Sheffield Teaching Hospitals NHS
NHS Foundation Trust

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MEDICINE CODE

SECTION 3
ADMINISTRATION OF MEDICINES

Reference Number	Version	Status	Executive Lead(s) Name and Job Title	Author(s) Name and Job Title
89 (section 3)	5.1	Draft	David Throssell Medical Director	Nicky Thomas Pharmacy Healthcare Governance Manager

Approval Body	TEG	**Date Approved**	
Ratified by	Board of Directors	**Date Ratified**	
Date Issued		**Review Date**	01/07/2016
Contact for Review Name and Job Title	Nicky Thomas Pharmacy Healthcare Governance Manager		

Associated Documentation:

Trust Controlled Documents

53 Incident Management Policy
54 Mandatory and Job Specific Training Policy
256 Policy for authorising staff to use medical equipment and medical devices.
62 Waste Strategy
225 Blood Exposure Policy
48 Hand Hygiene
187 Infection Control Patient Placement Guidelines
64 Patient Identification Policy
129 Policy & Procedures for Self-Administration
100 Consent to Examination or Treatment Policy
32 Patient Group Directions Protocol
AN0010/4 Epidural Analgesia Guidelines
AN0032 IVPCA Guidelines
276 Management of Reusable Equipment Policy
7 MS16A Syringe Driver Policy
110 Intrathecal Cytotoxic Chemotherapy Policy
144 Guidelines on Starvation Prior to Regional & General Anaesthesia or Sedation

Legal framework

Medicine Act 1968 and Medicine Act Orders.
Human Medicines Regulations 2012
Misuse of Drugs Act 1971
Misuse of Drugs Regulations 1985, 2001, 2005, 2006
National Health Service Act 1977
Environmental Protection Act 1990
Hazardous Waste Regulations 2005
Poisons Act 1972
Consumer Protection Act 1987
Control of Substances Hazardous to Health (COSHH) Regulations 1989
Medicinal Products: Prescription by Nurses Act 1992 + Amendments
Health Act 1999 (section 18)
Medicines for Human Use (Clinical Trials) Regulations 2004

External Documentation

Standards for Medicines Management NMC 2007
Standards of Conduct, Performance and Ethics for Nurses and Midwives 2008
Midwives Rules and Standards 2009
Medicines, Ethics and Practice (A Guide for Pharmacists) RPSGB (Royal Pharmaceutical Society of Great Britain) Edition 36, July 2012
Duthie Report – Guidelines for the safe and secure handling of medicines 1988, 2005
Crown Reports 1989, 1998, 1999
Guidelines issued by GMC (General Medical Council) and BMA (British Medical Association)
Aitken Report 1958 – Control of Dangerous Drugs and Poisons in Hospitals
Building a Safer NHS for Patients: Improving Medication Safety *Dr Jim Smith* 2004 DOH
Shipman Report and Associated Responses
Safer Management of Controlled Drugs – A Guide to Good Practice in Secondary Care (England) October 2007
Standards for Clinical Verification of Prescriptions for Cancer Medicines (BOPA)

Version history

Version	Date Issued	Brief Summary of amendments	Owner's Name:
1	22/04/05	New policy	Nicky Thomas
2	20/07/07	Updated in line with recent NPSA alerts, infection control procedures and STH Unlicensed Medicines Policy.	Nicky Thomas
3	01/06/09	Authority to administer – electronic training package. Identification of arterial lines, NaCl 0.9% for patency. MEDUSA. NPSA requirements for peripheral flushes. Intrathecal chemo now HSC 2008/001. Enteral syringes not to be reused.	Nicky Thomas
4	16/05/2011	Updated in line with recent NPSA & MHRA guidance, Hand Hygiene Policy, Entonox guidelines and second check requirements	Nicky Thomas
4.1	03/01/2012	Updated as a result of the switch from enoxaparin to dalteparin	Nicky Thomas
5	19/07/2013	Inclusion of Community Services. Infection control. Homely remedies	Nicky Thomas
5.1		Guidance for prioritising the use of infusion devices. Reference to Community Services transcribing and management of emergency medication procedures. Clarified responsibility for medicines taken by carers on Trust property. Inclusion of guidelines for multiple use of vials, previously in separate document. Unlicensed medicines section amended to be in line with updated policy. Preparation of IVs by physician's assistants (anaesthetics), and trainee physician's assistants (anaesthetics).	Nicky Thomas

Document Imprint

Executive Summary

MEDICINE CODE – SECTION 3

Document Objectives:	To describe, clarify and standardise practices and procedures for the safe administration of medicines across the Trust.
Group/Persons Consulted:	Previous versions: Clinical Directors, Nurse Directors, Lead Nurses, Clinical Risk Management Group, Matrons, Clinical Management Board, Nurse Directors, Medicine Safety Committee, Medicine Management and Therapeutics Committee. Current version: Medicine Safety Committee
Monitoring Arrangements and Indicators:	Key indicators will be monitored by the Clinical Assessment Tool and responses checked by the Medicine Safety Manager. Medicine Safety Committee will receive high level reports from the Clinical Assessment Tool and quarterly reports of medication incidents reported via Datix.
Training Implications:	All training related to medicine use has been classified as Job Specific Training therefore staff within the organisation will require this training dependant upon their role. The training is specified in the Central Training Needs Analysis
Equality Impact Assessment:	An Equality Impact Assessment has been completed – no negative impacts identified. A copy of the EIA is posted on the Trust's internet site
Resource implications:	All resources for training and monitoring are already in place.
Intended Recipients:	All Healthcare Staff within STH NHS Foundation Trust involved in the use of medicines, this includes prescribing, administration, dispensing, handling and disposal
Who should:-	
➢ be **aware** of the document and where to access it	Staff receive basic awareness of this policy through central induction
➢ **understand** the document	Ward/department managers and clinical supervisors
➢ have a **good working knowledge** of the document	STHFT staff involved in the administration of medicines

3 Administration of Medicines – Part A

Throughout this section, careful reference is made to the roles and responsibilities of both health care practitioners and health care professionals. Refer to the glossary for full definitions of these terms.

3.1 General Considerations

3.1.1 Consent

Valid consent is necessary for all examinations, investigations or treatments.

Consent may be implied, oral or in writing depending on the situation. See current STHFT Consent to Examination or Treatment Policy for further information.

3.1.2 Authorisation to Administer

Medicines may only be administered with an authorised prescription or according to an authorised Patient Group Direction (PGD), or if administered by groups of professionals as defined by Medicines Legislation e.g. registered chiropodists.

A Patient Specific Direction is the traditional written instruction from a prescriber for medicines to be supplied or administered to a named patient. Currently for inpatients at STHFT this should be on a prescription and administration chart and not in the notes.

In general, nurses, midwives, doctors, dentists and patients themselves are involved in the administration of medicines. Other practitioners (e.g. clinical support workers) may be involved in administration of medicines according to locally approved management policies.

Nuclear Medicine staff administer non-radioactive pharmaceuticals to patients as part of the procedure, according to protocols approved by the Administration of Radioactive Substances Advisory Committee.

All staff administering medicines to patients are accountable for their actions and must be trained and assessed competent in the intended procedure as well as in the use of any equipment required.

All qualified nursing staff are expected to demonstrate and maintain their proficiency in administration of medicines. A tool for assessing/demonstrating competence is available from the Learning and Development Department.

'Registered nurses' and 'registered midwives' on the NMC Professional Register may administer medicines unaccompanied except where extra checks are necessary as defined by Trust or Unit policy for example administration of controlled drugs on inpatient wards/departments. Other health care practitioners may administer medicines unaccompanied except where extra checks are necessary as defined by Trust or Unit Policy (see 3.1.3 below). Students of all disciplines must be supervised at all times and the responsibility remains with the health care professional supervising the activity.

Student nurses must be supervised by a registered nurse at all times when engaged in the administration of medicines. Responsibility for the administration remains with the registered nurse who must ensure all stages of administration are performed correctly and that they countersign the relevant prescription and administration chart.

Clinical support workers and health care practitioners may administer medicines if they have been adequately trained and demonstrate competence in this activity. They must be must be deemed competent to do so by the appropriate manager. A tool for assessing/demonstrating competence is available from the Learning and Development Department.

A current register of permanent health care practitioners, health care professionals and clinical support workers competent and authorised to administer medicines is maintained. The appointed service manager or sister/charge nurse/midwife for a ward/department must ensure this record is up to date and includes a specimen signature and initials for each individual.

All medicines administered within the Occupational Health Department are given via PGDs.

Exceptions

An exception to the above is the administration of parenteral medicines for the purpose of saving life in an emergency. Staff must be competent to administer these medicines in a life saving situation. The following medicines are exempt from the legislation under those circumstances.

- Adrenaline injection 1 in 1000 [1mg in 1ml] (Epinephrine) up to 1mg for IM use in anaphylaxis
- Atropine sulfate injection
- Atropine sulfate + obidoxime chloride injection
- Atropine sulfate + pralidoxime chloride injection
- Atropine sulfate, pralidoxime mesilate + avizafone injection
- Chlorphenamine injection
- Dicobalt edetate injection
- Glucagon injection
- Glucose injection
- Hydrocortisone injection
- Naloxone hydrochloride
- Pralidoxime chloride or mesilate injection
- Promethazine hydrochloride injection
- Snake venom antiserum
- Sodium nitrite injection
- Sodium thiosulfate injection
- Sterile pralidoxime

Staff with an Advanced Life Support Certificate issued by the Resuscitation Council (UK) may administer adrenaline 1:10,000 up to 1mg (IV only) and amiodarone parenterally in an emergency for treating cardiac arrest (Human Medicines Regulations 2012).

Staff employed within Community Services should refer to the Community Services Directorate Procedure for Management of Emergency Medication.

The actions taken in both the above situations must be fully documented in the patient's record after the event has been controlled.

Following insertion of an intravenous line, it must be appropriately flushed by a competent health care practitioner according to locally agreed protocols.

STHFT Community Health Services practitioners who administer vaccines must also carry adrenaline for the purpose of saving life in an emergency. Health care practitioners should be familiar with the recommendations and dosages from the Resuscitation Council (UK) available at: http://www.resus.org.uk .

Registered midwives may supply and administer certain medicines without the written directions of a professional as specified in the Medicines Act in the course of their professional practice. Student midwives may administer parenteral medicines on the Midwives Exemption List (except controlled drugs) under the direct supervision of a registered midwife (SI 2011/1327 July 2011).

Registered chiropodists/podiatrists, who have the relevant annotation in the Health Professions Council register may supply and administer certain specified products without the written directions of a professional in the course of their professional practice. (This list was extended 17.11.06)

Ambulance paramedics who hold a certificate of proficiency in ambulance paramedic skills issued by or with the approval of the Secretary of State, or registered paramedics may administer certain parenteral prescription only medicines (POMs) without the written directions of a professional in the course of their professional practice.

For verbal prescriptions see section 2.7.9.

3.1.3 Further Considerations

Accountability for administration of medicines is held by the registered health care professional administering the medication. He/she should make a professional assessment about whether any of the individual medications administered are required to be checked by a second registered health care professional. The second checker must carry out the same checks independently as the person performing the administration but final responsibility for the administration lies with health care professional administering and signing for the medication.

It is good practice (and within some wards and departments a requirement) to obtain a second check for the preparation or administration of: -

- high risk medicines including IV additives, cytotoxic drugs and insulin
- medicines unfamiliar to area/practitioner including clinical trials
- medicines administered to children of 12 and under
- calculation-dependent doses (e.g. weight related doses)

Controlled drugs administered in hospital must have a second check according to Trust CD SOPs

On admission to hospital or in clinic patients should be measured and the height recorded in the patient's record. Patients must be weighed on admission to hospital or in clinic and the weight recorded on the inpatient prescription and in the patient's record. The frequency of further weighings must be followed up according to local practice. If weighing is not feasible with sitting or standing scales, other equipment available locally should be used (e.g. hoists with adaptors). In an emergency, when a weight is estimated, two nurses (or a nurse and a doctor) must document in the patient's record that the weight is estimated, that they agree with the weight and that a follow up is required. In Community Health Services patients should be weighed when equipment is available and it is deemed appropriate. The weight should be recorded in the patient's notes. Patients own weighing scales should not be used.

In some situations a calculated 'ideal body weight' (ibw) is used to dose medication. The Medicines Information departments in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours can be contacted for further help.

Where calculations are to be checked, both practitioners must undertake the calculation independently and compare results.

It is important to be aware that renal replacement therapies such as haemodialysis, peritoneal dialysis or continuous arterio-venous/veno-venous haemofiltration may alter the way a medicine behaves in the body. Dosing regimens may need to be altered. Further information can be obtained from the Medicines Information departments in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]), the on-call pharmacist out of hours, or the renal pharmacists (Ext. 15358).

Practitioners involved in the administration of opioids must be familiar with the usual starting dose, frequency of administration, standard dosing increments, symptoms of overdose and common side effects (NPSA/2008/RRR05).

When opioid medicines are administered (except in acute emergencies), the health care practitioner should confirm any recent doses of opioids taken by a patient and check that any increases in opioid doses are appropriate and safe for the patient.

