than once a week you will have been informed of this.

You will need the following items which will be given to the patient, by the hospital staff:

- A sterile dressing pack containing gloves and a paper towel
- 2 large alcowipes
- Chlorhexidine in spirit
- 1 large IV 3000 dressings (10cm x 14cm) or a transparent occlusive dressing
- 10mls syringe(s). If you need to flush the central catheter with saline, you will have 1 syringe for each lumen. If you need to flush the central catheter with saline and Heparin, you will have 2 syringes for each lumen. Do not use anything smaller than a 10ml syringe when flushing a central catheter
- Blue needle(s). If you need to flush the central catheter with saline, you will have 1 needle. If you need to flush the central catheter with saline and Heparin, you will have 2 needles for each lumen
- 10mls of 0.9% saline
- A sterile bung / needle free connector e.g. a bionnector
- Heparin flush e.g. cannusal 200 units in 2ml (if you do not need to flush the catheter with Heparin, the patient will not have been given this)
- A sharps bin.

Flushing a Central Catheter
1. Identify your work area; this surface should be thoroughly cleaned to reduce the risk of infection.

2. Wash your hands thoroughly and then open the sterile dressing pack.

3. Open and place all of the other items onto the sterile dressing pack.

4. Wash your hands again and put on the sterile gloves.

5. Draw up the saline with a needle into a syringe. If you also need to flush the catheter with Heparin, draw up the Heparin into a separate syringe.
6. Pick up and clean the end of the central catheter with an alcowipe.

7. If the central catheter has a clamp, ensure that this is shut.

8. Place the central catheter onto the sterile towel. If the end of the central catheter is very short, place the sterile towel on the patient’s chest and place the end of the central catheter on top of it.

9. Pick up the catheter with a new alcowipe:
   - **If a needle free bung is in place** leave this on and clean it thoroughly with the Chlorhexidine using the gauze swabs provided in the sterile dressing pack.
   - **If a sterile bung is in place** remove and discard this - clean the end of the catheter with the Chlorhexidine using the gauze swabs provided in the sterile dressing pack.

10. To flush the central catheter, attach the syringe of saline.
   - If the catheter has a clamp, open it and slowly flush in the solution using a pulsating action (stop / start).
   - If the catheter has a clamp, close it whilst injecting the final 1ml of saline.

11. **If Heparin flush is also required** attach the syringe of Heparin.
   - If the catheter has a clamp, open it and slowly flush in the solution using a pulsating action (stop / start).

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<td>• If these fail, please contact the hospital nursing team for advice</td>
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<tr>
<td>• Never force solution into the catheter.</td>
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• If the catheter has a clamp, close it whilst injecting the final 1ml of Heparin.

12. If a needle free bung is in place, you can now remove and discard it.

13. Clean the end of the central catheter again with Chlorhexidine.

14. Attach a new bung or needle free connector.

15. Empty infusion devices, bags or syringes that are used for the administration of chemotherapy drugs should be disposed of in the sharps bins. Once the sharps bin is ‘three-quarter’ full, it should be sealed and returned to the hospital ward/clinic on your next visit. Dressing packs should be double bagged and can be disposed of in household waste.

Dressing a Central (Hickman / Groshong) Catheter
1. Clean the exit site on chest with Chlorhexidine using a gauze swab and allow to dry.

2. Secure the catheter in a looped position with a dressing (see below).

![Diagram of Catheter Dressing]

You may wish to observe this procedure at the appropriate hospital, if so please ring the appropriate hospital below to arrange a visit, or for queries related to chemotherapy or catheter flushing:

Please tick hospital to be contacted:
☐ Good Hope Hospital — 0121 424 2000
☐ Birmingham Heartlands Hospital — 0121 424 2000
Appendix 7
Central Venous Catheter Care Information for District Nurses

Complications
It is recommended that district nurses should carry out this clinical procedure Mondays to
Fridays only within the hours of 9-5 and not on bank holidays where possible. This is
ensuring adequate back up facilities are available from the relevant chemotherapy out-
patient departments and community specialist nurses.

Thrombosis. (A)

Signs and symptoms – swelling of shoulder, neck, arm or face,
with or without pain, inflammation, distension of neck veins/peripheral vessels.

Action - Do not flush the line. Contact relevant chemotherapy dept within the hours of 9-5
and send patient directly to unit. Out of hours send patient directly to A&E department.

Catheter related blood stream infection. (B)

Signs and symptoms – Pyrexia, plus or minus rigor following flushing of the line. Generally
feeling unwell, hypotension, tachycardia, shock.

Action – reassure patient, call a 999 ambulance. Patient needs immediate admission to
hospital. Contact any relatives if necessary to inform them of patient’s admission to hospital.

Exit site infection (B)

Signs and symptoms – inflammation and tenderness around exit site, with or without
exudate.

Action - take a swab, check for pyrexia, and increase frequency of dressing changes.
If patient is pyrexial they will need to attend the hospital. Contact relevant chemotherapy
department within the hours of 9-5 and send patient directly to unit. Out of hours send patient
directly to A&E department.

