

## Intravenous (IV) Medication and Fluid Therapy Administration Through a Peripheral Venous Cannula Policy

		POLICY	
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	X		
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<b>Sponsor (Position)</b>	Chief Nurse, Medical Director
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<b>Lead Division/ Directorate</b>	Corporate
<b>Lead Specialty/ Service/ Department</b>	Nursing – Practice Development Team
<b>Position of Person able to provide Further Guidance/Information</b>	Practice Development Team
<b>Associated Documents/ Information</b>	<b>Date Associated Documents/</b>
<ul style="list-style-type: none"> <li>• Procedure for Aseptic Non-Touch Technique – <a href="#">Royal Marsden Manual Aseptic Non touch technique</a></li> </ul> <p>Procedural guidelines for practice (bolus / continuous &amp; intermittent) – please refer to the guidance contained in the <a href="#">Royal Marsden Manual Online: Chapter 15 Medicines Optimisation: ensuring quality and safety</a></p> <ul style="list-style-type: none"> <li>○ 15.23 <a href="#">Medication: continuous infusion of intravenous drugs</a></li> <li>○ 15.24 <a href="#">Medication: intermittent infusion of intravenous drugs</a></li> <li>○ 15.25 <a href="#">Medication: injection (bolus or push) of intravenous drugs</a></li> </ul> <p><b>IV training packs accessible via the Sherwood eAcademy</b></p> <p>Peripheral IV Therapy – pre course training pack (all nurses, midwives and recovery operating department practitioners) Includes Infusion Devices.</p> <p>Peripheral IV Therapy – pre course training pack (anaesthetic operating department practitioners only)</p> <p>Administration of IV drugs as a bolus (excluding neonates) (OKS 717)</p> <p>Administration of IV drugs as a bolus (neonates) (OKS 718)</p> <p>Administration of IV infusions – free flow (excluding neonates) (OKS 719) - THEATRES ONLY</p> <p>Administration of IV infusions using the Adult GP Infusion Pump and Guardrails (ME 337)</p> <p>Administration of IV infusions using the Paediatric VP Infusion Pump (ME 339)</p> <p>Adult GH Syringe Pump and Guardrails Competency (ME 338)</p> <p>Blood and Blood Product Transfusion (excluding neonates) OKS 105</p> <p>Blood and Blood Product Transfusion (neonates) (OKS 256 and 316)</p> <p>Intravenous Administration of Opioids (excluding neonates) (OKS 384)</p> <p>Paediatric CC Syringe Pump Competency (ME 340)</p> <p>Post-operative Administration of Peripheral Intravenous (IV) Morphine to Children and Young People (THEATRE RECOVERY ONLY) OKS 551</p> <p><a href="#">East Midlands Cancer Alliance: Guideline for the Management of Extravasation</a></p>	<p><b>Information was reviewed July 2023</b></p>
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## 1.0 INTRODUCTION

- 1.1** The purpose of this policy is to inform staff working at the Trust of the correct procedures in relation to the care of all patients undergoing intravenous therapy and to give assurance that there is a safe consistent level of practice.
- 1.2** As many as 80% of hospitalised patients will have an intravenous cannula in situ at some point during their hospital stay (Zingg and Pittet, 2009). A growing number of patients are receiving intravenous therapy in hospital as it becomes a routine aspect of care. Although a routine procedure, the potential harm, complication, and risk to the patient should not be underestimated. For these reasons, it is vital that all health care professionals undertaking IV administration are competent and have a sound knowledge and skill base to minimise the risk and potential for harm for a patient undergoing IV therapy.
- 1.3** It is the duty of all who manage IV devices to understand the risks associated with their use, and take responsibility for updating their knowledge, and maintaining highest standards of practice.
- 1.4** Practitioners administering fluids/medications to infants, children and young persons must demonstrate the ability to explain the procedure to the child and their parents/carers in a way which increases confidence and minimises anxiety. This approach enhances compliance with the procedure, promotes family centred involvement and participation, and helps to reduce anxiety. The support of a member of the hospital play team should be encouraged – play and distraction therapy when undertaking a clinical procedure helps to reduce anxiety and gain trust. Practitioners must explain the procedure to the child/young person using age/developmentally appropriate language – to allow time for the child and parent/carer to ask questions and discuss any concerns, to work in partnership with the child/parent/carer and to support in obtaining informed consent.
- 1.5** No member of staff should activate or use an infusion device without accessing evidenced training and assessment and recorded as competent to administer IV medicines/fluids and associated devices. (Refer to the Associated Documents/ Information section of this policy).

## 2.0 POLICY STATEMENT

This policy identifies which members of staff can administer IV therapies and further specifies the level of training that the practitioner must complete. This policy is in place to ensure the highest standard of care to patients. Failure to comply with this policy may be regarded as misconduct and dealt with in accordance with the Trust's disciplinary procedures and potentially the practitioner's regulatory body.

- 2.1** This clinical document applies to:

### **Staff group(s)**

- Registered nurses, midwives and nursing associates (Nursing and Midwifery Council) including bank and agency staff
- Medical staff (General Medical Council) including locum medical staff
- Radiography staff who undertake diagnostic procedures (HCPC registered)
- Operating department practitioners (HCPC registered)

## Clinical areas

- Trustwide - all clinical wards, departments and units.

## Patient groups

- All patients undergoing delivery of IV medicines via bolus, continuous or intermittent modes of administration. This policy applies to neonatal, paediatric, maternity and adult patient groups.

## 2.2 Exclusions

This policy covers IV medicines administration only and **does not apply** to patients undergoing **subcutaneous infusions/therapy** or administration through **central venous access devices**.

### Please refer to the following policies/procedures

- [Intravenous \(IV\) medication and fluid therapy administration through a central venous access device \(CVAD\) policy](#).
- T34 Ambulatory Syringe Pump Procedure for Adults (Royal Marsden Manual of Clinical Nursing Procedures: Chapter 8: Patient Comfort and End of Life Care).

This policy does not include the use of specialist infusion equipment used in anaesthesia delivery or radiology contrast mediums, in these areas the therapy and the device falls under the remit of the department's own policy and protocols.

This policy does not apply to administration of IV medicines or fluids in the patient's home as part of the OPAT service. For patients accessing the OPAT service please refer to the [OPAT Policy](#)

## 3.0 DEFINITIONS/ ABBREVIATIONS

<b>AHP</b>	Allied Health Professional
<b>ANTT</b>	Aseptic Non-Touch Technique
<b>APEL</b>	Accreditation of Prior Experiential Learning
<b>Competence</b>	Competence can be described as the combination of training, skills, experience and knowledge that a person has and their ability to apply them to perform a task safely. Other factors, such as attitude and physical ability, can also affect someone's competence
<b>Continuous infusion</b>	Intravenous administration of a volume of fluid with medicines added over a prescribed period of time to achieve a clinical end point. The infusion may be repeated over a period of days. Large volume i.e. 250-1000ml or small volume infusions may be delivered continuously.
<b>DATIX</b>	Trust Incident Reporting System
<b>EPMA</b>	Electronic Prescribing Medicines Administration
<b>ESR</b>	Electronic Staff Record
<b>Extravasation</b>	The <b>inadvertent and unintentional</b> administration of vesicant medication or solution into the surrounding tissue instead of into the intended vascular pathway. (Royal College of Nursing, 2016).
<b>HCPC</b>	Health and Care Professions Council

