East London NHS
NHS Foundation Trust

Policy for the Administration of Intravenous Medication

Adults and Children
Community Health Services

Version number :	3.0
Consultation Groups	Nursing Development steering group(NDSG) Community Matrons District Nurse CHS Pharmacist
Approved by (Sponsor Group)	Medicines Committee/CHS Directorate
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Services	Applicable to
Trustwide	
Mental Health and LD	
Community Health Services	√
Target Audience	All professionals involved with the provision of intravenous medication in the Community Health Services

Version Control Summary

Version	Date	Author	Status	Comment
1.0	November 2011	Community Children's Matron		
2.0	October 2015	Community matron		
3.0	January 2018	Clinical lead, EPCT and Directorate Pharmacist CHS		Added Medusa link (Appendix 5), to enable registered CHS staff nurses access to information. Updated some references. Added ELFT Medicines policy to the list of related policies on section 7.0

Contents

1.0 Introduction

The Policy covers the administration of medication intravenously (IV) in the community for adults and children services via peripheral intravenous cannula and Central Venous Lines (CVL)

The policy intends to support the practice of Registered Nurses in administering IV medication and service development within the Trust.

(The term Registered Nurses includes all NMC registered nurses from all disciplines, for example adult and children's registered nurses)

1.1 There are many reasons and advantages to giving medication via the IV route and the decision to do so will be based on an assessment by the prescribing clinician of the individual patient's needs.

Some of the factors which should be considered when choosing the route of medication are;

1. Rapid absorption of the medication via the IV route allows for a faster and more targeted therapeutic benefit.
2. Certain medications cannot be given orally and many patients more easily tolerate IV medication than either sub cutaneous or intra muscular injections.
3. Some patients are unable to take medications orally (there are many physiologically and psychological reasons that this might be)

1.2 However, there are disadvantages to the IV route as a method of administration and these are mainly the complications, which are covered in the complication section later in this document. The complications associated with IV medications are potentially life threatening and therefore the practice of giving IV medication is a skilled health task which requires a level of both theoretical and practical competence which is assessed and regularly updated. Practitioners within ELFT must practice to the agreed standards within this document.

2.0 Background

The Trust is working towards targets set by the Department of Health (2006) within 'Our Health, Our Care, Our Say, to provide rapid and convenient access to high quality, cost effective care in the community. Due to these developments, intravenous (IV) therapy is now being provided in the community, to avoid unnecessary hospital admissions and support early discharge from hospital. NHS at Home: Community Children's Nursing Services (Department of Health 2011) supports this development in its statement that "children and young people are admitted to hospital or stay in hospital only when it is clinically unsafe to care for them in the community."

This policy has been designed to incorporate the Department of Health's (2010) High Impact Interventions for both Peripheral Intravenous Cannula and Central Venous Catheter Care

3.0 Aims & Objectives:

- To enable registered nurses to administer intravenous medication prescribed by Independent prescribers, General Practitioners or Hospital Medical team.

- To enable patients to safely receive intravenous therapy in their own home or in other community settings e.g. nursing, residential home, community health centre and schools and to avoid unnecessary hospital admission. This is also to facilitate early supported discharge from hospital

- To provide safe and consistent practice in the administration of intravenous medication by Registered Nurses thereby reducing the risk of complications

- To provide evidence based clinical practice

- To define professional responsibilities in preparation and administration of IV medication

4.0 Training:

Registered Nurses whose role encompasses this task must successfully complete approved training.

Intravenous Drug Therapy Training and Assessment

In order to administer intravenous medicines, the Registered Nurse must have successfully completed training in the theory of intravenous medicines, drug calculations, simulated practice and assessment in clinical practice. This training must have been approved by ELFT.

Registered Nurses must attend refresher training every 3 years. This training will include the theory of intravenous medicines, drug calculations, direct observation of practice using a simulator and re-assessment in clinical practice by a suitable Senior Nurse competent in intravenous drug administration (Specialist Community Practice Teacher, Band 7 or Band 6).

Assessment in clinical practice requires direct observation and a signed declaration by the Assessor to indicate that the Nurse has achieved the required level of competence in accordance with Trust Policy. The assessment form also requires the Nurse to sign a declaration that they are willing to undertake this role in accordance with Trust Policy. A copy of the signed, completed assessment form will be held by the Line Manager and by the Education Department at CHN.

Registered Nurses, new to ELFT, may not administer intravenous medicines until they have provided evidence of approved training to the Education Team (CHN) and have been assessed in practice by a suitable Senior Nurse competent in intravenous drug administration (as above) .

See Appendix 1 for Assessment in practice documentation

5.0 Outcome measures

Registered Nurses practice accordance with the policy. Medicine is safely administered by IV route.

Early supported discharge into the community is facilitated
Unnecessary hospital admission avoided

6.0 Appropriate use:

This policy applies to all Registered Nurses employed within ELFT

6.1 Inappropriate use:

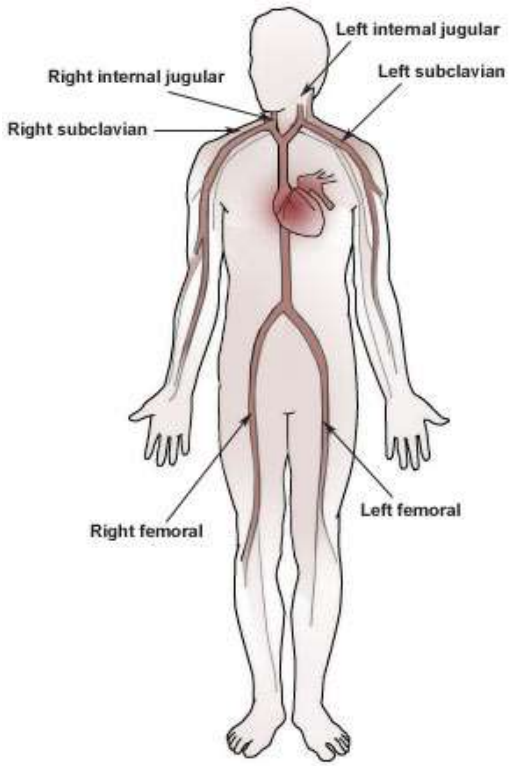
IV administration of medication by those who have not achieved competency in this domain or those who have not updated as required.

7.0 Related Policies

Nursing and Midwifery Council (2008) The Code: standards of conduct, performance and ethics for nurses and midwives.
Nursing and Midwifery Council (2007/update 2010) Standards for Medicine Management NMC London.
Nursing and Midwifery Council (2009) Record Keeping Guidance for Nurse and Midwives.
ELFT Community Infection Control Policy (Jan 2009)
ELFT Incident Reporting Policy and Procedures (August 2007)
ELFT Management of Medical Device Policy (Jan 2009)
ELFT for Consent to examination and treatment (Jan 2006)
ELFT Medicine Management (Under Review)
ELFT Health and Safety General Policy (June 2007)
ELFT Procedure for Cannulisations (Under Review)
ELFT Procedures for Anaphylaxis (Protocol for Immunisation Jan 2006)
East London NHS Foundation Trust (ELFT) Clinical Record Management Policy Keeping Policy (Jan2009)
ELFT Medicines Policy, Version 9, July 2017

8.0 Types of Intravenous Access Device

In the past there have been many different descriptions of intravenous devices; from peripheral, to long lines, midlines, short long lines, central lines. However, these names and descriptions lead to confusion for all professionals in the management of these intravenous devices and therefore intravenous devices are now commonly divided into just two categories, peripheral lines and central lines. The simple distinction between these two can be made based on where the tip or distal ends lies within the patient's body whichever device is used. The decision between the 2 is made on whether the tip is within a peripheral vein or a major vein, close to the heart. For example, PICC lines are often used in children as they can be inserted peripherally in a ward situation but the line's distal end may only lie in the child's upper arm, therefore this line would be treated as a peripheral line. Similarly, a large cannula can be used to access the jugular vein in the neck and would be treated as a central line.