If there is no pyrexia, send the swab for culture and ensure results are followed up, arrange
with GP for appropriate antibiotics to be prescribed. The patient must be made aware to
closely monitor their temperature and if at any time they have a reading of 38C they must go
straight to hospital. Increase frequency and choice of dressings if appropriate

Mechanical Phlebitis. (C)

Signs and symptoms – patients with a PICC line develop pain, warmth, hardness,
redness, confined to the path of the vein.

Action – Contact hospital staff in the appropriate chemotherapy out-patients dept they may
wish to see the patient or offer you advice. These patients do need to attend A&E unless the
symptoms are accompanied by a temperature of 38C.
The advice you may be given is for the patient to a warm compress intermittently, gentle arm exercises and elevation of the arm. The patient may also take NSAIDs if they have no contraindications or allergies to these. Patients must be made aware to monitor their temperature and attend hospital immediately if temperature reaches 38C. You will need to visit patient daily to monitor progress.

Catheter Migration. (D)

Signs and symptoms - increased length of protruding catheter. Cuff visible at exit site. It is suggested to document length of visible line in the patient’s records, this allows staff to compare what they are seeing to what was seen at the last visit. The patient is also likely to notice if the length of the catheter has changed.

Action – Hickman lines- if cuff visible or line noticeably longer, do not flush, tape line securely to chest and contact relevant chemotherapy dept within the hours of 9-5 and send patient directly to unit. Out of hours send patient directly to A&E department. PICC lines- if line has increased by less than 2cm inform the relevant chemotherapy out patients department, but no further action is necessary, flush the line as normal and secure dressing firmly. If the line has come out by more than 2cm, do not flush the line and contact the relevant chemotherapy out patient department to arrange for medical team to review.

Torn or Damaged Catheter (E)

Signs and symptoms – leakage from exit site when catheter is flushed. Bleeding from exit site.

Action – Clamp catheter above leak if possible, do not continue flushing procedure. Contact relevant chemotherapy dept within the hours of 9-5 and send patient directly to unit. Out of hours send patient directly to A&E department as the line must be removed or repaired as soon as possible. Apply dressing if appropriate.

Catheter Displacement (F)

Signs and symptoms – obstruction/resistance to flushing, pain on flushing, signs of migration (as described in sect D),

Action – never use force when flushing a central venous catheter, if unable to flush, abandon procedure maintaining a sterile environment i.e. replace bungs, ensure all clamps are closed. Contact the relevant chemotherapy out patients department and arrange for patient to be seen by medical staff. If out of hours the department can be contacted the following day. If patient experiences pain on flushing contact relevant chemotherapy dept within the hours of 9-5 and send patient directly to unit.

Bleeding (G)

Signs and symptoms- Bleeding from exit site ranging from slight ooze to substantial trickle.
**Action**- If bleeding substantially contact relevant chemotherapy dept within the hours of 9-5 and send patient directly to unit. Out of hours send patient directly to A&E department. Pad the wound with gauze and apply pressure. It is possible that the line has fractured.

Often lines ooze slightly for a few days post insertion. In this case apply gauze around the site under the semi occlusive dressing. This will need to be redressed daily following exit site dressing protocol. Observe for signs of infection and swab if necessary. Advise patient to monitor temperature regularly and attend hospital if temp above 38C. If oozing does not settle after 3 days contact the relevant chemotherapy out-patients department for advice.

If a Groshung (no clamps) line bleeds when the bung is removed this indicates the valve is faulty. If using needle free bung continue procedure and attach new bung as per protocol. Following this, flush line with a further 10mls of saline through the new bung. If not using needle free bung, attach new bung and clean with alcohol wipe. Then contact relevant chemotherapy out-patients department to explain the problem and arrange for the patient to attend.

**Catheter blocked (H)**

Signs and symptoms- unable to flush.

Management- Under no circumstances is force to be used to flush the catheter, contact relevant chemotherapy out patients department to explain problem and arrange for patient to attend.

Possible causes- clotted blood in the catheter, drug precipitation, fibrin sheath formation around tip, Pinch-off syndrome (when catheter is compressed between first rib and the clavicle).

If resistance felt whilst flushing catheter, the cause could also be any of the above. Continue flushing the line according the protocol if possible, but do not use excessive force. Abandon procedure if necessary. If procedure abandoned contact relevant chemotherapy department to arrange for patient to be seen. If able to continue with line flush, document resistance felt whilst flushing in the notes and monitor for improvement/worsening.
References


University College London Hospitals (2006) Central venous catheter care guidelines, UCLH.

Clinical Policy Document Control Sheet

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<tr>
<td>Author/Lead:</td>
<td>Jackie Derby</td>
</tr>
<tr>
<td>Job Title:</td>
<td>District Nurse Community Practice Teacher</td>
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<tr>
<td>Tele:</td>
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<td>April 2008</td>
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<td>Suggestions to final draft from Nicola Tongue incorporated. Hospital telephone numbers updated</td>
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