

1. Administration of Medicines

1.1. Medicines Administration

1.1.1. *General*

Medicines administration must only be undertaken:

- on the authorisation of a prescriber (PICS prescription or other approved prescription (see list in Appendix C)
- in accordance with a PGD approved for use within the Trust or

against an exemption from prescription requirements under the Medicines Act 1968 (see 9.1.4, 9.4.5 and 9.4)

All Healthcare staff who are involved in the administration of medicines are listed in Appendix B.

Medicines must only be administered to patients by registered practitioners and any healthcare staff who have been assessed as competent in the administration of medicines. Registered practitioners and other healthcare staff administering medicines must achieve, demonstrate, and provide documented evidence of competence relevant to their duties in drug administration. All newly registered nurses and all new starter nurses must successfully complete the Trust approved drug assessment and associated workbook to prove competence in their area of practice. External agency staff may administer medicines but must do so in accordance with the Trust standards for medicine administration and their professional code of conduct. Non nursing staff e.g. clinical technologists, must contact the Clinical Education Team to arrange profession specific drug administration training.

In accordance with Codes of professional practice, the registered practitioner has a responsibility to recognise, and to work within, the limits of their competence. In addition, the registered practitioner has a responsibility to practise within the boundaries of the current evidence based practice and in line with up to date Trust and national policies and procedural documents. Evidence of continuing professional development and maintenance of skill level will be required and confirmed at the registered practitioner's annual appraisal by the registered practitioner's line manager.

Registered/qualified practitioners may be issued with PICS passwords following completion of PICS training, and be provided with "medicines administration" privileges prior to being assessed as competent in the administration of medicines.

1.1.2. *Administration of Medicines by Non-Medical and Non-Nursing Staff*

Healthcare staff other than nurse, doctors and dentists may be involved in the administration of medicines. These individuals must have undertaken recognised Trust training and achieved the relevant competence in drug administration. Examples include the administration of radio-pharmaceuticals or diagnostic contrast media by radiographers, and medicines administered by perfusionists. Medicines administration must be against a prescription or in accordance with approved speciality specific directions (PGDs, PSDs) developed by the appropriate service manager, agreed with the Chief Pharmacist Pharmacy and approved by the Medicines Management Advisory Group.

1.1.3. *Administration of Medicines by Students (see Glossary for definition of student)*

- 1.1 **Students are not permitted to administer medicines without supervision. They may, under the direct supervision of registered practitioners or qualified healthcare staff, administer medicines (all routes except intravenous route and those listed as restricted routes, see 9.7.1) for the purpose of instruction and learning. Supervising registered practitioners or qualified healthcare staff must sign the administration record following administration of the medicine.**
- 1.2 **The supervisor will remain responsible and accountable for the administration of the medicine.**
- 1.3 Students must not administer intravenous drugs as this must be carried out by a registered practitioner competent in IV drug administration in accordance with the relevant expanded practice protocol. Healthcare students may witness the administration and monitoring of intravenous infusions under direct supervision.
- 1.4 **Students must not ‘flush’ intravenous cannulae or disconnect and reconnect IV fluids when dressing patients.**
- 1.5 **Students can participate in the administration of CDs under supervision, however, only as an additional signatory to those required from two registered practitioners.**

1.1.4. *Administration of Medicines under Medicines Act Exemptions*

Exemptions to medicines legislation permit certain other

registered healthcare professionals e.g. chiropodists/podiatrists, ophthalmic opticians, additional supply optometrists to supply or administer defined prescription only medicines without prescription. Where this occurs products supplied to patients must always be sourced and supplied by the Trust Pharmacy Department, and appropriate records of supply must be maintained.

1.1.5. *Exemptions to Medicines Legislation in the Event of a Pandemic Disease*

Other exemptions to **the requirements for a prescription before a medicine can be supplied come into existence in the event of, or in the anticipation of, a disease being imminently pandemic; and also a serious, or potentially serious, risk to human health.** The Department of Health will announce when this situation has arisen following which further advice will be issued within the Trust.

Administration of certain prescription only medicines for the purpose of saving a life in an emergency are detailed in section 9.4.

1.2. Basic Principles of Medicines Administration

1.2.1. *General*

Registered practitioners are expected to practice in accordance with the standards set in this medicines code and by their relevant UK professional bodies, and acknowledge any limitations in their knowledge, skills or competence to administer or check medicines. If there are such limitations they must refrain from this activity until trained and competent.

Wherever possible all practitioners should not be interrupted during the medicines administration process.

1.6 **The basic principles must be that whether administering a medicine, assisting in its administration, or overseeing self-administration; the registered practitioner will:**

- have a basic understanding of the therapeutic use and pharmacological aspects of the medicine
- have awareness of patient's condition, comorbidities and treatment plan
- be prepared to question any discrepancy
- be accountable and able to justify any action taken

A competent registered practitioner should be able to administer drugs without involving a second person. Exceptions to this, where a second check is mandatory for **all** registered practitioners, are:

- All Controlled Drugs.
- All cytotoxic medicines
- All parenteral drugs with the exception of low dose subcutaneous heparin administered for prophylactic treatment.

Where a dose calculation is required in the preparation of a medicine it is good practice for the calculation to be checked independently by a second competent practitioner.

When a second person is asked to check a calculation they must independently undertake the full calculation by their own method. They must not confirm the first person's answer until after they have performed the calculation.

Preparation of some parenteral medicines will require both the preparation and administration stages to be documented within PICS by **both** individuals involved in the process.