<b>Healthcare professional</b>	A registered member of staff, including nurses, nursing associates, midwives, operating department practitioners, allied health practitioners, doctors, dentists and radiographers. This also includes individuals employed by a third party to work within the Trust.
<b>Healthcare support workers</b>	Non-registered staff employed at band 2 or 3. This group includes phlebotomists.
<b>Infiltration</b>	The <b>inadvertent and unintentional</b> administration of non-vesicant solution/medication into surrounding tissue instead of the intended vascular pathway (sometimes described as 'tissued')
<b>IV</b>	Intravenous
<b>Intravenous bolus</b>	Introduction of a small volume of medicine solution into the peripheral cannula or the injection port of an administration set. A bolus injection should be administered slowly unless otherwise specified.
<b>Intermittent infusion</b>	Administration of medication in an infusion over a set time period, either as a one-off dose or repeated at specific time intervals. This will involve repeated use of a single peripheral cannula.
<b>IV Pump Assessor</b>	A registered professional who has achieved additional skills by attending IVI pump/blood assessor courses 2 yearly to enable them to support clinical staff in their 3 yearly IV infusion device assessments
<b>IV trained practitioner</b>	A practitioner who has satisfactorily completed the Trust's training for IV administration or has had their training and competency from another organisation verified (APEL), has undergone a competency check in their area of practice.
<b>LTCAME</b>	Lead for Training and Clinical Advisor for Medical Equipment
<b>Medusa</b>	The Trust uses the Medusa Injectable Medicines Guide available at <a href="https://www.wales.nhs.uk/medusa-homepage">Medusa HomepageHome.asp (wales.nhs.uk)</a> for detailed guidance on the NPSA risk rating, preparation, reconstitution and specific guidance on the administration of intravenous injections and infusions. The <a href="#">Trust Medicines Policy</a> can be obtained via the intranet.
<b>MEMD</b>	Medical Equipment Management Department
<b>NMC</b>	Nursing Midwifery Council
<b>Nervecentre</b>	The Trust's electronic observation recording system
<b>OLM</b>	Oracle Learning Management
<b>OPAT</b>	Outpatient Parenteral Antibiotic Treatment
<b>ODP</b>	Operating Department Practitioners
<b>PETT</b>	Professional Education Training Team
<b>Preceptorship nurse</b>	A newly qualified nurse who upon commencing post undergoes a structured programme of supported learning in their practice environment. Supported learning programmes are available for other newly appointed nurses to the Trust, where this is deemed essential to their role.
<b>The Trust</b>	Sherwood Forest Hospitals Foundation Trust including Newark Hospital and Mansfield Community Hospital
<b>Two-person check procedure</b>	This is a method of checking to remove error. The accepted standard is to have <b>TWO registered health care professionals</b> simultaneously check the medicine for administration (see checking and administration table below). Where a calculation is involved an <u>independent</u> two-person check must take place. This is where two



	<p>individuals will check a medicine separately and then share their individual calculation result to confirm accuracy.</p> <p><b>A single check of medicines for intravenous administration is not acceptable.</b></p> <p>The Trust's Medicines Policy states that "ALL intravenous medicines must be checked by TWO registered practitioners, one of whom must be the administering doctor or registered nurse/ midwife, ODP". This includes pre-filled syringes/syringe pumps and all infusions. The two person check should include <u>all stages</u> up until the bolus or infusion is commenced.</p> <p><b>Both registered healthcare professionals are required to sign the prescription chart in order to document that a robust two-person check has been completed.</b></p>
<b>VIPS</b>	Visual Infusion Phlebitis Score

## 4.0 ROLES AND RESPONSIBILITIES

**4.1 The Chief Nurse and Executive Medical Director** are responsible for the content and implementation of this policy.

**4.2 Head(s) of Nursing** are responsible for ensuring that necessary measures are in place to support the safe implementation and monitoring of the use of the policy in practice. They will need to take measures where practice has been deemed potentially unsafe.

**4.3 Matrons, department managers and service line directors** are responsible for ensuring that all staff accountable to them are aware of this policy and adhere to its statement. It is the manager's responsibility to investigate and rectify any discrepancies identified.

**4.4 Ward Sister/Charge Nurses/Departmental Leader** will act as role models and are accountable for the policy implementation among staff in practice, and the associated monitoring of standards and best practice. They will ensure that all staff in the sphere of their responsibility have access to training to develop the skills and competence. This includes the completion of the associated workbooks, medical equipment competency documents and study sessions in a timely manner.

**4.5 All registered healthcare professionals** have a *duty of care* to their patients. This is a legal and professional requirement of state registration that cannot be delegated. All registered healthcare professionals are personally responsible and professionally accountable in ensuring that they receive training in the safe use and observation of any medical device used in the delivery of IV therapy. It is the responsibility of the healthcare professional to ensure that any IV access or IV therapy is appropriately prescribed for the patient and that the patient and therapy delivery are monitored accordingly according to associated policies and procedures.

Prescribers of intravenous fluid therapy have a responsibility to ensure patients' fluid and electrolyte needs are assessed prior to treatment (See [Appendix 4](#) IV Fluid Therapy Protocol).

**4.6 Pharmacists** are responsible for monitoring both the prescribing and overseeing the administration of medicinal therapies and alerting prescribers and other health care professionals to potential or actual problems.

- 4.7 All staff** are required to prevent and manage healthcare acquired infection as part of Health and Social Care Act 2008 (Regulated Activities) Regulations 2014.
- 4.8** All staff are required to report incidents or near misses relating to IV medicines using the DATIX incident reporting system.
- 4.9** Appropriately trained and competent Band 3 health care support workers can flush a cannula after they have inserted it using a Posiflush® device to ensure the cannula is patent. The health care assistant must not flush a cannula at any other time. These staff members must ensure they have attended training and a completed competency has been signed and recorded by PETT.
- 4.10** Healthcare Support Workers are not allowed to connect a primed bio connector to a newly inserted cannula.

## 5.0 APPROVAL

Following consultation (as per front sheet), this policy has been approved by the Trust's Drugs and Therapeutic / Medicines Optimisation Committee.

## 6.0 DOCUMENT REQUIREMENTS (POLICY NARRATIVE)

### 6.1 Assessment of need

All patients should receive a full medical assessment. Fluid needs should be assessed, prescribed and monitored in accordance with ['Intravenous fluid therapy in adults in hospital', NICE clinical guideline 174 \(December 2013. Last update December 2016\)](#)

6.1.1 The following must be considered when inserting or accessing an intravenous device:

- Is it necessary or is there an alternate route?
- Is the device suitable for IV use?
- Do I know how and am I trained and competent to use the device?
- Is it the correct device for the task? (cannula size and type)
- Is there product support and is the equipment licensed for the task?
- Is it intact and sterile and in date?
- Condition of insertion site (visual infusion phlebitis scores, VIPS)
- Compatibility with other equipment? (infusion lines/Luer lock syringes/needle free connectors)
- What was the original intention for use of the device?
- Has the appropriate safety device been used where practicable?

### 6.2 Consent

6.2.1 Patients have the legal and ethical right to determine what happens to them. Valid consent to treatment is essential to all forms of healthcare and paramount when considering invasive techniques. Obtaining consent is also a matter of common courtesy between the healthcare provider and recipient.



