SECTION 18

INFECTION CONTROL GUIDANCE ON THE CARE AND MAINTENANCE OF INTRAVASCULAR DEVICES

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Title of Policy: Guidelines on the care and maintenance of intravascular devices

Policy Reference: Issue No 4, April 2012

Scope: Organisation wide

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Policy application / Target Audience Throughout NHS Ayrshire and Arran

RESPONSIBILITIES FOR IMPLEMENTATION

Organisation: Senior Management Team and Chief Executive

Directorate: Directors

Corporate: Senior Managers

Departmental: Heads of Wards or Departments

Local: All relevant staff

Policy Statement: It is the responsibility of all staff to ensure that they consistently maintain good practice when dealing with intravascular devices in order to minimise risk to both patients and staff.

Last reviewed: April 2012

Agreed by: Infection Prevention and Control Policy Review Group

Electronic approval by: Professor Robert G Masterton

Executive Medical Director

Date: 26 April 2012
Additional infection control policies that should be read in conjunction with this policy are:

- Section 1 Standard Infection Control Precautions (SICPs) (see manual page)

There are also clinical guidelines that will give further information on the insertion, removal, care and maintenance of these devices.

In some areas e.g. oncology, paediatrics, renal etc. there are local guidelines on the care and maintenance of intravascular devices. Please check if your area has local guidelines and refer for further specific guidance.
1.0 INTRODUCTION

The insertion of intravenous devices (IVs) is commonplace in routine and emergency care. However, any procedure which accesses the cardiovascular system increases the risk of infection. It is therefore essential to ensure that there is a clinical need for the device to be inserted.

Not all Healthcare Associated Infections (HAI) are avoidable. However, a significant proportion can be prevented. It should also be noted that bloodstream associated infections associated with the care and maintenance of peripheral venous catheters (PVC) central venous catheters (CVC) are among the most dangerous complications of healthcare. Prevention and control of HAI has to be embedded into everyday practice and applied consistently by everyone.

The application of an aseptic technique during insertion and maintenance of any IV device remains the most important factor in reducing the risk of sepsis.

Note: The care and maintenance of a tunnelled central venous access device for haemodialysis is managed differently, therefore specialist renal advice should be sought.

The following risk factors for IV catheter related phlebitis/infection are recognised:

- Migration of skin organisms via the insertion site
- The site of catheter insertion
- Size of catheter used
- Duration of catheterisation
- Use of multi-lumen catheters, injections ports and stopcocks
- Heavy microbial colonisation of the catheter hub and connection ports
- Poor decontamination of multi-lumen injection ports and stopcocks prior to use
- Breaks in asepsis during insertion e.g. emergency situations
- Frequency of manipulation or access
- Inexperience of staff inserting and using devices
- Poor skin preparation during insertion

Intravenous device related infections continue to be a major source of morbidity and mortality, particularly in hospitalised patients. Good practice and maintenance is essential in preventing infections related to the use of PVC.

Section 1 Standard Infection Control Precautions (SICPs) and asepsis should be adhered to at all times.
2.0 CHOICE OF INSERTION SITE

The risk of catheter related infections and phlebitis is influenced by the size of the catheter and site where the catheter is inserted, therefore:

2.1 For Peripheral Vascular Catheters (PVC)

- Peripheral catheters should be inserted in the upper limbs. Please note that for certain infusions larger veins may be required
- Insertion sites over limb joints should be avoided
- Areas of existing skin trauma or infection should be avoided
- Catheters inserted in lower limbs (e.g. foot, femoral) should be replaced as soon as alternative access can be obtained

Infusions established in emergency situations where breaks in asepsis may have occurred should be re-sited as soon after insertion as is practicably possible.

Bionectors should be attached.

2.2 For Central Venous Catheters (CVC)

The possible access routes are internal/external jugular, subclavian, femoral, antecubital fossa and supraclavicular veins.

Femoral veins have been associated with a higher risk of catheter related infections and it is advised that the use of this site should be avoided if possible. If the CVC is sited in a femoral vein it should not be left in situ for more than 5 days.

Note: For each of the above, the procedure must be recorded on the appropriate documentation/care bundle which should be inserted in the patient’s notes.

3.0 MAINTENANCE OF THE SYSTEM FOR ALL IV CATHETERS

The insertion site should be inspected at least daily and the findings documented on the appropriate documentation/care bundle.

