## Peripheral Intravenous Therapy

**Reference Number:**

NHSCT/12/489

**Target audience:**

All members of Trust staff involved in the management of peripheral intravenous therapy.

**Sources of advice in relation to this document:**

Pat McKee, Lead Nurse, Infection Prevention and Control  
Dr Peter Flanagan, Director of Medical Services

**Replaces (if appropriate):**

Legacy United, Causeway and Homefirst’s policy on the Management of Peripheral Intravenous Therapy

**Type of Document:**

Trust Wide

**Approved by:**

Policy, Standards and Guidelines Committee

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28 February 2012

**NHSCT Mission Statement**

To provide for all the quality of services we would expect for our families and ourselves

The NHSCT Management of Peripheral Intravenous Therapy Policy will be reviewed in accordance with legislative changes.
Management of Peripheral Intravenous Therapy

December 2011
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Management of Peripheral Intravenous Therapy

1. Introduction

These guidelines contain information for staff for management of intravenous therapy. These should be read and implemented in conjunction with the Aseptic Non-Touch Technique (ANTT) guidelines.

Aim
The aim of this policy is to ensure uniform standards of safe care in relation to peripheral intravenous therapy are maintained across the Trust.

Rationale
To ensure that there is a system in place to reduce the potential sources of infection and risks associated with intravenous therapy, and to reduce discomfort, trauma and complications to the patient. All NHSCT staff who perform peripheral intravenous therapy are expected to adhere to this document’s guidance to ensure that a consistently high standard of practice exists throughout the Trust.

Responsibilities

Chief Executive
The Chief Executive has overall responsibility for ensuring infection prevention and control is a core part of the Trust’s governance and patient safety programmes.

Board
The Board has collective responsibility for ensuring assurance that appropriate and effective policies are in place to minimise the risks of health care associated infections.

Director of Infection Prevention & Control
It is the responsibility of the Director of Infection Prevention & Control to oversee the development and implementation of infection prevention and control policies.

Infection Prevention & Control Team
It is the responsibility of the Infection Prevention & Control Team to ensure this policy is reviewed and amended at the review date or prior to this, following new developments in intravenous therapy.

Service Managers
It is the responsibility of managers to ensure that they oversee the development and implementation of this policy among ward staff.

Policy Context
This policy should be read in conjunction with the following:
- Regional Infection Control Manual (assessed via NHSCT Staffnet or www.infectioncontrolmanual.co.uk)
- Control of Substances Hazardous to Health (COSHH)
- Health & Safety at Work (Northern Ireland) Order 1978
• Trust Hand Hygiene Policy
• Trust Management of Medical Devices Policy
• Non Clinical Hazardous Waste Procedure
• Trust Waste Management Policy
• Trust Records Management Policy

**Target Audience**
All members of Trust staff.

**Equality, Human Rights and DDA**
This is a purely clinical policy (i.e. related to treatment of people with specific diseases and conditions and is evidence based) which does not require to be screened as it has no equality implications.

**Alternative Formats**
This document can be made available on request on disc, larger font, Braille, audio-cassette and in other minority languages to meet the needs of those who are not fluent in English.

**Sources of Advice in relation to this document**
The Policy Author, responsible Assistant Director or Director as detailed on the policy title page should be contacted with regard to any queries on the content of this policy.

2. **Background**

Insertion of intravenous (IV) cannula is an invasive procedure which bypasses the body's natural defence mechanism, this predisposes the patient to an increased risk of local and systemic infection either during cannulation or ongoing care. Up to 80% of hospitalised patients receive IV therapy via the peripheral venous route. The incidence of infection can be reduced by using aseptic principles. As the risk of infection increases with length of time of insertion, the cannula should be inserted only when absolutely necessary and removed promptly when no longer required. IV cannula related infections are associated with increased morbidity, prolonged hospitalisation and increased costs. Infections are most commonly caused by Staphylococci (DoH 2007). The predominant source of these micro-organisms is likely to be from the flora of the patient’s skin or from the hands of the health care practitioner (Hindley 2004). “Application of a standardised Aseptic Non-Touch Technique (ANTT) for clinical procedures is one of the most effective ways of containing healthcare acquired infections (Rowley, 2003). Correct insertion technique, appropriate standards of infection prevention and control and a sound knowledge of the equipment can minimise their occurrences and severity.
3. **Risk Factors**

The following risk factors for IV cannula related phlebitis/infection are recognised.

- Migration of skin organisms via the insertion site
- The site of cannula insertion
- Size of cannula used
- Duration of cannulation
- Use of multilumen devices, injections ports and stopcocks
- Heavy microbial colonisation of the cannula hub and connection ports
- Breaks in asepsis during insertion e.g. emergency situations
- Frequency of manipulation or access
- Inexperience of staff inserting and using devices

4. **Risk Management**

All Healthcare professionals must be familiar with the equipment required to perform peripheral intravenous therapy and be trained and competent to carry out the procedure. They must understand safe techniques and practices and adhere to this policy when considering the choice of vein and device. An individual risk assessment must be undertaken of the patient’s compliance prior to undertaking the procedure. Aseptic principles must be used during catheter insertion and ongoing care.