- 6.2.2 Consent is the patient's agreement for healthcare professionals to provide care (Department of Health, 2009) and consent may be given orally, in writing, implied (i.e. the patient offering an arm for cannulation) or any manner identified as consent by that patient.
- 6.2.3 When working with children it is important to gain consent from the parent/carer and the child where possible. For further information and guidance regarding consent in relation to children and young people please refer to the Trust [Policy for Consent to Examination, Treatment and Care](#).
- 6.2.4 In order for consent to be valid the patient must:
- be competent to take the decision.
  - have received sufficient information in an appropriate format to make an informed decision.
  - not be acting under duress.
- 6.2.5 Acquiescence where the person does not know what the intervention entails is not "consent".
- 6.2.6 Obtaining consent should not prevent urgent and necessary care.
- 6.2.7 **The healthcare professional carrying out the procedure is ultimately responsible for ensuring that the patient consents to what is being done. It is that individual who will be held responsible in law if the intervention is later challenged.**
- 6.2.8 Every effort must be made to explain the intervention and answer any questions the patient may have. Therefore, staff must possess effective communication skills.
- 6.2.9 If after discussion a patient refuses intervention this must be clearly documented in the notes, informing the medical staff of this decision.
- 6.2.10 Treatments to which the patient has consented should continue and the patient made aware of the option to change their mind and consent to the treatment later.
- 6.2.11 For patients who lack capacity, a Mental Capacity Act two-stage test should be completed, and a best interest's checklist should be added if the administration of IV medication is necessary in the best interests of the patient. This should be clearly recorded in the patient's notes.

### 6.3 Prescriptions

- 6.3.1 Prescriptions for all IV medication must be written on a Trust Medicine Prescription and Administration Record ("medicine" or "prescription" chart) or other authorised prescribing/administration documentation such as EPMA.
- 6.3.2 If EMPA is being used to prescribe and administer medication, guidance on how to do this can be found here at: [EPMA - Prescribing User Guides \(nnotts.nhs.uk\)](#) and [EPMA - Medicine Administration User Guides \(nnotts.nhs.uk\)](#)
- 6.3.3 Patients receiving IV medications in radiology departments under a Patient Group Direction (PGD) will have information relating to the PGD use recorded and scanned onto the patient's record on the radiology information system.

- 6.3.4 Any individual undergoing an outpatient radiology procedure where an IV medication is given will receive a proforma advising them of the dosage of the medication that has been given.
- 6.3.5 The prescription for each medicine must include the following (as per section 10 of the Trust Medicines Policy):
- patient's name, hospital/NHS number, date of birth, and address if available
  - the allergy status of the patient
  - the date and time of the medicine prescription
  - the approved name of the injectable medication (in full, do not abbreviate)
  - the date and time of administration
  - the dose and frequency (ensuring, where necessary, that recent parameters have been used to calculate dose, for example, weight and laboratory test results)
  - the date and time for re-assessment of the prescription
  - the start and finish date/time or maximum number of doses
  - the prescriber's signature, name also printed for clarity and in the event of any query

## 6.4 Fluid balance

All bags of fluids used to deliver IV medications should be recorded on the IV fluids section of the patient's fluid balance chart. Volumes of fluid should be added to the fluid balance chart on Nervecentre where used. The following link provides guidance on how to do this [PowerPoint Presentation \(nnotts.nhs.uk\)](http://nnotts.nhs.uk). Regular checks should be documented on the progress of the infusion to ensure that it is running according to the prescribed volume over time.

## 6.5 Medical devices

- 6.5.1 "An infusion system is a device, and any associated disposables, used to deliver fluids or drugs in solution to the patient. The common routes are: intravenous, subcutaneous, epidural or enteral" (Medicines and Healthcare Products Regulatory Agency (MHRA), 2010).
- 6.5.2 All staff using medical devices, either directly in the diagnosis or treatment of patients, must have sufficient understanding of its use to do so in a safe and effective manner. Therefore, all staff that use infusion pumps must undergo the appropriate training and assessment and be recorded as competent on the Trusts' ESR system. (Refer to the section: Associated Documents/ Information of this policy).
- 6.5.3 All IV medication infusions (excluding bolus delivery) where practicable, must be infused using an appropriate infusion device.
- 6.5.4 Where there is a requirement to disconnect an infusion for a prolonged period, an entirely new infusion must be started as recommended by infection, prevention and control processes.
- 6.5.5 All infusion giving sets (lines) should be labelled with the Date, Time and substance being infused using the white line labels available in clinical areas.
- 6.5.6 Giving sets should be used for a maximum of 72 hours for clear fluid and pre-filled medicine infusions.

- 6.5.7 Infusions containing additional medicines (labelled with yellow additive sticker) should be changed every 24 hours as a minimum.
- 6.5.8 Infusion Monitoring Charts should be maintained throughout infusions. It must include the MEMD number of the pump for each infusion for traceability. For paediatrics use a Paediatric Fluid Balance Chart
- 6.5.9 Infusion systems can be categorised into:
- Gravity
  - Volumetric
  - Syringe
  - Ambulatory
  - Anaesthetic

There is access to guides/ instructions for all infusion pumps if required: contact the Trust Equipment Library for these.

- 6.5.10 Wherever the infusion is included in the Pump's drug library, the **Guardrails Dose Error Reduction Software (DERS)** should be adopted to programme the infusion.

## 6.6 Flushes for infusion of IV antibiotics under 250mls

When antimicrobial/antibiotic medicines are administered as an infusion in a volume of fluid less than 250ml, a prescribed flush of 25ml must be infused on completion of the antibiotic infusion to clear any residual medicine from the infusion line/administration set. The infusion rate for the flush will be the same as the infusion rate was for the antibiotic.

For all information relating to infused antimicrobials /antibiotics and line flushing, please refer to the [Antimicrobial Prescribing Policy](#).

## 7.0 MONITORING COMPLIANCE AND EFFECTIVENESS

<b>Minimum Requirement to be Monitored</b>  (WHAT – element of compliance or effectiveness within the document will be monitored)	<b>Responsible Individual</b>  (WHO – is going to monitor this element)	<b>Process for Monitoring e.g. Audit</b>  (HOW – will this element be monitored (method used))	<b>Frequency of Monitoring</b>  (WHEN – will this element be monitored (frequency/ how often))	<b>Responsible Individual or Committee/ Group for Review of Results</b>  (WHERE – Which individual/ committee or group will this be reported to, in what format (eg verbal, formal report etc) and by who)
<b>Incident Reporting</b> If an incident or near miss occurs or is observed, there is a duty to take action to prevent any harm (or further harm) to the patient.	Immediate actions need to be taken to ensure the affected patient receives the correct interventional treatment this will include contacting the doctor to inform them of the error and the senior health care professional on duty. Out of hours this will be the duty nurse manager. A Datix should be completed. If an infusion pump is involved in an incident along with any consumables and related IV infusion documents, they should be saved and isolated for MEMD to collect. An in house or external investigation on the device, event LOG and related consumables will be performed and reported on to the lead investigator/DATIX.	All incidents and near misses are reportable via the SFHT incident reporting system as per the Trust's Incident Reporting Policy.	Ongoing – All incidents are monitored through the Trust's Governance Support Unit on a daily basis	Speciality Governance committees- escalating to divisional and Trust level as required.
Incidents and Near-misses	Divisional Clinical Governance meetings	Reviews of themes and trends of DATIX incidents associated to this policy where appropriate	Monthly	Any areas of concern should be addressed and escalated to the Patient Safety Quality Group
Medicines Safety	Trust Medicines Safety Officer Medicines Safety Group	Reviews of themes and trends of DATIX incidents associated to medicine	Bi-monthly	Any areas of concern should be addressed and escalated to the Patient Safety Quality Group

