Injectable Medicines and Infusion Therapy Policy

Policy Number:	752	Supersedes:	N/A	Classification	Clinical

Version No	Date of EqIA:	Approved by:	Date of Approval:	Date made Active:	Review Date:
V2	12/2019	Clinical Written Control Documentation Group	14.01.2021	27.11.2020 14.01.2021	6.2.2023

Brief Summary of Document:	This policy provides an overarching framework with the aim of reducing the risk of harm to patients from injectable medicines or infusion fluid therapy and meeting the requirements of the relevant legislation and professional guidance.
Scope:	This policy applies to all healthcare staff employed by the HDUHB on a substantive or temporary basis who are involved in any aspect of injectable medicines and infusion fluids and to all patients under the care of HDUHB who are receiving injectable medicines or infusion therapy
To be read in conjunction with:	268 Medicines Policy 467 Medical Device Management Policy 354 Standard Infection Prevention and Control Precautions (SICPs) Policy 700 Aseptic Non touch Technique (ANTT) 552 Insertion and Immediate Care of Skin Tunnelled Central Venous Catheter (Hickman's Line) Guideline 215 Insertion and Maintenance Care of a Central Venous Catheter (CVCs) Procedure 504 Insertion & Maintenance of Midline Catheter Procedure 490 Insertion, Maintenance and Care of a Peripherally Inserted Central Catheter (PICC) Procedure

Owning Committee	Medicines Management Sub-Committee

Executive Director:	Mandy Rayani	Job Title	Director of Nursing, Midwifery and Patient Experience

Reviews and updates		
Version no:	Summary of Amendments:	Date Approved:
1	New Policy	6.2.2020
2	Revised appendix 3 – Intravenous and subcutaneous therapy: administration device selection injectable medicines and infusion therapy policy	26.11.2020

Glossary of terms

Term	Definition
Administration Devices	Appropriate medical devices designed to mechanically or electronically regulate or control the administration of medicines by injection or infusion.
Aseptic Non Touch Technique (ANTT)	Handling technique designed to minimise the risk of microbial contamination of a sterile medicine during preparation.
Bolus (Push)	Administration from a syringe of a small volume of a single dose of a sterile solution directly into a tissue, organ or vein, over a short period of time, usually between 30 seconds and 10 minutes. The time for IV bolus administration varies between medicines. It is important to specify the administration time for a bolus injection of a particular medicine. The prescriber needs to have an awareness of the medicine they are prescribing and how it should be administered. Reference resources such as the current BNF or BNFC, Summary of Product Characteristics for the medicine in question, the Injectable medicines guide (MEDUSA) or approved local guidelines may be used
Diluent	Any sterile injection solution, such as water for injection or sodium chloride 0.9%, commonly used to dissolve (reconstitute) or dilute a medicine immediately before administration.
Drug Library	A library containing drugs and fluids from A-Z. Each drug or fluid entry has pre-determined infusion limits which a smart pump then alerts the user if these limits have been breached.
Flush, Flushing Solution	A sterile solution of diluent such as sodium chloride injection 0.9%, used to purge (flush) access devices (e.g. cannulae) before and/or after injection of a medicine, or between injections of different medicines.
Hazard	Something with the potential to cause harm. This can include substances (e.g. medicines, chemicals, electricity, etc) or machinery, methods of work and other aspects of the work environment.

Independent Second Check	Refer to HDUHB 168 Medicines Policy http://howis.wales.nhs.uk/sitesplus/documents/862/268-MedicinesPolicy-v12.pdf
Infusion	Administration, from a syringe or other rigid or collapsible container, of a volume of sterile solution in the form of an injectable medicine directly into a tissue, organ, vein or artery at a controlled rate, over a defined period usually of at least 10 minutes.
Injectable Medicines	Sterile medicines intended for administration by bolus injection or infusion by various routes of injection including intravenous injection/infusion, intramuscular injection and subcutaneous injection/infusion.
NPSA	National Patient Safety Agency
Precipitation	This occurs due to a reaction between drugs or between drugs and infusion fluids the result of which is the formation solid particles separating out of the solution or suspension.
Risk	Defined as the probability or likelihood that harm, damage or loss may occur, coupled with the consequence of that harm.
Smart Pump	An infusion device that includes dose error reduction software and a drug library (adult, paediatric or neonatal drug library). It allows the user to choose a drug from the library and the infusion device will calculate the desired infusion rate.

Keywords	Injection Infusion Medicine Fluids policy

This policy is based on the BCUHB Injectable Medicines Policy (2019) and the basis of this support framework is gratefully acknowledged.

CONTENTS

1. Introduction

The use of injectable medication has many healthcare benefits for patients. The complexities associated with the prescription, preparation and administration of injectable medicines means that there are greater potential risks for patients than for other routes of administration.

This policy closely follows the guidelines set out in the National Patient Safety Agency (NPSA) Patient Safety Alert 20 – Promoting the Safer Use of Injectable Medicines to provide the safe systems are needed to minimise these risks (NPSA March 2007) and NICE Guidance Clinical Guideline (CG) 174 Intravenous fluid therapy in adults in hospital [May 2017].

Injectable medicines and infusion therapy should be prescribed, prepared, administered and monitored only by healthcare staff that understand the risks involved, have been trained to use safe procedures, and have demonstrated their competence for the task.