Central line sites

8.1 Peripheral cannula

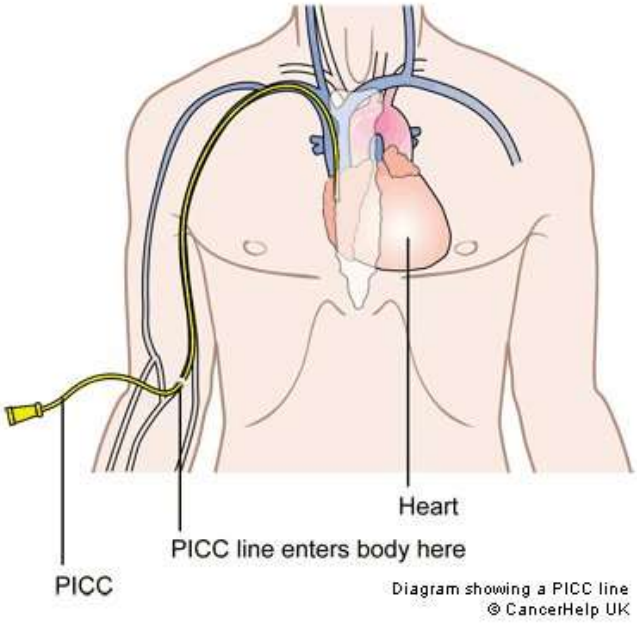
Peripheral cannula are the most commonly used vascular access devices within the Trust. Peripheral venous access is intended for short term therapy (hours to days). The advantage of this type of device is the ease by which it can be inserted by a trained practitioner, requiring no local anaesthetic in adults, (in children local anaesthetic cream is routinely used before the insertion of a peripheral line) However these lines can stay in situ for only a limited time 72-96 hours (or sooner if complications are suspected) before they should be replaced and therefore if a long course of IV treatment is being considered an alternative intravenous access device should be considered. A peripheral cannula can remain in-situ beyond 96 hours if

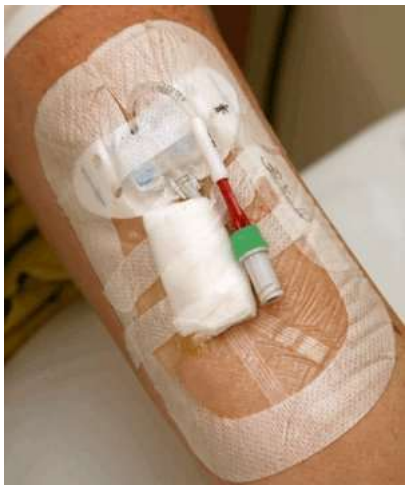
venous access is limited and there are no signs of infection – High Impact Intervention No 2, (2007)
On every occasion before the device is used the site should be observed using the Visual Infusion Phlebitis score (VIP score) and the patency of the device should be assessed before, during and post administration and the nurse should record, report and act on any concerns.
The registered nurse should ensure the removal of the cannula at the end of treatment.
Ensure the patient is aware of the measures to take in the event of displacement.
(Contact numbers must be provided to patient)

Central Lines – Central Venous Access Devices (CVAD)

8.2.1 Peripherally Inserted Central Catheters

Peripherally inserted central venous catheter is an intermediate to long term central venous catheter with an average life span of 3-6 months. Though they are inserted peripherally these should be treated as central lines, if the tip or distal end is placed in a major vein. There are 2 common types of these lines. The first type has a Groshong valve at the tip (Groshong is a registered trademark of Bard Ltd.) which allows fluids and medicines through into the vein but prevents blood from back flowing into the catheter, the second type is open ended and has a clamp/s on the exterior section to prevent back flow from the vein.





8.2.2 Tunnelled Central Venous Catheter

The tunnelled central venous catheters commonly in use are Hickman and Broviac catheters (Hickman is a trade mark of Bard). The majority of Central Venous Catheters in the community are inserted for childhood oncology patients. These types of line are inserted surgically, requiring a general anaesthetic but can be used for most blood tests and IV medications allowing children who require these regularly needle free care, they can remain in situ for an indefinite length of time if cared for appropriately.

The catheter has a Dacron cuff on its length which remains under the skin and helps prevent the line from becoming dislodged and as a barrier to infection.

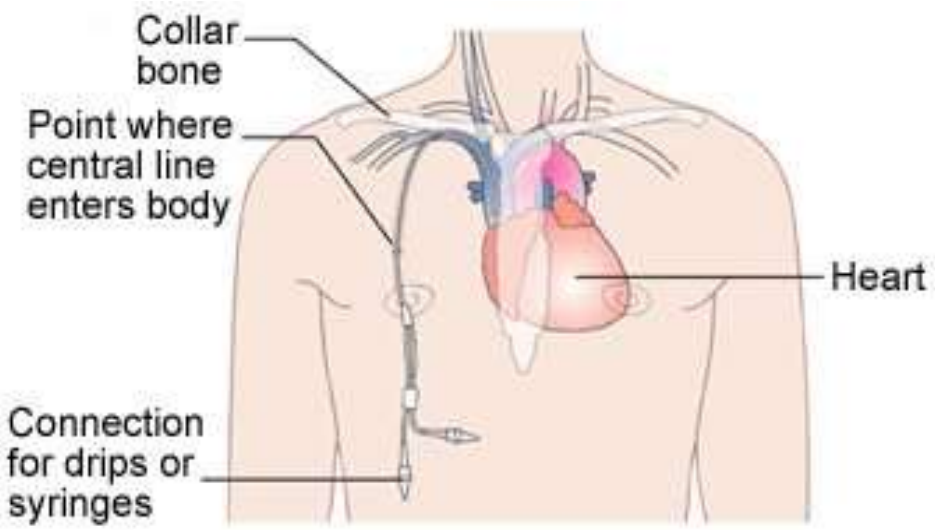


Diagram showing a central line

8.2.3. Implanted Central Venous Access Device – Portacath

A portacath is a small chamber or reservoir that sits under the skin at the end of a tunnelled central line. The chamber of the portacath can be felt under the skin but unless the patient is very thin it cannot often be seen. When treatment or bloods are required a special non coring needle is used to access the chamber. It is important that only the specialist needles such a 'Gripper' Needles should be used to access the port and as it has a special membrane over the chamber which self seals when the specialist needle is removed. Standard needles will cause holes in this membrane causing potential fatal blood loss and will definitely lead to the loss of the port/central ine. A portacath can stay in place for an indefinite time, if cared for appropriately.