5. **Consent**

- Informed verbal consent must be obtained form the patient.
- Suitable limb to be used in consultation with the patient.

To help reduce anxiety, the nurse explains the reason for insertion of cannula to patient / relatives (Wilson-Barnett & Batehup 1992).

6. **Selection of Site**

In adults the superficial veins of the upper extremities of the body are used for cannulation because they are located just beneath the skin. When selecting a suitable site both the required cannula size and the site and status of available veins must be taken into consideration. Preferably the vein should also be unused, easily detected, patent and healthy. Veins of the lower extremities should not be routinely used in adults due to the risk of embolism and thrombophlebitis (Intravenous Nurses Society 2000)

**General rules for vein selection include:**

- Avoid median cubital veins, which should be reserved for venous blood sampling. These are at the antecubital fossa in the elbow region.
- Distal veins should be used first with subsequent attempts proximal to previous sites.
• Always allow time for inspection and palpation of the patient’s forearm and
dorum of hand to select site.
• In difficult cases, ensure maximum venous dilation before inspection.
• If in doubt, consult a more experienced colleague.
• Use veins on the patient’s non-dominant side if possible.
• Use opposite side for cannulation to any surgical procedure.

The following veins should be avoided: Small and visible but impalpable, irritated
from previous use, tortuous/mobile. Sclerosed, fibrosed or thrombosed, inflamed,
painful or bruised, thin and fragile, bony prominences and areas of joint flexion, in
the lower extremities (increased risk of thrombophlebitis and pulmonary emboli),
close to arteries or deeper lying vessels.

Venous access may also be impaired by: Injury or disease, amputation, fracture or
paralysed limbs, impairment of lymphatic drainage (e.g. mastectomy), positioning of
the patient, oedematous limbs (these carry an increased risk of phlebitis and
cellulitis), obesity and malnourishment, operation on one side of the body.

7. **Equipment Required**

Hand sanitiser, Non-sterile gloves, Disposable plastic apron, Eye / face protection
are required if there is a risk of splashing with blood or body fluids, Sharps box with
tray, Disposable tourniquet, 2% Chlorhexidine Gluconate in 70% Isopropyl alcohol
impregnated swab, Cannulation equipment, a transparent, sterile semi-permeable
dressing and a prescribed ‘flush’.

8. **Selection of Device**

Staff must ensure that they are familiar with the devices in use in their area of work.
The NHSCT has introduced specific needless systems to minimise risk of needle
stick injury from the procedure. These should be used at all times whenever possible
with risk assessment taken into account.

**Device Selection depends on:**
• Patient assessment
• The type of fluid or medication to be administered
• Use the smallest gauge and shortest length that will be accommodated by the
  vein to ensure good blood flow around the cannula. The cannula length
  should correspond approximately to the length of straight vein to be used.
• Infusion rate required (high rates will require a large vein).
• Expected duration of intravenous therapy.

Choose the smallest gauge cannula to accommodate the prescribed therapy
(Intravenous Nurses Society 2000) and thereby reduce the risk of mechanical
irritation and trauma. Polyurethane and silicone cannula are associated with lower
risk of infection.
9. **Properties of Cannula Dressing**

- A transparent polyurethane dressing to permit visual inspection of the site.
- The dressing should be sterile to protect the insertion site from potential contamination.
- A self-adhesive dressing is required to secure the cannula in place and prevent movement of the device which damages the vein.
- A waterproof dressing will facilitate bathing, etc.
- A semi-permeable dressing will allow the skin to breathe.
- A dressing which permits recording of date and time of insertion.

10. **Procedure for Insertion of Peripheral Venous Cannula**

Ensure that the patient is informed and prepared for the procedure as this may reduce anxiety and lessen the likelihood of sharps injury.