Medicines should be given by injection only when the use of no other route is clinically appropriate, practically possible or acceptable to the patient. The necessity for repeated injections/infusions should be regularly reviewed in favour of switching to an appropriate alternative route of administration as soon as clinically appropriate. [RCN Standards for Infusion Therapy 2016]

2. Policy Statement

Injectable medicines and infusion therapy should be prescribed, prepared, administered and monitored only by healthcare staff who understand the risks involved, have been trained to use safe procedures, and have demonstrated their competence for the task.

3. Scope

This overarching policy applies to all healthcare staff employed by the Hywel Dda University Health Board (HDUHB) on a substantive or temporary basis who are involved in the procurement, prescribing, supply and storage, preparation, administration and monitoring, disposal and transportation of injectable medicines by the following routes, including but not limited to:

- Intravenous injection/infusion
- Intramuscular injection
- subcutaneous injection/infusion
- Intrathecal and epidural injection/infusion
- Intraosseous injections
- Intravitreal
- Intra-articular
- Intra-peritoneal

which includes administration through Peripherally Inserted Central Catheters (PiCC), Skin Tunnelled Central Venous Catheters (Hickman's Line) and Portacath lines.

This policy covers the treatment of all patients under the care of Hywel Dda University Health Board (HDUHB) who are receiving injectable medicines or infusion therapy in the Acute, Mental Health and Learning Disability and Community Sectors and is offered as best practice to Primary Care.

4. Aim

This policy provides an overarching framework with the aim of reducing the risk of harm to patients from injectable medicine and infusion therapy within HDUHB meeting the principles of

- National Patient Safety Agency (NPSA) Alert 20,

- NICE CG 174 Intravenous fluid therapy in adults in hospital
- Royal College of Nursing (2016) Standards for Infusion Therapy.
- epic3: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England

The aim of this policy is to inform staff of their roles and responsibilities in relation to safe and secure procurement, handling and storage, prescribing, administration and dispensing of injectable medicines and infusions to ensure that:

- All healthcare professionals involved with the use of injectable medicines and infusions understand the standard procedures for dealing with these medicines and follow these procedures at all times.
- All legislation and guidance is adhered to with respect to injectable medicines and infusions.
- Risks associated with the incorrect procuring, prescribing, preparation, administration, monitoring and storage of injectable medicines and infusions are reduced to a minimum.
- All staff that are involved with injectable medicines and infusions have access to, and have received, the appropriate training and can demonstrate competence. This includes Pre-registration nurses, midwives, medical and Allied Health Professional Students working under supervised practice.

5. Objectives

This aim of this policy will be met by the following objectives:

- Set out the standards and procedures that must be used when prescribing, administering, monitoring and otherwise handling injectable medicines and infusions which healthcare staff must follow at all times.
- Ensure that all legislation and guidance is adhered to with respect to injectable medicines and infusions.
- Reduce the risk of harm associated with the incorrect procuring, prescribing, preparation, administration and monitoring and storage of injectable medicines and infusions to a minimum.
- Detail the appropriate training required for all staff involved with prescribing, administering, monitoring and otherwise handling injectable medicines and infusions.

6. Injectable Medicines Guidelines and Procedures

6.1 Professional Responsibilities for Registered Healthcare Professionals and non-registered staff associated with Injectable Medicines and Infusion Therapy.

Healthcare professionals must always work within their own Codes of Professional Practice and the HDUHB 268 Medicines Policy. Non-Medical Independent Prescribers should refer to the HDUHB Non Medical Independent Prescribing Policy.

Staff should undertake training in accordance with the Mandatory Training Policy and their annual PADR.

Any healthcare professional including pre-registration students working under supervision who are involved in the processes leading to administration of an injectable medicine or infusion to a patient is accountable for their actions and their omissions.

Healthcare professionals must exercise their professional judgement and apply their knowledge and skills every time they prescribe, prepare or administer a drug or infusion.

Before administering any medicine, healthcare professionals must know the therapeutic uses of the medicines and infusion fluid to be administered, its normal dosage, side effects, precautions and contra-indications and any required management techniques for adverse drug interactions.

Central line (including PiCC,Tunnelled and Portacath) or Midline line administration of injectable medicines or infusions is permissible only after completion of training and local competency assessment.

All staff who use a medical device to administer any injectable medicine must receive training from a recognised cascade trainer, the Medical Devices Trainer or an appropriate company representative, and be assessed as competent in its use prior to using that device.

Healthcare professionals who do not consider they are competent to carry out the injection of medicines or infusions must not undertake the procedure and must seek further education and training.

6.1.1 Prescribers (Medical, dental, non-medical independent prescribers)
It is the responsibility of medical staff and HDUHB approved non-medical independent prescribers to comply with this policy when prescribing injectable medicines.

Prescribers must attend medicines management training as part of their induction and attend regular update sessions to maintain competency.

It is the responsibility of the individual administering the injectable medicine to ensure that they have received the appropriate training and have up-to-date competency assessments.

6.1.2 Doctors
Any medical practitioner (including FY1 doctors) is permitted to give injectable medicines and infusions (excluding cytotoxic medicines). In all cases they are expected to ensure they are competent before they give an injectable medicine or infusion.

6.1.3 Nurses and midwives
Registered nurses / midwives who have successfully completed the training session and competency assessment for the preparation, administration and monitoring of peripheral intravenous medicines and infusions, may prepare and administer medicines via the peripheral intravenous route.