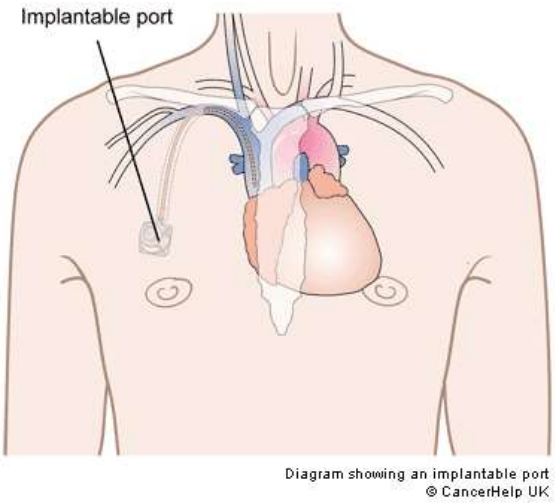
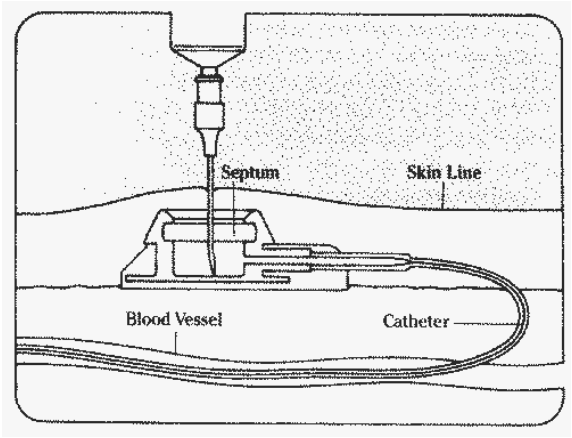


Diagram showing an implantable port
© CancerHelp UK



9.0 Administration of IV Medication

NOTE: Administration of IV medication via peripheral and central lines uses the same technique, there are differences in the management of the lines but the practical procedure for administering medication is the same.

9.1 The Importance of Asepsis

IV medications carry an associated risk of infection because of the potential for direct microbial entry to the bloodstream. Health Care Acquired Infections (HCAI) in relation to IV medications have the potential to cause major health complications for the patient and in some cases can be a cause of death. In terms of financial cost, one case of MRSA can cost the NHS £5,200 at 2009-10 prices.

Definitions.
- Sterile – free from microorganisms, this is only achievable in controlled environments such as Laminar flow or operating theatres.
- Asepsis – prevention of microbial contamination, achieved through excluding or removing microorganisms in order to prevent infection.

9.2 What is ANTT ?

ANTT = Aseptic Non Touch Technique

This is the underpinning management principle for all IV nursing care. It reflects the understanding of the key definitions of infection control outlined above and guides the practitioner to take specific steps to minimize the risk of introducing microorganisms.

The non- touch technique contributes to asepsis, by focusing attention on minimising contamination of key parts. The key parts are described as the fluid being administered or the skin around the insertion site. Therefore the needles, hubs, syringes, bungs and the exposed lumen of the IV line that the fluid comes into contact with are the elements which the technique aims to prevent from becoming contaminated.
Prevention of contamination of the insertion site concentrates on the dressings and cleaning agents which are used around the site.

This technique does not require the use of full sterile dressing packs or sterile gloves. The maintenance of asepsis is achieved through non contamination of key parts and the effective use of recommended agents for cleaning the insertion site skin and connection parts (Pratt et al 2007). Effective hand decontamination, the wearing of gloves and aprons (to prevent the descaling of bacteria onto key parts) and the establishment of an appropriate surface for preparation of the medication, in the community setting an aseptic field is a pre requisites for accessing intravenous lines. Therefore within Community Health Newham dressing packs and gloves contained within are used to provide these essential criteria.
As outlined in the NICE guidelines on infection control in the primary care and community settings (2003) effective decontamination is an essential part of preventing catheter acquired blood stream related infections (CVC 2 and 6 NICE 2003) The High impact Intervention peripheral Intravenous Cannula Care Bundle requires that the cannulae port and surrounding area is decontaminated with 2% chlorhexidine gluconate in 70% isopropyl alcohol (or single use providone iodine solution if the patient has a sensitivity) and allowed to dry prior to administration of medications or fluids via a cannula.

10.0 Referral and Assessment of Patients

Patients may be referred to Community Nursing Teams for Adults and Children for intravenous therapy medication in the community by Independent Prescribers, General Practitioners (GP) or the hospital and specialist medical teams, the referrers will be responsible for the prescription and review of the intravenous therapy for patients /clients in a community setting.
The use of IV therapy should be minimised where possible due to the inherent risks associated with this method of medication
The prescriber must also adhere to the antibiotic prescribing policy.

The registered nurse in the community team is responsible for monitoring the patient's condition at each visit and reporting any adverse reactions or potential problems back to the initial prescriber. The registered nurse must liaise with the prescriber about any changes to the medication regime, including continuing or discontinuing treatment and any follow up medication or investigations that maybe required.

The Criteria for community based IV treatment is on the following page.

10.1 Criteria for community based IV treatment

It is essential to establish whether the patient or carer, are able to safely identify complications and summon help in an emergency before considering the patient's suitability for home IV therapy. All discussions and decisions must be recorded in the patient's record.

Criteria			Comments
Has the patient had a previous reaction to this proposed medication?	No	Yes	Continue with IV policy Not suitable for IV therapy in the community
Is the prescribed medication appropriate for the patient taking into consideration the contraindication or interaction with current medication?	No	Yes	Check with microbiologist or prescriber for further alternative medicine Continue with medication
Is there a start, review/complete date of treatment?	No	Yes	To check with the prescriber before starting the procedure Continue with the medication
Is the IV therapy likely to exceed two weeks?	No	Yes	To continue with peripheral cannula The IV therapy should be given via a central line, discuss with the refer and prescriber if central line not in situ
Is the community nursing team able to support the proposed treatment? Issues to consider; timing of medication, the number of times it needs to be given in 24hrs, can treatment be supported over the weekend or bank holidays?	No	Yes	Not suitable for IV therapy in the community. Continue with the medication
Has the patient consented or has the mental capacity to consent to home IV therapy?	No	Yes	If not consented – no IV therapy If does not have the mental capacity- check if a mental capacity form completed and discuss with next of kin If there is a consent – continue with the medication

11.0 Prescribing

- It is the responsibility of the referrer to prescribe the intravenous medication on an authorised prescription and also complete and sign and an appropriated community prescription form.
- All diluents and flushes required must also be prescribed, as these are prescription only medicine.
- The prescriber must provide clear, precise written instructions regarding the medicine, dose, and route, frequency of administration and duration of treatment
- Under no circumstances will verbal instructions to administer or change a prescribed medication be accepted

11.1 Supplies of Intravenous Medication

The community pharmacist needs a minimum of 24 hours to order and dispense the medication and diluents and flushes. If there is a delay in obtaining the medication, a Datix incident form will need to be completed.

12.0 Equipment

The provision of needles, syringes and bungs is via the ICES service and an order form will be need to be completed by the Community Nursing Team, these may need to be collected from the ICES by a family member or a member of the Community Nursing Team if they cannot be delivered by ICES in the necessary timeframe.