1.2.2. *Administration of medicines by teams in the Community*

Individuals working alone in the community as part of a team (Outreach, Umbrella Services, Occupational Health, Recovery at Home) can administer medicines without a second check providing they have:

- undertaken area specific competence based assessment to allow them to administer independently
- have been signed off as having achieved this competence.
- The medication has been risk assessed to confirm that administration without a second check is acceptable. This includes oral, intravenous, subcutaneous, and intramuscular medication

The medication must undergo the following checks before it leaves the Trust:

- On discharge from hospital the medication must be checked with the patient by a registered nurse (either from the ward or the nurse who will be administering the medication in the Community).

- The patient will store the medication at home until the registered Community nurse visits to administer it. Prior to administration in the patient's home, the registered nurse must check the medication with the patient again.

Appropriate monitoring and audit of the process must be in place.

1.2.3. *Steps to be followed when Administering Medicines to Patients*

All individuals administering medicines to patients are accountable for their actions. If the prescription is illegible, unclear or unusual the prescriber or pharmacist must always be contacted for clarification. Medicines must not be administered to a patient if the prescription is illegible or ambiguous.

The process adopted for supplying or administering a medicine to any patient by any route must ensure that:

- .. the correct patient is given
- .. the correct dose of
- .. the correct drug by
- .. the correct route with the correct formulation at
- .. the correct date and time, with consideration to previous doses given.

1.2.4. *Patient Identification*

A positive identification of the patient must be made **before** administration. Additional means of identification must include a positive identification either by two other members of staff, relatives/carers and where appropriate, interpreters and photographs (refer to Trust Policy for Patient Identification – Controlled Document Number 382).

Inpatients:

The bar code on a patient's wrist band must be scanned to identify the patient. The details on the wristband – patient's name and hospital number – must be confirmed against those on the prescription. In addition, the patient should state their name and date of birth wherever possible.

PICS is configured to **only** recognise the unique barcode on patients' wristbands (i.e. will not recognise barcodes that are not on wristbands). Under **no** circumstances must a wristband be scanned that is **not** attached to a patient (any exceptions to this are audited and have serious safety consequences).

Where the wrist band is illegible/ damaged, the registered nurse or healthcare professional must ensure that the wrist band is replaced (check patient's name, address, and date of birth). Additional means of identification are essential when replacing wrist band(s), or when the patient cannot give their name and date of birth prior to administration of the medicine.

Outpatients or patients without a wristband

Three pieces of patient identification must be obtained before administering medication to the patient.

1.2.5. Check for Allergies/Sensitivities

The prescriber must check that the patient is not allergic or sensitive to any of the medicines prescribed, nor to any substances known to be included in any medicines prescribed, e.g. tartrazine or arachis (peanut) oil contained in some medicines.

Where patients are known to have a drug sensitivity or allergy this will be indicated on: the patient's prescription or on PICS, in the medical notes and nursing records. A single red identification wristband (with printed black text on a white panel) must be used instead of the standard identification wristband to alert staff to an allergy.

If no allergies or sensitivities are known, the prescriber should have endorsed the appropriate section of the prescription 'none known'. Medicines must not be administered if the allergy status has not been recorded. The registered practitioner administering the drug must still check that the patient is not allergic or sensitive to any of the medicines prescribed at the point of medicines administration.

If there is any reason to suspect that a patient may be allergic or sensitive to any prescribed medicines or their constituents this must be reported without delay to the medical staff looking after the patient and documented in the patient's notes and on PICS.

1.2.6. Check All Prescription and Administration Records

Check all records for the:

- date and time of the dose due and the previous dose
- signature of the prescriber (non PICS prescriptions)
- medicine name, dose, form and route of administration
- duration/frequency of therapy

Check that the:

- prescribed dose has not already been given
- maximum dose of a variable 'as-required' prescription is not exceeded

1.2.7. *Choosing the Correct Medicine*

Select the correct medicine in the correct formulation for administration. Pay special attention to the identity of the medicine, as labelled, and the expiry date of the product. Not all strips have an expiry on them so they **MUST** be returned to their original container after use.

Calculate the number of tablets/capsules or volume of liquid medicine required to administer the prescribed dose and double check this calculation. It is good practice to ensure there is enough medication for the following two doses.

If the product requires preparation (e.g. reconstitution or dilution) the practitioner must ensure that they are aware of the correct method of preparation and that appropriate diluents and expiry of prepared products are considered. Further information can be found in the product's Summary of Product Characteristics (SPC) or by contacting the pharmacist for the clinical area.

1.2.8. *Administration of Liquid Oral/Enteral Medicines*

ALL doses **must** be drawn up in a purple oral medicine syringe or a device provided by the manufacturer as part of the patient dispensing pack.

Where a syringe is required to administer oral/enteral medication, this **must** be a purple oral/enteral medicine syringe. Syringes for parenteral use must **not** be used for measuring or administering oral/enteral medicines.

Medicines may not be readily available in a presentation suitable for administration to certain patients e.g. those unable to swallow or patients with feeding tubes. In these cases tablets or other dose forms should **not** be crushed or changed in a clinical area without contacting the Pharmacy Department for advice. This is because:

- Crushing tablets or opening capsules can alter the legal status of a product making the use of the medicine 'unlicensed'.

- Certain tablets or capsules must not be crushed or opened. This includes modified release formulations and enteric coated preparations.
- Some medicines are hazardous to the person administering them if crushed or opened.

Pharmacy will attempt to locate a suitable source of the medicine wherever possible.

When administering medicines via the PEG, NG, NJ and JEJ routes, ensure that the correct line is used to administer the medicine. Liquid medicines in bottles may need to be shaken prior to measuring the dose.