Newly registered nurses and midwives who have not had previous learning experience will be given post registration training in injectable medicines administration as part of a front loading program for Newly Registered Nurses and Midwives, prior to them commencing their preceptorship program. Community based Newly Registered Nurses who will not be administering IV medicines will receive training in subcutaneous administration of infusions.

Newly registered nurses who have been trained in subcutaneous (SC), intramuscular (IM) and intravenous (IV) preparation and administration and assessed as competent as part of their pre-registration training, can administer SC/IM and IV injections and infusions following an on-ward/department initial assessment.

Registered nurses joining from another UK healthcare setting, who provide evidence of previous training and assessment of intravenous medicines administration and recent practice, are not required to attend the intravenous study day. They are required to undertake the Aseptic Non

Touch Technique (ANTT) e-learning course and practical assessment on the intranet, complete the intravenous competencies and be assessed on the ward administering the minimum number of medicines as set out in the competencies.

Pre registration nurses and midwives undertaking the NMC new education standards for nurses and midwives (2018) will receive training in subcutaneous/ intramuscular/and intravenous preparation and administration as part of their pre-registration training and be assessed as competent to achieve the required proficiencies for NMC Registration

6.1.4 Health and Care Professionals (including radiographers, operating department practitioner, physiotherapists, podiatrists, paramedics, orthoptists), professionals affiliated to the Academy of Healthcare Scientists (including physiologists)

These healthcare professionals, having successfully completed the training and competency assessment for the preparation, administration and monitoring of injectable medicines, may administer injectable medicines which are prescribed or part of a HDUHB procedure or departmental protocol or a Patient Group Direction. The training and competency assessment may be part of an accredited qualification or HDUHB approved training.

Radiographers may also administer intravenously as defined by departmental protocol, or otherwise prescribed by a holder of an Administration of Radioactive Substances Advisory Committee (ARSAC) certificate specific to the HDUHB - or someone working under his/her written direction - pre-prepared radio labelled pharmaceuticals and any other medicines required for nuclear medical imaging or therapeutic procedures.

6.1.5 Pharmacists

Pharmacists may perform the calculation check required for preparation of injectable medicines. They may also perform the independent second check of the preparation process. These checks are detailed in section 6.7.

6.1.6 Pre-registration staff

Pre-registration medical, nursing and midwifery students can participate in the preparation and administration of subcutaneous or intramuscular injections under direct supervision.

Pre-registration students, regardless of professional group, may only observe the administration of injectable drugs. They may only participate in the preparation of injectable medicines under direct supervision as a third participant. The exception would be student midwives, who are able to administer prescribed injectable medicines on the midwife exemption list under the direct supervision of a sign-off mentor and pre-registration student nurses who have received training working under direct supervision to obtain their NMC proficiencies (2018).

6.1.7 Agency, Bank, and Locum Staff

Agency, or locum staff, who have undergone prior intravenous therapy training, are required to provide evidence of this training and subsequent updates to the nurse in charge before they can administer intravenous medicines and infusions in the clinical area.

Staff must be able to demonstrate that they are competent with local procedures, configurations and Drug Error Reduction Software (DERS) library (where appropriate) prior to using a medical infusion device.

There are no circumstances under which agency, bank or locum staff should be involved in administration of Parenteral Nutrition or administration of inotropic drugs outside of a critical care environment.

6.1.8 Non-registered staff

NVQ Level 3 Health Care support Workers (HCSW) may flush a peripheral IV device with 3-5mls of 0.9% sodium chloride pre-filled syringes ONLY when inserting a peripheral cannula.

6.2 Education and Training

6.2.1 Prescribing

All staff authorised to prescribe injectable medicines and infusions must have received appropriate training and be competent to do so.

Junior medical staff must have completed the Prescribing Safety Assessment and the relevant sections of their e-Portfolio (TURAS) sections [Preparation and administration intravenous medicines, injections and fluids, subcutaneous injections, intramuscular injections and intravenous infusions including prescribing of fluids] and attended induction training provided by the HDUHB prior to prescribing and administering injectable medicines and infusion therapy.

Non-medical prescribers must have successfully completed a recognised independent prescribing course and comply with all regulations around this including only prescribing within their area of competence and prescribing only those medicines that are included in their prescribing portfolio. Non medical prescribers must maintain their prescribing competency in their clinical specialty and evidence this in their annual PADR.

6.2.2 Preparation and Administration

Prior to being assessed as competent to prepare and administer injectable medicines and infusions, all eligible HDUHB staff must have completed the full day injectable medicines training course, provided by the HDUHB. This training includes intravenous administration.

Complete a period of supervised practice (6 observed preparations and administrations) within six months of attending the injectable medicines training course and have competency assessments in their work book signed off as complete by ward/clinic manager or member of the clinical skills team. Those staff who will struggle to complete their workbooks within 6 months due to the low numbers of injectable medicines they prepare within their role may either be granted a longer period of time or be transferred to another area to work as a temporary arrangement until competency is achieved.

Staff who are eligible to prepare and administer injectable medicines must also attend a half day injectable medicines refresher course every 3 years provided by the HDUHB.

Staff who are employed to work for HDUHB having previously worked in another NHS organisation and can provide evidence of recent training for injectable medicines and infusions, the evidence will be assessed and, if of the appropriate standard, the individual will be authorised to prepare and administer injectable medicines in HDUHB following a workplace assessment of practice. A Declaration of Practice Document will be completed by the member of staff and the ward/department sister or charge nurse.