In inpatient areas within STHFT two practitioners must check the administration of controlled drugs (CDs). One practitioner will take the lead and administer the medicine, the other act as a witness to the procedure.

The witness, who may be a student nurse, must be present at all stages of the process from obtaining the medicine from the locked cupboard to administering the correct dose to the patient. Both the administering practitioner and the witness must count and record the stock balance before and after administration, and sign the CD register.

In Community Health Services it is good practice for the administration of CDs to receive a second check. However many health care practitioners lone work in the community and there are situations where this is not possible. CDs in patient's homes are the patient's property and are not stored in CD cabinets or recorded in registers.

The Trust has an approved list of critical medicines which must be administered at the prescribed times in an inpatient setting to avoid serious harm or death (NPSA/2010/RRR09). The list is not exhaustive as other medicines may be critical in specific circumstances and it is the prescriber's responsibility to make this clear on the prescription. The list does not include medicines administered in emergency situations or in theatre. Medicines on the list should be administered on time and any omitted doses documented appropriately in the 'omitted or delayed' section of the drug card. Medical staff must be informed if the patient is unable to take a dose such that an alternative route can be considered. Nursing staff must ensure supplies are ordered from Pharmacy before the last dose is administered.

When administering treatment doses of low molecular weight heparin, the health care practitioner should check the dose based on the patient's weight and renal function (NPSA/2010/RRR014).

When administering subcutaneous insulin to a patient for the first time, the health care practitioner should ask to see the patient's insulin passport and if it is available, use it to confirm the correct identity of insulin products (NPSA/2011/PSA003).

Any staff handling medicines who are pregnant, trying to become pregnant or breastfeeding need to inform their line manager who will perform a risk assessment including consideration of hazardous medicines which may need to be avoided.

District nurse teams should ensure that injectable medicines which they are required to administer in a patient's home are prescribed and labelled for the patient with clear dose

instructions. Failure by the prescriber to issue a prescription means legally a Patient Specific Direction is required for each administration. Without this authorisation the nurse cannot legally administer the medication.

Carers who are staying overnight with patients in clinical areas (e.g. new mothers who have been discharged where the baby is still an inpatient) are responsible for the security and administration of their own medication. There is no requirement for any record of doses taken by the carer. The carer may be given access to a lockable cupboard for storing only their medication. The cupboard must be cleared by nursing staff when the patient is discharged. If any medication has been accidently left in the cupboard, the carer should be contacted to arrange collection or give permission for disposal.

Appropriate safety equipment must always be used when risk assessments require their use.

Any errors, incidents or near misses occurring during medicine administration must be recorded on an incident form for inclusion in the Trust's Datix Risk Management System.

Standard Infection Prevention and Control Precautions

In order to safeguard the health and safety of all patients and health care practitioners, it is essential that good working practices are adopted at all times. This involves careful handling of all blood and body fluids from all patients, regardless of whether a risk of infection has been identified or not. Health care practitioners should treat all blood/body fluids as potentially infectious. All clinical procedures should be undertaken using Standard Infection Prevention and Control Precautions at all times. In summary these consist of:

- Cleaning hands at the point of care before and after patient contact and between procedures for the same patient.
- Choice and use of personal protective equipment (PPE) to protect staff from exposure to blood/body fluids and prevent spread of infection between patients. Appropriate protective clothing (e.g. disposable gloves and plastic aprons) must be worn when in contact with blood and body fluids. Eye/face protection must be worn if splashing is anticipated.
- Preserving integrity of the skin as a barrier to infection. Cover existing wounds or skin lesions with waterproof dressings.
- Treating waste and linen contaminated with blood/body fluids as infected.
- Treating all blood spillages as infected and dealing with them immediately
- Handling and disposal of sharps to prevent sharps injuries. Sharps must not be re-sheathed but must be disposed of appropriately.
- Contaminated Injury Management.

For further details see Trust Blood Exposure Policy and other related policies via the Waste Management site on the Trust Intranet.

Other measure may be required **in addition to** Standard Precautions for the safe management of patients with certain infections. See the Trust Infection Control Patient Placement Guidelines for further information.

See Trust Infection Control Intranet site for further information

Hand Hygiene

Within the acute Trust setting hands should always be cleaned with liquid soap and water before and after administering medication. Hand wash basins should be appropriately located and equipped with liquid soap dispensers and well placed waste bins for disposal of paper towels.

In the domiciliary setting, hand washing facilities differ significantly, therefore must be based on risk assessment prior to use. In the community, the type of hand hygiene required before administering medication will be based on the activity that has just been performed and the hand washing facilities available.

Soap and water should be used in the following situations:

- When hands are visibly soiled
- The patient is experiencing vomiting and/or diarrhoea
- There is direct hand contact with bodily fluids (i.e. if gloves have not been worn)
- There is an outbreak of *Norovirus, Clostridium difficile* or other diarrhoeal illnesses
- After using the toilet
- Before and after preparing, handling or eating food
- Before and after an aseptic technique
- Before putting on sterile gloves
- Before putting on non-sterile gloves if carrying out a non-touch aseptic procedure
- After removal of gloves
- At the start and end of a shift
- After completing a task (e.g. cleaning equipment)
- After cleaning up any spillages
- After handling linen and waste
- Before and after administering medication
- Before and after emptying urinary drainage bags
- Before and after caring for susceptible or immunocompromised patients

Alcohol hand rub can be used in the majority of other patient care situations on non-soiled hands. Whether using alcohol hand rub or soap and water, the same six-step technique (including wrists) must be carried out. See the Hand Hygiene Policy for further information.

Community health care workers should order hand hygiene supplies (liquid soap, paper towels, alcohol hand rub and moisturiser) from regular stock suppliers. Individuals are responsible for replenishing stock in their own kit bag/box whilst undertaking duties in the domiciliary setting.

3.2 Administration Records

All doses of prescribed medicines administered to inpatients must be signed for on an approved STHFT prescription and administration chart or approved supplementary chart.

Community Health Services should record medicines administration (as described below) in the patient's notes. This should be done as per local procedure e.g. a MAR chart, controlled drug transdermal administration record card or insulin administration record chart in the patient's notes. Medication should be administered according to the principles outlined in the community nursing care plans.

Designated healthcare professionals employed within Community Services may transcribe prescribed medicines to administration record documents in line with the Community Services Care Group Medication Transcribing Procedure.

Doses administered under a PGD must be recorded in the patient's record or under the appropriate section of the inpatient prescription and administration chart.

In the outpatient clinic setting all doses administered to patients must be documented in the patient's record including those administered under a Patient Group Direction (PGD).

The health care practitioners must keep records of all medicines administered including: -

- date
- time of administration
- name and strength of medicine administered
- dose, including units
- route of administration
- initials of administering practitioner
- full name & signature of administering practitioner (if required)
- counter-signature if supervising student nurse
- second signature if required by Unit
- controlled drug register details when applicable

When any patch is administered to a STHFT inpatient, (e.g. fentanyl), the position of the patch should be noted on the prescription and administration chart. When a patch is administered in Community Health Services the name and position of the patch must be documented in the patient's notes.

Signing for the administration of an IV dose also assumes responsibility for administering the appropriate flushes before and after the treatment. Flushes for some treatments are included on the prescription (e.g. chemotherapy at WPH).

Flushes given after the insertion of intravenous lines must be documented in the patient record according to locally agreed protocol.

3.2.1 Recording of Omitted Doses

It is the responsibility of the health care professional caring for the patient to ensure that every effort is made to administer prescribed medicines.

A health care practitioner unable to administer a prescribed dose must refer to a qualified registered nurse/midwife, or pharmacist/pharmacy technician within Community Health Services.

For inpatients, doses of medicines may not be given for a variety of reasons and it is important that the reason is documented on the prescription and administration chart or supplementary medicine prescription chart using the codes below.

If a prescribed dose cannot be administered, the nurse/midwife responsible for the administration must take appropriate action (see below), and document on the designated section of the administration chart (where used) or in the patient's record. Failure to document the reason for an omitted, prescribed dose constitutes a medication error.

If a patient is away from the ward for clinical reasons (e.g. tests or x-ray), the nursing staff should apply clinical judgement to determine whether it is appropriate to administer the dose on their return. If necessary, nursing staff should refer to medical staff or a pharmacist for advice. The time of administration and reason for delay must be documented.

Code	Reason	Suggested Actions
1	Patient away from ward	The patient should be discouraged from being absent from the ward when regular medication is due. If the patient is away from the ward for clinical reasons (e.g. x-rays or tests) clinical judgement should be applied to determine whether it is appropriate to administer the dose prior to leaving the ward or on their return. If necessary, refer to doctor or pharmacist for advice. The time of administration and reason for the delay should also be recorded.
2	Patient could not take dose	This includes 'nil by mouth' and vomiting for oral doses and 'line not in place' for parenteral doses. The current STHFT Trust Guidance on Starvation prior to Regional and General Anaesthesia or Sedation must be referred to, to determine whether medication should be withheld when patients are 'nil by mouth' (NBM). Clinical judgement should be employed and appropriate action taken. Alternative routes and formulations should be considered in consultation with the doctor and/or pharmacist.
3	Patient refused dose	The reason for refusal should be identified and appropriate alternatives considered. Every effort should be taken to educate the patient and persuade them to take their medicine as prescribed. If the nurse considers it inappropriate to administer a dose, this should be recorded as code 5.
4	Dose not available	If the POD or pharmacy supply section indicates that the item was issued, every reasonable effort should be made to locate that supply (including contact with the referring ward). New supplies will be initiated by the pharmacy team on their ward visits. Nursing staff are responsible for obtaining a supply of medicines at the earliest opportunity according to clinical necessity. Nursing staff should use clinical judgement to determine whether it is necessary to order from Pharmacy before the next pharmacy visit. Refer to site specific 'Urgent Medication' lists.
5	Dose not given at nurse's discretion	This may be used if the nurse considers it clinically inappropriate to administer a prescribed dose. The reason must be documented on the designated section of the administration chart (where used) or the patient's notes and the prescriber informed.
6	Dose not given at prescriber's request	The prescriber must communicate the reason to the nurse looking after the patient and also document it on the designated section of the administration chart (where used) or on the patient's record.

The nurse responsible for the administration must sign the prescription and administration chart or supplementary medicine prescription chart in addition to recording the code.

For patients in the community setting, if a dose is not able to be administered the reason must be recorded in the patient's notes; this can be done by annotating the MAR chart using the codes printed on the chart. If a clinical support worker is unable to administer a medication, the staff member must inform a nurse, pharmacist or pharmacy technician.

3.3 Pre-Administration Checks

"The administration of medicines is not solely a mechanistic task to be performed in strict compliance with a written prescription; it requires thought and the exercise of professional judgement." (NMC Guidelines 2004)

Health care practitioners must ensure that they are focussed on the task of administration and should avoid any unnecessary distractions.

All other staff have a responsibility not to distract a health care practitioner during the administration of medicines or related tasks (e.g. calculations, preparing injections).

The health care professional responsible for administering the medicine must know the therapeutic uses of the medicine to be administered, its normal dosage, side effects, precautions and contra-indications.

Prescriptions for anticancer medicines, (whether for cancer or non-cancer indications) must be checked and authorised by an appropriately trained pharmacist (or suitably competent medicines management technician) before administration (BOPA Guidelines 08/01/2010).

The BNF, pharmacists and the Medicines Information departments in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) are all sources for advice and information.

The health care professional must be satisfied that there are no contra-indications to giving the medicine at that time (including co-existing therapies and the patient's condition including relevant clinical parameters e.g. INR) and that there is no record of an allergy/sensitivity to the medicine.

Particular care should be taken when administering medicines which require loading doses and subsequent maintenance doses to ensure that the appropriate dose is given (e.g. warfarin, amiodarone, digoxin, phenytoin [NPSA/2010/RRR018]).

The health care practitioner must ensure that any previously applied patches (e.g. fentanyl) are accounted for, removed and suitably disposed of before a new patch is applied. Any discrepancies must be investigated and recorded on the Trust's Datix Risk Management System.

The health care practitioner must be aware of the patient's care plan.

The health care professional must check every side of the inpatient prescription and administration chart and supplementary charts when administering medicines to avoid omissions. In Community Health Services the patient's notes should be checked prior to administration and if MAR charts are being used to record administration, all MAR charts must be checked.

The health care practitioner responsible for administering the medicine must be satisfied that the following criteria are met before administering a dose: -

- a legal prescription is available (except for PGDs and when health care professionals are administering as specified in the Human Medicines Regulations in the course of their professional practice)
- valid consent has been obtained
- the right patient
- the correct medicine, correctly stored
- the medicine is in date
- the correct dose
- the correct form
- the correct administration time
- the correct rate of administration (if applicable)
- the correct route
- the correct equipment (if applicable)

- record the batch number for all blood derived medicines and other medicines required by local policy

If the prescription is unclear or incorrect, the dose must not be administered. This should be documented in the patient's record. The prescriber or appropriate health care professional should be informed immediately.