1.2.9. *Administering the Medicine to the Patient*

The administration of medicines involves the use of professional judgement in the context of each specific patient. Careful consideration should be given to the dosage, the method of administration, the route and the timing of every administration.

Each patient must receive medications that have been individually prepared for them. In the case of oral medicines, this must include witnessing that the patient has ingested the medicine. In no circumstances must medicines be left by the patient's bedside, or in a "tot" in the medicines trolley, to be taken or administered at a later time.

Immediately **after** administering the medicine a record of the administration details must be completed on PICS or alternative record.

For "as required" (PRN) medicines the date and time of administration will be recorded automatically within PICS. For "variable dose medicines" the actual dose administered must be recorded.

For drugs given in accordance with a PGD, the details of the administration must be documented in the patient's records. Where PGDs are live on PICS, then the correct PGD must be chosen by the practitioner, against which they have completed competency training.

1.2.10. *Non-administration of Medicines, Missed or Delayed Doses*

Every effort should be made to administer prescribed medicines as omission of certain medicines, or a delay in dosing, can be detrimental to a patient's well-being. Medicines identified within the Trust as "high risk" medicines should never be delayed or

omitted, unless clinically contraindicated or the patient refuses medication. High risk medicines for non-administration are:

- All anti-infective medicines
- HIV medicines
- Anticoagulants
- Insulins
- Medicines for Parkinson's Disease
- All anti-rejection medicines

For details of individual medicines within these groups refer to the relevant section in current edition of the BNF, or Medusa.

Where a patient is fasting for surgery or a specific procedure, or is 'nil by mouth' check with the medical team whether or not to omit medication (see Trust Peri-operative Fasting Guidelines, controlled document number 363).

Where a patient is vomiting check with the prescriber whether any oral medicines can be prescribed and administered via another route and/or if a missed dose should be administered once vomiting ceases.

Where a patient is unable to physically swallow; check with pharmacist whether the medicine can be provided in an alternative form.

Where medicines are unavailable every effort must be made to obtain the medicine without delay so that the dose can be administered. Refer to section 4 for details of obtaining medicines.

Where a patient is off the ward for investigations etc. consider administering any missed doses later. Confirm this action is appropriate with the patient's medical team.

- 1.7 If the patient refuses to take the medicine or the medicine prescribed is not given for some other reason, the registered practitioner or healthcare professional must document this omission on the administration record in PICS using the appropriate codes.**
- 1.8 A medicine that has been omitted or refused on two consecutive occasions must be brought to the attention of an appropriate prescriber and the omission/refusal documented in the patient's records. Where the omission/refusal of a single dose is considered to be**

clinically significant e.g. medicines on the high risk list, this escalation must occur immediately.

1.2.11. *Disposal of Medicines that Cannot be Administered to a Patient*

1.9 Medicines removed from a container for administration must not be returned to the container if they are not administered to the patient. Liquid medicines, unused contents of ampoules or solid medicines must be disposed of in blue medicinal non-hazardous sharps bins.

1.10 For CDs in addition to the non-administration comment made in PICS, an appropriate entry must be made in the CD register (see Trust CD Procedure). In the event that a medicine is unable to be administered to a patient, the dose must be disposed of in an in-use blue sealed container.

1.2.12. *Covert Administration of Medicines*

Covert administration is the practice of leading a patient to believe that they are not receiving medication when in fact they are, usually by disguising the medicine in food or drink. This covert administration of medicines is only likely to be necessary or appropriate in the case of patients who actively refuse medication **but** are judged **not** to have the capacity to understand the consequences of their refusal.

Staff must follow guidance set out in the Trust Guidelines for the Assessment and Care of Patients with No or Suspected Dementia or Delirium, Controlled Document No. 205 – What to do if a Patient is Refusing Treatment.

It is recognised that there may be certain exceptional circumstances in which covert administration may be considered to prevent a patient from missing out on essential treatment. In such circumstances and in the absence of informed consent, the following policy applies.

- The best interest of the patient must be considered at all times.
- The medication must be considered essential for the patient's health and wellbeing, or for the safety of others.
- The decision to administer a medication covertly must not be considered routine, and should be a contingency measure. Any decision to do so must be reached after assessing the care needs of the patient individually. It must be patient specific, in order to avoid the ritualised administration in this way.

- There should be broad and open discussion among the multi-disciplinary team and with the patient's relatives, carers or advocates to establish the patient's past wishes and feelings and agreement that this approach is required in the circumstances, before the decision is taken to administer medicine covertly.
- The involvement of the pharmacist is especially important as adding medication to food or drink can alter its chemical properties and thereby affect its performance. In addition, if a formulation is crushed, dissolved or otherwise altered the product may be rendered unlicensed.
- The decision and the action taken, including the names of the parties concerned, must be documented in the patient's notes and regularly reviewed at appropriate intervals.
- Regular attempts should be made to encourage the patient to take their medication. This might best be achieved by giving regular information, explanation and encouragement, preferably by the team member who has the best rapport with the individual.
- Any registered nurse who may be involved in the covert administration of medicines is advised to seek professional advice from the Nursing and Midwifery Council.

The covert administration of medicines must not be confused with the administration of medicines against a person's will which may be considered unlawful. Registered nurses must refer to the NMC Standards for Medicines Management (2007).

1.2.13. Administration of Medicines Requiring Refrigeration

When administering a medicine which requires storage in the refrigerator the practitioner should remove the medicine immediately prior to administration (unless the medicine needs to reach room temperature before administration). On removal of the medicine from the refrigerator, the practitioner must check that the current fridge temperature is between 2-8°C and that daily fridge temperature recording is in place. If there is reason to suspect that the cold chain has not been maintained then the Pharmacy Department must be contacted for advice.