Sharps boxes are available from the clinical waste service.

For children with Central Venous Access Devices the GP prescribes the IV Sodium Chloride and the appropriate Heparinised Saline solution, Chlora prep – skin preparation and the dressing packs.

All other equipment required for administration and management of IV therapy in the community will be provided by the nursing team and the necessary dressing can be prescribed by the GP or nurse prescriber if required.

13.0 Responsibilities for Administration

The registered nurse at all times adheres to Nursing and Midwifery Council (NMC) Standard for Medicine Management (2010).
This states that where possible two registered nurses should check IV medication, one of whom should the nurse who administers the medication.
How can this standard be met in the community?
Where possible; on the first dose of the medicine to be given in the home, two registered nurses should carry out the following checks once the medication has

been dispensed and is in the home. These checks should also be completed by the registered nurse on every occasion IV medication is to be administered.

- The medication should be checked against the prescription
- The medication is within its expiry date
- The medication is the right colour and has no unusual cloudiness or precipitate, the patient advice leaflet will give a description of the medication.
- There is no evidence that it could have been tampered with.

The two registered nurses should check the directions on how the medication should be reconstituted or diluted and administered. They will then ensure these are clearly written in the notes, care plan and on the administration prescription. The care plan should also advise staff to check the manufacturer's instructions and the prescription before administration and if they have any concerns or doubt to contact a senior member of the nursing team. Subsequent doses of this medication for this patient can be checked and administered by one registered nurse.

The registered nurse must stay with the patient at all times from the start to the finish of the IV medication therapy.

13.1 Observations

The nurse administering the IV medication should record the patient's temperature at the time of administration, this will therefore be a minimum of daily recording, this is to detect early signs of systemic infection from a blood borne infection and if IV medication is for infection to monitor the efficacy of treatment. The Visual Infusion Phlebitis Score (VIP Score) should also be observed, recorded and actioned as needed. There is a copy of the VIP score and a record sheet to record temperature and VIP Score in Appendix 3

If the patient is found to be pyrexial with a temperature above 37.5ºC then medical advice should be sought. For children and young people with an oncology diagnosis then the Supportive Care Protocols should be followed.

(Supportive Care Protocols – Great Ormond Street Hospital for Children NHS Trust, The Royal Marsden NHS Foundation Trust, The University College London Hospital NHS Trust)

NB. The Community Children's Nursing Team in end of life care will manage continuous IV infusions via a central line, without a nurse staying with the child at all times.

13.2 Permitted methods of administration

The Registered Nurse in the community may only administer IV therapy in the following ways.

Intravenous Bolus Injection - direct injection of a small volume of fluid / medicine (max 20mls) contained within a syringe administered directly into the injection bung/needless device.

Intravenous Intermittent infusion - infusion of a volume of fluid / medicine (max 100mls) over a set period of time at prescribed intervals and stopped until next dose is required.

For bolus and intermittent infusions the nurse must stay with the patient for the duration of the infusion in order to monitor the flow rate.

N.B. The use of electronic flow control devices (syringe drivers) is not covered by this policy, for staff within Adult services this is covered Policy for the use of the Graseby Pump. The Community Children's Nursing Service (Community Children's Nursing Team and the Diana Service) use McKinley syringe drivers in end of life care for continuous infusions via an intravenous device, and there is procedure document for this.
Staff must be aware of the risks associated with the use of pumps and the need for specialised knowledge and training in the use of pumps.

14.0 Procedure for the administration of intravenous medication

Administration of IV medication via peripheral and central lines uses the same Aseptic Non Touch Technique (ANTT), there are differences in the management of the lines but the practical procedure for administering medication is the same.
NB Where the procedure is different for central lines these are highlighted in yellow

14.1 Equipment

Dressing pack – this may contain gloves and apron if so no need for additional gloves or apron
Non-sterile gloves and apron
Alcohol Hand Gel
Patient's prescribed medicines
Flushing solution (see below)
Alcohol based cleaning wipe – Sani-cloth CHG2% = 2% Chlorhexidine Gluconate and 70% Isopropyl alcohol
Luer-loc syringes
If the IV device is a port, a non coring needle - Port needle or Gripper needle' (if first access or Gripper needle has been in situ for 7 days) Plus ChloraPrep 3ml Applicator
Needles for drawing up solutions
Needle-free bung (not if changed in last 7 days)
Giving set if required
Sharps bin

Adrenaline injection 1 in 1000 (in case of Anaphylaxis)

14.2 Central lines – once the medication is administered and has been flushed an additional flush of Heparinised Saline, or 0.9% sodium chloride . This is administered using a pulsing (push–pause) technique to create a turbulent flow within the lumen of the device and is required to prevent thrombi forming in the line. For central lines which have clamp on them the clamp should be closed as the flush is being given, this is called positive pressure and also reduce the risk of the formation of thrombi.

Different strengths of Heparinised Saline are used dependent on the type of device in situ and the frequency that the line is used. See table 1 for guidance.

14.3 Table 1

Type of CVL	Frequency of routine flushing	Strength of heparinised saline	Volume	Comments
Hickman or Broviac lines	Weekly	10 units per ml	5mls per lumen	If double lumen both lumens should be flushed. Heparinised saline should be used every time the line is accessed unless a continuous infusion is in progress.
Port a cath	Monthly	100 units per ml	4mls	If the patient (especially a child) is having regular medication, - more than once a week then the strength of the heparinised saline should be discussed with the prescriber to ensure that the patient does not become over heparinised.
PICC	Weekly	10 units per ml	5mls	Heparinised saline should be used every time the line is accessed unless a continuous infusion is in progress.

14.4 Administration procedure

ACTION	Rationale
Check the identity of the patient against the prescription, asking for name and date of birth Check the drug, dose, date and time of administration, route of administration, and diluents as appropriate, validity of prescription, signature of the prescriber and prescription is legible. See Appendix 1 Drug and Flow rate calculation formulas If this is a first dose in the community the above checks should be completed by 2 nurses.	To ensure the correct medication is given to correct patient. The patient is given the correct drug in the prescribed dose using the appropriate diluents and by the correct route. To comply with NMC Standards for Medicine Management (2010)
Explain the procedures to the patient and family	To ease anxiety and ensure compliance of patient and family/carers
If cleaning facility is available, wash hands with liquid soap and dry with paper towels Use alcohol gel on hands as per hand hygiene guidelines. Nurses performing clinical procedures should be bare below the elbow therefore watches and rings (except plain wedding bands) should be removed and sleeves rolled up to the elbows	Risk assessment of the advantages of hand washing in relation to the facilities available should be made. To minimise the risk of infection
Open out the dressing pack onto a stable and clutter free surface. Put on gloves, if the pack contains gloves these can be used.	To minimise the risk of infection To minimize the risk of contamination and protect against body fluids.