- Prior to preparing for the procedure, hands must be suitably decontaminated to reduce the risk of infection both to patient and staff. Use the 7 step technique as recommended by the (ICNA 2002) and the NHSCT Hand Hygiene Policy.
- A clean disposable apron must be worn for all 'direct patient contact' to prevent uniforms being contaminated with micro-organisms which may subsequently be transferred to patients.
- Ensure all necessary items of equipment are to hand. Check that the packing of sterile equipment is intact with no evidence of damage or moisture penetration. Check expiry dates. All equipment must be transported to the bedside in a 'sharps box procedure tray'.
- Immediately prior to cannulation, hands must be suitably decontaminated again and dried thoroughly. Either Trust approved skin antiseptic or liquid soap and water, followed by Alcohol gel can be used.
- Disposable gloves must be worn due to the potential exposure to body fluids. Sterile gloves are not essential if this procedure can be performed without touching key-parts.
- Apply the disposable tourniquet and select an appropriate site. If the skin at the insertion site is visibly dirty it should be cleansed with soap and water and dried prior to skin disinfection.
- Disinfect the skin using a 2% Chlorhexidine Gluconate in 70% Isopropyl alcohol impregnated swab. Cleanse the site for 30 seconds in a circular motion from the inside outward over a 4 cm to 5 cm diameter. Allow to dry for 30 seconds (Pratt et al 2007) & (Hadaway (2003).
- Povidone Iodine skin preparation may be used as an alternative if the patient has sensitivity to Chlorhexidine Gluconate (Pratt et al 2007).
- **DO NOT REPALPATE ONCE SITE IS CLEANED.**
- Insert the cannula as swiftly and as aseptically as possible using a 'non-touch technique'. Do not attempt repeated insertions with the same cannula. If the 1st insertion is not successful, the procedure must be repeated with a new sterile cannula and skin disinfected as above.
• Observe for flashback of blood and then advance the cannula slowly. Do not advance/withdraw/advance as this may damage the vein.
• The cannula must be secured with an appropriate dressing, ensuring that the insertion site is clearly visible.
• Record date and time of insertion on the dressing.
• Dispose of sharps into the sharps box at the point of use - as per NHSCT policy.
• Hands should be suitably decontaminated again at the end of the procedure following removal of gloves and apron.
• Document insertion in High Impact Intervention (HII) No. 2. Cannula Inspection Chart.
• The nurse must provide the patient with the NHSCT Patient Information Guidance Sheet for Intravenous Cannula and ask the patient to report any discomfort due to the presence of the cannula. (Appendix 1)

Ensure all intravenous cannula and associated devices are indicated/necessary. If there is no indication, then the cannula should be removed immediately or when Visual Infusion Phlebitis (VIP) score is 2 or greater. Removal must be documented in the High Impact Intervention (HII) No. 2. Cannula Inspection Chart.

11. Ongoing Care of Peripheral Venous Cannula

An Aseptic technique must be applied at each manipulation. Unnecessary manipulation must be avoided.

• Decontaminate hands (using the 7 step technique) before patient contact and prior to any manipulation/intervention of the cannula or administration set. Either Trust approved skin antiseptic or liquid soap and water followed by alcohol gel can be used.
• A clean disposable apron must be worn for all 'direct patient contact' to prevent uniforms being contaminated with micro-organisms which may subsequently be transferred to patients.
• Disposable gloves must be worn due to the potential exposure to body fluids.
• The insertion site should be inspected for signs of infection such as erythema, tracking, oedema, swelling, heat, pain/tenderness or purulent discharge. If infection is suspected the entire system, including giving set and fluid, should be replaced. Signs of Infection must be documented the in High Impact Intervention (HII) No. 2. Cannula Inspection Chart.

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<tr>
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<th><strong>NON - INFUSED</strong></th>
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<tr>
<td></td>
<td>(not used for continuous infusion)</td>
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<tr>
<td><strong>ADULT</strong></td>
<td>Twice daily (10.00am &amp; 10.00pm)</td>
<td>Four hourly</td>
</tr>
<tr>
<td><strong>PAEDIATRIC</strong></td>
<td>Four hourly</td>
<td>Hourly</td>
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Signs of Infection must be documented in the High Impact Intervention (HII) No. 2. Cannula Inspection Chart.

- All flushes required for non-infused cannula must be prescribed.
- Use 2% Chlorhexidine Gluconate in 70% Isopropyl alcohol to disinfect the hub/port prior to accessing cannula or administration ports. Allow to dry.
- Following access of the hub and ports, disinfect again with 2% Chlorhexidine Gluconate in 70% Isopropyl alcohol and allow to dry.
- Once a hub cap is removed for access it must be replaced by a new sterile hub cap.
- Record date / time of erection of administration set on High Impact Intervention (HII) No. 2. Cannula Inspection Chart and on the administration set next to the fluid chamber. Use appropriate colour coded label.
- A ‘closed system’ must be maintained at all times.
- A new administration set must be used when a cannula is renewed.

11.1 Administration Sets

- Administration set for blood or blood products can be used for continuous transfusion up to a maximum of 12 hours.
- All other administration sets must be replaced after 72 hours.
- Before accessing any port or extension set ensure hands are appropriately decontaminated and all ports are cleansed using 2% Chlorhexidine Gluconate in 70% Isopropyl alcohol.
- Refer to policy on Total Parenteral Nutrition.

NB: Administration sets must be discarded immediately following disconnection from the cannula. They must be replaced with a new sterile administration set.