Minimum Requirement to be Monitored  (WHAT – element of compliance or effectiveness within the document will be monitored)	Responsible Individual  (WHO – is going to monitor this element)	Process for Monitoring e.g. Audit  (HOW – will this element be monitored (method used))	Frequency of Monitoring  (WHEN – will this element be monitored (frequency/ how often))	Responsible Individual or Committee/ Group for Review of Results  (WHERE – Which individual/ committee or group will this be reported to, in what format (eg verbal, formal report etc) and by who)
		prescription and administration.		
Infection control	This will be led by the Trust Nurse Consultant for Infection Control.	audits will explore trends identified from VIP (visual infusion phlebitis) scores, patient bacteraemia associated to intravenous catheter related and invasive device related infections will be fed through from Health Care associated infection meetings through to the Infection Prevention and Control Committee and discussed as required	Bi-monthly Health Care Acquired Infections meetings.	Any areas of concern should be addressed and escalated to the Patient Safety Quality Group

## 8.0 TRAINING AND IMPLEMENTATION

Prior to commencing IV administration, all staff must be able to demonstrate that they have read and understood this policy and all associated Trust documents and be able to evidence this as part of their training.

### 8.1 All staff (other than medical staff) are required to have:

- Accessed training, complete and return the assessment of competency forms for the Trust infusion pumps relevant to role and practice to the LTCAME.
- Completed an Accountability Assessment e-learning package via the Sherwood e-Academy or the “Accountability and Responsibility” training session delivered by PETT as part of the clinical induction for new starters to the Trust. The single completion of the pack covers all Role Developments.
- Successfully completed the IV therapy medicines calculation test.
- Completed the total parenteral nutrition training package (if this is appropriate to the individual’s area of practice).
- Undertaken, following completion of the above, at least **four** supervised practice administrations and demonstrate competency in the administration of IV therapy by bolus, intermittent and continuous modes of administration.
- Provided ward level documented evidence of all the above, using the correct assessment packs, and send the signed record to PETT in the Training, Education and Development Department. The successful sign-off by PETT of this document will be recorded and inputted onto the Trust Oracle Learning Management training database.
- Ensure that as registered professionals they access training supported by the IV pump/blood assessor to ensure that their competence is reviewed and updated 3 yearly to use infusion pumps relevant to their role.

### 8.2 Nurses and Midwives

“Nurses or midwives who are competent and fit to practise should: have the skills, experience and qualifications relevant to the part of the register they have joined. Demonstrate a commitment to keeping those skills up to date, and deliver a service that is capable, safe, knowledgeable, understanding and completely focused on the needs of the people in their care” (NMC, 2018).

#### 8.2.1 Nursing staff undertaking training for this practice as a new role development must complete the following in advance of practice in this role.

- IV calculations test (achieving a score of at least 80%);
- the pre-course workbook
- the Intravenous Medication and Fluids Management Study Day
- all competency assessments.

**They may participate in the administration of IV medications as the second registered person only if they have successfully completed the IV medicines calculations test.**

#### 8.2.2 Training for role developments must be successfully completed (depending on relevance to their role) before administration of IV therapies can take place in practice.

#### 8.2.3 Until staff have accessed training and have completed and returned the associated competency forms which the LTCAME has marked as competent, **they are unable to**



set up, activate or action any features of the infusion pump unless under the direct supervision of a competent user.

### **8.3 Newly appointed staff not in preceptorship (nursing and midwifery and AHP staff)**

Newly appointed staff who have previously worked at other organisations will be required to supply evidence of their training, proof of supervised practice and verification of competence. The staff member will also need to provide evidence of recent continued practice and be able to clearly demonstrate knowledge relating to complications and the skills to take any action that is required. They will also be required to demonstrate the application of their practice relating to the NMC Code (2018) or AHP Standards of Conduct, Performance and Ethics (2016). A certificate of attendance for an appropriate IV administration study in other organisations and/or evidence of supervised practice and signature of competence is required for the APEL process. Without evidence of previous training the member of staff will be required to complete the Trust's IV fluids and medication infusion study day. The APEL process will require the staff member to complete the Trust IV calculations test prior to undertaking the two assessments to show competent practice at Level 5 (Independent Practice).

APEL must be completed within SIX months of the individual joining the Trust.

### **8.4 Agency nursing and midwifery staff**

Employing agencies are responsible for checking the competency and on-going professional development of their registered nursing staff in the practice of IV administration. Agency staff should be able to provide robust evidence of Trust specific medical device user training when challenged.

### **8.5 Student Nurses and midwives**

Student nurses and Midwives will undertake theoretical training as part of their pre-registration course and will be required to complete supervised practice on placements to achieve competency in the skill. Competency is recorded within the student practice assessment documents. This is a mandatory requirement to complete training and achieve NMC registration (for those qualifying from 2022 onwards only).

### **8.6 Medical Staff**

As medical students, trainee doctors are trained in core procedures and as part of this, specifically to put up a basic IV infusion and to administer an IV injection - this forms part of their core curriculum of practical skills and is signed off by clinical educators when competency is demonstrated. The core procedures are regulated by the foundation school (part of the local education training boards) and the United Kingdom Foundation Programme Office. Foundation locum doctors coming into year 2 are also required to have been deemed competent in this procedure and are regulated in the same way. As foundation year 1 doctors the safe prescribing and administration of IV infusions and IV medicines is part of the individual's core learning program - this can be signed off as a directly observed procedure by a competent observer and signed off for competency by their educational supervisor as complete in their e-portfolio. Medical staff, including locums, should not action any infusion pump, unless specific evidenced training is completed and recorded in specialities such as anaesthetics, in accordance with the medical equipment user training policy.

## 8.7 Locum medical staff

Locum medical staff will have completed the training for IV prescribing and administration in their foundation year 1. If they are not deemed competent in the use of medical devices according to this policy, they must not attempt to use these devices and will need to seek the support of staff that are competent to do so in accordance with the [Medical Equipment user policy](#).

## 8.8 Radiology Staff

Radiographers must be qualified for one year before they are able to access the Trust IV training (they are not required to complete the calculations test. Their training is delivered alongside specific departmental practices with the focus in the department being on the use of specific mediums or IV medication being delivered as an essential part of the procedure. Radiography staff are responsible for maintaining their own level of competency in practice; this is subject to peer review by a senior radiographer or radiologist.

## 8.9 Newly appointed radiology staff

Newly appointed radiology staff that have worked in other organisations need to provide evidence to the department manager to demonstrate prior completion of appropriate training. In addition to this they will need to undergo formal observation in practice under the scrutiny of a senior radiographer. This must be completed within SIX months of the individual joining the Trust.

## 8.10 Medical device training and competency

All registered staff – unless have evidenced training/competency they must not use or action any function on infusion pumps. Evidence of training will be achieved by either –

Completion of formative / summative assessment with an IV assessor as part of the IVI skills training, (uploaded on to the staff eAcademy)

Reviews 3 yearly which must be completed with an IVI pump assessor.

Evidence of training will be logged onto the individuals ESR by the OLM Team

All unregistered staff must not action any functions on infusion pumps except as specified in the Escort Policy.