Inpatients should wear a hospital wristband at all times (see current Patient Identification Procedure for exceptions and further information). The details on the wristband (patient's full name, gender, hospital/NHS number, date of birth, ward [if deemed necessary]) must be used to **positively** identify the patient together with asking their name and date of birth, if possible. When a medicine is being administered against a prescription, these details must also be checked against the prescription documentation. (NB Wristbands will not be applied to patients consenting to radiotherapy).

If an inpatient does not wear an identity bracelet, this should be documented in the notes with reasons and the identification checking procedure in these circumstances agreed and employed.

In Community Health Services patients should be identified as per STHFT Patient Identification Procedure.

3.4 Supervision of Administration

The administering health care practitioner is responsible for ensuring that the patient takes/uses the medicine appropriately.

The health care practitioner must witness the medicine being administered except in the following circumstances: -

- Inpatients on level 1 of the STHFT Self-Administration Scheme (see STHFT Self-Administration Policy)

- Medicines administered over a prolonged period (e.g. infusions, nebulisers etc.). Under these circumstances, the health care practitioner must initiate the administration and ensure adequate supervision for the period of the administration.

Inpatients who are self-administering must not leave medications unattended out of their locked cupboard.

Individual doses must not be left by the patient's bedside or in the patient's home for them to take later if the patient is receiving medicines administration from a Community Health Service such as CICS (Community Intermediate Care Service).

If a dose is dropped, every effort should be taken to retrieve it and dispose of it in the appropriate container (see current STHFT Waste Strategy and Policy)

3.5 Administration to Children

Parents/guardians can give consent to treatment for children under 16 years of age.

Children less than 16 years of age can consent to treatment provided they understand the nature, purpose and consequence of that treatment (Gillick-competence).

After the age of 16, a competent child may give consent to treatment.

The refusal of a competent person aged 16 or 17 can be overridden by a person with parental responsibility, or by the courts, if the welfare of the child requires this (see current STHFT Policy on Consent to Examination and Treatment for further information).

The general principle for the administration of medicines to patients applies equally to adults, children and neonates.

The weight of the patient and any changes must be recorded in kilograms on the prescription and administration chart. A new prescription must be written if a weight change occurs necessitating a change in dose.

In an emergency, when a weight is estimated, two nurses (or a nurse and a doctor) must document that they agree with the weight in the patient's record. The child must be weighed at the first possible opportunity.

It is good practice for two competent health care professionals to independently calculate and check drug administration where complex calculations are involved. This includes weight-based calculations and therefore includes some children's doses (e.g. Neonatal ICU). Local policies on administration may be in force.

All medicines administered to children of 12 and under must be checked by two registered nurses. Any calculations must be independently carried out by each of the two nurses.

Many medicines used in children are not licensed for use in children. It is important that the dose is checked against a reference (e.g. STHFT Neonatal Pharmacopoeia or the BNF for Children) before administration, (see section 3.6).

Paediatric formulations should be used wherever possible. Extreme care is necessary where these are not available and adult–strength formulations are used.

Oral preparations should be sugar-free wherever possible.

Doses of less than 1ml must be drawn up into 1ml syringes graduated to 0.01ml.

Oral syringes, medicine dummies or medicine spoons must be used for oral liquid formulations.

Further information is available in the current Protocol/Guidelines for Safe Paediatric Drug Administration and the National Service Framework (NSF) for Children.

3.6 Administration of Unlicensed Medicines

An unlicensed medicine is a medicine without a European or UK Marketing Authorisation (MA) and is not licensed to be marketed in the UK (see section 2.8).

The administering health care professional must be satisfied that an unlicensed medicine has been prescribed according to current STHFT Policy for the use of Unlicensed and Off-licence Medicines except where a community nurse/midwife is administering a medicine prescribed by a GP.

The administering health care professional must have sufficient information to administer the medicine safely as with licensed medicines and he/she is responsible for this action.

The administering health care professional similarly may refuse to administer unlicensed medicines if they are concerned about risks to the patient's health. The prescriber must be notified immediately in such cases and the reasons documented in the patient's record.

Crushing tablets and opening capsules generally falls outside the MA. Therefore the prescriber, administering nurse and pharmacist (if such action has been endorsed) are professionally accountable for any adverse effects resulting from such administration.

It is safe and reasonable for tablets to be crushed or capsules to be opened providing a licensed alternative is not available and the formulation remains effective. As a general guide enteric coated tablets, modified and slow release preparations, cytotoxic and hormone preparations should not be subjected to crushing or opening.

Medicines Information in pharmacy (Ext. 14371 [NGH] or Ext. 12346 [RHH]) holds information about the suitability of crushing or opening solid dosage forms and about the availability of liquid or dispersible alternatives.

Homely remedies

Homely remedies are products that can be bought without a prescription to treat a minor ailment. They include licensed medicines available on the general sales list (GSL) and pharmacy only (P) listed medicines as well as herbs, spices and vitamin products available without prescription and used to treat a variety of ailments. The latter group are also called 'traditional' or 'herbal' remedies, and they may or may not have evidence-based medicinal properties.

Health care practitioners may only administer homely remedies to patients if they have been prescribed, or included on the patient's MAR sheet and the GP has signed an authorisation form and the identity of the remedy can be confirmed (i.e. it is in original commercial packaging stating the name of the product).

3.7 Patient Group Directions (PGDs)

For further information, see STHFT PGD protocol

The most appropriate clinical care will usually be provided on an individual basis by a specific prescriber to a specific individual patient. PGDs should only be considered where it would offer a benefit to patient care without compromising patient safety.

A PGD is a specific written instruction for the direct supply or administration of a named medicine in an identified clinical situation. It applies to groups of patients who may not be individually identified before presenting for treatment.

Administered doses must be recorded in the 'doses administered without a prescription' section of the drug chart.

The following health care practitioners may be involved in the supply/administration of medicines via a PGD as **named** individuals:

- State registered paramedics (or individuals who hold a certificate of proficiency in ambulance paramedic skills issued by the Secretary of State (or with his approval)
- Pharmacists
- Registered health visitors
- Registered midwives

- Registered nurses
- Registered ophthalmic opticians
- State registered chiropodists/podiatrists
- State registered physiotherapists
- State registered orthoptists
- State registered radiographers
- Speech and language therapists
- Dietitians
- Occupational therapists
- Orthotists
- Prosthetists
- Dental hygienists (from 01/06/10)
- Dental therapists (from 01/06/10)

PGDs are intended mainly for prescription only medicines (POM) but exemptions are provided within the Medicines Act for the supply of pharmacy medicines (P) and general sales list medicines (GSL). Registered nurses and pharmacist are permitted to supply morphine or diamorphine under a PGD for the immediate, necessary treatment of sick or injured persons (SI 2012/973 April 2012)

Medicines used outside the terms of the Summary of Product Characteristics (i.e. off-license) and newly licensed medicines (black triangle medicines) may be included in a PGD in exceptional circumstances, but reasons for their use must be clearly stated together with their unlicensed status. This must be supported by current best clinical practice.

The approved STHFT Trust template should be used.

The development of a PGD is a multidisciplinary task involving a minimum of:

- Senior doctor/dentist (registrar or above) who is closely involved in the area of medicine covered by the PGD
- Senior pharmacist
- Representative of the professional group expected to supply/administer the PGD

Specified members of the multidisciplinary team plus the consultant(s) whose patients will be treated under the direction must sign off the PGD before submitting it for final authorisation by the Trust Clinical Governance Office.

Antimicrobial resistance is a major health concern and therefore any PGD involving antimicrobials should also include a microbiologist in the development process.

A competency programme for the PGD must be approved and completed and a signed up-to-date list of those deemed competent be maintained.

The PGD must be submitted to the Healthcare Governance Office for approval. If it is approved, the Trust Clinical Governance lead (or designated deputy) signs it off. A reference number will be issued on approval.

Any PGD not reviewed before the review date is no longer valid.

For a small number of medicines which are used widely across the Trust, Trust wide PGDs are currently being developed. Once approved, clinical areas wishing to use these must take responsibility for their application and training in the usual way.

Full details including approved STHFT templates are available on the STHFT intranet under Patient Group Directions Protocol.

3.8 Self-administration by Inpatients

For further information see STHFT Policy and Procedures for the Self-administration of Medicines and section 4.6

Providing the criteria outlined in the policy are met, the following items can be self-administered by patients assessed as competent by the nursing staff in any clinical area: inhalers, nasal sprays, GTN sprays, eye drops, ear drops and skin preparations, low molecular weight heparin (dalteparin or tinzaparin) and subcutaneous insulin.

The Directorate of Pharmacy and Medicines Management maintains a register of inpatient areas which have implemented self-administration in full.

If a patient has been formally assessed according to the STHFT Policy and Procedures for Self-administration of Medicines, the stage should be indicated on the prescription and administration chart. Medical staff cannot assess patients for self-administration.

3.9 Clinical Trials

If a patient admitted to hospital is already participating in a clinical trial, the clinical trial medication must be brought in from home. If this is not possible, the Pharmacy department should be contacted for advice. Hospitalisation may be a serious adverse event as described by the Medicines for Human Use regulations. It is vital that if a patient on a clinical trial is admitted to hospital, that the contacts described on the research alert page are contacted as soon as possible. This may be the principle investigator at the site or a designated individual. This individual will offer immediate advice regarding potential patient safety and follow the process described in the STHFT Research Department SOPs.

Ward staff must be aware of the study requirements and where to obtain further information.

Only use clinical trial medication prescribed for the patient named. Clinical trial medication must never be administered to a different patient.

If a patient commences on a clinical trial as an inpatient, health care professionals looking after that patient must be familiar with the protocol, treatment and documentation.

The participant's informed consent form and a copy of the participant information sheet are kept in the patient's notes in the research section. This will provide sufficient detail to understand the trial and its implications. Contact details for the trial personnel and the location of the protocol are also listed on the research alert page if further information is required.

Advice and information may be obtained from the designated trial nurse or from clinical trials coordinators in Pharmacy:-

RHH	Ext. 13840
NGH	Ext. 15456
WPH	Ext. 65101
JW	Ext. 68216/68220

See Section 4.12 for further information.

3.10 Adverse Drug Reactions (ADRs)

Any unexpected reaction to a medicine must be reported immediately to the prescriber and recorded in the patient's record. It must also be recorded on the Trust's Datix Risk Management System.

A 'Yellow Card' must be completed and sent to the Medicines and Healthcare Products Regulatory Agency for all suspected reactions involving Black Triangle (▼) medicines. A Black Triangle is always assigned to a medicine if:-

- it contains new active substances; new medicines/vaccines authorised on or after January 2011 are assigned a black triangle
- biological medicines such as vaccines or medicine derived from plasma
- it has been given 'conditional approval' or approved 'under exceptional circumstances'
- the company that markets the medicine is required to carry out additional studies e.g. to provide more data on long-term use of the medicine

The Black Triangle Scheme now operates EU-wide

A 'Yellow Card' is also required for all serious reactions in established medicines: -

- fatal
- life threatening
- disabling
- incapacitating
- result in or prolong hospitalisation

'Yellow Cards' for submitting ADRs may be found at the back of the current edition of the BNF, or a report may be submitted online at http://yellowcard.mhra.gov.uk. For further information about any aspect of ADR reporting, please consult the 'Guidance on Prescribing' chapter of the current BNF or contact the Medicines Information departments in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours.

Suspected adverse reactions to any therapeutic agent should be reported including medicines (prescribed and self medication), blood products, vaccines, X-ray contrast media, dental or surgical materials, intra-uterine devices, herbal products and contact lens fluids.

If an adverse reaction to a trial drug is suspected in a STHFT sponsored research study, the research department should be notified following the SOP (A122) 'Reporting, Monitoring and Recording of Adverse Events for Externally Sponsored Studies' and SOP (A123) 'Recording Recording of Adverse Events for STHFT Sponsored Studies'. For further information see Research Department pages on the intranet.

The MHRA is particularly interested in ADRs in children (regardless of whether the medicine is licensed for use in children), the elderly, congenital abnormalities, delayed adverse effects (e.g. cancers) and herbal remedies.

Doctors, dentists, pharmacists, nurses, midwives, health visitors, coroners and patients themselves can report ADRs under the 'Yellow Card' scheme.

Medical staff are responsible for informing the patient of the adverse reaction and its implication.

Medical staff are responsible for informing the patient's GP of the adverse reaction and its implication.

3.10.1 Anaphylaxis

Anaphylaxis is a severe often fatal form of hypersensitivity allergic reaction. It is a medical emergency.

It can occur as a response to foods, latex or insect bites as well as to medicines. Such reactions may be related to a dye or preservative in the preparation rather than the medicine itself.

All inpatient clinical areas where medicines are regularly administered by the intravenous route should ensure that an anaphylaxis box is available and in date.

All nurses who administer vaccines in patients' homes must carry adrenaline (see section 3.1.2)

Community Services may stock adrenaline as part of their emergency stock drugs.

The likely offending medicine must be stopped (latex allergy should also be considered – see current STHFT Latex Policy) and medical assistance sought urgently.

Appropriate initial and secondary anaphylaxis treatment must be given according to the algorithm on the outside of the anaphylaxis box. This should be followed up with subsequent investigations as appropriate.

The incident must be documented with full details of the allergy recorded in the patient's record.