3.1 Taps and injection ports

The use of taps and injection ports increases the risk of infection. If used, taps and ports must be disinfected with 70% isopropyl alcohol (unless contra-indicated by manufacturers) and allowed to dry prior to giving additives. Ports and taps should be changed every 24-hours with the administration set in accordance with manufacturer’s instructions.
3.2 Infusions

Ideally, all infusions should be bought pre-prepared from the manufacturer, or prepared for use in the Pharmacy Department. If any additives do need to be added at local level, it is essential that these are made and administered using an aseptic technique.

3.3 Preparation

When preparing IV infusions they should be run through the lines using a sterile field and the appropriate aseptic technique into a sterile receptacle e.g. sterile swab/gallipot and never into a sink.

3.4 Hanging Time

The length of time an infusion bag or bottle should remain in use will vary according to the nature of infusion, prescription or manufacturers’ instructions. However, use should not exceed 24 hours.

Specific points to note regarding maintenance of PVC:

As soon as the PVC is no longer required it should be removed. PVC should not remain in situ for longer than 72 hours unless there is a clinical need to do so in adults this should never exceed 5 days. Should this be the case, the rationale must be recorded in the appropriate documentation/care bundle in the patient’s notes.

If infection is suspected, the cannula must be removed, the insertion site must be swabbed and the swab sent for culture. The giving set and the fluid should be replaced.

3.5 Administration sets

Administration sets should be changed in accordance with the manufacturers’ instructions (usually be used for up to 72 hours, check with local guidelines). However, sets used for administering blood, blood products, TPN (Total Parenteral Nutrition) or lipid emulsions require to be changed every 12 hours. Asepsis must be maintained during administration set changes.

3.6 Disconnection

If an infusion has to be disconnected e.g. to allow the patient to attend other departments for investigations or to bath/shower, it must be discarded. Under no circumstance should the line be disconnected, hung over the drip stand and reconnected when the patient returns.

3.7 Multi-dose vials

The use of multi-dose vials should be avoided. When no alternative is available, multi-dose vials should be reserved for individual patient use and in
accordance with manufacturers’ instructions. The vials must be discarded if sterility is compromised.

**Specific points to note regarding maintenance of CVC:**

Following a clinical assessment, if a catheter related infection is suspected, the catheter may require removal and replacement. Clinical staff caring for that patient and a Consultant Microbiologist should be informed immediately if any issue is identified.

### 3.8 Removal

CVC should be removed when no longer required, when malfunctioning, or when catheter related infection is suspected (the tip must be sent for culture). The frequency for routine changes of CVC will be determined by the site where the catheter is situated and the type of catheter used. Refer to the manufacturers’ instructions.

### 4.0 CATHETER RELATED SEPSIS

#### 4.1 Prevention

To prevent catheter related infection it is essential to detect problems at the earliest opportunity. Therefore, all catheter insertion sites should be observed and the finding recorded on the appropriate documentation/care bundle. This should be undertaken at least daily by clinical staff to ensure the device has not become dislodged and for signs of infection and/or extravasation. Based on clinical assessment, temperature and pulse should be recorded at suitable intervals to detect early signs of infection.

When inserting a central line, staff must wear PPE. This should include a surgical hat, mask, theatre gown and sterile gloves. Sterile drapes should be used along with a sterile sheath for the ultrasound prob.

**Signs of infection**

- Pyrexia
- Tachycardia
- Rigors
- Hypotension
- Inflammatory response
- Erythema
- Tracking (redness along the vein)
- Oedema/swelling
- Pain/tenderness
- Purulent discharge

If any of the above are observed the line should be reviewed by clinical staff caring for that patient immediately.
4.2 Swabbing

If the patient is suspected as having a catheter-related infection, then entry site swabs should be obtained and blood cultures taken via each catheter lumen and via separate peripheral venepuncture. **Note the peripheral culture should always be obtained first.** If there is clear evidence of catheter-related infection the catheter should be removed and the tip sent for culture.

4.3 Blood cultures

Blood cultures can be contaminated by skin organisms e.g. coagulase-negative Staphylococci, if not taken correctly.

**Asepsis must be maintained when obtaining blood cultures** to minimise the risk of contamination at the site, and of the samples. Hygienic hand hygiene and suitable disinfection of the access ports **prior to sampling is essential.**

5.0 BIBLIOGRAPHY

