

**ADMINISTRATION BY INJECTION POLICY – INTRAVENOUS,
INTRAMUSCULAR and SUBCUTANEOUS**

**This policy should be read in conjunction with the Syringe Driver Policy and
the Medicines Policy**

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1. INTRODUCTION

- 1.1 The use of injectable medication and fluid has many healthcare benefits for patients. The complexities associated with the prescription, preparation and administration of injectable medicines means that there are greater potential risks for patients than for other routes of administration. Safe systems of work are required to minimise these risks, to ensure patients receive safe, effective care.

2. PURPOSE AND RATIONALE

- 2.1 The purpose of this policy is to ensure the safe administration of injectable drugs and fluids.

3. POLICY STATEMENT

- 3.1 Somerset Partnership NHS Foundation Trust is committed to ensuring safe clinical practice in the administration of injections via the intravenous (IV), intramuscular (IM) and subcutaneous (SC) routes. This policy sets out the governance requirement for safe administration of injectable medicines.

4. DEFINITIONS

Intravenous (IV) – into a vein

Intramuscular (IM) – into a muscle

Subcutaneous (SC) – The tissue layer just below the skin

Personal Protective Equipment (PPE) – should be worn when all other measures are inadequate to control exposure to body fluids. It protects the wearer and includes such items as gloves, aprons, respirators and eye goggles.

5. DUTIES AND RESPONSIBILITIES

The Trust Board, via the Chief Executive is responsible for ensuring the Trust has a policy to promote safe and best practice in relation to injections.

The Director of Nursing and Patient Safety is responsible for overseeing the local control of and the implementation of the injection Policy

The Learning and Development Team is responsible for provision of Trust training related to Medicines Management and IV therapy. The team is also responsible for maintaining the electronic staff record of training.

The Senior Nurse for Clinical Practice is the designated Intravenous Fluid Lead for Somerset Partnership, with responsibilities for overseeing the processes relating to IV fluid prescribing and administration, including training and audit.

The Clinical Practice Team is responsible for ensuring there is a defined process for competency assessment relating to injections.

Ward Managers and Team Leaders are responsible for ensuring that staff who undertake IV, IM and SC injections are appropriately trained and assessed as competent, and compliant with the policy.

All staff who administer IV, IM or SC injections as part of their role, are required to maintain their competence in this skill and to adhere to this policy. Staff must also complete the mandatory anaphylaxis training annually.

All staff who delegate IM or SC injections to unregistered practitioners are responsible for appropriate assessment of the patient prior to delegation.

Clinical Pharmacists and Technicians are responsible for providing a clinical advisory and medicine management service.

6. POLICY

Identification of Patients

- 6.1 The correct process for this must be followed prior to the administration of any medication. Please see the Identification of Patients Policy for more information.

Infection Control

- 6.2 Guidance set out in the Indwelling Devices Policy and Central Venous Access Device Policy and all relevant SOPs must be followed when administering injections via peripheral cannula or CVADs. All staff administering IV medication via an intravenous cannula must visually inspect the insertion site and document their findings using Visual Inspection Phlebitis score (see the Indwelling Device Policy).

Use of PPE

- 6.3 Gloves should be used if stipulated in individual Standard Operating Procedures (SOPs), and where there is a risk to the member of staff of exposure to blood or body fluids. Gloves must be used for any intravenous administration of medication as part of ANTT requirements (see the Aseptic Non Touch Technique policy for more information). For IM and SC injections, the use of gloves is not necessary. Plastic aprons should be used for all injection procedures to protect uniform or clothing. Hands must be washed before and after any procedure.

Anaphylaxis

- 6.4 IM adrenaline must be readily available when administering medication via the intravenous route. Please see the Medical Emergencies Management Policy.

Reconstitution of injections/infusions

- 6.5 Where possible injections/infusions should be in a ready-to-use form. If reconstitution is required, aseptic technique must be used. This includes appropriate cleaning of additive ports of infusion bags, and the tops of medicine vials and ampoules. Cleaning must be undertaken using 2% chlorhexidine wipes.

- 6.6 Green needles are recommended for drawing up medication preparation from vials and glass. If a blunt fill needle is used, it must have a filter to stop any potential glass particles from being drawn up into the syringe.