Ensure gloves are a good fit	To prevent descaling of bacteria onto key parts. Poorly fitting gloves increase the potential of contaminating key parts.
Put apron on	The wearing of aprons prevents clothing being contaminated with microorganisms which could subsequently be transferred to other patients.
Visual inspection of the site using the VIPS for peripheral cannula Appendix 2 Central line site should also be visually inspected for signs of infection or possible displacement	To recognize and minimise complications of phlebitis, extravasation and infection.
Open the needles, syringes, giving set if required and alcohol wipe onto the open dressing pack. If the IV device is a port, a non coring needle will be required. Syringes – should be opened from the plunger end of the syringe not popped through the wrapper. No syringes smaller than 10ml in size should be used with a central line. Where it is necessary to use a smaller syringe to ensure the accuracy of the dose, the drug should then be decanted to a 10ml syringe and if necessary diluted to a greater volume.	To be prepared for the procedure Prevent contamination of key parts Syringes less than 10ml in size provide too much pressure within the line, with the potential to damage the line or cause physiological trauma to the patient.
Make up medication as per instructions, ensuring at all times that the key parts do not become contaminated by touching unsterile surfaces.	Minimise contamination and risk of infection
Draw up the required flushes, routinely this will be 0.9% Sodium Chloride (but always check medication instructions for compatibility). The flush volume should be twice the priming volume of the IV access device plus any add on devices. Flushes required;(refer to **21.1**) ~ Before administration of medication, ~ Between different medications ~ At the end of medication administration If medication is to be given as an infusion the required flush should be available as an infusion. (NB infusion bags of 500mls Sodium Chloride are often considerably more cost effective than 100ml bags) For central line devices the volume of flush needed between medications is the same as above. On completion of administration a flush of 10mls is used, followed by a flush of Heparinised Saline or 0.9% saline required If a port needle is required this should also be primed with saline and clamped before insertion. See below for procedure for insertion of 'Gripper' into porta cath.	~ To check patency of the IV device ~ To ensure no incompatibility issues between different medications ~ To ensure all of the prescribed drug is received by the patient

Remove needles from the syringes without re sheathing.	To prevent accidental needle stick injury
If medication is to be given as an infusion, connect the medication to the giving set and prime the giving set and clamp the line	
Clean the needle free bung using a rubbing action and allow to dry naturally (at a least 30 seconds)	Minimise the risk of contamination by microorganisms. The friction action dislodges microorganisms Allowing any cleaning solution to dry is vital in order for disinfection to be completed.
Administer flush via needle free bung observe for resistance and pain If using a central line draw back first to obtain a flashback of blood into the syringe. If no flashback carry out interventions as outlined in the complications section	To detect extravasations of cannula and blockage
Administer medication either as a bolus over the time indicated in the prescription and manufacturers instructions, **or** connect giving set and infuse over the time indicated in the prescription and manufacturers instructions. See Appendix 1. Flushing as required between medications.	
Observe the patient whilst the medicine is being given	To detect early sign of adverse reactions.
When the flushes have been completed.	
Discard the giving set, syringes and needles (without re sheathing) into a sharps bin	To prevent accidental needle stick injury To reduce the risk of cross contamination
Other waste should be disposed of as per infection control policy.	To promote infection control measures
Ensure the patient is able to recognize complications and know whom to contact for advice	To detect early sign of complications and appropriate treatment is sought
Record the medicine administration on the drug record chart and the visit in the patients nursing notes. Amend the care plan if any changes occur which affect the treatment and /or care of the patient	To maintain accurate records, provide a point of reference in the event of any queries and prevent duplication of treatment.

15.0 Insertion of Port needle

Equipment as above
Plus clear semi permeable polyurethane dressing

Action	**Rationale**
If this is a planned procedure, ask the patient, family or carer to apply prescribed anaesthetic cream to the port site. How long this needs to be applied for is dependent on the medication prescribed.	To reduce discomfort on insertion of needle Reduce patient anxiety
Remove the dressing and wipe away the anaesthetic cream.	

Locate the port and identify the septum of the port.	
If cleaning facility is available, wash hands with liquid soap and dry with paper towels Use alcohol gel on hands as per hand hygiene guidelines. Nurses performing clinical procedures should be bare below the elbow therefore watches and rings (except plain wedding bands) should be removed and sleeves rolled up to the elbows	Risk assessment of the advantages of hand washing in relation to the facilities available should be made. To minimise the risk of infection
Open out the dressing pack onto a stable and clutter free surface. Put on gloves, if the pack contains gloves these can be used. Ensure gloves are a good fit	To minimise the risk of infection To minimize the risk of contamination and protect against body fluids. To prevent descaling of bacteria onto key parts. Poorly fitting gloves increase the potential of contaminating key parts.
Put apron on	The wearing of aprons prevents clothing being contaminated with microorganisms which could subsequently be transferred to other patients.
Open the needles, syringes, giving set if required and alcohol wipe onto the open dressing pack. Syringes – should be opened from the plunger end of the syringe not popped through the wrapper No syringes smaller than 10ml in size should be used with a central line. Where it is necessary to use a smaller syringe to ensure the accuracy of the dose, the drug should then be decanted to a 10ml syringe and if necessary diluted to a greater volume. If the port needle is to remain in situ for a period of medication instead of routine flush/bloods a needle free bung and dressing will also be required and should be opened onto the dressing pack. Remove ChloraPrep applicator from packaging	To be prepared for the procedure Prevent contamination of key parts Syringes less than 10ml in size provide too much pressure within the line, with the potential to damage the line or cause physiological trauma to the patient.
Draw up the required flushes,	
Remove needles from the syringes without re sheathing.	To prevent accidental needle stick injury
Prime the port needle with Sodium Chloride flush and clamp the line (refer to **21.1)**. If the needle is to remain in situ for treatment then the needle free bung should be connected at this point. Remove the needle sheath and place on dressing pack.	To be prepared for procedure
ChloraPrep – pinch the wings to pop the enclosed ampoule to release the solution	
Gently press the ChlorPrep applicator against the	

skin and the apply the solution using firm repeated, up and down and then left to right, strokes for 30 seconds over port site Allow the skin to dry naturally.	
Hold the port needle by bending back the wings/ holding the grip section with dominant hand. With your other hand, using finger and thumb locate the sides and firmly secure the port, making sure not to touch the skin surface over the septum of the port	To prevent contamination of the cleaned skin
Insert needle at 90°/right angle into the septum, see diagram on Pg 13, until the internal base/back plate of the port is felt.	
Connect an empty syringe to the port needle and withdraw 1-2mls of blood, this called a flashback. If no flashback carry out interventions as outlined in the complications section	To ensure the port needle is correctly in situ and that the line is not blocked.
If line is correctly sited remove syringe and continue as above, to flush or give medication.	
To dress the site	
If the port needle does not sit flush with skin, fold and carefully slide a layer of gauze under the wings of the port needle. Take care not to pull the needle or to obscure all of the port site	To support the wings and to help prevent accidental dislodgement. To allow visibility to monitor the site for infection or extravasation
Put a small coil or curl on the port needle line ensuring that it does not become kinked and apply the clear semi permeable dressing over the port site and the tubing without covering the clamp.	
Discard syringes and needles (without re sheathing) into a sharps bin	To prevent accidental needle stick injury To reduce the risk of cross contamination
Other waste should be disposed of as per infection control policy.	To promote infection control measures
Ensure the patient is able to recognize complications and know whom to contact for advice	To detect early sign of complications and appropriate treatment is sought
Record the insertion of the port needle and the medicine administration on the drug record chart and the visit in the patients nursing notes. Amend the care plan if any changes occur which affect the treatment and /or care of the patient	To maintain accurate records, provide a point of reference in the event of any queries and prevent duplication of treatment.