The allergy status must be updated on any prescription and administration charts as well as in the inside front cover of the patient's record.

Medical staff are responsible for informing the patient of the adverse reaction and its implication.

Medical staff are responsible for informing the patient's GP of the adverse reaction and its implication.

Part B Routes of Administration

Examples of preparations given in this section are for illustration only and may not be available in the appropriate formulary.

The route of administration must be clearly written on the prescription and administration record or outpatient prescription.

The health care practitioner administering the dose must be competent to deliver medicines via the intended route.

3.11 Injections and Infusions

Medicines should be given by injection only when the practicality and appropriateness of other routes of administration have been excluded. The use of this route should be regularly reviewed in favour of switching to oral administration as soon as clinically appropriate.

Injections/infusions should be prescribed for administration and given via their licensed route(s) unless evidence-based advice is available (see Section 2.8 Unlicensed Medicines) as the preparation is not always suitable to be given via the alternative route.

This section will address the issues common to all routes of injection and infusion (e.g. intravenous [IV], intramuscular [IM], subcutaneous [SC]).

Injections/infusions are sterile products intended for administration into bodily tissues or cavities.

The formulation involves careful consideration of the following inter-relating factors: -

- proposed route of administration
- volume of the injection/infusion
- the vehicle in which the medicine is dissolved or suspended
- the osmotic pressure of the preparation (where relevant)
- the use of preservatives/antioxidants
- the pH of the preparation
- the stability of the medicine and method of sterilisation

The initial preparation may be a powder, a solution (aqueous or oily), a suspension, an emulsion or a colloidal solution. Some preparations are not interchangeable as their properties determine the route of administration, (e.g. Pabrinex® I.M. and Pabrinex® I.V.).

Only preparations designated for multi-dose may be used on more than one occasion. These preparations may be used to treat more than one patient if the manufacturers have restricted the license only on the grounds of the risk of cross contamination and a risk assessment is performed locally.

Dry powders are **generally** not considered appropriate for multi-use and the remaining contents should be discarded after the required dose has been withdrawn. Containers of sodium chloride 0.9%w/v and water for injection do not contain a preservative and any unused solution should be discarded immediately.

The date opened and expiry date must be written on the vial at the first use and the vial stored appropriately according to the product literature. The date and storage conditions together with the appearance of the vial must be checked before any subsequent use of the multi-dose vial. See below for General Guidelines for the Preparation of all injections/infusions.

Preparations licensed for single use may only be used as multi-dose containers within the Pharmacy Aseptic Units or according to an approved protocol where a thorough risk assessment has been undertaken.

Any remaining medicine from a single use preparation must be discarded after use in line with the current STHFT Waste Strategy and Policy.

When it is necessary to administer a part dose directly from the original container (e.g. 500mg IV paracetamol from a vial containing 1g), the excess dose must be withdrawn from the container and discarded before the intended dose is administered.

All regular single and bolus doses of insulin must be measured and administered using an insulin syringe or commercial insulin pen device. Intravenous syringes must NOT be used for subcutaneous insulin administration. (NPSA/ 2010/RR013)

The needle of an insulin pen device should be changed (preferably by the patient if they are able) after each dose during inpatient stays. If the patient is unable to change the needle, a needle safe device (BD Autoshield Duo) should be used by the healthcare practitioner, ensuring that a sharps bin is available when the needle is changed.

Pre-filled insulin syringes for IV infusion should be obtained from Pharmacy for hospital inpatients. Only when pre-filled syringes are unavailable should IV insulin be prepared in critical areas using an insulin syringe to measure the insulin and following the SOP provided by Pharmacy for these circumstances.

When a medicine is supplied with needles for administration, these needles should be used for that purpose. Advice should be sought from Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]), the on-call pharmacist out of hours or the product manufacturer if alternative needles or sharp safe needle devices are to be used.

The compatibility of any pre-filled syringes (e.g. from emergency boxes) with needle-free-intravenous connectors should be determined before doses are administered (MDA/2011/068 15 June 2011)

A risk assessment of all injectable medicines must be undertaken and reviewed annually by a pharmacist and senior practitioner to determine the safest presentation and location for storage and preparation.

Preparations, which are available in a ready-to-use form from a Pharmacy Aseptic Unit, should be used wherever possible. These products may carry different expiries to similar preparations prepared on the ward/department.

All IV administration must be according to the current STHFT Administration of IV Medicines Open Learning Programme. Local procedures should be followed for administration to children/neonates.

Injections/infusions must be prepared immediately before use and should be administered by the same practitioner. Exceptions to this are:-

- an established infusion instigated by another practitioner following Medicine Code guidelines
- medication prepared by a Pharmacy Aseptic Unit
- in an emergency to prepare substances for injection by a doctor providing he/she follows Medicine Code guidelines
- injections prepared by an anaesthetist for use in theatre (see pages 56 to 58)
- injections prepared by a trainee under the supervision of an anaesthetist (see page 58)

Medical devices with luer connectors must be used only for preparation and administration of injections.

Giving sets for continuous infusions may be kept in situ for 72 hours (except heparin which should be changed every 24 hours, and blood giving sets). Giving sets for certain medicines given intermittently can be kept in situ for 24 hours provided the set stays connected to the line. Contact Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours for further information.

The use of filters on IV lines is currently according to local policies.

If a medicine is light sensitive (e.g. amphotericin infusion, TPN) it must be covered with appropriate light protective materials, which are usually supplied with the medicine.

Arterial lines must be clearly identified. Sodium chloride 0.9% w/v (or other approved solutions not containing glucose) must be used to keep arterial lines open.

All infusions for inpatients must be recorded on the infusion chart, TPN chart, Chemotherapy chart or supplementary Syringe Driver chart as appropriate. The volumes given must be included on the fluid balance chart and any problems reported to the prescriber. In Community Health Services syringe drivers must be prescribed on the supplementary Syringe Driver chart & Nurse Administered Drug Record Card (pink).

Infusions should be examined regularly while they are running. If cloudiness, colour change or any other sign of contamination or interaction occurs, the infusion should be stopped and medical advice sought. The incident must be thoroughly documented in the patient's record and must be recorded on an incident form for inclusion in the Trust's Datix Risk Management System.

Equipment used for infusions should be checked regularly while infusions are running to ensure the infusion is running as prescribed. Where an infusion device is being used, the volume infused according to the device should be recorded on the Infusion Devices Recording Chart. If a Fluid Balance Chart is also in use, the volume must be documented there as well. This may involve 2 practitioners in some areas.

All pumps used for acute pain control with epidural analgesia or Intravenous Patient Controlled Analgesia (IVPCA) should to be checked hourly for the first 12 hours and four hourly thereafter (see Epidural Analgesia Guidelines and IVPCA Guidelines). This should be recorded on the Epidural Prescription and Monitoring Chart and IVPCA Prescription and Monitoring Chart respectively.

Only spinal, epidural and regional devices with non-luer compatible neuraxial connectors that will not connect with intravenous equipment will be used in response to NPSA/2011/RRR003 28 November 2011.

Extra safety precautions should be followed when administering cytotoxic medicines for example staff clothing and dealing with any spillages (see later section).

Risk assessments must be carried out by managers where cytotoxic medicines are handled according to current STHFT Safe Handling of Cytotoxic Drugs Policy. Any member of staff who is pregnant must inform their line manager in order for the risk assessment to be reviewed.

The general guidelines provided earlier in this section must always be followed before any administration is undertaken.

All records must be maintained as in sections 3.1 and 3.2.

If a medicine for injection/infusion requires preparation, the practitioner must ensure that they are aware of the correct method of preparation and that appropriate diluents and expiry times are considered. (For further information see MEDUSA and IV Administration Guide)

Administration of infusions prepared in clinical areas should be completed within 24 hours from the time of preparation but there are exceptions (e.g. where medicines are **not** stable for this length of time).

The following list includes ***common*** intravenous medicines used within STHFT with an expiry less than 24 hours. This list is **not** exhaustive. The product information leaflet, MEDUSA and Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours can be accessed for further information.

Drug	**Infusion Fluid** *either can be used but Dex 5% preferred	**Expiry (hrs) at room temp** (including infusion time)
Aciclovir	0.9% Sodium Chloride/ Dextrose 5%	12
Amoxicillin	0.9% Sodium Chloride	8
Clarithromycin	0.9% Sodium Chloride/ Dextrose 5%	6
Co-amoxiclav	0.9% Sodium Chloride	4
Co-trimoxazole	0.9% Sodium Chloride/ Dextrose 5%*	6
Desmopressin	0.9% Sodium Chloride	6
Imipenem + Cilastin	0.9% Sodium Chloride/ Dextrose 5%	3
Meropenem	0.9% Sodium Chloride	8
Meropenem	Dextrose 5%	3
Methylprednisolone	0.9% Sodium Chloride/ Dextrose 5%	6
Mycophenolate	5% dextrose	5
Omeprazole	0.9% Sodium Chloride	12
Omeprazole	Dextrose 5%	3
Pantoprazole	0.9% Sodium Chloride/ Dextrose 5%	12
Phenytoin	0.9% Sodium Chloride	1
Rifampicin	0.9% Sodium Chloride/ Dextrose 5%*	6
Vitamins B and C (Pabrinex)	0.9% Sodium Chloride	7

All syringes including flushes, infusions and docked bags must be labelled using a green additive label, immediately after preparation by the person who prepared them. 'Flag labelling' should be used to ensure that volume graduations on small syringes are not obscured. The only exception to this is in situations where preparation and bolus (push) administration is one uninterrupted process and the unlabelled product does not leave the hands of the person who prepared it. Only one unlabelled medicine must be handled at one time.

The following should be included on the label: -

- Patient's name
- Hospital number (inpatient only)
- Medicine and amount
- Diluent
- Initials of staff preparing and checking dose
- Date and time of preparation
- Date and time of expiry
- Route

The Trust has adopted the national standard syringe labelling system developed by the Royal College of Anaesthetists, the Association of Anaesthetists of Great Britain and Ireland, the Intercollegiate Faculty of Accident and Emergency and the Intensive Care Society. Preparations drawn up by anaesthetists in theatre are identified with coloured labels.

The NPSA recommends that these labels should **not** be used outside the anaesthetic environment. Within STHFT, anaesthetists will use the coloured syringe labels routinely. The use of these labels by other health care professionals (e.g. within the Endoscopy Unit) must be reviewed and subjected to risk assessments.

DO NOT rely on colour coding. **ALWAYS** read the label.

National Standard Syringe Labels		
Group	Example	New colour/pattern
Induction agents	Etomidate Ketamine Propofol Thiopental	Yellow
Muscle relaxants	Atracurium Mivacurium Pancuronium Suxamethonium Vecuronium	Red
Narcotics	Alfentanil Fentanyl Morphine	Blue
Anticholinergic agents	Atropine Glycopyrronium bromide	Green
Hypnotics	Diazepam Midazolam	Orange
Local anaesthetics	Bupivacaine Lidocaine Prilocaine	Grey
Major tranquillizers	Chlorpromazine	Salmon
Hypotensives	Labetalol Nitroprusside Propranolol	White with violet diagonal stripes
Relaxant antagonists	Neostigmine	White with red diagonal stripes
Narcotic antagonists	Naloxone	White with blue diagonal stripes
Hypnotic antagonists	Flumazenil	White with orange diagonal stripes
Vasopressors	Adrenaline (Epinephrine) Ephedrine Phenylephrine	Violet

Further information is available from Simon Richardson, Risk Advisor, Critical Care, Anaesthesia and Operating Services (Ext. 12944) or Nicky Thomas, Pharmacy Healthcare Governance Manager (Ext. 13007).

Physician's assistants (anaesthetics), and trainee physician's assistants (anaesthetics) may prepare and label (with the above national standard labels) IVs under the supervision of an anaesthetist. The supervising anaesthetist may wish to check the preparation. Responsibility lies with the supervising anaesthetist administering the dose.

General Guidelines for Preparation of all Injections/Infusions

See current STHFT Management of IV Medicines Open Learning Programme and the Manual of Clinical Nursing Procedures (The Royal Marsden Hospital) for further information. Local procedures should be followed for administration to children/neonates and community services.

Preparation of medicines in clinical areas must be carried out in risk-assessed environments by competent practitioners. The area must be suitably cleaned and disinfected according to current Control of Infection Guidelines.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Standard universal precautions and aseptic techniques must be adhered to throughout all preparative and administration procedures.

In general, only one addition should be made to any infusion container to ensure compatibility and stability. Care should be taken that any addition made to an infusion bag/bottle is compatible by reference to manufacturer's literature or Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours. Some incompatibilities/instabilities are not immediately obvious as a precipitate or colour change.

Ensure that all the materials to be used have not expired.

Check the integrity of all packaging.

Ensure a suitable size of syringe and needle is used for the intended procedure. The smallest bore needle depending on the viscosity of the fluid, type and route of injection/infusion and manufacture's recommendations) is recommended in general ward areas. Refer to manufacturer's literature or Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours.

Practitioners should be aware of the risk of particulate contamination from glass or cored bungs and aim to minimise this by avoiding the use of needles larger than 21g (green) and ensuring the needle bevel is pointing uppermost when drawing up. For all spinal injections and other circumstances where the risk of particulate contamination is significant, a filter needle or filter straw should be used to draw up from vials and ampoules.