Labelling of syringes prior to administration

- 6.7 All injections must be labelled immediately after preparation, except for syringes intended for immediate push (bolus) administration, by the person who prepared them. Under no circumstances should an operator be in possession of more than one unlabelled syringe at any one time, nor must an unlabelled syringe be fitted to a syringe driver or similar device. Where one IV drug and one IV Sodium Chloride 0.9% (normal saline) flush are prepared, a pre-printed label can be used to identify the IV normal saline flush. Pre-printed labels will only be available for Sodium Chloride 0.9%. When approaching a patient with two IM injections for administration, then both must be labelled.

Intravenous Administration

- 6.8 The term IV refers to drugs administered using both peripheral cannula and central venous access devices (CVADs).
- 6.9 All practitioners involved in IV drug administration must adhere to the guidelines of their professional bodies and must follow guidance when handling 'red' drugs (for more information, see the Medicines Policy).

Intravenous fluid

- 6.10 Please refer to the SOP for intravenous Fluid Therapy for more information.
- 6.11 IV fluid therapy must only be provided for patients whose needs cannot be met by oral or enteral routes.
- 6.12 The patient must be assessed by a healthcare professional who has core competencies to diagnose and manage acute illness, before IV fluid is prescribed or administered according to a Patient Group Direction.
- 6.13 All patients receiving IV fluids must have:
- Accurate fluid balance monitoring recorded on a fluid chart.
 - An IV fluid management plan, which should include the fluid and electrolyte prescription for the next 24 hours, with consideration of arrangements for Out of Hours/weekends.
 - A daily review of the IV fluid management plan reviewed by a clinical expert
- 6.14 Please refer to Appendix A for more information on the Administration of IV Drugs, and the SOP for Intravenous Fluid Therapy.
- 6.15 Please refer to the Royal Marsden Manual (2016) for the procedure for IV bolus (Section 12.26).

Intramuscular Injections

- 6.16 The purpose of an IM injection is to deliver medication into the muscle layer beneath the subcutaneous tissue:-

- For rapid systematic uptake of a drug
- When prolonged action is required
- To enable relatively large doses to be given

- 6.17 The Royal Marsden Manual (2016) recommends two sites for IM injection: the vastus lateralis and the ventrogluteal. The ventrogluteal site has less risk of nerve damage. However other sites may be used depending on the patient's physical condition and age. The site for injection may also be determined by the medication licence e.g. depot injections. The decision for the site used must be documented in the patient's record.
- 6.18 Please refer to Appendix B for more information on the Administration of IM Injections. Please refer to the Royal Marsden Manual (2016) (on the Trust Intranet Clinical Practice page) for details of the IM injection process (Section 12.21).
- 6.19 For the administration of depot injections, please refer to the 'Guidance on the Administration to Adults of Oil-based Depot and other Long-Acting Intramuscular Antipsychotic Injections, 5th Edition' available on the intranet in the Medicines section

Subcutaneous Injections

- 6.20 The SC route is suitable for administering small doses of non- irritating water- soluble medication such as insulin or heparin.
- 6.21 Sites recommended are the abdomen in the umbilical region, the lateral or posterior aspect of the lower part of the upper arm, the thighs (under the greater trochanter rather than midthigh) and the buttocks.
- 6.22 If a medicine is being given frequently by the SC route, the site of injection must be rotated to decrease the likelihood of irritation and ensure improved absorption. If the abdominal area is being used, each subsequent injection should be 2.5 cm from the previous one.
- 6.23 Please refer to the Royal Marsden Manual (2016) (on the Trust Intranet Nursing page) for details of the injection process (Section 12.18).

Subcutaneous Catheters

- 6.24 SC catheters are commonly used to deliver continuous infusions of medicines for patients at the end of their life. The catheters may also be used to administer frequent SC boluses of medication for symptom control.
- 6.25 A bolus of SC medication must not be given through a catheter already connected to a syringe driver – a separate SC catheter must be used. SC catheters must be needle-safe.
- 6.26 The catheter insertion site must be checked daily and the catheter removed if there is any sign of inflammation.

7. MONITORING COMPLIANCE AND EFFECTIVENESS

- 7.1 All incidents, audits, complaints and feedback relating to medicines administered via IV, IM and SC routes will be monitored by the Medicines Incident Group. All incidents, audits, complaints and feedback relating to administration of IV fluid as an intervention

for deteriorating patients will be monitored by the Medical Emergencies Group. Key risks, good practice, any shortfalls, action points and lessons learnt will be disseminated through the appropriate Best Practice Groups.