16.0 Removal of Port Needle

The port will need to be flushed or locked with heparinised saline Either 10 uints per ml if the port is used weekly or 100 units per ml if the port is used less than this.

Action	**Rationale**
Wash and dry hands, Apply alcohol hand rub. Use full aseptic technique	
Open dressing pack, open chosen dressing onto dressing pack, Open needle and syringe onto sterile field.	

Open Sani cloth wipe	
Put on gloves and apron	
Draw up heparin and remove the needle,	
Clean the needle free injection bung with 2% Chlorhexidene Gluconate in 70% IPA wipe and allow to dry for 30 seconds.	
Administer heparin and clamp the line as the last ml is being given to achieve a positive pressure finish.	Positive pressure reduces the possibility of blood coming back into the line between episodes of flushing and forming a clot within the line.
Carefully remove the dressing covering the port needle. Stabilise the port with one hand, put your hand over the port around the port needle and with the other hand grasp the port needle firmly and pull firmly upwards away from the port.	Stabilising the port reduces the risk of trauma to the tissues. Pulling firmly upwards away from the port also reduces the risk of trauma.
Apply pressure to the entry site with sterile gauze until any minor bleeding has ceased. A dressing or plaster maybe applied if necessary or the patient wishes.	To reduces the risk of bleeding and bruising at the site.
Dispose of the port needle and other needles in a sharps bin and dispose of other waste as per infection control policy.	

17.0 Removal of peripheral cannula

Action	**Rationale**
Wash and dry hands, Apply alcohol hand rub. Use full aseptic technique	
Open dressing pack, open chosen dressing onto dressing pack	
Put on gloves	
Carefully remove the covering dressing and any tape which has been used to secure the line in situ.	
Hold the cannula securely with dominant hand in the other hand have a gauze swab ready to apply pressure to the site once the cannula is removed. Pull the cannula gently from entry site and apply pressure	
Once the site has stopped bleeding, the skin around the site can be cleaned if needed with 2% Chlorhexidine Gluconate in 70% IPA wipe being careful not to dislodge the newly formed clot on the entrance site.	
Apply a dressing to site, The patient or carers should be advised that ideally this dressing	

should remain in situ for 24 hours and be kept dry during this period.	

18.0 Removal of a Picc line

Action	Rationale
Wash and dry hands. Apply alcohol hand rub. Use full aseptic technique. Wear disposable apron Remove Statlock, clean site with ChloraPrep. Withdraw line slowly using sterile gloves. DO NOT PULL if resistance felt Apply pressure to stop bleeding. Cover entry site with a gauze occlusive dressing (Opsite or Mepore) for 24 hours. If line infection is suspected. Cut the last 6cms of the line with sterile scissors, place in a universal container and send for culture.	

Hickman Lines and Porta Caths require surgical intervention to be removed.

19.0 Complications of IV Medications

19.1 Adverse Reactions

All registered nurses must be familiar with the anaphylaxis guidance given in the Protocol for Immunisation (Jan 2006) prior to administering IV medication.
Registered Nurses who are administering IV medication to adults must have Adrenaline injection 1 in 1000 available at all times when administering IV medication. Registered children's nurses administering IV medication to children are not required to have Adrenaline available to treat anaphylaxis, as doses for children can vary widely due to their age and weight, however they must ensure that they have access to call for emergency assistance/ambulance if required.
During IV medicine administration the nurse must monitor the patient's condition, observing colour, respirations, heart rate if required, pain and agitation/distress (often a precursor to anaphylactic reactions) for any adverse reactions.
The nurse must act immediately if there is any sign of an adverse reaction by stopping administration of the IV medication and following the guidance given in the Protocol for Immunisation

Any adverse or suspected adverse reaction must be reported to the prescriber as soon as possible. The details should also be documented in the patient's community nursing records and reported to the Committee on Safety of Medicines using a yellow card, which can be found in the British National Formulary.

19.2 POTENTIAL COMPLICATIONS FOR PERIPHERAL INTRAVENOUS CANNULATION

Problem	Example / Explanation / Action

Pain on intravenous injection	Can occur if drugs are hypertonic, administered too rapidly or are insufficiently diluted (high pH or chemical irritancy) e.g. erythromycin. **Action: stop infusion, monitor the patient, document and report**
Phlebitis and extravasation	Phlebitis – red inflamed vein with local irritation can be caused by the physical presence of the cannula or chemical. Extravasation – occurs if the injection solution gets outside the vein into sub-cutaneous tissue. **Action: stop administration, assess site, and seek advice from the prescriber or specialist unit to determine the need for treatment/intervention. Ensure all observations and actions are recorded**
Infection	IV administration of medicines can lead to both local and systemic infection (septicemia) Possible sources of infection include: - poor technique used when siting the cannula / catheter - contamination of infusion or - contamination of lines or connections (by nursing / medical staff or patient) - contamination of insertion site - systemic infection **Action: Stop administration, assess site and carry out observation of the patient, temperature, pulse, respiration, BP (if available).** **Seek advice from the prescriber or specialist unit to determine the need for treatment/intervention. Ensure all observations and actions are recorded. Blood cultures may be required.**
Anaphylaxis	Anaphylaxis is more likely to occur on the second dose of a drug and the risk is greater when the drug is administered IV. Action: Refer to anaphylaxis guidelines **Action: Stop Administration. See anaphylaxis guideline**

19.3 Recannulation (if required)

Cannulation must only be performed by clinical practitioners who have received theoretical and practical training and are competent in cannulation. If recannulation is required the registered nurse should arrange for a member of the team who is a competent practitioner in this clinical skill to perform this procedure. If no one is available in the community arrangement should be made for the patient to attend A & E or the discharging ward/hospital.

19.4 POTENTIAL COMPLICATIONS FOR CENTRAL VENOUS CATHETERS

Problem	Possible Cause	Recommended Action
Dyspnoea, tachypnoea, chest pain, cyanosis, respiratory arrest.	Air embolism	Clamp the catheter and then check for damage, rupture or disconnections. If damage or rupture found, clamp the line immediately, above (toward patient) damaged part. Monitor the patient. Ring emergency services if patient at home. Inform Dr/GP, hospital. Lay patient in *Trendelenburg position* - head down

		45 degrees if possible Administer oxygen if available. Commence CPR if necessary. Ensure all observations and actions are recorded.
Oedema, pain, swelling and/or tenderness of arm, neck and/or chest. Engorged peripheral veins. Peripheral neuropathy. Skin colour and/or temperature changes. Blocked catheter.	Thrombosis	Report to Hospital, Dr, GP. Venogram may be performed. Possible anti-coagulant therapy. Possible catheter removal.
Pain, redness, inflammation, exudate at wound site.	Local infection of the tunnel or exit site.	Swab wound and clean and redress site. Report to Hospital, Dr, GP. Blood cultures may be required peripherally and from each lumen. Antibiotics - oral or potentially I.V. Possible catheter removal.
Mechanical phlebitis (Peripherally inserted central catheters)	Maybe related to movement of the line	Apply warm compresses to the elevated extremity 4 times daily for 72 hours. Contact referring doctor regarding potential removal of line.
Pyrexia, tachycardia, rigors.	Systemic infection.	Report to Hospital, Dr, GP. Blood cultures may be required peripherally and from each lumen. I.V. antibiotics. Possible catheter removal.
Unable to obtain Blood/flash back Inability to flush catheter.	Occlusion/blockage . Catheter tip against vessel wall.	Try gentle pressure and aspiration with sodium chloride 0.9% in syringe. NB. Use a syringe of 10ml or above ONLY to avoid excessive pressure. DO NOT use excessive force. Check clamps are open and the catheter is not kinked. Move clamp and massage catheter where the clamp was. Ask patient to:- cough, deep breathe, raise arms, change position. If unsuccessful, Seek advice from prescriber or specialist unit. Instillation of Urokinase maybe needed to dissolve any thrombi and restore patency. Potential for catheter removal.