1.2.14. Administration of Controlled Drugs

1.11 The Trust CD procedure must be adhered to at all times. For the administration of CDs within the operating theatre department, refer to Trust Controlled Document No. 970.

When administering opioid medicines other than in an acute emergency, the guidance issued in the NPSA rapid Response Alert (RRR2008/003): Reducing Dosing Errors with Opioid Medicines must be followed.

Practitioners must:

- Be aware of any recent opioid dose, formulation, frequency of administration and any other analgesic medicines prescribed for the patient.
- Ensure where a dose increase has been prescribed, that the calculated dose is safe for the patient (e.g. for oral morphine or oxycodone in adult patients, not **normally** more than 50% higher than the previous dose).
- Ensure that they are familiar with the following characteristics of the medicine and formulation: usual starting dose, frequency of administration, standard dosing increments, symptoms of overdose, common side effects.

1.3. Self-Administration of Medicines by Patients

Patients may be responsible for administration of medicines to themselves. Approved guidelines, which include principles relating to safety, security and appropriate storage arrangements, and the education, training and assessment of ability to undertake self-administration, must always be followed.

For patients undertaking self-administration of medicines wherever possible, the administering practitioner should strive to:

- assess and promote the patient's knowledge and understanding about their medicines
- prepare the patient for self-administration of medicine(s) at home or in hospital as part of a planned programme towards independence
- involve relatives or other informal carers, where appropriate.

See Trust Guidelines for Self-Administration of Medicines, Controlled Document No. 578.

1.4. Administration of Medicines for the Purpose of Saving Life in an Emergency

1.4.1. *List of Medicines*

The following list of medicines are exempt from the requirement for a prescription or PGD when administered for the purpose of saving life in an emergency, by the persons detailed in the table below:

Drug	Named Person who can administer
Epinephrine (Adrenaline) injection 1 in 1000	Registered Advanced Life Support (ALS) providers only
Atropine sulphate injection	Registered ALS providers only
Chlorphenamine injection	Registered ALS providers only
Glucagon injection	Registered ALS providers only
Glucose injection 50%	Registered ALS providers only
Hydrocortisone injection	Registered ALS providers only
Promethazine hydrochloride injection	Registered ALS providers only
Sodium chloride 0.9%, 1 litre	Registered ALS providers only
Atropine sulphate and obidoxime chloride injection	Registered practitioners only
Atropine sulphate and pralidoxime chloride injection	Registered practitioners only
Atropine sulphate, pralidoxime mesilate and avizafone injection	Registered practitioners only
Flumazenil injection	Registered practitioners only
Pralidoxime chloride injection	Registered practitioners only
Pralidoxime mesilate injection	Registered practitioners only
Sodium thiosulphate injection	Registered practitioners only
Sodium nitrite injection	Registered practitioners only
Naloxone hydrochloride	Registered practitioners only
Snake Venom Antiserum	Registered practitioners only
Oxygen	ALL Trust employees

Refer to PGD 003/0506 for the administration of amiodarone 300mg in 10ml intravenous injection for the emergency treatment of ventricular fibrillation and pulseless ventricular tachycardia in adults.

Refer to PGD 007/0703 for the administration of epinephrine (adrenaline) 1 in 1000 intramuscular injection for the emergency treatment of acute anaphylaxis to patients aged 16 years and

over; and PGD 001/0514 for the administration of epinephrine (adrenaline) 1 in 1000 intramuscular injection for the emergency treatment of acute anaphylaxis to patients aged 11 years and over.

1.4.2. *Administration of Oxygen*

Oxygen is a 'Prescription Only Medicine' within the Trust and as such must be administered against a patient specific prescription or in accordance with a PGD (see exceptions below).

If administering oxygen against a PGD, the registered practitioner must have been deemed competent against the relevant PGD prior to administration.

N.B. A number of Trust approved PGDs for the administration of oxygen exist to support safe and effective oxygen administration within the Trust.

1.4.3. *Oxygen can be administered without prescription or PGD in the following situations:*

- Where a **registered practitioner** employed by the Trust is administering oxygen at a rate of 4 litres per minute to support the respiratory function of a patient where there is an acute risk of respiratory distress (i.e. patients acutely short of breath). The oxygen must be prescribed as soon as possible.
- Where **any Trust employee** is administering oxygen for the purpose of saving life in an emergency.

1.5. Administration of Parenteral Medicines

1.5.1. *Definition*

The term "parenteral medicine" refers to those medicines that are administered by injection. This definition includes any injectable route e.g. intravenous, intramuscular, subcutaneous, intra-arterial, intrathecal, intraocular, epidural, etc.

All healthcare practitioners are expected to acknowledge any limitations in their knowledge, skills or competence to administer parenteral medicines in their specific area of practice, and if there are any such limitations refrain from medicines administration until trained and competent to do so.

1.5.2. *Use of Single and Multi-dose Injectable Containers*

Serious infection and fatalities have been reported due to the inappropriate use of a single container to prepare more than one dose of an injection. The following rules are based on guidance issued by the Royal College of Anaesthetists, and aim to minimise the risk to patients.

1.5.3. *Single Use Containers*

Single use containers of injectable products are for use for **one** patient only on a **single** occasion. Medicines within single use containers do not contain preservatives hence any volume remaining **must** be discarded after single use.

The above guidance applies regardless of the presentation (ampoule, vial, pre-filled syringe, infusion bag, etc) and also includes situations where a single use product is given non-parenterally, such as for diluting nebuliser solutions or flushing enteral tubes.