## 9.0 IMPACT ASSESSMENTS

- This document has been subject to an Equality Impact Assessment, see completed form at [Appendix 5](#)
- This document is not subject to an Environmental Impact Assessment

## 10.0 EVIDENCE BASE (Relevant Legislation/ National Guidance) AND RELATED SFHFT DOCUMENTS

### 10.1 Evidence Base:

Department of Health (DoH) (2015) Health and Social Care Act 2008: Code of practice on the control of infections and related guidance. London: DoH.

Department of Health (DoH) (2009) Reference guide to consent for examination or treatment. 2<sup>nd</sup> ed. London: DoH.

Dougherty, L. and Lister, S. (eds) (2020) [The Royal Marsden Hospital manual of clinical nursing procedures](#). 10th ed. Chichester: Wiley-Blackwell.

National Institute for Health and Care Excellence (NICE, 2013) Intravenous (IV) Fluid Therapy Management in Adult Patients in Hospital Version: 2.1 Issued: December 2018  
Page **10** of **13** *therapy in adults in hospital NICE clinical guideline 174*.

NIVAS- National Infusion and Vascular Access Society (2019) Intravenous Infusion Drug Administration: Flushing Guidance.

Nursing and Midwifery Council (2018) The Code: Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates.

Nursing and Midwifery Council (2018) Future Nurse Standards of Proficiency for Registered Nurses.

Royal College of Nursing (RCN) (2016) *Standards for infusion therapy*. 4th ed. London: RCN.

Macqueen S, Bruce EA, Gibson F (2012) The Great Ormond Street Hospital of – Manual of children's nursing practices. Wiley – Blackwell. Oxford.

Nottingham University Hospitals NHS Foundation Trust (2017) NUH Medicines policy: Code of Practice-Intravenous Drug Administration Policy. NUH.

Pentin J, Green M & Smith J (2016) Undertaking safe medication administration with children part 1. Nursing Children and Young People Vol 28, No 6, 34-40.

Royal College of Nursing (2017) Competences – An education and training competence framework for administering medications intravenously to Children and Young People. RCN. London

The Royal Children's Hospital Melbourne (2018) Clinical Guidelines (Nursing) Peripheral intravenous (IV) device management [accessed online: 27-2-2020  
[https://www.rch.org.au/rchcpg/hospital\\_clinical\\_guideline\\_index/Peripheral\\_Intravenous\\_IV\\_Device\\_Management/](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Peripheral_Intravenous_IV_Device_Management/)

Tofani B.F, Rineair S.A, Gosdin, C.H, Pilcher P.M, McGee S, Varadarajan K.R, Schoettker P.J. Quality Improvement Project to Reduce Infiltration and Extravasation Events in a Pediatric Hospital. Journal of Pediatric Nursing. 2012 Vol.27 pp 682-689

Zingg, W. and Pittet, D (2009) Peripheral venous catheters: an under-evaluated problem. International Journal of Antimicrobial Agents, Vol 34, Suppl. 4, p.S38-42

## **10.2 Related SFHFT Documents:**

- [Antimicrobial Prescribing Policy](#)
- [Consent to Examination, Treatment and Care Policy](#)
- [Escort and Transfer Policy for Adult Inpatients](#)
- [Intravenous \(IV\) medication and fluid therapy administration through a central venous access device \(CVAD\) policy](#)
- [Intravenous \(IV\) Drug Calculations-Assessment of Mathematical Skill SOP](#)
- [Intravenous Opioid Administration \(Morphine, Oxycodone and Fentanyl\) by Registered Nurses and ODP's - policy](#)
- [Hand Hygiene Policy](#) ICP17
- [Personal Protective Equipment Policy](#) ICP 9
- [Nutrition and Hydration Policy](#)
- [Medical Equipment User Training Policy](#)
- [Medical Device Management Policy](#)
- [Medicines Policy](#)
- [Observations and Escalation Policy for Adult Inpatients](#)
- [PCA Policy – Administration of Morphine, Fentanyl or Oxycodone via an Intravenous \(IV\) Patient Controlled Analgesia \(PCA\) System in Adults Policy](#)
- [Operating Policy for Infection Prevention and Control](#) ICP1
- [PCCP 005: Infant or child requires intravenous fluid therapy](#)
- [Role Development Policy](#)
- [Transfusion Policy, Procedures and Guidelines](#)
- [Venepuncture and Peripheral Cannulation Policy \(Adult Patients\)](#)

## **10.3 Related guidelines and procedures**

All procedural guidance can be found within the [Royal Marsden Manual of Clinical Nursing Procedures](#).

## **10.4 Regulatory standards**

- NMC (2018) The Code Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates
- HCPC (2018) Standards of conduct Performance and Ethics

## **11.0 KEYWORDS**

- administration; intravenous, medicines; medication; drugs; medical equipment; infusion; extravasation; neonate; UCV; paediatrics; VIP; VIPs; score; scale

## 12.0 APPENDICES

<a href="#">Appendix 1</a>	Table of possible IV administration complications and link to VIPS on Nervecentre
<a href="#">Appendix 2</a>	Ports and Flushing of Venous Access Devices
<a href="#">Appendix 3</a>	Administration of Intravenous Medicines and Fluids to Neonates
<a href="#">Appendix 4</a>	IV Fluid Therapy Protocol
<a href="#">Appendix 5</a>	Equality Impact Assessment

## Appendix 1

### Table of possible IV administration complications – Included is link to VIPS on Nervecentre

Information taken from RCN Standards for Infusion Therapy, 2010; The Royal Marsden Hospital Manual of Clinical Nursing Procedures, 9th ed, 2015; MHRA Device Bulletin: Infusion Systems DB2003 (02), v 2.1, 2010.

Ensure completion and ongoing VIPS monitoring on Nervecentre via link [showcontent.aspx\(nnotts.nhs.uk\)](http://showcontent.aspx(nnotts.nhs.uk))

Complication	Possible Signs and Symptoms	Actions/Treatment
<p><b><u>Infiltration:</u></b></p> <p>The RCN (2010) defines this as the inadvertent administration of non-vesicant medication or solution into the surrounding tissue instead of into the intended vascular pathway.</p>	<ul style="list-style-type: none"> <li>• Localised swelling</li> <li>• Skin blanching</li> <li>• Pain</li> <li>• Numbness</li> <li>• Leakage of infusion around the cannula site</li> <li>• Discolouration and circulatory impairment</li> </ul>	<ul style="list-style-type: none"> <li>• Stop the infusion and record severity of infiltration</li> <li>• Inform medics</li> <li>• Report and record actions</li> <li>• Remove the cannula and treat site as requested</li> <li>• Elevate and monitor the site</li> <li>• Re-site the cannula as appropriate (Royal Marsden)</li> </ul>
<p><b><u>Extravasation:</u></b></p> <p>The RCN (2010) defines this as the inadvertent administration of vesicant medication or solution into the surrounding tissue instead of into the intended vascular pathway.</p> <p>Vesicant medication can include boluses or infusions that are: acid e.g. Clarithromycin, alkaline e.g. Aminophylline, vasoconstrictor e.g. Noradrenalin, cytotoxic e.g. Vincristine and hypertonic e.g. Sodium chloride 1.8% (seek advice from Pharmacy).</p>	<ul style="list-style-type: none"> <li>• Localised swelling</li> <li>• Redness</li> <li>• Warmth</li> <li>• Burning, stinging pain</li> </ul>	<ul style="list-style-type: none"> <li>• STOP the injection immediately, but leave the cannula in place</li> <li>• Classify the agent and treat as directed (consult Pharmacy)</li> <li>• Collect extravasation kit</li> <li>• Apply COLD pack immediately (WARM if non-DNA binding Vesicant)</li> <li>• Aspirate as much fluid as possible through the cannula, try to draw back about 3 to 5mls of blood</li> <li>• Mark the extravasation area with a permanent marker pen</li> <li>• Contact the patient's doctor</li> <li>• Remove the cannula only after appropriate treatment</li> </ul> <p><a href="http://Extravasation(sfh-tr.nhs.uk)"><u>Extravasation (sfh-tr.nhs.uk)</u></a></p>
<p><b><u>Speed shock/fluid overload:</u></b></p> <p>When an intravenous medication is given too</p>	<ul style="list-style-type: none"> <li>• Headache</li> <li>• Flushing</li> <li>• Chest tightness and irregular pulse</li> </ul>	<ul style="list-style-type: none"> <li>• Stop the infusion</li> <li>• Seek <b>IMMEDIATE</b> advice from Medics</li> <li>• Instigate treatment as</li> </ul>