20.0 Line and insertion site care.

An important additional aspect of the prevention of IV associated infections is line and insertion site care.

Insertion site dressings EPIC2 found no evidence to demonstrate the difference between transparent polyurethane dressings (e.g. Opsite IV3000) and gauze and tape dressings in relation to the incidence of IV related infections. However, polyurethane dressing which are permeable to water vapour and oxygen and impermeable to microorganisms, have the benefit of being able to secure the cannula or line, allow inspection of the site and require less frequent changes.

20.1 Peripheral Line Insertion Site Care.

- Once the cannula is inserted, it should be secured using either tape or steri strips before a clear dressing is applied. However, if during insertion blood went on to the surrounding skin this should be cleaned away with a Chlorhexidine wipe before the dressing is applied.
- Following this the site should not require further dressing until the cannula is removed after 72 hours. However a cannula which has infrequent use, for example daily antibiotics or medication, may stay in situ beyond 72 hours if a risk assessment is documented and there are no signs of infection.
- The entry site should be reviewed for signs of infection and complications at least daily and at every occasion the cannula is used. This review should be documented using the VIP (Visual Infusion Phlebitis) score and any concerns discussed with the lead clinician for the patient.
- If the patient is receiving an intermittent (short) infusion, a new giving set will be required each time an infusion is given
- All care should be documented in the patients records including removal of the cannula.

20.2 PICC and Hickman Lines

These lines require very similar care and they require redressing weekly. All care should be carried out using an aseptic technique following hand washing and alcohol rube, wearing both gloves and aprons and always using sterile dressing packs and dressings.

Before dressing with a clear dressing as discussed above,
the exit site should be visibly clean, free of any sign of blood or exudate, this cleaning should be done with sterile gauze and 0.9% Sodium Chloride before being cleaned with 2% Chlorhexidine Gluconate in 70% isopropyl alcohol (Chloraprep®) using a brisk forward and back motion friction rub.

- Hickman lines are curled under the clear dressing and this is changed every 7 days unless it becomes loose, wet or soiled beneath the dressing.
- PICC lines should be secured with a stat lock this is to reduce the risk of them becoming dislodged. There are a variety of manufacturers of statlocks and it is essential to use one, which is compatible with the line that has been inserted. The manufacturers provide instructions for using and removing these. Statlocks need to replaced weekly when the dressing is changed.
- A picture of Stat lock is given below.

Bathing and showering. The exit site must not be allowed get wet. The needleless access device should be kept dry and not be immersed in bath water

20.3 Porta caths

Dressing a Porta cath should be done weekly if the port needle remains in situ and is carried out as described in the section for insertion of the port needle and cleaning follows the procedure as described fro Hickman lines.
The instructions for bathing and showering remain the same as for a Hickman line whilst the port needle remains in situ.

21.0 Audit of the High Impact Interventions.

The aim of audit tool in appendix 3 is monitor compliance of staff, who give IV medications, with the high impact interventions. The audit should be completed by each service by observation of staff practice, at a minimum annually. However, if the service is administering IV medications on daily basis the audit should be completed at more frequent intervals

21.1 Flushing Technique: Flushing After and Between Uses

It is recommended that a syringe smaller than 10 ml is not used for infusion into the catheter. To prevent excessive pressure being exerted on the lumen which might cause it to rupture. Smaller syringes exert greater pressure. But please note that syringe size alone is not sufficient to prevent rupture. “When resistance is felt, if more pressure is applied to overcome it, catheter fracture could result regardless of the syringe size

• **Use a brisk 'push-pause' flushing technique** routinely when flushing the catheter i.e. flush briskly, pausing briefly after approximately each ml of fluid. The 'push-pause' technique causes turbulence within the catheter, which helps to flush away any debris and prevent occlusion of the lumen

• **If the catheter possesses a clamp, clamp the line while the final ml of the flush is being injected**. If there is no clamp you can achieve a "positive pressure finish" by removing the syringe from the Clave (or similar) while injecting the last ml, being careful to avoid any spray from the syringe. Maintaining positive pressure helps prevent blood entering the catheter after flushing, which might lead to occlusion or thrombus formation. Specially designed positive pressure needle free devices are available.
• **Do not routinely withdraw and discard blood from the catheter before flushing** in an attempt to avoid flushing bacteria and clots into the patient (*25)*. *There is no evidence that withdrawing prior to flushing reduces infection or embolism.* Note **that if the catheter is to be used for administering drugs or fluids, checking for "flashback" should be a routine part of catheter assessment**

All Midlines and CVADs should be flushed with 0.9% saline for injection (Must be prescribed). Frequency of flushing and locking solutions may vary:
This varies depending on the device type. See care of individual catheter types, and to prevent this source of occlusion, clinicians should clamp the extension set or withdraw the syringe while administering the last 0.5 ml of flush (positive pressure technique

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Appendix 1

FORMAL ASSESSMENT

INTRAVENOUS DRUG ADMINISTRATION

Name:

Administration of drug as bolus:

1) Date……

I certify that the above named competently prepared and administered an intravenous bolus drug dose and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) ……..... Department.....

2) Date……

I certify that the above named competently prepared and administered an intravenous bolus drug dose and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) ……..... Department.....

3) Date……

I certify that the above named competently prepared and administered an intravenous bolus drug dose and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) ……..... Department.....

Addition of drug to bag of diluent

1) Date……

I certify that the above named competently prepared and administered an intravenous drug dose by adding to a bag and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) ……..... Department.....

2) Date……

I certify that the above named competently prepared and administered an intravenous drug dose by adding to a bag and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) ……..... Department.....

3) Date……

I certify that the above named competently prepared and administered an intravenous drug dose by adding to a bag and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) ……..... Department.....

Administration via syringe driver

1) Date……

I certify that the above named competently prepared and administered an intravenous drug dose via syringe driver and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) ……..... Department.....

2) Date…….
I certify that the above named competently prepared and administered an intravenous drug dose via syringe driver and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) …….....
Department.....

3) Date…….
I certify that the above named competently prepared and administered an intravenous drug dose via syringe driver and demonstrated an acceptable level of knowledge

Signed…….. Name & Title (Block Letters) …….....
Department.....

I confirm that I have achieved competency in the administration of intravenous medication and am willing to undertake this role in accordance with Trust policy. I am aware of my professional and legal responsibilities and understand that I must administer medications regularly in order to maintain competence. Should my level of proficiency or competency fall, I shall seek retraining and re-assessment. I am aware that I shall be required to attend a refresher/update course every three years.