Devices which facilitate multiple access into bags or bottles of infusion solutions, such as multi-dose adaptors or needles with three way taps **must not** be used. The only exception is where medicines are prepared under full aseptic facilities within the Pharmacy Department.

1.5.4. *Multi-dose Containers*

Multi-dose containers contain a combination of a drug and an antimicrobial preservative. The fact that it is possible to remove a drug more than once via a septum or bung does not in itself mean a product is suitable for multiple use. It will be identified on individual preparations whether they can be used as single or multi-dose container.

Multi-dose containers of injectable products may be used to prepare **one or more** doses usually in a single session e.g. an immunisation clinic however there are some exceptions where multi-dose containers are used on multiple occasions e.g. insulin vials, on such occasions the container must be allocated to a specific patient.

Insulin vials must be labelled with the following information when use is initiated:

- the patient's name and registration number
- date use commenced
- expiry date

The Trust standards for Aseptic Non Touch Technique (ANTT) must be adhered to for all preparations of parenteral drugs. A **new** sterile syringe and needle must be used to withdraw **each** dose and with the exception of insulin, the container must be used on one occasion for example, a single immunisation session.

If it is unclear to a practitioner if the injectable container is single dose or multi-dose, advice can be sought from a pharmacist or the Medicines Information Service on ext. 2389.

1.5.5. *Additional Information for Single use Injectables within Theatres*

The most appropriate sized ampoule/vial should be selected for the dose to be administered. In addition to the information provided below theatre staff are asked to be particularly aware of the single use status of ondansetron ampoules, metaraminol ampoules and remifentanil vials.

The contamination risk of propofol is particularly high. Propofol vials/ampoules are single patient use containers. The remainder of the vial must be discarded immediately. Where a spike is used to aid withdrawal from 50ml propofol vials, the spike must be discarded with the vial and a fresh spike used with subsequent vials.

Where an insulin infusion is made up within theatres, the vial must be labelled with the expiry date upon first piercing. Unused vials must remain in the original outer cardboard packaging within the theatre refrigerator in a separate area from the vials in use. Any vial not within a cardboard outer, that has been used without an expiry date added, must be discarded. The infusion must be drawn up with a new needle and syringe away from the patient.

If multiple infusions are being prepared at the same time, infusion bags of sodium chloride 0.9% and glucose 5% can be used. These must be for single patient use only. All manipulations must occur on one occasion, and the remaining volume then discarded. Infusion bags of sodium chloride 0.9% and glucose 5% must not be retained for future preparations.

1.6. Intravenous Injections

1.6.1. *Administration - Basic Principles*

The administration of a medicine by the intravenous (IV) route can be hazardous. All staff administering an intravenous infusion must have an independent second check by another registered

practitioner competent in drug administration. The second check process involves the second practitioner performing their own independent verification of the patient and the medication to be administered.

1.12 Registered practitioners who have accepted responsibility for the administration of IV medicines, and achieved competence against the relevant expanded practice protocol can administer medicines by the IV route. The basic principles of medicines administration set out in section 9.2 must be applied to the IV administration of medicines.

1.13 All IV injections must be given in an environment that permits subsequent observation and resuscitation of the patient if required.

1.6.2. *Intravenous Bolus Injections*

The prescriber must document in the patient's notes; on an approved prescription or other Trust approved documentation; or on PICS even if the administration has already taken place.

Bolus injections must be given intermittently by slow, direct administration into an established central or peripheral IV access site.

1.6.3. *Intravenous Infusions*

Certain medicines are best given by infusion to achieve the desired therapeutic effect and/or reduce toxicity. Infusions can either be given intermittently or continuously in a prescribed IV fluid regimen. Preparation and administration of IV infusions including the second check must be documented on PICS, on other approved documentation or in the patient's notes. Advance preparation of infusions must be kept to a minimum and (as a maximum) within 1 hour of predicted time of use, dependent on patient clinical condition. When prepared in advance, all syringes and infusion bags must be labelled with the patient's name, medication (name, concentration, volume), and date and time of preparation.

IV medicines may be administered via an established vascular access device. When opening a closed IV system, aseptic non-touch technique, as defined in the Royal Marsden Manual of Clinical Nursing Procedures, must be followed. In addition, Trust guidelines for the insertion, care and removal of peripheral venous cannulae (Controlled Document No 225) and for the care of central venous access devices (Controlled Document No 42) must be followed.

All IV infusions must be given via a specific infusion device e.g. infusion pump, which registered practitioners must be trained and have their competence assessed and documented.

IV infusions expiry times

Due to the risk of microbial contamination a maximum expiry date of 24 hours must be given to infusions in progress, unless there is data for the specific product which indicates the need for a reduced expiry time. See Appendix I for a list of medicines that have an infusion expiry time of less than 24 hours. Prescriptions where expiry times are longer than 24 hours must be approved by the ward pharmacist and lead doctor involved with individual patient care, and annotated by the pharmacist. The exception is where the infusion has been prepared under full aseptic facilities within the Pharmacy Department.

IV infusions that have been stopped and remain connected to the patient must be discarded after four hours of not being in use. If an infusion is re-started after this period, a new IV infusion must be prepared.

IV infusions containing additives should be examined from time to time whilst they are being administered. If cloudiness, crystallisation, change of colour or any other sign of interaction or contamination is observed the infusion must be discontinued.

1.6.4. *Injectable Medicines Guide (Medusa)*

The "Medusa" injectable medicines guide can be accessed from "PICS Help" and from the Trust intranet (select Pharmacy department then links and downloads to see user name and password to be used). Medusa provides information about preparation and administration of injectable medicines including information on: reconstitution; method and rate of administration; compatible diluents; compatible drugs; adverse effects caused by IV administration; special handling precautions and other useful information.