If a staff member makes an error while preparing injectable medicine then the incident and competence of the individual should be assessed according to the Multidisciplinary Medication

Errors Policy and attend a refresher injectable refresher training course to re-confirm competence, if required. The error must be reported 6.15 Incident Reporting)

Staff are responsible for maintaining and updating their knowledge and skill to provide evidence of this as agreed with their line manager through the PADR process.

Note: For anaesthetists and anaesthetists in training, training in the administration of injectable medicines is an inherent part of their role and therefore has already been provided – attendance at additional injectable training sessions is not required.

Where administration involves a medical device (e.g. McKinley T34), staff must be appropriately trained and competency assessed by HDUHB for each device they are expected to use as part of their practice and must not use or check a device until they have been trained and assessed as competent. Refer to 469 Medical Devices Management Policy.

For other administration routes (e.g. epidural, intra-articular, intra-osseus intraocular, etc) individual practitioners will require specific training in the preparation and administration of the injectable medicines via this route and have proven competence.

For all routes of administration staff must have relevant and up to date evidence of competency assessments through their annual PADR's as agreed with their line manager.

Pharmacy staff preparing injectable medicines within the Pharmacy Aseptic Units must have undertaken the appropriate training programme and must undertake regular competency assessments as a requirement of European Union Good Manufacturing Practice.

6.3 High Risk Injectable Medicines Risk Assessment: Supply and Storage of Injectable Medicines

In 2007 the NPSA released Patient Safety Alert number 20 (Promoting safer use of injectable medicines). This alert highlighted injectable medicines such as cytotoxic agents and parenteral nutrition as being high risk and also utilising open procedures and a lack of appropriate labelling of products in place when preparing injectable medicines

The safety alert required all Health Boards and NHS Trusts to undertake a risk assessment of injectable medicine procedures and products in all clinical areas to identify high risk products and processes, and to develop an action plan to minimise high risks identified.

All injectable medicines and the processes used to prepare injectable medicines must be risk assessed using the risk assessment template from the NPSA that can be found through the specialist Pharmacy Services website: NPSA Injectable medicines risk assessments

High risk injectable medicines are those that score a 6 or more using this documentation.

There is a UK wide list of high risk injectable medicines. The HDUHB staff must recognise this list that has been produced by the Pharmacy Aseptic Services Group (PASG), MEDUSA injectable medicines guide and the Specialist Pharmacy Service (SPS). Staff must be aware of the drugs on the list that they use and take the necessary steps to reduce this risk. The list can be found through the following link UK High Risk Injectable medicines list 2016

New injectable medicines should be risk assessed during the formulary application process to determine the safest presentation and location for storage and preparation in the clinical area.

Existing high risk injectable medicines should be reviewed in the area that they are used every 2 years; an action plan must be drawn up to address any new risks identified.

Ready-to-administer or ready-to-use products, where available, should be stocked in all clinical areas in preference to products needing preparation for use. Concentrated solution requiring dilution should only be supplied where safer alternatives are not available.

Based upon risk assessments the preparation of medicines may be restricted to specified areas and accredited individuals.

Some medicines are never held on wards or departments but are issued only following the authorisation of a pharmacist who will ensure that personnel on the ward or department understand how to administer the medicines correctly.

The following medicines are always defined as high risk and must not be manipulated outside of the Pharmacy Aseptics Unit:

- Parenteral Nutrition: seals may be broken on dual and triple chamber bags **but additions must not be made on wards or departments**
- Cytotoxic medicines: shall be provided in a ready to use form.

6.3.1 Aseptic Services and products

Aseptic services provide ready to use injectable medicines for use in clinical areas, thereby reducing the risk of preparing these, often high risk, injectable medicines in these areas.

There are two Aseptic Services departments within the HDUHB providing products under a Section 10 exemption to the Medicines Act 1968:

- Bronglais General Hospital
- Withybush General Hospital

The core services provided include:

- Chemotherapy
- Radiopharmacy (Withybush General Hospital only)

All cytotoxic medicines and parenteral nutrition for parenteral administration are supplied by pharmacy. These preparations must never be prepared, or further additions made, outside of the Pharmacy Aseptic Services Unit.

A list of the products available is available from each unit and can be found at http://howis.wales.nhs.uk/sitesplus/documents/862/Withybush%20Bronglais%20Aseptic%20Unit%20Product%20List%20March%202019%20%282%29.pdf . Please note this is not an exhaustive list and other products will be considered on request.

6.3.2 Procurement

The pharmacy procurement department is responsible for purchasing injectable medicines and infusions.

The pharmacy department will perform a risk assessment (including the MEPA risk assessment score and the NPSA injectable medicines risk assessment process) to ensure that, when

injectable medicines are procured, the safety of the preparation is taken into consideration before a purchase is made. The MEPA scoring gives an objective assessment scale.

If a new injectable medicine is requested through the Medicines Management Sub-Committee, a risk assessment of this new drug must be carried out before use of this drug is implemented.

If the injectable medicine to be procured is unlicensed then Part 10 - Unlicensed Medicines and Unlicensed Indications of the HDUHB 268 Medicines Policy must be followed.