8. TRAINING AND ASSESSMENT OF COMPETENCE

- 8.1 All staff undertaking IV, IM and SC injections as part of their role must be appropriately trained and assessed as competent in the skill, before they can practice the skill. The exception to this is if it is an intrinsic part of their professional training.
- 8.2 IV drugs may only be administered by registered practitioners who have completed appropriate training and have been assessed as competent in this skill (See the IV administration competency assessment on the competency page of Learning and Development intranet site). If IV drugs are to be administered via a CVAD, then further training and assessment of competence specific to this skill is required (please refer to the Central Venous Access Device Policy).
- 8.3 Training for IM and SC injections is provided on a bespoke basis. Please contact the Learning and Development Department for more information.
- 8.4 All staff must complete the Medicines Management training programme appropriate to their role, prior to their training and assessment of competence in IV, IM and SC injections. All staff administering medicines must also undertake annual mandatory training in Anaphylaxis.
- 8.5 Training will include theoretical knowledge and practical skills. This will be followed by a period of supervised practice and formal assessment of competence using the agreed Trust competency framework and documentation as supplied by the training department.
- 8.6 All training and competency records must be reviewed at appraisal. Records must be maintained by the individual and the Department Manager. This must include a record of how often this skill has been used in practice.
- 8.7 All staff must access update training if it is required, to enable them to continue to practice competently. This should be considered after a period of extended absence through sickness, maternity leave or where lack of administration opportunities has compromised potential competence.
- 8.8 Staff new to the Trust with existing skills in IV, IM and/or SC injections may continue to practice these skills (if it is part of their role) if they can provide evidence of their training and assessment of competence. If they are unable to provide this evidence, they must undergo a period of supervised practice and be assessed as competent before they can practice these skills.
- 8.9 Bank and agency staff who can provide written evidence of training and competency may administer IV drugs. They must read this policy prior to undertaking any IV administration.

9. REFERENCES, ACKNOWLEDGEMENTS AND ASSOCIATED DOCUMENTS

9.1 References

Good Practice Statement for the Preparation of Injections in Near Patient Areas, including Clinical and Home Environments. NHS Scotland 2002
Injectable Drug Administration Guide UCL Hospitals. Edited by R Shulman et Al, Blackwell Science 1998

Mallet, J. and Dougherty, L. Royal Marsden Manual of Clinical Nursing Procedures (2016)

Multiple Use of Injections 3rd ed NHS Pharmaceutical Quality Control Committee Nov 2004

NICE (2016) Intravenous Fluid Therapy in Adults in Hospital. Available from: <https://www.nice.org.uk/guidance/cg174/resources/intravenous-fluid-therapy-in-over-16s-in-hospital-35109752233669>

NMC Standards for Medicines Management 2007, updated 2010

NPSA (2007) Patient Safety Alert No. 20 – Promoting Safer Use of Injectable Medicines

NPSA Patient Safety Observatory Safety in doses: Medication Safety Incidents in the NHS 2007 www.npsa.nhs.uk

RCN Standards for Infusion Therapy 2016

9.2 Cross reference to other procedural documents

ANTT (Aseptic Non Touch Technique) Policy
Assessing Competencies and Clinical Practice
Blood & Blood Components Transfusion Policy
Consent and Capacity to Consent to Treatment Policy
CVAD (Central Venous Access Device) Policy
Healthcare (Clinical) Waste Policy
Indwelling Devices Policy
Infection Control Policy
Medical Devices Policy
Medicines Policy
Needlestick and Contamination Injury Policy
Physiological Observations of Adult Patients in a Community Setting
Physiological Observations of Inpatients and MIU Policy
Rapid Tranquillisation Policy
Record Keeping and Records Management Policy
Syringe Driver Policy
Untoward Events Reporting Policy

All current policies and procedures are accessible in the policy section of the public website (on the home page, click on 'Policies and Procedures'). Trust Guidance is accessible to staff on the Trust Intranet.

10. APPENDICES

- 10.1 For the avoidance of any doubt the appendices in this policy are to constitute part of the body of this policy and shall be treated as such. This should include any relevant Clinical Audit Standards.