<p>rapidly, 'speed shock' may occur (Royal Marsden).</p>	<ul style="list-style-type: none"> <li>• Tachycardia and fall in blood pressure</li> <li>• Syncope and the risk of cardiac arrest</li> </ul>	<p>requested</p> <ul style="list-style-type: none"> <li>• Report and record actions</li> <li>• Always check the medication information leaflet prior to administration</li> <li>• Maintaining a fluid input/output chart will aid monitoring and prevention of complication</li> <li>• Giving intravenous therapies slowly and over the specified time will aid prevention of complication (Royal Marsden)</li> </ul>
<p><b><u>Phlebitis:</u></b></p> <p>The RCN (2010) defines this as inflammation of the intima of the vein which may be infective, mechanical or chemical.</p>	<ul style="list-style-type: none"> <li>• Redness</li> <li>• Tenderness and swelling around the site</li> <li>• The vein feels hard on palpation</li> <li>• Possible evidence of 'tracking' (red lines running up the arm)</li> </ul>	<ul style="list-style-type: none"> <li>• Stop the infusion</li> <li>• Remove the cannula and treat as required</li> <li>• Re-site the device as appropriate</li> <li>• Report and record actions (VIP score)</li> </ul>
<p><b><u>Air emboli:</u></b></p> <p>Introduction of a bolus of air into a vessel.</p>	<ul style="list-style-type: none"> <li>• Rapid drop in blood pressure</li> <li>• Tachycardia</li> <li>• Cyanosis</li> <li>• Unconsciousness</li> </ul>	<ul style="list-style-type: none"> <li>• Stop the infusion</li> <li>• Seek <b>IMMEDIATE</b> advice from medics</li> <li>• Report and record actions</li> <li>• Ensure all infusion lines are carefully primed and connections airtight</li> <li>• Medics may advise turning the patient on the left side and lower the head of the bed to prevent air entering the pulmonary artery (Royal Marsden)</li> </ul>
<p><b><u>Thrombosis:</u></b></p> <p>The RCN (2010) defines this as the formation of a thrombus (small blood clot) within a vessel.</p>	<ul style="list-style-type: none"> <li>• Redness</li> <li>• Tenderness and swelling around the site</li> <li>• The vein often feels hard on palpation</li> </ul>	<ul style="list-style-type: none"> <li>• Stop the infusion</li> <li>• Seek <b>IMMEDIATE</b> advice from medics</li> <li>• Report and record actions</li> <li>• Ultrasound may be needed to diagnose clot in the arm (Royal Marsden)</li> </ul>

<p><b><u>Cannula occlusion:</u></b></p> <p>This may occur when an infusion is allowed to run dry or incompatible solutions are administered.</p>	<ul style="list-style-type: none"> <li>• Unable to administer bolus, infusion</li> </ul>	<ul style="list-style-type: none"> <li>• Flush the cannula before, after and in between medication administration gently using a 10mls syringe of 0.9% sodium chloride. If resistance is met stop and re-site the device (peripheral device) (Royal Marsden)</li> <li>• Report and record actions</li> </ul>
<p><b><u>Allergic reaction:</u></b></p> <p>Allergic reaction due to sensitivity to an intravenous fluid, additive or medication.</p>	<ul style="list-style-type: none"> <li>• Itching</li> <li>• Rash</li> <li>• Shortness of breath</li> </ul>	<ul style="list-style-type: none"> <li>• Stop the infusion</li> <li>• Seek <b>IMMEDIATE</b> advice from medics</li> <li>• Report and record actions</li> <li>• Ensure hydrocortisone and epinephrine are available (Royal Marsden)</li> <li>• Always check for allergy before administration of medication</li> </ul>
<p><b><u>Bacteraemia:</u></b></p> <p>Blood stream infection that can cause sepsis.</p>	<ul style="list-style-type: none"> <li>• Pyrexia</li> <li>• Rigors</li> <li>• Tachycardia</li> </ul>	<ul style="list-style-type: none"> <li>• Stop the infusion</li> <li>• Seek <b>IMMEDIATE</b> advice from medics</li> <li>• Remove the cannula &amp; send the tip for C&amp;S</li> <li>• Take blood cultures from a fresh venepuncture site</li> <li>• Report and record actions</li> <li>• Always adhere to aseptic techniques when performing all intravenous procedures ANTT (RCN, 2010)</li> </ul>

## **Appendix 2 - Ports and Flushing of Venous Access Devices**

### **Ports**

The Trust promotes the use of a needle free access extension set to be used in accessing an intravenous cannula.

No infusion should be delivered using the coloured ports. Many studies over the past decade have recognised that using the port for administering IV medication is implicated in higher rates of infection and reducing the life of the intravenous device. (Hadaway 2012; EPIC 3, 2015).

Potential infection risks are due to difficulties in cleansing the port prior to accessing it and ensuring it is a sterile pathway prior to using it. In addition the ports often pop open allowing bacteria entry, and it often catches on clothes and bedding causing trauma to the site allowing bacteria to enter the blood stream and potentially cause phlebitis.

Vessel health and survival are of paramount importance to ensure the patient has a positive experience and successful treatment. Using the ports to perform saline flushes jeopardises that experience, increasing the risk of an unintentional poor outcome.

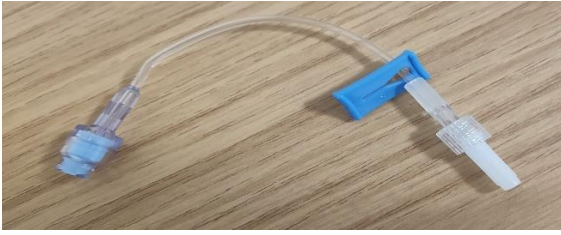
### **Flushing of Venous Access extension sets**

Flushing of a cannula via a needle free venous access extension set should only be undertaken by a registered nurse, midwife, radiographer or doctor.

Band 3 health care assistants, nursing associates or registered nurses/midwives who have not completed their IV study day **can flush** a cannula after they have inserted it using a Posiflush® device to ensure the cannula is patent as long as they have completed the Posiflush® training session (delivered by PETT).

The health care assistant or nursing associate must not flush a cannula at any other time. Staff must ensure they have attended training and a completed competency has been signed and recorded by PETT.