1.6.5. *Preparation and Administration of IV Bolus Injections and IV Infusions*

All IV bolus doses and IV infusions must be prepared and commenced by a registered practitioner competent in IV medicines administration and independently checked with another registered practitioner who is competent in the administration of medicines.

Students may under direct supervision, prepare IV bolus doses and IV infusions.

Non registered practitioners may prepare and administer an IV flush only against a prescription for the purpose of cannulation.

Both registered practitioners and students where involved, must ensure:

- ANTT is used when preparing the injection/infusion,
- preparation is undertaken in a clean, uncluttered environment,
- before administering the medicine, there are no incompatibilities with other medicines or infusion fluids. This should be done by reference to the drug package insert, the online injectable medicines guide (Medusa), a pharmacist or the Medicines Information Service,
- before administering the medicine, the IV device is not blocked and is sited correctly,
- preparation and administration of the medicine has been documented on PICS or other approved documentation by the registered practitioner and checker. Infusions must also be recorded on the Fluid Balance Chart.

For bolus doses, syringes containing the prepared medicines must be labelled with the name, dose and expiry date of the medicine; the patient's details; and the initials of the person preparing and checking the medicine. See section 9.6.8 for details of labelling infusions with additives.

All medicines for infusion are rate controlled and the rate of the infusion must be set and checked by both registered practitioners.

Infusions must be independently checked by a registered practitioner competent in the administration of medicines hourly, and at shift handover, to ensure correct operation of the device and prompt detection of device error or adverse event.

Any alterations in the infusion rate must be made in accordance with the prescription and independently checked by two registered practitioners competent in the administration of medicines, one of whom must be competent in IV medicines administration. Any alterations must be documented in PICS. Where frequent alterations of an infusion rate are expected e.g. dose titration over a very short period of time in the critical care environment, the dose following titration i.e. when the desired therapeutic effect has been achieved, must be recorded on the administration record.

Any staff and students not deemed as competent in the administration of medicines must not stop and restart infusions under any circumstances.

1.6.6. *Flush procedure for IV boluses, IV intermittent injections and IV infusions*

All bolus injections must be flushed with 5-10mls of a suitable vehicle.

Infusions given via volumetric pumps must be disconnected at the infusion bag and the line flushed with the volume of fluid held within the giving set (usually noted on the line packaging). Giving sets currently available (e.g. Intrafix[®], Safeset[®] and Alaris GP[®]) hold a residual fluid volume of between 20-25ml. Therefore, after infusions have completed the entire line must be flushed post infusion with 25-50ml of suitable flush fluid at a rate appropriate for the medication.

1.6.7. *Administration of a Sodium Chloride 0.9% Flush*

Up to **5ml** sodium chloride 0.9% flush can be administered against PGD [No. 029/0503 - PGD for administration of 0.9% (w/v) sodium chloride for intravenous (IV) use to flush and maintain the patency of central venous access devices (CVAD) and peripheral venous cannulae (PVC)];
or **5-10ml** sodium chloride 0.9% flush against a prescription, to check position and maintain patency of peripheral cannulae, by registered practitioners and other healthcare staff who are deemed:

- IV competent against the approved Trust expanded practice protocol for the administration of intravenous drugs and infusions (Controlled Document No 232)
- and/or*
- competent in the insertion of peripheral cannulae against the approved Trust expanded practice protocol for the performance of peripheral cannulation (Controlled Document No 229).

The administration of a sodium chloride 0.9% flush against a PGD **must** be checked by another IV competent registered practitioner or IV competent member of healthcare staff and details **must** be documented in PICS or in Trust approved documentation.

1.6.8. *Additions to IV Infusions*

Many medicines are incompatible when mixed in an infusion. Single medicines should be administered wherever possible. In situations where addition/mixing cannot be avoided, for example due to fluid restriction then:

- Information about incompatibility for many commonly used medicines is available from:
 - The on-line injectable medicines guide (Medusa)
 - Medicines Information Service
- Each medicine must be reconstituted or drawn up in separate syringes immediately before adding to an infusion bag. Each bag must then be repeatedly inverted to ensure thorough mixing before administering.
- A visual inspection of the final product must be undertaken to check for absence of particulate matter before use.
- Infusions prepared must be labelled with an IV additive label containing: details of the medicine(s) added; quantity; date and time of preparation; details of time and date of expiry; and the patient's name. This additional labelling should not interfere with information on the manufacturer's label.
- If the infusion cannot be administered immediately it must be discarded.

1.6.9. "Mixing" Medicines in Syringes

"Mixing" is defined as the combination of two or more medicinal products together for the purpose of administering them to meet the needs of a particular patient.

Mixing two licensed medicines where one is not a vehicle for the administration of the other, results in a new, unlicensed product being produced. Unlicensed products are the personal responsibility of the prescriber.

Potential problems include degradation of the medicine(s) and therefore reduced efficacy, and precipitation/crystallisation. Crystallisation can occur either through formation of an insoluble product of medicine interaction, or because a medicine alters the pH of the solution rendering the second medicine insoluble.

The more medicines mixed, the greater the potential for interaction. Medicines which have a high or low pH in solution are more likely to cause an interaction. The following principles must be applied:

- Medicines should not be mixed unless essential to meet the needs of the patient. It is recognised that there are particular circumstances, for example for a patient at the end of life or receiving intensive care; where mixing will be in the patient's best interests as it will provide the most efficient way of managing the patient's symptoms.
- Advice should be sought from a pharmacist in deciding whether there are alternatives to administering mixed medicines. Licensed products should be used in preference to mixing medicines.
- Advice on which medicine(s) can be mixed, and in what dosages, is available from the Medicines Information Service.
- Medicines mixed in a near-patient area must be prepared immediately before use and be clearly labelled with details of the medicine(s) added, quantity, date, and time of preparation; details of time and date of expiry; and the patient's name
- The mixture in the syringe must be carefully inspected **before** use for any signs of crystallisation or precipitation.
- The syringe must be inspected every hour during its use.
- The patient must be monitored carefully, especially for evidence of reduced efficacy of any of the medicines.