APPENDIX A	The administration of IV drugs
APPENDIX B	The administration of Intramuscular Injections

The Administration of IV Drugs

IV Monographs

- 1.1 All IV medicines must be administered according to the appropriate monograph:
- Trust services must use the Taunton and Somerset NHS Foundation Trust IV drug monograph (accessible via the Medicines page of the Trust intranet) as the primary source of information.
 - If the required IV monograph is not available via TST NFT then Trust services, for instance for mental health medicines, must use the Medusa Injectable Medicines Guide (accessible via the Medicines page of the Trust intranet: Home Page > A - Z Directory > Medicines) as the secondary source of information. The Medusa Injectable Medicines Guide includes an extensive range of monographs on mental health injectable drugs in addition to 'physical health' medicines.
 - However, alternative Trust monographs may be used in specific circumstances, depending on patient safety, treatment continuation or complex needs.
- 1.2 It is the responsibility of the nurse administering the IV medication to ensure that an up to date IV monograph is available and stored with the prescription chart for each patient and referred to during the preparation of each dose.
- 1.3 On completion of the IV therapy the IV monograph should be destroyed and not kept in the notes. If a patient has an adverse reaction the monograph used must be noted when a yellow card is completed.

Routes for the Administration of IV Drugs

- 1.4 IV drugs may be administered in the following ways;
- Intermittent bolus dose via a cannula /y-connection
 - Intermittent infusion
 - Continuous infusion of proprietary pre-prepared drugs
 - Addition to infusion fluids in bags, bottles or burette chambers
 - CVADs (please refer to the Central Venous Access Device Policy for more information)
 - Hickman tunnelled lines and peripherally inserted central catheters.
 - Implanted devices

Consideration should be given to using needle-free connectable ports wherever possible.

- 1.5 The practitioner may only administer drugs via the route and device for which they have received appropriate training and assessment of competence, and for which the drugs have been prescribed and are licensed.

Administration Sets

- 1.6 Administration sets used for a continuous infusion must be changed every 96 hours unless the following applies:
- If a drug is being administered via an intermittent infusion
 - For blood administration the line must be changed when the transfusion episode is complete, or every 12 hours (whichever is sooner)

- 1.7 Administration sets for intermittent infusions must be changed every 24 hours if remaining connected to a device, or discarded after each use if disconnected.
- 1.8 Add-on devices such as extension sets and needleless devices should be changed at the same time as changing the administration set.
- 1.9 Date and time labels must be applied to administration sets to ensure they are changed at the correct intervals.
- 1.10 Aseptic technique must be used when changing administration sets.
- 1.11 Only recommended or designated administration sets must be used in infusion pumps.

Adding Drugs to a Diluent

- 1.12 Where drugs have been added to diluents in bags or syringes, an intravenous additive label (available from Pharmacy) must be completed and attached to the bag or syringe.
- 1.13 After the addition of any drug to a bag or syringe, thorough mixing must be ensured. This prevents layering of drug and ensures a constant dose is given.
- 1.14 The following information must be included on the additive label
- Patient's name and Hospital Number
 - Drug name/dose/batch number/expiry date
 - Date and time drug added
 - Details of diluents
 - Signature of administering practitioner and checker (where appropriate)
- 1.15 If an IV drug needs to be added to an intravenous solution, this must be done immediately following reconstitution. A delay may result in degradation, loss of potency and microbial growth.

Potency and Incompatibility of IV Drugs

- 1.16 Drugs administered by the IV route have a more immediate and potentially greater effect than those administered by other routes. There is also a greater risk of incompatibility between drugs and intravenous solutions.
- 1.17 Potassium Chloride for injection must not be kept in stock due to the serious consequences of accidental administration.
- 1.18 IV fluids with added potassium are available from pharmacy. Potassium Chloride must **never** be administered by bolus dose and practitioners must not add Potassium Chloride to infusion fluids.
- 1.19 When adding and mixing drugs the monographs must be checked to ensure compatibility. Drugs must **not** be added to the following:
- blood, plasma and blood products
 - parental nutrition regimes
 - Mannitol
 - Sodium bicarbonate

Saline Flushes

- 1.20 A 5ml Sodium Chloride 0.9% flush must be administered before and after giving any IV drug. This may be administered against the patient group direction for 0.9% saline flush where the practitioner has been assessed as competent to use this and signed for on the prescription chart.
- 1.21 A 10ml syringe must be used for the flush, to reduce the pressure, using a push pause technique to minimise occlusion. If available, a wide-barrelled 5ml pre-prepared syringe can also be used, as this has the same diameter as a standard 10ml syringe and will avoid excessive pressure.
- 1.22 The registered practitioner who is to administer the drugs must prepare the flush/es.
- 1.23 Drugs must not be pre-prepared for another practitioner to administer unless that person is present or there are specific protocols agreed by the Pharmacy and department staff.