When high risk injectable medicine products and procedures are identified, risk reduction strategies will be implemented to reduce the risk. If these methods do not sufficiently lower the risk then it will be added to the risk register.

Infusions devices and consumables must be procured following the 467 Medical Devices Management Policy.

6.3.3. Storage

Storage of injectable medicines and infusion fluids will be as per 268 Medicines Policy. The expiry dates of injectable medicines and infusion fluids will be carried as defined in ward and pharmacy Standards Operating Procedure.

6.4 Prescribing Injectable Medicines

Injectable medicines must be prescribed according to the HDUHB 268-Medicines Policy. Medicines should only be given by the injectable route when the practicality and appropriateness of other routes has been excluded. The use of this route should be regularly reviewed in favour of switching to oral administration (or another route) as soon as clinically appropriate. When two or more patient medication records (prescription charts) are in use, it is essential that they are cross referenced so that practitioners are aware of all prescribed medicines. To ensure safe practice in administration, all prescriptions (including pre-printed prescription labels) for injectable medicines and infusions, **including flushes,** must specify the following:

- patient's name and hospital or NHS number
- prescriber's signature
- the approved medicine name
- the dose (also written as mg/kg on a paediatric prescription)
- the frequency of administration
- the date of administration
- the route of administration
- the allergy status of the patient
- rate and duration of administration
- the indication and duration for antibiotic treatment
- a prescription for a suitable flush for pre-and post-administration compatible with the medicine.

Further information which may be required includes the following items:

- brand name and formulation of the medicine
- concentration or total quantity of medicine in the final infusion container or syringe
- name and volume of diluent and/or infusion fluid
- rate and duration of administration

- type of rate-control pump or device(s) to be used (the device number should be annotated on administration chart where appropriate)
- the age and weight of any patient under 16 years of age
- date on which treatment should be reviewed
- Arrangements for fluid balance or clinical monitoring should be made on an individual patient basis and according to local protocol and clinical need
- Stability information to determine the expiry date of the final reconstituted product

Guidance on the preparation and administration of injectable medicines for adults, paediatrics and neonates in clinical areas can be found on the Injectable Medicines Guide on the intranet http://medusa.wales.nhs.uk/?ID=ca6df37243900495092e2d9b342f0d59848
In all instances the LIVE version of these medicines monographs should be used as guidance for the preparation and administration of injectable medicines but sometimes the availability of computers in clinical areas makes this difficult. The medicines monographs on the Medusa site can be downloaded and printed for use in clinical areas. However it is the responsibility of the Registered Nurse or Midwife who is preparing or administering a drug that they ensure the printed version is the most up to date version of the LIVE monograph.

The UCL Injectable Medicines Administration Guide 3rd edition should NOT be used as a reference source for preparing or administration of injectable medicines

When two or more prescription charts or electronic records are in use it is essential that they are cross referenced so that practitioners are aware of all prescribed medicines.

6.5 Preparation of Injectable Medicines
Before beginning preparation, staff * must have a prescription, patient specific direction, patient group direction (PGD), essential information about the product(s), and processes needed for safe preparation and administration.

* In those circumstances where a doctor or dentist is preparing and administering the injectable medicine, a prescription is not required. However, a record of the administration of the medicine must be made.

In Theatres, Recovery, Day Theatre & Critical Care anaesthetic assistants may prepare items under the direction of an anaesthetist without a prescription or PGD. Technical information required is available in the electronic Injectable Medicines Guide.

Prior to preparing the medicine, both practitioners must check all calculations needed prior to the administration of the prescribed injectable medicine.

Preparation area The area in which the medicine is to be prepared must be as clean, uncluttered, and as free from interruption and distraction as possible. Preparation should take place in an area dedicated to this process away from sluices, food and drink following ANTT principles.

Sharps The use of Sharps must be kept to a minimum as described in Safer Sharps Directive 2012, blunt needles must be used whenever possible for the preparation of injectable medicines. All sharps must be disposed of into the appropriate sharps container as detailed in HDUHB 258 Waste Management Policy. Careless disposal of needles, giving sets and cannulae presents a hazard to staff, patients and visitors.

Multiple use of unpreserved injectable medicines is not permitted. Most injectable medicines are licensed for "once-only" use. Unless the manufacturer's label specifically indicates that the injection contains a preservative, the container must be used to prepare a single dose for a single patient on one occasion only. **Vial sharing of single-use products is not permitted.** Bags of infusion fluids must also be used once only. When preparing injectable medicines, infusion fluids must not be used to dilute or reconstitute more than one preparation. Decanting spikes must not be used.

N.B: When vancomycin injection is reconstituted for **oral** administration, it must be labelled with the patient's details and, if advised by the Summary of Product Characteristics, may be stored in a refrigerator (2° to 8°C) for up to 24 hours, to allow administration of further doses **only** to the individual patient.

Aseptic Non Touch Technique (ANTT) must be used during preparation and administration. Injectable medicines prepared in clinical areas must always be administered **immediately** after preparation: they must not be stored before use. The duration of administration of any infusion should not exceed 24 hours. If therapy is to continue and there is a proportion of the infusion remaining after 24 hours then it should be discarded and a new infusion prepared and administered.

Open systems

The Medicines and Health Regulatory Agency (MHRA) alert NHS/PSA/D/2016/008 stipulates that the use of open systems is not acceptable and that injectable medicines must be drawn directly from their original ampoule or container into syringes, and then administered immediately.