Do not touch the tip of the syringe, the needle directly or allow the needle to come into contact with the work surface during preparation of the medicine.

Do not remove the cover from the needle until ready to prepare the medicine.

Inspect the ampoule/vial for particulate matter. **Do not** use if particulate matter is present. Inform Pharmacy and follow their instructions on what action to take.

Tap the head of the ampoule to ensure all the solution is in the bottom of the ampoule before opening.

The head of an ampoule and rubber cap of a vial should be cleaned with an alcohol wipe and allowed to dry before opening or withdrawing any medicine.

Coring of vial tops can be minimised by inserting the needle at an angle of 45°with the bevel up.

Always ensure reconstituted medicines are completely dissolved before adding to an infusion bag or giving the dose.

Avoid aerosol formation when manipulating medication in vials by ensuring pressures inside and outside the vial are equalised when adding diluents and removing dissolved powders and solutions.

Ensure the correct dose is withdrawn into the syringe and all air bubbles are dislodged before giving the dose. The needle must be removed and suitably discarded into a sharps bin and the syringe closed with a protective cap after the correct dose has been measured. The syringe must be appropriately labelled (see page 56).

After preparation, infusions must be thoroughly mixed by shaking (unless manufacturer's instructions dictate otherwise).

Always check the syringe or infusion for particulate matter before giving the medicine. **Do not** administer the dose if particulate matter is present.

Disposal

All sharps MUST be disposed of safely using only bins designated for the disposal of sharps. (see current STHFT Waste Strategy and Policy and current Sheffield Control of Infection Guidelines).

Sharps must be disposed of immediately.

Sharps must never be carried in the hand or the pocket.

Single use needles and syringes must be disposed of as a single unit.

Giving sets with bags attached must be disposed of as a single unit as clinical waste (see current STHFT Waste Strategy and Policy).

Any giving set with an exposed spike must be disposed of in a sharps bin.

Sharps bins must be correctly assembled according to the manufacturer's instructions.

Sharps bins must be kept out of the reach of children (e.g. not on the floor).

NEVER try to retrieve an item once discarded in a sharps bin.

NEVER empty out the contents of a sharps bin.

NEVER overfill a sharps bin. Fill only to the fill line or two-thirds capacity.

Cytotoxic waste is classified as hazardous waste and must be disposed of appropriately (see current STHFT Waste Strategy and Policy).

Needle stick injuries must be reported via the Trust's Datix Risk Management System. Occupational Health may be consulted additionally depending on the nature of the injury. Further information is available in the current STHFT Infection Prevention and Control Standard Precautions, Prevention of Sharps Injuries & Prevention of Exposure to Blood and Body Fluids Policy.

3.11.1 Intravenous (IV)

Refer to above section 3.11 Injection and Infusions.

Only staff that have received training and are currently validated as proficient in IV medicines management may undertake IV medicine preparation and administration within the limits of

their proficiency. (Refer to the current STHFT Administration of Intravenous Medicines Open Learning Programme and local procedures for children/neonates)

All nurses and midwives must successfully complete the STHFT Administration of Intravenous Medicines Open Learning Programme.

The administration of medicines via the IV route is a risky process and should be avoided where an alternative is available and appropriate.

Intravenous cannulation is one of the most common invasive procedures for patients, whether it is used for the administration of intravenous medicines and fluids or for emergency venous access.

Some medicines can only be given via the IV route due to, for example stability and immediacy of need.

Consideration should be given to the type of extension set used (if applicable) to avoid back-tracking of medication. (MHRA alert MDA/2010/073)

Prescriptions for IV medicines should be reviewed daily.

The STHFT Administration of Intravenous Medicines Open Learning Programme and the Royal Marsden Manual of Clinical Nursing Procedures (The Royal Marsden Hospital) must be adhered to by all STHFT health care practitioners during preparation of IV infusions and injections and their administration. Local procedures must be followed for children/neonates.

When using a syringe pump to administer IV fluids or medicines to neonates, the bag of fluid must not be left connected to the syringe (this does not apply to the administration of blood components to neonates). All clamps on IV administration sets for neonates must be closed removing the administration set from the infusion pump or switching the pump off. This is required regardless of whether the administration set has an anti-free flow device. (NPSA/2010/RRR015)

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

For peripheral administration, the insertion site must be assessed regularly, a minimum of 8 hourly. Assessments of the cannula site using the phlebitis grade assessment tool should be carried out. For other venous access, the insertion site must be checked. This is to ensure the patency of the cannula and to detect any signs of infection. Appropriate documentation should be made.

The Trust IV inpatient Cannula Chart should be used by all staff inserting a peripheral cannula with the intention of using the cannula for longer than a day case episode.

Signing for the administration of an IV dose also assumes responsibility for administering the appropriate physiological flush (i.e. glucose 5%w/v and sodium chloride 0.9%w/v) before and after the treatment dose. Flushes for some treatments are included on the prescription (e.g. chemotherapy at WPH).

All heparin flushes must be prescribed on an approved Trust prescription document or given by a PGD.

Heparin flushes should not normally be used to flush peripheral catheters (NPSA alert).

Medicines must **never** be added to blood or blood products. Medicines should not normally be added to mannitol and sodium bicarbonate or adult total parenteral nutrition.

IV lipid emulsions may break down with the separation of their phases if unsuitable additions are made. Medicines must only be added where compatibility is assured.

IV Infusions

An appropriate giving set must be attached to the infusion using a 'no touch' technique and the line primed to avoid an air embolus.

Take care to avoid puncturing infusion bags or causing needle stick injuries when connecting giving sets.

If the syringe/bag is prepared in a clinical area, a green additive label (appropriately completed) must be applied to the container.

The site must be regularly observed both during and after the infusion to detect any early complications from the medication or patency of the venous access.

The infusion volume must be recorded on the fluid balance chart.

Individual Unit Policy must be consulted for appropriate volumes for flushes in neonates and paediatrics.

Continuous IV Infusions

This is usually the delivery of a volume of fluid over a number of hours that may be repeated over a number of days. Some continuous infusions may be small volume (e.g. heparin) delivered via a syringe driver.

A continuous infusion may be used when medicines to be administered must be highly diluted or where a steady state blood level is required.

The infusion must be delivered at the prescribed rate either via a device (e.g. syringe driver or pump) or by gravity.

Ensure that lines are appropriately clamped when changing bags/syringes.

Giving sets for continuous infusions may be kept in situ for 72 hours (except blood giving sets).

Intermittent IV Infusions

This is the infusion of small volumes (e.g. 50 – 250ml over 15 minutes to 2 hours).

It may be required when a peak plasma level is required therapeutically, if the pharmacology of the medicine dictates that specific dilution, if the patient is on restricted fluids or if the medicine is insufficiently stable in any other volume for administration.

If an infusion is given via a cannula, the cannula should be flushed with an appropriate volume of sodium chloride 0.9%w/v before and after the infusion. If an infusion is given via an existing line, the line should be flushed with an appropriate volume of sodium chloride 0.9%w/v after the infusion. If the medicine is incompatible with sodium chloride, manufacturer's literature, Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours should be consulted.

When attaching an intermittent infusion to an existing line, compatibility must be checked and alternative access sought if necessary.

The patency of the existing line must be checked before the intermittent infusion is connected.

Giving sets for certain medicines given intermittently can be kept in situ for 24 hours provided the set stays connected to the line.

Bolus IV Injections

If an infusion fluid is in progress, the compatibility of the bolus injection must be checked. This may necessitate an alternative insertion site.

The injection port should be swabbed with sterile alcohol and the site allowed to dry before the injection is given.

Individual Unit Policy must be consulted for appropriate volumes for flushes in neonates and paediatrics.

Via a Cannula Bung

If an injection is given via a cannula, the cannula should be flushed with an appropriate volume of sodium chloride 0.9%w/v before and after the injection. If the medicine is incompatible with sodium chloride, manufacturer's literature, Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours should be consulted.

The medication should be injected at the correct rate according to manufacturer's literature (which may vary from seconds up to 30 minutes depending on the medicine).

In the absence of manufacturer's recommendations or approved ward protocols, consult Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours.

Via a Port

If the medicine is incompatible with the infusion solution, the infusion should be stopped and a sodium chloride 0.9%w/v flush of an appropriate volume administered before and after the medicine.

If the medicine is incompatible with sodium chloride 0.9%w/v advice should be sought from manufacturer's literature or Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours.

Manufacturer's instructions should be followed for needleless systems.

For multiple administrations, the cannula/IV set should be flushed with an appropriate volume of sodium chloride 0.9%w/v (if compatible) between each medicine.

The insertion site of the cannula must be carefully observed to detect any complications at an early stage.

Syringe Drivers and Infusion Devices

All equipment must be appropriately maintained according to the current STHFT Management of Reusable Medical Equipment Policy (this replaces the Medical Equipment Management Manual). STHFT Decontamination of Hospital Equipment and Medical Devices Policy should be followed before equipment is sent for servicing.

Health care practitioners must not attempt to set up a syringe driver or infusion device to deliver a medicine unless they have received or are under supervision whilst receiving training on that equipment and are deemed to be competent according to current Policy for Authorising Staff to use Medical Equipment and Medical Devices.

A Medical Equipment Library is available at NGH and RHH.

It is recommended that all parenteral infusions (medicines and fluids) are administered via an infusion device. However, it is acknowledged that currently there are insufficient devices within the Trust to achieve this. The following infusions must be given by an infusion device:

- Cytotoxic medicines
- Total parenteral nutrition
- Infusions required to be administered over an hour or longer

Priority should also be given to the following high risk infusions which should be administered via an infusion device (N.B. some may be given by IV bolus in certain clinical situations):

Adrenaline (epinephrine)
Alteplase
Amiodarone
Amphoteracin
Bivalirudin
Caspofungin
Ciclosporin (Sandimmun®)
Dantrolene
Desferrioxamine
Diazepam emulsion
Digoxin-specific antibody (DigiFab®)
Disopyramide
Epoprostenol
Ferric carboxymaltose (Ferinject®)
Flecainide
Ganciclovir
Hydralazine
Infliximab
Insulins
Ketamine
Lidocaine
Methylprednisolone (Solu-Medrone®)
Milrinone
Mycophenolate
Noradrenaline (norepinephrine)
Phenytoin
Potassium chloride (concentrated)
Remifentanil
Terbutaline
Trastuzumab
Vasopressin
Vecuronium bromide

If necessary, nursing staff should discuss the prioritisation of available pumps with the medical team, and consideration should be given to changing to alternative routes or medicines. Further advice is available from the product information leaflet, MEDUSA and Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours.

Luer lock syringes of the make specified by the equipment's manufacturer must be used for delivering medication via a syringe driver.

Ensure the correct giving set (which is free from kinks) is used for the infusion pump available.

Ensure any alarm/prompt on a device is acted upon. DO NOT assume that the equipment is faulty.

Ensure lines are primed before starting infusions.

Ensure lines are appropriately clamped when changing a bag/syringe.

After use, unplug the device and clean with a damp lint-free cloth and mild detergent (if necessary). Decontamination should be undertaken in line with the current STHFT Decontamination of Hospital Equipment and Medical Devices Policy.

Keep unused devices plugged into an AC power supply during storage to maintain battery life.

For patient controlled analgesia (PCA), ensure the patient is aware of how to operate the pump to deliver a dose.

Central Venous Access Device (CVAD)

For further information see the current STHFT Infection Control Guidelines for Central Venous Access Device and the Nutrition Handbook.

Health care staff managing CVADs must be competent in infection prevention and management of these invasive devices and have completed the relevant STHFT Administration of IV Medicines Open Learning Programme. Health care workers need to be aware of the signs and symptoms of clinical infection.

All medicines for injection/infusion must be prepared as in section 3.11 and according to the Royal Marsden Guidelines. Local procedures should be followed for administration to children/neonates.

The selection of catheter type is dictated by the individual clinical needs of the patient, the duration of use and the purpose of the CVAD.

A single lumen CVAD or dedicated port of a multilumen catheter must be used for the administration of Total Parenteral Nutrition (TPN).

Peripherally inserted central catheters (PICCs) may be a suitable alternative to a central venous line in some cases.

2% chlorhexidine in 70% alcohol is the preferred cleansing agent for the CVAD site provided the catheter is compatible with this solution. NB Videne® disinfectants must not come into contact with the Bard range of CVADs as this may result in cracking and catheter failure.

Using maximal sterile barrier precautions during CVAD placement will significantly reduce the risk of infection.

Hand antisepsis and proper aseptic non-touch technique (ANTT) are required for all changes of catheter dressings and for all access to the system.

Dressings must be permeable to water vapour. Two common types are used; sterile, transparent, semi-permeable polyurethane dressings coated with an adhesive and gauze and tape. The sterile transparent dressings help to secure the CVAD, permit site inspection and require less frequent changes.

A pulsed (push pause) method of flushing should be used (with a syringe no smaller than 10ml) which creates a turbulent flow within the lumen of the catheter to prevent the build-up of debris.