11.2 Routine Cannula Replacement

- The cannula device is replaced in a new site every 72 hours (RCN 2005), or earlier if clinically indicated, and the time and date of the change is documented in the HII No.2 Cannula Site Inspection Chart.
- If venous access is limited, the cannula can remain in situ if there are no signs of infection. This must be documented in the Peripheral Intravenous Cannula ‘Care Bundle’, detailing reason for ongoing requirement e.g. difficult venous access, or when patient benefit outweighs risk factors. Clinical judgment must be utilised when making this risk assessment.
11.3 **Removal of Cannula**

- The nurse ensures that all cannula are removed prior to discharge from hospital.
- Decontaminate hands using the 7 step technique (using Trust approved skin antiseptic or soap and water followed by alcohol gel).
- Appropriate PPE should be donned due to potential exposure to body fluids.
- Removal of cannula is documented in the HI No.2 Cannula Site Inspection Chart.
- Upon removal of cannula apply light firm pressure immediately for approximately 2-3 minutes until bleeding (if it occurs) stops and apply a light sterile dressing.
- Dispose of cannula and clinical waste appropriately at point of use.

12. **Key Points**

- Standard precautions should be taken i.e. disposable gloves and apron to be worn.
- Gloves are not a replacement for good hand hygiene (Wilson, 2006), therefore immediately prior to procedure hands must be suitably decontaminated. When skin preparation or ANTT is compromised in an emergency situation, the cannula should be replaced within 24 hours, once the patient's condition has been stabilised (RCN, 2003). Apply the principles of asepsis.
- The use of taps and injection ports increases the risk of infection. Keep number of lines, taps and ports to a minimum.
- Prior to use containers packaging and equipment must be checked for any obvious defects (e.g. leakage, damage to packs, cracks, alteration in colour or consistency). Any damage or abnormality noted must be reported to the hospital pharmacy. Damaged or abnormal equipment must not be used.
- Intravenous fluids and all associated equipment must be stored in clean and dry areas. Any special storage requirements, as indicated by the manufacturer, must be observed e.g. storage temperatures, protection from light.
- When using multiple lines, colour-coded labels should be applied next to the fluid chamber.
- Shaving the skin with a razor prior to cannulation must not be performed because of the potential of causing microabrasions, which increase the risk of infection. If hair removal is necessary then this should be accomplished by clipping with scissors or clippers (Dougherty & Lister 2004). Clippers must have disposable heads.

13. **IV Drug Administration**

- Peripheral non-infused cannula should be flushed with 0.9% sodium chloride twice daily to maintain patency.
• Peripheral cannula should be flushed with 0.9% sodium chloride before administration IV drugs to establish patency.
• 0.9% sodium chloride should be used to flush the cannula between multiple IV drug administration to reduce the risk of incompatibility.
• Following the completion of IV drug administration, cannulae should be flushed with 0.9% sodium chloride.
• The volume of each 0.9% flush should be a minimum of 2mls but not exceed 5mls.
• Sodium chloride is a prescription only medicine (POM) and must be prescribed for an individual patient.

14. Monitoring Compliance with these Guidelines

Through the implementation of HII No 2, Insertion and Ongoing Care, this procedure will be monitored by observational audit and review of the completed documentation.

15. References

- Royal College of Nursing (2005) Standards for Infusion Therapy, RCN, London
Patient Information Guidance Sheet for Intravenous Cannula

Many drugs and fluids can only be given to you by the intravenous route (through a vein).
You have had an intravenous cannula (tube/line) inserted into your vein to allow the Nurses and Doctors to administer these type of fluids and drugs through the cannula.

The cannula goes through your skin into the vein, this is normally in your arm, but may be in your foot/leg. The needle is removed and only the plastic tube remains in your vein.

The nurses will look after the cannula by checking it frequently, but there are some important points for you to remember:

1. After the cannula has been put in, you should not experience any pain. This includes any pain experienced when the nurse or doctor is giving you medication or when fluids are being administered through the cannula, as well as when the cannula is not in use. If pain does occur tell the nurse immediately.

2. Generally the cannula will be held in position with a transparent dressing. If the dressing becomes wet, soiled, moves or falls off, tell the nurse immediately.

3. It is important to handle the cannula carefully and hygienically, do not pull on the cannula or the drip line (fluids line). Do not remove the dressing.

4. Because the cannula goes through the skin, there is a risk of infection. Remember the following points and tell your nurse if they occur:
   - If you feel hot, cold or shivery, you may have a temperature.
   - The area around the cannula feels hot, swollen and/or painful.

5. Help to prevent infection by:
   - Washing your hands thoroughly before touching the cannula site.
   - Keep the clothing next to the cannula clean, whenever possible change them daily.
   - Have a daily shower or bath to keep your skin generally clean. Your transparent dressing will protect the cannula from the water.
   - Do not allow the drip line (fluids line) or fluids to hang in the water.