The use of open systems such as gallipots or other types of open container such as moulded plastic procedure trays is not permitted in HDUHB. This practice risks one medication being confused with another, and medication intended for injection being confused with other substances, such as skin antiseptics, that are routinely contained in gallipots or other open containers. Additionally, an 'open system' can become contaminated by bacteria.

The only exception is for embolization procedures involving embolic agents that need to be prepared openly.

Do not make any additions to infusions without first checking compatibility and stability. As a general rule no additions should be made if the fluid is blood (or blood products including immunoglobulins), plasma, mannitol, sodium bicarbonate, potassium or nutrition solutions.

When preparing infusions the number of additions to the infusion bag via the additive entry port should be minimised.

All syringes, including flushes and infusions, must be labelled immediately after preparation by the person who prepared them. "Flag labelling" should be used to make sure that volume graduations on syringes are not obscured.

The following exceptions apply:

- In general clinical areas 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. In theatres a scrubbed nurse drawing up and handing a syringe to a surgeon is also considered to be undertaking one uninterrupted process. Only one

unlabelled medicine must be handled at one time. Local procedures must be in place to prevent misidentification errors.
- Where a flush is a pre-filled medical device used for its intended purpose.
- Exemptions apply for community nursing teams when in line with their approved local operational policy.

Adult Patients
Nursing staff must follow the Royal Marsden procedures for the preparation of injectable medicines https://www.rmmonline.co.uk/

Paediatric Patients
HDUHB uses locally developed paediatric procedures, MEDUSA, BNF for children and approved tertiary centre guidelines to guide treatment (as below on page 21).

6.5.1 Stability and Compatibility
If an injectable medicine is prescribed in an infusion fluid such as glucose 5% or Sodium Chloride 0.9% it is essential to check that it is compatible with that fluid.

If two or more injectable medicines are prescribed for use within one infusion fluid, it is essential that the stability and compatibility are checked by reference to any of the sources of information below before proceeding, these include:
- The medicine information leaflet (usually included in the pack)
- National Injectable Medicines Guide (Medusa) http://medusa.wales.nhs.uk/?ID=ca6df37243900495092e2d9b342f0d59848
- Approved local guidelines and protocols.
- British National Formulary (BNF) – Appendix 6 Intravenous additives www.bnf.org
- British National Formulary for Children (BNFC) available as a paper copy in appropriate clinical areas and as an e-copy at www.bnfc.org
- Contact the ward pharmacist, hospital pharmacy or HDUHB Medicines Information 01437 773418
- Summary of Product Characteristics (SPC) – available on electronic medicines compendium at http://emc.medicines.org.uk
- Neonatal Unit Intravenous Guidelines at http://howis.wales.nhs.uk/sitesplus/documents/862/Version%203%20-%20%20Neonatal%20Drug%20Formulary%20February%202017.pdf
- Palliative Care Adult Network Guidelines Plus (syringe driver compatibilities) at http://book.pallcare.info/

No further additions are to be made neither to an infusion bag or syringe, once an infusion has started nor to a preparation supplied in a ready to use form from the pharmacy aseptic unit.

6.5.2 In-use expiry
Injectable medicines prepared in clinical areas must be used immediately and should not be stored for use at a later time. If an infusion containing a medicine is being administered then this can only be infused for a maximum of 24 hours (or less if stability data stipulates less than 24 hours). If therapy is to continue and there is a proportion of the infusion remaining after 24 hours then it should be discarded and a new infusion prepared and administered.

6.6 Labelling Injection and Infusion Containers
All injections including flushes and infusions should be labelled immediately after preparation by the person who prepared them.

The following exceptions apply:

- In general clinical areas where preparation and **immediate** bolus (push) administration is one uninterrupted process and the unlabelled product does not leave the hands of the person who prepared it. In theatres a scrubbed nurse drawing up and handing a syringe to a surgeon is also considered to be undertaking one uninterrupted process.
- Only one unlabelled medicine must be handled at one time. If preparing two injections for administration at the same time then the syringes must be appropriately labelled. In this circumstance, a flush is considered to be an injectable medicine.
- Where a flush is a pre-filled medical device used for its intended purpose.
- Exemptions apply for community nursing teams when in line with their approved local operational policy

Only labelled syringes are to be fitted to a syringe driver or similar device.

Specific 'Drug Added' labels must be used for injectable medicines prepared in clinical areas, (including critical care areas and epidurals) and should be applied to the back of the infusion bag (to ensure contents of the original bag are not obscured) or the barrel of a syringe. "Flag labelling" should be used to make sure that volume graduations on syringes are not obscured.

The 'Drug Added' labels must be approved by the Medicines Management Sub-Committee.

Both practitioners must check that the label contains the following information:

- Name of the medicine
- Strength
- Route of administration
- Diluent and final volume
- Patient's name
- Expiry date and time (this must not exceed 24 hours after preparation)
- Name of the practitioners preparing and checking the medicine

6.6.1 Labelling Syringes in Theatre Areas

This must be done in accordance with the most recent syringe labelling standards (updated in 2014) produced 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. https://www.rcoa.ac.uk/system/files/SYRINGE-LABELLING-2014_0.pdf

This document specifies what label colour is to be used for what injectable medicine and has provided consistency throughout the UK. It is generally for use in patients in theatres where they are under the direct care of an anaesthetist.