All flushing procedures (except for internal valve catheters such as Groshong) must be completed using a positive pressure flush technique. This is achieved by maintaining a forward motion on the syringe plunger whilst clamping the line and simultaneously injecting the last 0.2 – 0.5ml of flush solution.

Groshong CVAD catheters should be flushed (using a 'push pause' technique) with sodium chloride 0.9%w/v. Hepflush® is not recommended.

Clamping of Hickman catheters should be on the thickened area marked 'clamp here'.

Where a suspected or confirmed line infection is to be treated with the line still *in situ,* the line should not be used for any purpose apart from administering antimicrobials until after the antimicrobial therapy has finished. Alternative IV access will need to be made. Contact the Nutrition Team for TPN advice. If in doubt, contact a medical microbiologist.

In some circumstances, antimicrobial line locks may be appropriate in addition to antimicrobial infusions. The practicalities will depend on the individual situation.

3.11.2 Subcutaneous (SC)

Refer to above section 3.11 Injection and Infusions.

A subcutaneous injection involves a small volume (usually up to approximately 1ml) injection made directly into fatty tissue. Isotonic solutions are preferable to reduce pain.

For example, subcutaneous infusions may be given for palliative care pain control following surgery, for immunoglobulin therapy or for mild hydration when IV access is difficult to obtain.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Ensure a suitable site is chosen for the injection/infusion depending on convenience, mobilisation and patient comfort.

Subcutaneous injections are usually given via a 25g needle at an angle of 45°. Exceptions include dalteparin and insulin, which are usually given at an angle of 90°.

All regular and single bolus doses of insulin must be measured and administered using an insulin syringe or commercial insulin pen device. Intravenous syringes must NOT be used for subcutaneous insulin administration.

Pinch the skin into a fold to elevate the subcutaneous tissue and lift it away from the underlying muscle.

After giving the injection, remove the needle rapidly and apply pressure to any bleeding to prevent haematoma formation.

For subcutaneous infusions given by syringe driver: -

- the designated inpatient chart must be used to prescribe, and to record the administration and monitoring
- Staff must only attempt this procedure if they are trained and currently validated as competent in the use of the device

Further information can be obtained from the current syringe driver procedure.

Following NPSA Rapid Response 'Safer Ambulatory Syringe Drivers' (NPSA/2010/RRR019) the Trust plans to replace the MS16A with the McKinley device by 16/12/15.

Further information on subcutaneous immunoglobulin therapy is available from the immunology nurse specialists.

Fluid replacement may be given via the subcutaneous route: -

- Fluid should be limited to 3litres in 24 hours
- Hyaluronidase increases the rate of absorption of subcutaneous fluids but should only be considered if fluid uptake becomes problematic (i.e. localised oedema round the infusion site)

Further information on subcutaneous replacement fluids is available in the current Guidelines for the Administration of Subcutaneous Fluids (Hypodermoclysis).

Insulin drawn up in patient's homes for self administration should be done as per local protocols.

Hospital inpatients prescribed subcutaneous insulin should be considered for self-administration as per the STHFT Policy and Procedures for the Self-administration of Medicines.

Hospital inpatients anticipated for discharge on subcutaneous dalteparin should be trained to self-administer this medication as per the STHFT Policy and Procedures for the Self-administration of Medicines.

3.11.3 Intramuscular (IM)

Refer to above section 3.11 Injection and Infusions.

Many medicines are administered via this route if they are non-irritant to soft tissue and sufficiently soluble.

Aqueous or oily solutions or suspensions of medicines (including depot preparations) can be given via this route.

Relatively large doses (up to 5ml at certain sites) may be given via this route.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Clean the patient's skin with 70% alcohol and allow to dry before inserting any needle to reduce the risk of infections.

Needles must be long enough to penetrate the muscle and still allow approximately ¼ of the needle to remain external to the skin. The most common sizes are 21g or 23g and 2.5 to 5cm in length. Longer needles may be necessary in heavier patients. When choosing the correct needle length for IM injections, it is important to assess the muscle mass of the injection site, the amount of subcutaneous fat and the weight of the patient to ensure that the medicine is injected into the muscle mass.

The skin must be stretched and compressed if the "Z track injection technique" is employed.

After inserting the needle it is important to aspirate for blood to indicate correct positioning of the needle before continuing with the procedure.

Wait approximately 10 seconds before withdrawing the needle to allow the medicine to diffuse into the tissues. After waiting 10 seconds, the needle should be removed rapidly and pressure applied to any bleeding to prevent haematoma formation.

For information on the speed of injection, refer to manufacturer's literature, Medicines Information (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours.

3.11.4 Intradermal

Refer to above section 3.11 Injection and Infusions.

This route provides a local rather than systemic effect and is used primarily for diagnostic purposes e.g. allergy and tuberculin testing.

It is usual to use 25g needles inserted at a 10 to 15° angle, bevel up just under the epidermis.

The volume is usually 0.5ml or less.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

3.11.5 Intrathecal

Refer to above section 3.11 Injection and Infusions.

The injection/infusion of medicines into the sub-arachnoid space (intrathecal administration) may be used for example for long-term pain management or for the administration of chemotherapy.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Chemotherapy

For intrathecal chemotherapy, National Guidance is applicable (HSC 2008/001) and the Trust's Intrathecal Chemotherapy Policy **must** be followed.

- There is a Designated Lead for intrathecal chemotherapy
- Only personnel trained and listed on the register are authorised to prescribe, dispense, issue, check or administer intrathecal chemotherapy
- Annual reviews of competence are required for all staff who remain on the register
- Intrathecal chemotherapy must be administered after intravenous chemotherapy and should only be issued following written confirmation that any intravenous chemotherapy has been administered (or started in the case of infusions). No bolus intravenous chemotherapy may be given to a patient on the same day as intrathecal chemotherapy

- Intrathecal chemotherapy should only be administered in normal working hours. Exceptional circumstances may be considered and discussed for individual patients only

Further information is available at: -
http://nww.sth.nhs.uk/STHcontDocs/STH_Pol/ClinicalGovernance/IntrathecalChemoPolicy.doc

Other Medicines

Medicines for pain control may be given by infusion into cerebro-spinal fluid when pain control cannot be gained with systemic analgesics or where intolerable side effects are experienced even though pain is controlled.

Medicines used for intrathecal pain relief are opioids such as morphine and diamorphine together with bupivacaine and clonidine. Doses are calculated on an individual patient basis.

All patients must be assessed by an anaesthetist for their suitability for this procedure.

Nursing staff that are trained in the management and aftercare of intrathecal infusions should be available where this procedure is given. These staff should have achieved competencies in the management of all dedicated infusion devices used for intrathecal pain management or other intrathecal applications.

Further information on this route for pain management is available from clinical nurse specialists or pain specialist nurse or from the Intrathecal Pain Management Guidelines.

3.11.6 Epidural

Refer to above section 3.11 Injection and Infusions.

This is an injection or infusion of medicines into the epidural space.

It can be used for anaesthesia, or as analgesia for the management of postoperative pain or during labour under advice from an anaesthetist.

Medicines used for pain control include local anaesthetic agents (e.g. bupivacaine) and opioids (e.g. fentanyl). The epidural catheter may be inserted at different spinal levels in order to block appropriate nerve roots supplying the pain site.

Infusions and injections for epidural therapy must be clearly labelled ‘For Epidural Use Only’.

NPSA safety alert (NPSA/2009/PSA004B and NPSA/2011/PSA001) states that by 1 April 2012, all spinal (intrathecal) bolus doses must be given using syringes, needles and other devices with safer connectors that will not connect with IV luer connectors. It also states that by 1 April 2013, all epidural, spinal (intrathecal) and regional infusions and boluses must be given with safer connectors that will not connect with IV luer connectors or IV infusion spikes. The Trust is currently negotiating with companies to have compliant devices later in the year. The chosen devices must be used as soon as they are available.

Infusions and injections for epidural therapy must be stored in separate cupboards or refrigerators from those holding intravenous and other types of infusions and injections.

Infusion pumps and syringe driver devices for epidural infusions must be easily distinguishable from those used for intravenous and other types of infusion. Standardised, dedicated pumps for administration of epidural infusions are available.

Epidural administration sets and catheters should be clearly labelled ‘epidural’.

A second practitioner should independently confirm that the correct product and line have been selected and that the administration method is correct.

Rate controlled infusions altered by nursing staff are used at the Central Site. At NGH, PCEA (Patient Controlled Epidural Analgesia) is used involving a background infusion with a PCA bolus facility.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Further information is available from the clinical nurse specialists or pain specialist nurse.

3.11.7 Other injectable routes

e.g. Intra-arterial, intracardiac, ophthalmic (subconjunctival, intraocular), intrapleural, intra-articular.

These are specialised injections. Local policies and procedures must be in place where they are used.

3.12 Oral, Sublingual, Buccal

3.12.1 General Guidelines

Follow the guidelines in sections 3.1 to 3.10 before undertaking any oral administration.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Ensure the patient is not ‘nil by mouth’. Refer to the current STHFT Guidelines on Starvation prior to Regional and General Anaesthesia or Sedation to determine whether medication should be withheld when patients are ‘nil by mouth’ as most regular medication must still be given.

Solid dose forms must not be handled but placed directly into a medicine pot after identification and checking of the medicine.

Tablets must not be crushed or capsules opened without approval (see section 3.6).

Tablets that are not scored must not be broken without consulting a pharmacist, as this may cause incorrect dosing, GI irritation or destruction of active medicine. If it is considered appropriate to split unscored tablets, a tablet cutter must be used.

For inpatients most liquid preparations are supplied from STHFT inpatient Pharmacy as ‘named patient’ treatment. These will have an expiry on the label. For any preparations which are stock in a clinical area are supplied with the seal intact, it is the nurse/midwife’s responsibility to add the date of opening and expiry to the bottle when the container is first opened.

Graduated medicine containers or medicine spoons should be used for oral liquids. Oral syringes must be used to measure small doses less than 2.5ml or doses, which cannot be measured accurately with a graduated container or medicine spoon.

Oral syringes should always be used for babies and small children. Medicine spoons may be used for older children.

Medicines for oral/enteral use must be prepared and administered using only devices with non-luer connections.

IV syringes **must not** be used to measure and administer oral/enteral doses.

When administering medication using an oral syringe, push the tip gently into and towards the side of the mouth. Slowly discharge the contents towards the inside of the cheek pausing if necessary to allow the liquid to be swallowed. Do not direct the syringe at the back of the throat.

Enteral syringes **must not** be washed and reused in inpatient clinical areas. For tube administration, one syringe may be used for a single episode (including tube flushing).

For inpatients graduated medicine pots should be discarded if used for measuring liquids but may be washed in the ward dishwasher if used for solid doses (see current Sheffield Control of Infection Guidelines).

In Community Health Services medicine pots should be for single patient use. They should be washed in hot soapy water, rinsed in clean tap water and allowed to air dry on a hard flat surface with absorbent kitchen paper underneath or washed in a dishwasher. If they have been used to administer liquids they should be visually checked to ensure that there is no lingering residue.

Inpatient cardboard trays used for transporting medication to patients should be discarded after use.

For inpatients the container should be rechecked after removing the dose before replacing it in the drug trolley/cupboard/locker.

Additional requirements for the administration of the medicine should be followed to ensure optimum benefit.

e.g. an hour before food or on an empty stomach
with or after food
swallowed whole, not chewed or crushed
with a full glass of water
dissolved under the tongue
dissolve before use

It is important that the patient is given any pertinent information with respect to side effects of the medicine to avoid any undue alarm. This may be done by the nurse, doctor, pharmacist or medicine management technician depending on the local situation on the ward/department. The patient information leaflet (PIL) should be available at the patient's request. The patient should be encouraged to give feedback to staff about the suitability of treatment to improve future compliance.

All records must be maintained as in sections 3.1 and 3.2.

Giving Medication via Enteral Tubes

It is important to ensure that the medication is suitable to be given via the enteral feeding tube:

- Enteric coated tablets must not be crushed or given via a nasogastric or gastrostomy tube
- Sustained release tablets/capsules are unsuitable for crushing
- Hormonal and cytotoxic preparations should not be crushed
- Sublingual or buccal preparations will usually be ineffective if given by tube as they are designed to be absorbed through the oral mucosa
- Formulation will not block the tube
- Poor absorption if medication inadequately absorbed

Where possible soluble or dispersible tablets or liquid formulations diluted with 20-30mls water should be used.

Enteral feeding systems and syringes must be labelled to indicate the route of administration. Three-way taps and syringe tip adaptors must not be used.

Medication must not be added to the enteral feed but administered separately down the enteral tube.

Discontinue the enteral feed and flush the tube with 30mls water to clear the tube. Administer the medication. If an oral syringe is required to administer the medication through the tube, use a 60ml enteral syringe to avoid the build-up of pressure and possible rupture of the tube. Flush the tube with 30mls water to clear the tube.

If several medicines are to be administered, give each one separately to avoid interactions and flush with 10mls water after each different medication.

It is sometimes necessary to discontinue the enteral feed for a period of time before giving medication to avoid interactions between the medication and the enteral feed (e.g. phenytoin).