1.6.10. Administration of Concentrated Electrolyte Injections

Concentrated potassium chloride injection, concentrated sodium chloride solutions and certain other concentrated ampoules intended for injection **after dilution** present specific hazards. These medicines must always be stored separately from other commonly used stock medicines, such as sodium chloride and water for injection. (Refer to section 3.1.4 for further details).

1.7. Other Parenteral Routes

1.7.1. Restricted Injectable Routes

Within the Trust, the following routes are considered as "restricted routes":

- intra-arterial
- intra-articular
- intraosseous
- intraperitoneal
- intrathecal
- intraventricular
- intra-ocular
- spinal

- epidural

Unless a registered practitioner has been formally assessed as competent to give injections by any of these “restricted routes”, and there is documented evidence of this, they cannot give injections via these routes except as part of supervised training/assessment. All medicines administered by these routes require an independent second check of the medicine and dose by a registered practitioner competent in the administration of medicines.

1.7.2. *Epidural Medicines*

A number of risks exist related to epidural injections and infusions, including how the medicines and devices are labelled, stored and used. Within the Trust these risks must be minimised by:

- using ready-to-administer licensed preparations wherever possible and storing them in separate locations from other medicines to reduce selection errors.
- clear labelling of epidural administration sets and catheters with the yellow label stating “EPIDURAL” – The date of changing/connecting the giving set must be documented on the label with the initials of the individual. Refer to “Trust Guidance Notes on the Use of Invasive Line Flags (Controlled Document Number 215).
- using dedicated infusion pumps and syringe driver devices for epidural infusions that are easily distinguishable from those used for other infusions.
- ensuring all staff involved in epidural therapy have received adequate training, and have completed the necessary competencies to undertake their duties safely.

The insertion of an epidural catheter is restricted to an anaesthetist. However, medical practitioners and registered nurses can, once trained and assessed as competent **change epidural bags** in accordance with the prescription instructions and relevant expanded practice protocols.

1.7.3. *Intrathecal cytotoxic medicines*

Pharmacy staff involved in the dispensing, checking or issuing of intrathecal chemotherapy must have received appropriate training and their names must be on the intrathecal register. Intrathecal chemotherapy can only be issued from Pharmacy to the doctor who is to administer it. Alternatively a trained member

of pharmacy staff may deliver the intrathecal chemotherapy to the administering doctor in the clinical area.

Confirmation that the patient has already received any intravenous chemotherapy due that day, or alternatively that no intravenous chemotherapy is due for the patient on that day, **must** be provided before the medicines can be released.

Intrathecal chemotherapy must only be administered by a consultant, registrar or staff grade who has been trained and assessed as competent to perform the procedure and whose name is on the Trust's intrathecal register.

Intrathecal chemotherapy will only be checked by a registered nurse who has undergone appropriate training in intravenous and intrathecal chemotherapy and whose name is on the register. The registered nurse must be present throughout the procedure.

Prior to administering the intrathecal chemotherapy, the doctor and registered nurse must ensure that the designated area is free from any medicines for intravenous administration.

Refer to the Trust Policy for the Safe Prescribing, Handling and Administration of Intrathecal Chemotherapy (Controlled Document No 840) for further details.

1.7.4. *Other intrathecal medicines*

Other medicines administered by the intrathecal route are specially formulated medicines which must be stored separately from other parenteral medicines and must only be administered by a consultant or registrar (e.g. intrathecal gentamicin).

1.7.5. *Extra Corporeal Circuits - Haemodialysis and Haemofiltration Fluid*

Administration, Plasmapheresis and Perfusion

These procedures present increased risk from medication errors. The principles described above must be incorporated into specific procedures for haemodialysis, haemofiltration, plasmapheresis, perfusion or any other extracorporeal treatment. Healthcare staff involved in the administration of these medicines in these areas must be trained and assessed as competent to undertake this role.

1.8. Topical Medicines

1.8.1. *Creams and Ointments*

Creams and ointments must be stored in a cool place and used for a single patient only. Mixing topical preparations on the skin should be avoided. A few minutes must be allowed between application of different preparations.

Where the topical preparation contains a corticosteroid, apply the preparation thinly to the skin.

Fire risk with paraffin based products

Skin products containing paraffin (for example white soft paraffin, white soft paraffin plus 50% liquid paraffin, or emulsifying ointment), in contact with dressings and clothing are easily ignited with a naked flame or a cigarette.

It is vital that staff and patients do the following to minimise the risk of fire when patients are supplied with, and/or treated with paraffin based products.

- Particular care must be taken around oxygen supplies. Paraffin based products must NOT be used to lubricate equipment used for oxygen administration.
- Patients must be given information that includes advice about the potential fire risks of smoking (or being near to people who are smoking), or exposure to any open flame or other potential cause of ignition during treatment. In hospital units initiating therapy, this must be given in both verbal and written form.
- Patients and their families must be provided with safety advice about regularly changing clothing or bedding saturated with paraffin based products (preferably on a daily basis), as the paraffin soaks in to the fabrics and can potentially be a fire hazard. Chairs or seating may also have the potential to become saturated.