<b>Action</b>	<b>Rationale</b>
Prepare a 10 ml syringe of 0.9% sodium chloride (or compatible solution) for injection, as described, using aseptic non- touch technique.	To use for flushing before, during (if more than one medication) and after administration of medication. To clear the line and prevent possible interaction of solutions.
Clean needle free connector with a 2% chlorhexidine/70% alcohol swab. Apply with friction, cleaning the hub in a clockwise and anticlockwise manner for at least 30 seconds and allow to air dry for 30 seconds.	To reduce the number of pathogens introduced at the time of the insertion. To ensure complete disinfection has occurred.
Attach the syringe to the needleless port using a non-touch technique.	To prevent cross contamination from gloved hands
Using a push-pause method, inject the contents of the syringe (inject 1 ml at a time).	To prevent excessive pressure on the veins reducing any pain or trauma.
Maintain pressure on the plunger as the syringe is disconnected from the cap.	To remove syringe safely without disconnecting the needle free bung/device.
Clamp device tubing if necessary while performing positive pressure on the syringe.	Clamp tubing to prevent backflow of fluid/ blood to prevent any clotting or blockage.



Needle-Free Access Extension Set



Double Needle-Free Access Extension Set

**Please note prior to connecting these needle-free access extension sets; they must be flushed through with 0.9% saline using a non-touch technique to prevent any air entering the venous line.**

Flushing/ priming of a needle free venous access extension set should only be undertaken by a registered professional.

## **Appendix 3**

### **Administration of Intravenous Medicines and Fluids to Neonates**

Neonates are prescribed a variety of medicines and fluids depending on their clinical diagnosis, which are administered via different routes to meet specific therapeutic outcomes. Medicines or fluids may be administered as a continuous or intermittent infusion or as a bolus. The reasons for intravenous administration are as follows:

- to achieve high and predictable therapeutic levels
- when the medicine is not absorbed via the gastrointestinal tract
- the medicine would be inactivated by the gastrointestinal tract
- when the gastrointestinal tract needs to be rested
- when the enteral route cannot be used

The main types of intravenous access are:

- Peripheral venous cannula
- Umbilical venous catheter (UVC)
- Percutaneous long line

A percutaneous long line or UVC should not routinely be used for the administration of bolus or intermittent infusions as there is an increased risk of infection from frequently accessing a central line. Furthermore, these forms of access are commonly used for parenteral nutrition (PN) or continuous medicine infusions that should not be flushed or interrupted. It must be noted however that the UVC may be the only form of access in some small babies through which all medicines and fluids need to be given. This should only be done after discussion with a consultant.

### **Training and competence**

- ***Prior to the administration of intravenous therapy, practitioners must be familiar with the infant's plan of care.***
- ***The health care professional, prior to the administration of an infusion/medicine must ensure they have checked the following and comply with the SFH Trust Medicines Management Policy.***
  - ***The medicine prescription for route, date, time and dosing frequency, correct dose range and signature of prescriber,***
  - ***Reasons for prescription***
  - ***Compatibility with other medicines/fluids,***
  - ***Side effects,***
  - ***Potential associated hazards,***
  - ***Prescription is written as per SFH Medicines Management Policy.***
- **Check the infusion/vial and the container for any faults or contamination.**
- Two registered health professionals need to prepare the medication and take it to the patient's bedside and check the patient's identity as per SFH Medicines Management Policy.

## Administration

- When using a syringe pump to administer intravenous fluids, fluid should not be left attached to the syringe.
- Ensure the administration equipment is loaded into the infusion pump correctly before connecting the infusion to the baby, and staff have been assessed as competent in the use of the infusion device.
- The registered nurse or medical practitioner and second checker, double check the infusion rate and total volume to be infused against the prescription, prior to commencing an infusion.
- Always check the cannula site and clean the port of the cannula / needle free device, with an alcohol wipe (70% Isopropyl Alcohol / 2% Chlorhexidine Gluconate) and allow time for it to dry, before administering the medication and follow the SFH Trust infection control policy.
- Always pre and post flush the cannula with sodium chloride 0.9% (and in between if multiple medicines are to be given). Use an alternative if sodium chloride 0.9% is contra-indicated.
- In neonates, a doctor must always prescribe the flush.
- The tiny total hourly amounts of fluid intake required means that pre and post flushes of the cannula should only be between 1-2 ml (in a 5ml syringe) of sodium chloride 0.9% (and in between if multiple medicines). In fluid-restricted infants, record the flush volume as an intake. i.e., when flushing a cannula, use 0.75 ml– 1 ml to check patency. If multiple medicines are to be given, use 0.25 – 0.5 ml, then use 0.75 ml – 1 ml afterwards to flush the medicine through.
- Never share a drip stand between two patients.

## For intravenous infusions

- Check and document on the infusions chart the infusion rate and volume infused hourly.
- Double check the infusion rate and total volume to be infused against the prescription or prescribed fluid demands at each rate change and both practitioners sign the infusions chart indicating the time of rate change.
- Ensure all clamps are closed prior to the removal of an administration set from the infusion device, or if switching the pump off.

## Ongoing Nursing Management

- At each shift change the nurse handing over and the nurse taking over the care of the infant must double check the infusion rate and total volume to be infused with each other and sign the infusions chart.
- At each shift change the nurse taking over the care of the infant must check that all discontinued infusions have been disconnected from the baby with the only exception being a sliding scale insulin infusion.
- Complete a VIP Score and document when commencing an infusion or giving a bolus.
- When administering solutions that are hyperosmolar/highly irritant to peripheral veins there may be an increased risk of extravasation injury. In this case the peripheral cannula should be highly visible and assessment of the cannula site should be more frequent, no less than every 15 minutes.
- All infusions must be changed as per Neonatal Unit Medicines Management Folder.



## Monitoring

- Whilst an infant is receiving an infusion they must be continuously monitored and as a minimum heart rate, respiratory rate and O<sub>2</sub> saturations documented hourly or more frequently if necessary.
- If the baby deteriorates the possibility of fluid overload must be considered along with other potential causes.
- Observe whether the intravenous line remains patent, shows signs of phlebitis, or extravasation and document infusion pressure reading hourly on the infusions chart.

## Special Considerations

- PN should not be administered peripherally.
- An aseptic non-touch technique must be used for all peripheral lines and an aseptic technique for all central line access.
- Ensure pump pressure limits are set appropriately; the default setting is 40mmHg. An increase in this pressure may be required depending on the viscosity of the infusion, the infusion rate, the lumen size of the giving set and venous access device, for example a peripheral long line will require much higher pressures due to the size of the lumen. This pressure limit must be recorded on the infusions sheet.
- Pumps should be at the same height as the venous device to ensure optimum administration.