Current advice from STHFT Dietetics Service is to use sterile water to flush any tube for inpatients and cooled boiled water for patients at home. (communication July 2010).

Further information (including information on specific medicines) can be obtained from the clinical pharmacist, Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours, the dietitian or the Nutrition Handbook, NG Tube Guidelines and PEG Guidelines (Trust Intranet).

3.12.2 Enteral Formulations

Medication given by the oral, sublingual or buccal route may be given in the following forms. The medication may be for systemic use (i.e. absorbed into the bloodstream) or for topical use.

Tablets
e.g. uncoated, coated, dispersible/soluble, controlled-release, chewable, buccal, sublingual

Formulations vary from very simple uncoated tablets to complex controlled-release preparations. Coating may be necessary to prevent breakdown by gastric acid or to avoid irritation of the gastric mucosa. The coating can also enhance appearance and make the preparation more readily identifiable. Buccal and sublingual tablets are designed to be absorbed within the mouth when left in contact with the mucosa. Such preparations may be

appropriate when a rapid effect is desired (e.g. GTN) or when the patient cannot tolerate the oral dose. The preparations should not be swallowed, as they may be rendered ineffective.

Capsules

These consist of a hard (2-piece) or soft (1-piece) gelatin shell containing the medicine in the form of a powder, granules or liquid. These offer a useful method of formulating medicines, which are difficult to make into tablets, or are particularly unpalatable. Certain capsules are formulated such that the capsule can be opened and the contents mixed with/sprinkled onto food/liquid (e.g. Creon® preparations).

Lozenges and Pastilles

These are solid preparations designed to be sucked either for local treatment of the mouth/throat or for systemic absorption via the buccal route (e.g. nystatin pastilles).

Mouthwashes/sprays and oral pastes/gels

These are used topically in the mouth. Mouthwashes can be used for oral hygiene (e.g. chlorhexidine mouthwash), sprays can be used as artificial saliva (e.g. Saliva Orthana®), oral pastes can be used for protection of oral mucosa and gels can be used for oral hydration (e.g. BioXtra®) or oral antifungal treatment (e.g. miconazole). When administering mouthwashes, it is important to check whether swallowing is desirable (e.g. nystatin) or to be avoided in large quantities (e.g. chlorhexidine).

If the medicine is for topical use in the mouth, it is important that the patient is instructed (and understands) exactly how to use the medicine and whether or not it can be swallowed.

Liquid Preparations
e.g. linctus (codeine), elixir (ketotifen), mixture (magnesium trisilicate), syrup (amoxicillin SF), drops (Abidec®).

These can be either solutions or suspensions. It is important that the contents are thoroughly mixed by shaking before administration to ensure uniformity of dose. Sugar-free preparations are generally preferred where possible due to the risk of dental caries.

Oral Lyophilisates
e.g. wafers, melts

These are preparations which when placed in the mouth will quickly disperse in saliva and be rapidly absorbed on swallowing (e.g. Feldene Melt®).

Granules, Powders and Sachets

Powders and granules can be either in the form of a bulk pack (e.g. calcium resonium) where measurement is required before a dose is given or as individual dose. Individual doses are presented as sachets (e.g. Fybogel®). The preparations may then need to be added to food or mixed well with a liquid before ingestion.

Chewing Gum

Some medicines may be presented as a gum to chew. Absorption occurs via the buccal mucosa (e.g. nicotine replacement chewing gum). The gum should not be swallowed but disposed of according to current STHFT Waste Strategy and Policy.

3.13 Topical

3.13.1 General Guidelines

The fingertip unit describes a practical way in which to measure and apply the cream/ointment prescribed. One unit is equivalent to the amount of cream/ointment squeezed from the tip of the index finger down to the first joint of the PATIENT'S finger. The dose of cream/ointment in a fingertip unit varies with age. Accurate dosing is particularly important for topical steroids.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

The area for application must be documented in the patient's notes, on the prescription and administration chart, MAR chart or care plan.

It is important to administer the formulation which has been prescribed as different forms of the same medicine may have different properties, (see section 3.13.2).

Inpatients topical preparations kept as ward stock must be labelled with the patient's name on allocation to an individual patient and not administered to any other patient to reduce the risk of spreading infection and given a four-week expiry.

When the inpatient medication is supplied in a jar, the appropriate amount should be decanted into a gallipot using a wooden spatula before application to prevent contamination of the stock container.

Certain medicines such as emollients for hydrating or softening the skin need to be applied liberally whereas medicines such as steroids should usually be applied sparingly. Always follow the application instructions supplied with the product.

3.13.2 Topical Formulations

Medication applied topically to the skin may have a local effect or be absorbed for a systemic effect and may be given in the following forms.

Ointment
e.g. hydrocortisone ointment 1%

A semisolid preparation consisting of dissolved or dispersed medicine incorporated into a fatty, waxy or synthetic base. Ointments should soften but not necessarily melt when applied to the skin. Ointments are greasier than creams and absorption is slower.

Cream
e.g. hydrocortisone cream 1%

These are semisolid emulsions, which are either oil-in-water (aqueous creams) or water-in-oil (oily creams). They spread more readily on the skin than ointments, are less greasy and often soothe the skin as the water evaporates. They are used where a highly occlusive effect is not required.

Gels
e.g. piroxicam 0.5%

These are two compartment semisolid or solid systems rich in liquid made with the aid of a 'gelling' agent.

Pastes
e.g. dithranol

These are ointments containing as much as 50% powder dispersed in a fatty base. Due to the much thicker consistency, pastes are able to localise the action of irritant or staining materials. They are less greasy than ointments as the powder absorbs some of the grease.

Patches
e.g. fentanyl

A small volume of medicine is contained in a matrix or reservoir, which is stuck to the skin. Drug molecules diffuse at a constant rate through a membrane, which is in direct contact with the skin when the patch is applied.

Patches should be applied to a suitable area of the body, which is hair-free such that the patch will be comfortable and adhere to the skin. The skin should be clean, dry and undamaged and the site of application changed regularly to prevent soreness. Old patches should be removed on applying a new patch and suitably disposed of in line with current STHFT Waste Strategy and Policy.

The health care professional must ensure that any previously applied patches (e.g. fentanyl) are accounted for, removed and suitably disposed of before a new patch is applied. The position of new patches must be recorded on the prescription and administration chart. Any discrepancies must be investigated and must be recorded on an incident form for inclusion in the Trust's Datix Risk Management System.

Patches should not be cut routinely. Further advice can be obtained from Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours.

Liquid Preparations
e.g. soaks (potassium permanganate), lotions (e.g. calamine), paints (e.g. Phytex®), applications (e.g. idoxuridine 5% in DMSO), shampoos (e.g. ketoconazole 2%)

These provide active ingredients in an aqueous, oily or alcoholic solution or suspension or an emulsion.

Aerosols/Sprays
e.g. povidine-iodine

These are delivery systems for solutions, suspensions, powders semisolids and emulsions.

Powders
e.g. clotrimazole 1%

These are finely divided soluble materials for application to skin folds in order to dry, protect and lubricate the skin. They may be presented as a spray.

Wound Products

The number and type of products available are complex and the type required depends on the nature of the wound. All interactive wound products must be appropriately prescribed and signed for when administered to the patient.

Further information is available in the Wound Management pages on the Trust's Intranet and the Wound Management Products section of the Sheffield Formulary.

3.14 Eye

3.14.1 General Guidelines

Specialised ophthalmic procedures such as intraocular injections are not described here but reference should be made to the Department of Ophthalmology.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

All eye preparations are for single patient use only. Preserved eye preparations kept as ward stock must be labelled with the patient's name and given a two-week expiry. If one or both eyes are infected, separate containers of all eye preparations (not just antibiotics) must be used for each eye and they must be clearly labelled as such.

It is easier to work from behind the patient's head to give access to the eyes and any necessary equipment.

Preserved eye preparations used in clinical areas (i.e. not patient specific) must be discarded at the end of the clinic session.

The dropper/ointment must be as close to the eye as possible without touching the lids, lashes or cornea to avoid corneal damage and infection.

Contact lens should be removed during treatment with eye drops and eye ointments should not be used in conjunction with contact lens.

Check the prescription carefully for which eye(s) to administer the medication into.

The order of use for ophthalmic preparations depends on a number of factors including: -

- Form of preparation
- Therapeutic consideration
- Stinging potential

The formulation with a longer contact time should be used after an aqueous solution.

The interval between different aqueous solutions should be 5 minutes.

'Constrictors' (strong miotics e.g. pilocarpine) must be used before 'dilators' (mydriatics e.g. cyclopentolate)

Preparations with a greater 'stinging potential' (e.g. cyclopentolate) must be used later as the eye waters and any further drops will be washed to quickly from the surface thus reducing contact time.

For any problems with the order of use, contact the Ophthalmic Clinical Pharmacist bleep 2661), Medicines Information in Pharmacy (Ext. 14371 [NGH] and Ext. 12346 [RHH]) or the on-call pharmacist out of hours.

3.14.2 Ophthalmic Formulations

Drops
e.g. timolol 0.5%

There are a variety of sterile packages available including single use minims, plastic bottles and pipettes in eye drop bottles.

Ensure the patient is looking up when the drops are instilled.

Most drops are instilled into the outer side of the lower fornix with the lower eyelid pulled down to create a small pocket. This avoids loss of drops into the nasolacrimal passage. Exceptions to this include anaesthetic drops where the first few drops should be instilled into the conjunctiva and then directly onto the cornea until the patient can no longer feel the drops.

One drop is usually sufficient but there are exceptions (e.g. anaesthetic drops) and this must be stated on the prescription.

Release the lower lid after instillation of the drops and gently press the inner corner for optimal penetration of the drops. Any excess medication can be wiped from the cheeks with a clean tissue.

If more than one type of drops are to be instilled, at least 5 minutes should elapse before instilling the second drops to prevent overflow from the eye.

Patients should be aware that the effect of some drops used during procedures and diagnosis is prolonged and vision may be affected.

Ointment
e.g. chloramphenical 1%

Ensure the patient is looking up when the ointment is applied.

The lower lid should be pulled down to create a small pocket between the lid and the eye.

Apply a small amount (approximately 1cm) of ointment along the inner edge of the lower lid ensuring the nozzle does not touch the eye to prevent damage and infection.

The lower lid should be released and the eye closed for 30 seconds. Any excess medication can be wiped with a clean tissue.

Advise the patients that vision may be blurred for a while after applying eye ointment.

3.15 Nose

3.15.1 General Guidelines

Nasal administration is the instillation of medication into the nasal passages.

Medication may be used for infections, allergies or nasal congestion.

Preparations are usually administered to both nostrils.

The presentation may be as drops, sprays, creams or ointments.

Nasal preparations are for single patient use only.

Nasal preparations kept as ward stock (e.g. Bactroban Nasal ®) must be labelled for single-patient use after allocation.

An expiry of 4 weeks from opening is given regardless of any extended manufacturer's expiry. The container should be labelled with the date of opening and expiry date.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Some preparations must be shaken before the dose is delivered. Check the label and shake the container if necessary.

Ensure the patient's nasal passages are clean to allow maximum penetration of the medication.

3.15.2 Nasal Formulations

Drops
e.g. betamethasone 0.1%

Tilt the patient's head backwards to ensure the dose is delivered to the correct area.

Check the prescription for the number of drops to be delivered. This depends on the preparation but is usually 2 to 3 drops to each nostril.

Avoid touching the nose with the dropper end.

Ensure the head remains tilted for 1 to 2 minutes to allow the drops to penetrate and then instruct the patient to gently sniff with the head tilted before bringing the head back to its normal position. Wipe any excess with a tissue.

Sprays
e.g. beclometasone dipropionate 50 micrograms/metered spray

The container may need priming before use (and if use is interrupted for several days). Consult the manufacturer's instructions.

Check the prescription for the number of sprays to be administered.

Tilt the patient's head forward slightly. Instruct the patient to inhale at the same time as the dose is squirted into the nostril. Repeat as necessary according to the prescription.

The spray may need regular cleaning. Consult the manufacturer's instructions.

Ointment/cream
e.g. Naseptin®

Squeeze a small amount of cream/ointment onto the fingertip and apply to the nostril. Repeat for the other nostril according to the prescription.

3.16 Ear

3.16.1 General Guidelines

Aural administration is the instillation of medication into the ear canal.

Medication may be used for infections, wax removal, and inflammation.

Aural preparations are for single patient use only.

The presentation may be as drops, sprays or ointments.

An expiry of 4 weeks from opening is given regardless of any extended manufacturer's expiry. The container should be labelled with the date of opening and expiry date.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Some preparations must be shaken before the dose is delivered. Check the label and shake the container if necessary.

Place the head on one side with the ear to be treated uppermost. Lying down may be preferable.

For adults and older children, straighten the ear canal by pulling the lobe up and out. For younger children, straighten the ear canal by pulling the middle section of the pinna out and slightly back. This ensures that the medicine reaches the tympanic membrane

3.16.2 Aural Formulations

Drops
e.g. sodium bicarbonate 5%

Avoid touching the ear with the dropper. Keep it 1cm above the ear.

Check the prescription for the number of drops to be delivered. This depends on the preparation but is usually 2 to 3 drops. More than 3 drops may be necessary for wax removal.