This information should be given on the first occasion that such treatment is prescribed, dispensed or administered by a healthcare professional. Checks should be made on subsequent occasions that the advice has been received and understood.

1.8.2. *Eye Preparations*

Medicines are most commonly applied to the eye by topical application as eye drops or eye ointments. Eye drops are sterile aqueous, or oily solutions, or suspensions for instillation into the eye. Eye ointments are sterile preparations for application to the conjunctival sac or the lid margin.

Preparations containing preservative for the eyes are supplied as sterile multi-application containers, however care must be taken to avoid contamination of the contents during use. Preservative-free preparations are for single-use only, and must not be used to administer more than one dose.

A **separate** container must be used for **each** patient. Where there are specific concerns about contamination e.g. where the patient has an eye infection, then a separate container must be used for each eye.

The date of first opening must be recorded on the container, and eye preparations used in an in-patient setting must be discarded after 14 days due to the risk of microbial contamination.

When administering two different eye drop preparations at the same time of day, an interval of 5 minutes must be left between the two preparations to avoid the possibility of dilution and overflow.

In out-patient settings and the ED, single application packs should preferably be used where available.

1.8.3. *Nebuliser Solutions*

Nebulisers are devices used to deliver higher doses than is usual with standard inhalers. Nebuliser solutions are medicines designed for this use, and are used in the nebuliser to provide a continuous fine aerosol mist directly into the lungs.

Points to remember:

- Nebules should be diluted with 0.9% sodium chloride to a minimum volume of 4mL and a maximum of 10ml before use.
- Nebuliser solutions can be mixed, depending on their compatibility.
- On completion of treatment, check that all medication has been aerosolised then:
 - Disassemble the individual patient nebuliser kit (labelled with patient's name, date of birth, hospital number and date and time of kit assembly) and dry with a clean tissue.
 - Store covered with a clean paper towel in a clean paper tray on the patient's locker

1.9. Administration of Medicines in Operating Theatres

The potential for serious medicines administration errors is high in these clinical areas due to the number of different medicines and

syringes in use at any one time, including potent medicines such as muscle relaxants, opiates and their respective antagonists. The following will reduce the potential for error:

- Medicines must be adequately stocked so that any medicines required are readily available when needed
- Medicines, including water for injection and sodium chloride, must always be stored in the manufacturer's original packaging (See section 6.2.2)
- Medicines administered during the peri-operative period must be documented. Where patients are transferred to other clinical areas on infusions then these must be prescribed on PICS and the syringe labelled with details of the medicine(s), strength, date and time of preparation, details of time and date of expiry, the patient's name and signature of preparer and checker.
- Syringes of medicines intended for use in an emergency should be immediately available but stored in an area away from the immediate work area. These must be labelled with the name of the drug, dose, date and time of dispensing.
- Where it is necessary to prepare syringes in advance of immediate use, they must be prepared as units/mL and labelled using the nationally agreed colour system (line flag). The anaesthetist must double check the medicine prior to administration
- Single use containers must not be used as multi-dose containers (See section 9.5.3)

1.10. Storage of medicines in anaesthetic room(s)

In response to collaborated best practice guidance from the Royal College of Anaesthetists (RCoA), The Association of Anaesthetists of Great Britain and Ireland (AAGBI) and The Royal Pharmaceutical Society (RPS) recommendations have been agreed to ensure safe storage of drugs within anaesthetic rooms.

All controlled drugs must be stored in accordance with the Trust Controlled Drugs procedures.

Patient safety must be the paramount consideration, ensuring rapid access to emergency drugs and fluids. Nevertheless, the security and access of medicines must also be considered. Accordingly, it is imperative that anaesthetic room drugs and fluids are stored safely and securely but without hindrance for those who require them without delay. This may mean that in the interests of patient safety, drug cupboards (excluding those containing Controlled Drugs) may remain unlocked when the anaesthetic room is temporarily unoccupied and the operating theatre is in use. To minimise the medicines security risks that this imposes, the following practices must be followed:

- Staff-only restricted swipe access for all entry routes into theatres in order to limit access to only those with legitimate reasons for access.
- Anaesthetic room entry doors (from main corridor/thoroughfares) must have the bottom 3 quarters of windows fitted with frosted glass or covered with an opaque film for both patient privacy and to minimise any unwarranted, opportunistic sight of any drugs and fluids stored inside. The top quarter panel can be left uncovered for purposes of observation of trainees from a distance without causing disruption.
- It is common practice to prepare a selection of 'emergency drugs' that should be immediately available during the course of an anaesthetic. These will often accompany the patient from the anaesthetic room into the operating theatre. If this is not possible, they should be stored in the anaesthetic room in a manner that maintains their immediate availability yet preserves security whilst the anaesthetic room is unoccupied during the procedure, e.g. a closed, unlocked cupboard. They must be adequately labelled, and disposed of appropriately if not used. This should be a standardised, agreed location across all theatres. All staff involved in the procedure must be aware of this location to ensure rapid retrieval in the event of an emergency (it is recommended to include such communication at the World Health Organisation (WHO) checklist stage).
- Other non-emergency drugs and fluids must not be visible and must be kept in closed (not necessarily locked) cupboards.
- An unoccupied anaesthetic room should ideally remain visible at all times to those in the operating theatre, usually through windows in the theatre entry door.
- Anaesthetic room drug cupboards must be locked when the operating theatre is unoccupied.
- Certain rarely-used emergency drugs may be stored in a central location, such as the out-of-hours emergency drug cupboards serving the entire theatre suite, e.g. dantrolene and intralipid.

1.11. Medication Administration Errors

All errors or incidents observed or discovered in the administration of medicines must be reported using the online risk reporting system.