Signed…….....…

Date……

Copy to: Line Manager and Education Dept (CHN)

Appendix 2

DRUG CALCULATIONS

1. To calculate the amount of medicine to give from a solution:

$$\frac{\text{Dose to be given}}{\text{Strength available}} \times \text{Volume of Solution}$$

Or

$$\frac{\text{What you want}}{\text{What you've got}} \times \text{what it's in}$$

Example:

If a patient is prescribed 200mg of a medicine that comes as 250mg in 5ml - the calculation will be:

$$\frac{200}{250} \times 5\text{ml} = 4\text{ml}$$

2. To calculate the flow rate of an infusion in drops per minute:

$$\frac{\text{Vol of solution to be given(mls)} \times \text{Number of drops per ml}}{\text{Duration of infusion (mins)}} = \text{Flow rate (drops/min)}$$

NB Always check the individual packaging of the giving set to be used before calculating the flow rate, as the number of drops per ml may vary with different manufacturers.

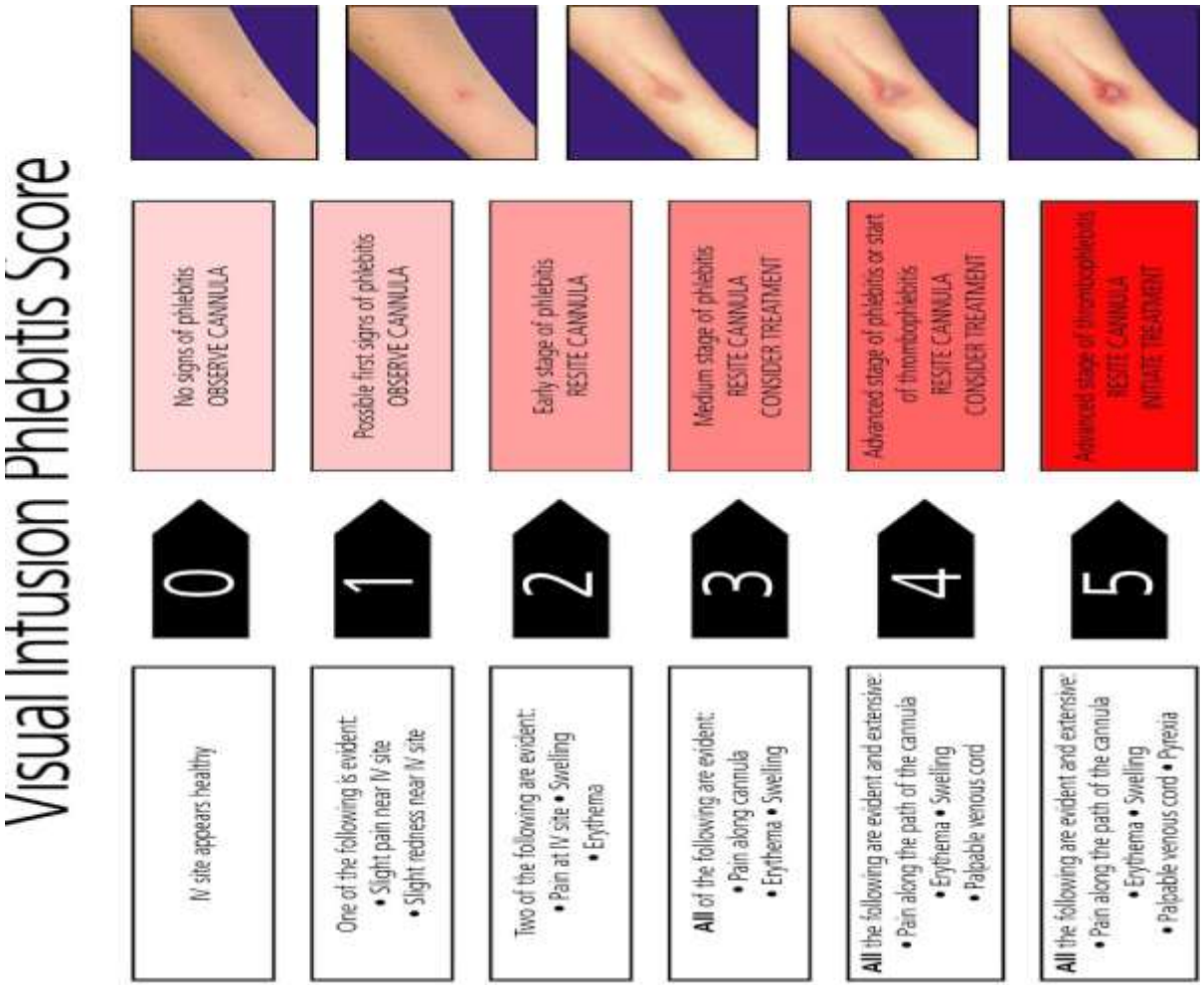
Example:

The patient needs to be given 100mls of Metronidazole over 30 minutes, the giving set delivers 20 drops per ml - the calculation would be:

$$\frac{100(\text{mls}) \times 20(\text{drops})}{30(\text{mins})} = 66.6 \text{ drops per minute}$$

Appendix 3

Visual Infusion Phlebitis Score (VIP)



On the following page is a recoding sheet for the VIP score and temperature monitoring.

Record of IV Checks completed

Patient's Name:			**NHS or RIO Number:**		
Date and time	VIP Score	Action Taken	Temperature	Action Taken	Nurse to sign

Appendix 4

Audit Tool

Stage	Practitioner			1	2	3	4	5	6
1	Were hands decontaminated using the 7 stage technique with alcohol rub or 13 steps with soup and water?		Y						
			N						
2	Was all equipment gathered and placed by the dressing pack/sterile field		Y						
			N						
3	Were hands decontaminated after gathering equipment?		Y						
			N						
4	Was an appropriate glove choice made and worn?		Y						
			N						
5	Preparation of actual IV medications	Were all fluids drawn up using a needle and syringe?	Y						
			N						
		Were all bungs and ports cleaned using 2% Chlorhexidine in 70% IPA?	Y						
			N						
		Were keys parts protected throughout preparation?	Y						
			N						
6	Administration of actual IV medications	Were all the ports wiped clean with 2% Chlorhexidine in 70% IPA?	Y						
			N						
		Was key part allowed to dry properly (30 sec)?	Y						
			N						
		During administration were key parts protected?	Y						
			N						
7	Were sharps and other equipment disposed of correctly?		Y						
			N						
8	Were hands decontaminated using the 7 stage technique?		Y						
			N						

Appendix 5: Medusa link see below

Medusa is an UK, NHS electronic website for Injectable Medicines Guide (IMG) containing information on the IV preparation and administration of many injectable medicines.

Medusa website can be accessed using the link below:

http://www.injguide.nhs.uk

To access information from the above link for Medusa, it requires a username and password.

The Clinical Leads of the respective Community Health Services, ELFT have been provided with the username and password access to Medusa website.

The Clinical leads have got the discretion to allow access to the registered nurses that requires the detail to access the medusa website.

Note:

Please note that access to this information on Medusa does not override the authorised prescription from the hospital referral/prescribers.

Cross check any discrepancies noticed.