## Related documents

- Neonatal Nursing Procedure C4 – Administration of intravenous drugs via central umbilical venous catheter.
- Neonatal Nursing Procedure C5 – Management of a central umbilical venous catheter.
- British National Formulary for Children (BNFc) (2017/2018) BMJ Publishing Group: London
- NPSA (2010) Prevention for over infusion of intravenous fluid and medicines in neonates, <http://www.nrls.npsa.nhs.uk/resources/?entryid45=75519>
- Central Newborn and Trent Perinatal Networks (2018) Parenteral Nutrition (PN) on the Neonatal Unit. <http://www.centralandtrentneonatalnetwork.nhs.uk/images/tpn-networkguidelines/Parenteral%20Nutrition%20PN%20on%20the%20Neonatal%20Unit%20V1.pdf>

## **Appendix 4 – IV Fluid Therapy Protocol**

Intravenous (IV) fluid therapy must be given as part of a protocol – An overarching algorithm with four individual algorithms:

- Patients' fluid and electrolyte needs must be assessed using algorithm 1 – Assessment (green).
- If patients need IV fluid resuscitation use algorithm 2 – Fluid Resuscitation (red).
- If patients need IV fluid for routine maintenance use algorithm 3 – Routine Maintenance (blue).
- If patients need IV fluids to address existing deficits or excesses, on-going abnormal losses, or abnormal fluid distribution, follow algorithm 4 – Replacement and Redistribution (orange).

### Algorithm 1: Assessment

Using an ABCDE (Airway, Breathing, Circulation, Disability, Exposure) approach, assess whether the patient is hypovolaemic and needs fluid resuscitation. Assess volume status taking into account clinical examination, trends and context. Indicators that a patient may need fluid resuscitation include: systolic BP <100mmHg; heart rate >90bpm; capillary refill >2s or peripheries cold to touch; respiratory rate >20 breaths per min; NEWS ≥5; 45° passive leg raising suggests fluid responsiveness.

### Algorithm 2: Fluid Resuscitation

**Initiate treatment**

- Identify cause of deficit and respond.
- Give a fluid bolus of 500 ml of crystalloid (containing sodium in the range of 130–154 mmol/l) over 15 minutes.

**Reassess the patient using the ABCDE approach**  
Does the patient still need fluid resuscitation? Seek expert help if unsure

Yes No

Does the patient have signs of shock?

Yes No

>2000 ml given?

Yes No

Seek expert help

Give a further fluid bolus of 250–500 ml of crystalloid

**Assess the patient's likely fluid and electrolyte needs**

- History: previous limited intake, thirst, abnormal losses, comorbidities.
- Clinical examination: pulse, BP, capillary refill, JVP, oedema (peripheral/pulmonary), postural hypotension.
- Clinical monitoring: NEWS, fluid balance charts, weight.
- Laboratory assessments: FBC, urea, creatinine and electrolytes.

Can the patient meet their fluid and/or electrolyte needs orally or enterally?

Yes

Ensure nutrition and fluid needs are met  
Also see [Nutrition support in adults](#) (NICE clinical guideline 32).

No

Does the patient have complex fluid or electrolyte replacement or abnormal distribution issues?  
Look for existing deficits or excesses, ongoing abnormal losses, abnormal distribution or other complex issues.

Yes

### Algorithm 4: Replacement and Redistribution

**Existing fluid or electrolyte deficits or excesses**  
Check for:

- dehydration
- fluid overload
- hyperkalaemia/hypokalaemia

Estimate deficits or excesses.

**Ongoing abnormal fluid or electrolyte losses**  
Check ongoing losses and estimate amounts. Check for:

- vomiting and NG tube loss
- biliary drainage loss
- high/low volume ileal stoma loss
- diarrhoea/excess colostomy loss
- ongoing blood loss, e.g. melaena
- sweating/fever/dehydration
- pancreatic/jejunal fistula/stoma loss
- urinary loss, e.g. post AKI polyuria.

**Redistribution and other complex issues**  
Check for:

- gross oedema
  - severe sepsis
  - hyponatraemia/hypomatraemia
  - renal, liver and/or cardiac impairment.
  - post-operative fluid retention and redistribution
  - malnourished and refeeding issues
- Seek expert help if necessary and estimate requirements.

Prescribe by adding to or subtracting from routine maintenance, adjusting for all other sources of fluid and electrolytes (oral, enteral and drug prescriptions)

Monitor and reassess fluid and biochemical status by clinical and laboratory monitoring

### Algorithm 3: Routine Maintenance

**Give maintenance IV fluids**  
Normal daily fluid and electrolyte requirements:

- 25–30 ml/kg/d water
- 1 mmol/kg/day sodium, potassium, chloride
- 50–100 g/day glucose (e.g. glucose 5% contains 5 g/100ml).

**Reassess and monitor the patient**  
Stop IV fluids when no longer needed.  
Nasogastric fluids or enteral feeding are preferable when maintenance needs are more than 3 days.

## **APPENDIX 5 – EQUALITY IMPACT ASSESSMENT FORM (EQIA)**

<b>Name of service/policy/procedure being reviewed:</b> Intravenous (IV) Medication and Fluid Therapy Administration Through a Peripheral Venous Cannula Policy (previously known as Policy for the care of the patient undergoing IV Therapy (bolus, continuous, intermittent))			
<b>New or existing service/policy/procedure:</b> Existing			
<b>Date of Assessment:</b> 23/11/2023			
<b>For the service/policy/procedure and its implementation answer the questions a – c below against each characteristic (if relevant consider breaking the policy or implementation down into areas)</b>			
<b>Protected Characteristic</b>	a) Using data and supporting information, what issues, needs or barriers could the protected characteristic groups' experience? For example, are there any known health inequality or access issues to consider?	b) What is already in place in the policy or its implementation to address any inequalities or barriers to access including under representation at clinics, screening?	c) Please state any barriers that still need to be addressed and any proposed actions to eliminate inequality
<b>The area of policy or its implementation being assessed:</b>			
<b>Race and Ethnicity</b>	Nil	N/A	Nil
<b>Gender</b>	Nil	N/A	Nil
<b>Age</b>	Nil	N/A	Nil
<b>Religion</b>	Nil	N/A	Nil
<b>Disability</b>	Nil	N/A	Nil
<b>Sexuality</b>	Nil	N/A	Nil
<b>Pregnancy and Maternity</b>	Risk assessments for colleagues who are pregnant with certain medications which may be teratogenic	Individual risk assessments for pregnant staff as soon as they disclose pregnancy or within 14 days – <b>Expectant Mothers risk assessment form found in the Policy - Maternity Leave Guidance document for managers</b>	Nil

<b>Gender Reassignment</b>	Nil	N/A	Nil
<b>Marriage and Civil Partnership</b>	Nil	N/A	Nil
<b>Socio-Economic Factors (i.e. living in a poorer neighbourhood / social deprivation)</b>	Nil	N/A	Nil
<b>What consultation with protected characteristic groups including patient groups have you carried out?</b> <ul style="list-style-type: none"> <li>None – Not Applicable -policy/guidance exists</li> </ul>			
<b>What data or information did you use in support of this EqIA?</b> <ul style="list-style-type: none"> <li>The Policy itself and Maternity Leave Guidance</li> </ul>			
<b>As far as you are aware are there any Human Rights issues be taken into account such as arising from surveys, questionnaires, comments, concerns, complaints or compliments?</b> <ul style="list-style-type: none"> <li>No</li> </ul>			
<b>Level of impact</b>  From the information provided above and following EQIA guidance document Guidance on how to complete an EIA ( <a href="#">click here</a> ), please indicate the perceived level of impact:  <b>Low Level of Impact</b>  For high or medium levels of impact, please forward a copy of this form to the HR Secretaries for inclusion at the next Diversity and Inclusivity meeting.			
<b>Name of Responsible Person undertaking this assessment: A Davidson – Practice Development Matron</b>			
<b>Signature: A.Davidson</b>			
<b>Date: 23/11/2023</b>			