6.6.2 Labelling epidural infusions and injections

Epidurals must comply with national guidance; all epidurals must be labelled with a yellow coloured label to differentiate them from other injectable medicines. Policy 337- Epidural Analgesia Guideline contains further information:
http://howis.wales.nhs.uk/sitesplus/documents/862/337-EpiduralAnalgesiaGuideline.pdf

6.6.3 Products Supplied from the Pharmacy Aseptic Services Units

All injectable medicines prepared and supplied in a ready to use form from the pharmacy aseptic unit will be labelled appropriately and will not require additional labels to be added in clinical areas.

6.7 Independent Second Check of the preparation:
By definition the independent second check must not be controlled or influenced by any other person.

All preparation of injectable medicines must receive an independent second check [HDUHB 268 Medicines Policy Part 5.1.4 Administration requiring two registrants] http://howis.wales.nhs.uk/sitesplus/documents/862/268-MedicinesPolicy-v12.pdf

An *independent second check* must occur for preparation of intravenous injectable medicines except when a life threatening emergency prevents this. (The checker can be a doctor, registered nurse, anaesthetic assistant, pharmacist, radiographer or registered Allied Health Care Professional (AHCP) practitioner who has undertaken training in drug administration).

Prior to preparing the medicine, both practitioners must check all calculations required for the preparation and administration of the injectable medicine

Where a doctor or dentist has prepared the injectable medicine, the second check is recommended but it is at the discretion of the individual practitioner.

Single nurse preparation of intramuscular and subcutaneous injectables is acceptable. [HDUHB 268 Medicines Policy Part 5.1.4 Administration requiring two registrants] http://howis.wales.nhs.uk/sitesplus/documents/862/268-MedicinesPolicy-v12.pdf

For each medicine container, diluent, infusion fluid and item of equipment to be used the following must be checked by both practitioners independently:

- Expiry dates of all products used in the preparation
- Damage to containers, vials or packaging
- Infusion containers must be checked for particulate matter
- Storage is as recommended (e.g. in the refrigerator)
- That the formulation, dose, diluent, infusion fluid, route and rate of administration correspond to the prescription and product information
- That the patient has no known allergy to the medicine
- That you understand the method of preparation. There should be sufficient information available for you to prepare the product.

Both practitioners must check that the label contains the following information:

- Name of the medicine
- Strength
- Route of administration
- Diluent and final volume
- Patient's name
- Expiry date and the time the injectable medicine was prepared (this must not exceed 24 hours after any additions have been made)
- Name of the practitioners preparing and checking the medicine

The second checker is also responsible for witnessing that:

- The correct preparation and administration process is adhered to
- The administering practitioner administers the medication to the correct patient.

- The injectable medicine is administered via the correct route and at the correct rate and duration.
- If the injectable medicine is to be administered using a smart infusion device and associated drug library then the second checker must check that the correct drug and infusion rate is selected prior to signing to confirm the check has been completed.

The second independent checker must accompany the administering practitioner to the patient. The role of the administrator and checker are of equal importance and responsibility during the process of injectable drug administration.

Clinical Emergency – In clinical scenarios whereby the patient needs emergency intervention, restorative injectable medicines may be administered without an independent second check as delay in therapy may be more hazardous to a patient's safety.

Ampoules/syringes should be retained for a retrospective check and the administration recorded appropriately.

The guidance on **verbal orders** (268 Medicines Policy http://howis.wales.nhs.uk/sitesplus/documents/862/268-MedicinesPolicy-v12.pdf Section 2.22) must be followed.

The second checking of medicines does not apply in areas of anaesthesia and resuscitation where the doctor, dentist or Advanced Life Support provider can administer medicines alone.

Community nursing: The checking of medicines by a second healthcare professional does not apply in community practice e.g. Community Hospitals or in a patient's home. However independent checking is required for any medicine, which the primary administrator is unfamiliar with, in particular, those medicines that are to be administered parenterally, regardless of the professional group, this may be a parent/ carer or patient themselves following assessment of capability**.**

6.8 Administration of Injectable Medicines

All registered professionals who have completed the intravenous medicines course provided by the HDUHB and have satisfactorily demonstrated competence in parenteral administration of medicines, may administer injectable medicines subject to the following conditions:

- They are satisfied that they are giving the correct medicine at the correct route/rate/dose/diluent/volume. If there is **any doubt,** the prescriber or a pharmacist must be contacted before the dose is given.
- The injectable medicine to be administered has been appropriately checked by another healthcare professional in accordance with this policy for the required route of administration.
- Injectable medicines may be administered only by appropriately trained staff **once independently checked** by an approved second healthcare professional. This must be either a nurse, doctor, midwife, pharmacist, radiographer (radiology only) or Operating Department Practitioner (theatres only)
- Community Services exception
- Community nurses may administer IV drugs as prescribed by the appropriate medical (GP or hospital doctor) or non-independent prescriber without a second check. However independent checking is required for any medicine, which the primary registered healthcare professional, who is administering, is not familiar; particular care must be taken with medicines that are to be administered parenterally.

- They are operating within their clinical scope of practice and in a clinical a**rea where they are familiar with th**e injectable medicines they are administering.

- Staff must acknowledge any limitations of competence and refuse, in such cases, to administer the medicine or infusion without having first received sufficient instruction and information to ensure safe practice. Staff should not administer any medicine or infusion which they do not feel confident in giving but should ask a more experienced colleague or doctor for advice/support or to administer.