Infusion Pumps

- 1.24 All IV infusions including blood must be administered via an infusion pump with an air-in-line detector. In exceptional circumstances, such as if a pump is not available the infusion may be given without a pump. However a risk assessment must take place to determine the safety of giving the infusion without a pump. The staff member must be able to regularly monitor the infusion rate.
- 1.25 Where drugs need to be given using an infusion pump, the practitioner must have received appropriate training and assessment of competence in the use of that equipment. (Please refer to the Syringe Driver Policy and the Medical Devices Policy or more information)
- 1.26 When IV drugs are being administered via an infusion pump, the system must be checked 15 minutes after commencing administration and then at each drug round unless otherwise directed on the monographs. The infusion must also be checked at each shift handover. The following information must be recorded in the patient record: date, time infusion started, expected completion time, route, device serial number, rate setting, volume to be infused, total volume infused, volume remaining, checks of infusion site and rationale for any alterations.

Intramuscular Injections including Depots

Injection Site

- 1.1 The choice of injection site is crucial as the uptake of medication can be enhanced or diminished depending on the site chosen. There is also a risk of injury and discomfort if the injection is inappropriately sited.
- 1.2 There are 5 suitable sites for intramuscular injection and nurses must be aware of these in order to make an informed decision regarding administration
- Dorsogluteal (buttock)
 - Ventrogluteal (hip)
 - Deltoid (upper arm) – provides the most rapid absorption rate
 - Vastus lateralis (thigh) – quicker absorption rate than buttock
 - Rectus femoris (thigh)
- 1.3 The ventrogluteal site is recommended for the following reasons:-
- greatest thickness of gluteal muscle
 - free of penetrating nerves - reduced risk of sciatic nerve injury
 - free of major blood vessels
 - consistently thinner layer of fat over the muscle
- 1.4 However, the decision to use the most appropriate injection may influence this decision. If the ventrogluteal site is not available to use, then the practitioner must discuss the risks and benefits of the alternative site with the patient so they can make an informed choice. The site used and any decision-making related to this must be documented in the patient's record.

Injection Technique

- 1.5 The use of the Z-track method is recommended. This technique creates a disjointed injection pathway which:-
- prevents seepage of medication
 - can prevent skin staining
 - diminishes subcutaneous irritation
 - reduces pain and injection site lesions
- 1.6 A small test dose of injection must be given before the full treatment schedule is initiated for oil based depots to minimise the adverse effects (refer to the Summary of Product Characteristics and BNF).

Intramuscular needle gauge size and length

- 1.7 Where a syringe and needle are provided with the drug for administration, they must ALWAYS be used. It is important to read the manufacturer's instructions regarding syringe and needle selection as packs and presentations may vary.
- 1.8 If a needle is not supplied, the needle used must be long enough to penetrate the muscle, still allowing a quarter of the needle length to remain external to the skin. The most common size is 23 Gauge (blue), or 21 Gauge (green)(2.5-5.0 cm long) for patients with more subcutaneous tissue.

- 1.9 The patient's muscle mass at the injection site must be assessed to ensure that the needle does not end up in the subcutaneous tissue.

Subcutaneous Infusions

- 1.10 For guidance on subcutaneous infusion (hypodermoclysis), please refer to the Subcutaneous Fluids Administration Policy.

Injection Site

- 1.11 Sites recommended are the abdomen in the umbilical region, the lateral or posterior aspect of the lower part of the upper arm, the thighs (under the greater trochanter rather than midthigh) and the buttocks.
- 1.12 If a medicine is being given frequently by the SC route, the site of injection must be rotated to decrease the likelihood of irritation and ensure improved absorption. If the abdominal area is being used, each subsequent injection should be 2.5 cm from the previous one.

Injection Technique

- 1.13 The skin should be gently pinched into a fold to elevate the subcutaneous tissue which lifts the adipose tissue away from the underlying muscle.
- 1.14 The maximum volume tolerable using this route for injection is 2ml and drugs should be highly soluble to prevent irritation

Subcutaneous Needle Gauge and size

- 1.15 Injections are usually given using a 25 G needle. To ensure medication reaches the subcutaneous tissue, the rule is: if you can grasp 2 inches of tissue, insert the needle at a 90° angle; for 1 inch, insert needle at a 45° angle. With the introduction of shorter needles (orange) (4–8 mm), it is recommended that insulin injections be given at an angle of 90°.