Press the tragus 4 or 5 times whilst leaving the head on one side for 1 to 2 minutes (sometimes longer for wax removal) to allow the drops to penetrate and not form an air pocket. Wipe the excess with a clean tissue or cotton wool.

In certain circumstances, cotton wool may need to be placed loosely in the ears after the drops and this must be stated on the prescription.

Ointment
e.g. hydrocortisone acetate 1.5%, neomycin sulphate 0.5%

Avoid touching the ear with the nozzle of the ointment tube.

Apply approximately 1cm of ointment to the ear canal. Massage the ear gently for 10 seconds.

Spray
e.g. Otomize®

The container may need priming before use (and if use is interrupted for several days) – consult the manufacturer's instructions. Ensure the nozzle is not directed at yourself or anyone else during this process.

Check the prescription for the number of sprays to be administered.

Place the nozzle tip gently into the ear opening and press the actuator to deliver the correct dose.

3.17 Respiratory

Further information can be obtained from Clare Daniel, the Asthma Nurse Specialist (NGH Ext.66308 or bleep 2146), from the 'Management of Inhaled Therapy' Guidelines available on the Intranet, from the current Entonox Open Learning Programme and the respiratory systems section of the Sheffield Formulary.

3.17.1 Inhalation

This is the delivery of medicines directly to the lungs.

The delivery devices available include pressurised metered-dose inhalers, breath actuated inhalers and dry powder inhalers.

Manufacturer's literature must be consulted for specific information (including cleaning) on the individual device prescribed.

Medicines for asthma and chronic obstructive pulmonary disease (COPD) may be delivered via this route.

The patient will often be required to self-administer these preparations. The health care practitioner's role in this case is to ensure that the patient's technique is satisfactory and to identify whether a different device or aid (e.g. Haleraid®) is required. They must also ensure that the patient takes the correct dose and record it on the appropriate chart.

Patients require instruction from health care practitioner on the techniques required to obtain an optimal dose from the chosen device. Techniques should be rechecked before stepping up treatment in respiratory conditions to ensure optimal doses are being delivered to the lungs.

Spacer devices may be necessary for younger patients (NICE Guidelines 'Inhaler Devices for Children with Chronic Asthma 2000 [age under 5] and 2002 [age 5 – 15]) and for those unable to coordinate actuation of the device and inhalation. Spacers should be considered for inhaled steroid therapy.

The patient should be made aware of the storage and disposal conditions for the prescribed device.

Appropriate peak flow monitoring should be performed according to local policy and clinical appropriateness.

3.17.2 Nebulisation

This is the use of a compressor or oxygen to convert a liquid medicine into a vapour in order that the dose can be delivered to the lungs directly.

Medication delivered via this route includes antibiotics, prophylaxis and treatment of pneumocystis pneumonia, β-agonists and ipratropium for acute exacerbation of asthma or as regular treatment in severe cases and prophylactic medication such as corticosteroids where the patient is unable to use other devices (e.g. children).

A risk assessment must be undertaken for all hazardous medicines to be administered by nebulisation and appropriate personal protective equipment and ventilation provided.

Oxygen should not be used as the driving gas in patients with COPD.

Masks must only be used when a mouthpiece cannot be tolerated and should be avoided where anticholinergics or steroids are being administered.

Advice on giving nebulised antibiotics can be obtained from the respiratory nurses or respiratory team to ensure appropriate equipment is used. A mouth piece should be used when delivering antibiotics via a nebuliser.

Nebulisers must be thoroughly cleaned according to local protocols due to the risk from dirty chambers potentially leading to lung infections.

Further information will be available on the Trust Intranet when completed, about the preparation and administration of nebulised ribavarin.

3.17.3 Oxygen Therapy

Oxygen is regarded as a medicine. For inpatients it should be prescribed on the 'Oxygen section of the drug prescription and administration record' and the prescription should state the percentage required (as the concentration depends on the condition being treated) and the preferred delivery device (e.g. venturi mask, nasal cannulae). In community static oxygen concentrators are prescribed by GPs using the form HOOF part a; ambulatory oxygen is prescribed by referring to STHFT Oxygen Nurses Specialists

Patients requiring home oxygen following an inpatient stay should be referred to the Sheffield Home Oxygen Assessment and Review Service for follow-up. This may be done by faxing a copy of the HOOF to 2714511. These orders will all be classified as temporary pending formal outpatient assessment. The only equipment available to order via the HOOF will be static cylinders and concentrators. All other equipment will need to be arranged following formal specialist assessment. Order Forms and Consent Forms are available to download.

Oxygen should be prescribed in all situations in accordance with British Thoracic Society (BTS) guidelines. (NB these do not cover critical care or children under 16 years). In emergencies oxygen should be given immediately and documented later. Pulse oximetry must be available in all locations where oxygen is used. (NPSA/2009/RRR006)

It is prescribed for hypoxaemic patients to increase alveolar oxygen tension and decrease the work of breathing necessary to maintain a given arterial oxygen tension (e.g. acute lower respiratory infections, asthma, cystic fibrosis, acute pulmonary oedema, carbon monoxide poisoning and long term therapy for chronic obstructive pulmonary disease).

The maximum dose delivered via nasal cannulae should not exceed 4 litres/minute.

Oxygen supports combustion and should not be given close to a naked flame.

Patients should be advised of the dangers of smoking whilst receiving oxygen therapy.

The tubing should be securely attached and not trapped under any equipment.

Patients should be advised not to alter the delivery rate. Flow meters should be checked against the prescription each shift to ensure the correct amount of oxygen is being delivered.

Oxygen saturation should be monitored according to medical advice documented in the patient's record or on the oxygen prescription.

Patients should be observed for signs of carbon dioxide retention (e.g. drowsiness) and medical staff informed.

Nasal prongs should be checked for patency.

Forms and information for ordering home oxygen are available from Christine Wrench (Ext.69207) or Ruth Darwin (Ext. 69175) COPD/Oxygen Nurse Specialists.

3.17.4 Entonox

See Open Learning Programme for Supporting the Self-Administration of Entonox for further information.

Entonox is a homogenous gas containing 50% nitrous oxide (N_20) and 50% oxygen (O_2). It is compressed into a blue cylinder with a blue and white shoulder or if it piped, this is blue and white striped tubing. It is non-flammable but strongly supports combustion so should be treated as oxygen. It can be used alone or with other analgesics for pain control. It has many uses including pain relief in labour, during dressing changes and manipulations.

For first or unexpected use, Entonox may be given once only via a PGD by a registered health care professional who has undergone PGD training and assessment and where a valid PGD exists.

If continued use of Entonox is necessary, it must be prescribed in the PRN section of the drug prescription and administration record.

A record must be made of all Entonox administration

Midwives can administer Entonox under Midwives Rules and Standards.

Entonox should not be used in certain conditions (e.g. head injuries with impairment of consciousness, maxillofacial injuries, where air is trapped in the body and where its expansion might be dangerous). Check the data sheet and current policy for the complete list.

Entonox should not be used for more than a total of 24 hours (BOC 2010)

If Entonox is administered more frequently than every four days intermittently or for more than 24 hours continuously, peripheral bloods must be sampled for megaloblastic anaemia and leukopenia.

Patients must be informed that as a safety precaution they will be unable to drive, operate machinery and undertake other psychomotor activities until at least 30 minutes have elapsed after the use of Entonox and they are deemed safe and competent to do so.

3.18 Bladder Irrigation/Lavage/Intravesical Instillation

An aseptic technique should be used for all urological procedures to minimise the risk of infection.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Further information and advice can be obtained from Unit Policies, Directorate of Urology and the Spinal Injuries Unit.

3.18.1 Lavage

Bladder lavage is the washing of the bladder with sterile fluid to clear obstruction from a catheter and to remove potential or actual sources of obstruction from the bladder e.g. blood clots or sediment from a urinary infection.

Sterile sodium chloride 0.9%w/v is the most commonly recommended agent since it is isotonic and does not affect the body's fluid or electrolyte levels and large volumes may be used if necessary.

Ensure the catheter tubing is not kinked before attempting the procedure as this may release the blockage.

20ml of fluid in a 60ml bladder syringe should be used for the procedure to enable the blockage to be reached and expelled. Larger volumes can lead to increased pain for the patient and excess air can cause distension and discomfort.

If the fluid does not drain back naturally it may be necessary to aspirate particularly when removing blood clots. It will be necessary to reinstil and drain repeatedly until the returning fluid is clear to ensure the bladder is free from contaminants.

Ensure accurate records of the volumes used are kept.

In patients with spinal injuries, specific Unit policies are available and must be followed.

3.18.2 Irrigation

Bladder irrigation is used to prevent the formation and retention of blood clots inside the bladder usually following prostatic or bladder surgery. It can be used to remove heavily contaminated material from a diseased bladder.

Sterile sodium chloride 0.9%w/v is the most commonly recommended agent.

It is important to carefully monitor input and output volumes as absorption of fluid can occur leading to circulatory failure. An imbalance may be an indication that the catheter is not draining properly.

A 3-way catheter is used for irrigation purposes to allow simultaneous instillation of irrigant and drainage of the bladder.

The colour and consistency of the urine should be monitored hourly and the catheter bag should be regularly emptied according to the patient's care plan.

3.18.3 Intravesical Instillation

This is the instillation of medicines directly into the bladder via a urinary catheter.

The choice and placement of the urinary catheter will depend on the clinical situation.

In Urology cytotoxic medicines may be used such as mitomycin or epirubicin.

Managers must carry out risk assessments, where cytotoxic medicines are handled according to the STHFT Safe Handling of Cytotoxic Drugs Policy. Any member of staff who is pregnant must inform their line manager in order for the risk assessment to be reviewed.

Ensure extra safety precautions must be followed when administering cytotoxic medicines for example staff clothing and dealing with any spillages (see later section).

The medicine is instilled into the catheter from an instillation bag fitted with a connection for the catheter. The bag should be gently squeezed to administer the medicine.

The retention time and patient movement to ensure contact depends on the protocol and situation (inpatient or outpatient) of the procedure.

Ensure all cytotoxic waste is disposed of according to current STHFT Waste Strategy and Policy.

Ensure all outpatients are aware of how and when to void the dose.

Further information can be found in the Code of Practice for Administration and Control of Intravesical Chemotherapy Agents in the Directorate of Urology.

3.19 Vaginal/Rectal/Stomal

3.19.1 Vaginal

This is the insertion of medicine in the form of a solid pellet/tablet or specialised cream into the posterior fornix of the vagina so that it will release its active ingredient at body temperature.

Medicines, which can be given via this route, include oestrogens (HRT), antifungals and abortificants.

If the medicine prescribed is an abortificant, the health care professional has the right to refuse to administer the medicine as written in the 'conscience clause', section 4 of the Abortion Act, 1967.

Nurses administering vaginal abortificants must have completed the Trust open learning package 'Open Learning Package for the Administration of Vaginal Abortificant Drugs by Registered Nurses'.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

If an applicator is provided it should be used whenever possible.

Lubricating jelly may be necessary to aid insertion.

The patient should be encouraged to remain on bed rest for one hour after administration of the medicine.

If the pessary/tablet falls out, medical advice should be sought as to whether a further dose needs to be prescribed and administered.

3.19.2 Rectal

Rectal administration is defined as the insertion of a medicine directly through the anal canal into the rectum for medicinal purposes.

Rectally inserted products include suppositories, enemas and specific rectal creams and ointments.

Suppositories are solid dose forms shaped for insertion into the rectum and designed to either melt at body temperature or dissolve or disperse when in contact with mucous secretions.

Enemas and micro enemas are liquid preparations for rectal administration and are used for example as purgatives, as anti-inflammatory medicines and sedatives. The medicine should be dissolved, emulsified or suspended in the vehicle. Large volume enemas should be warmed to body temperature before use.

The rectal route may be used if a local effect is required (e.g. local anaesthetics and anti-inflammatory medicines). It may also be used for systemic effects if the patient is unable to make use of the oral route (e.g. post-op nausea) or if the medicine is less suited for oral administration (e.g. taste, stability).

Ensure there is no contraindication to giving the medication via the rectal route.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

The patient must be made aware of the need to retain or evacuate the medication depending on the desired effect.

Lubricating jelly should be applied to the suppository/enema/ointment applicator tube to facilitate insertion through the anal canal and into the rectum.

Medical advice must be sought if the patient is unable to retain the medication or if the medication cannot be inserted.

Further information can be obtained from the colorectal nurse specialists.

3.19.3 Stomal

Stomal administration is defined as the insertion of a medicine into the lumen of a stoma for medicinal purposes.

Enemas and suppositories (see above) may be given via some stomas (i.e. colostomies). Ensure the stoma type is not contraindicated and is viable.

Ensure that the mucocutaneous junction is sound with no sign of necrosis or mucocutaneous separation.

The health care practitioner must perform hand hygiene prior to undertaking any medicine administration, refer to section 3.1.3.

Lubricating jelly should be applied to the suppository/enema to facilitate insertion through the stomal lumen.

Clean the stomal area and replace the stomal appliance after insertion of the medication.

Further information can be obtained from the colorectal nurse specialists.