For injectable medicines prepared in clinical areas, practitioners must not administer an injectable medicine that has been prepared by another practitioner unless they have witnessed or supervised the preparation themselves.

The use of secondary sets for administration is not supported in the HDUHB (except occasionally in specialist areas (e.g. Chemotherapy Day Units).

6.8.1 Reference sources/evidence base

For adult patients:

- Refer to the Royal Marsden procedures for administration of injectable medicines in adults available at: https://www.rmmonline.co.uk/
- Refer to the Royal College of Nursing Standards for Infusion Therapy – available at: https://www.rcn.org.uk/clinical-topics/infection-prevention-and-control/standards-for-infusion-therapy

For paediatric and neonatal patients:

- HDUHB uses locally developed paediatric procedures, MEDUSA, BNF for children and approved tertiary centre guidelines to guide treatment.

These standards and procedures cover the following:

- Administration of intravenous medicines by direct injection, bolus or push
- Administration of intravenous medicines by intermittent infusion
- Administration of intravenous medicines by continuous infusion
- Administration of intramuscular and subcutaneous injections

6.8.2 Infusion Devices

A suitable infusion device should be selected to administer the medicines. Consult Appendix 2 or the Summary of Product Characteristics.

6.8.2.1 Infusion Pumps – Drug libraries (Smart Pumps)

To reduce the risk of administration errors, when infusion pumps are used for the administration of injectable medicine infusions, these devices have been pre-programmed with a library of specific drugs for which the dose and infusion rates/ranges have been set.

If the injectable medicine to be administered is included in the library then the drug must be administered using the library functionality (unless there is professional justification not to) to ensure the correct drug and infusion rate is selected.

If a medicine is not included in the drug library, inform the HDUHB Medicines Information Centre (01437 773641).

6.8.3 Administration Sets

In all cases the integrity of the packaging must be ascertained before use.

Set out below are the recommended maximum times before administration sets shall be changed.

In all cases where contamination is suspected or the integrity of the product or system has been compromised the set shall be changed immediately.

If an administration set is disconnected from a patient, any remaining solution and administration set must be discarded following the HDUHB policy on disposal of clinical waste.

The administration and fluid balance charts must be annotated to record the fluid administered.

Administration sets and unused fluids must be disposed of in accordance with the HDUHB 258 Waste Disposal Policy

Continuous Administration Sets: primary and secondary continuous sets shall be changed at least every 72 hours. Primary sets which have been disconnected from the patient or secondary sets that have been disconnected from the primary set must be discarded

Intermittent Administration Sets: primary intermittent administration sets shall be discarded after each use

Parenteral Nutrition: administration sets used to deliver parenteral nutrition must be changed every 24 hours. Parenteral nutrition bags must not be re-spiked

Blood and Whole Blood Components: the use of administration sets for blood and whole blood component must be done in accordance with the HDUHB 278 - Non medical authorisation of blood component transfusion Policy

PCA Administration Sets24 hours (Scottish & Swansea)

6.8.4 Before Administering Injectable Medicines

Refer to the HDUHB 268 Medicines Policy.

First, check that the medicine is due for administration at that time and has not already been given

Then check all of the following:

- Patient's name and unit number
- Prescriber's signature
- Approved name of the medicine
- Dose and frequency of administration
- Date and route of administration
- Rate of administration: bolus **or** infusion in mL per hour and duration
- Allergy status of patient
- Weight (when dose is based on patient weight and all paediatrics)

Also check, where relevant:

- Brand name and formulation of the medicine

- Concentration or total quantity of medicine in the final infusion container or syringe
- Name and volume of the diluent and/or infusion fluid
- Stability information to determine the expiry date of the final product
- Type of rate-control pump or device(s) to be used
- Date on which treatment should be reviewed

Check that an appropriate access device is in place and follow the HDUHB Infection Control Procedures including 700 - Aseptic Non Touch Technique (ANTT) and vascular device insertion bundle, recording VIP (Visual Inflammation and Phlebitis) scores each time the device is used. Flush the device immediately before and after the administration of a medicine and between doses of different medicines administered consecutively.

6.8.5 Flushing

All IV devices must be checked for patency and tip position with 0.9% Sodium Chloride prior to the administration of any medication. For peripheral lines (PVC and Midline) 3-5mL is usually sufficient to determine whether extravasation has occurred, blood return need not be checked. Central Catheters (PICC, non tunnelled and tunnelled) blood return must be observed in the clear extension of the line prior to administration of medicines and 3-5 mL of 0.9%soduim chloride then flushed through. Failure to withdraw blood could indicate the presence of a fibrin sheath and central administration of that medicine might not be assured. Help and advice should be sought.

A flush of 2-3mL of a compatible flush solution, should be administered between bolused medications and following administration to ensure the catheter is clear of any drug. A push stop flushing technique is recommended with a positive pressure finish by clamping the needle free adaptor during administration of the last mL of the flush.

Following an intermittent infusion from a bag or bottle, the administration set should be flushed through with a 50mL infusion of a compatible flush solution. Failure to do so could result in an under administration of between 5 to 20% of the intravenous medicine left in the tubing of the intravenous giving set once the infusion bag becomes empty at the end of the administration of the infusion. [NIVAS Intravenous Infusion Drug Administration: Flushing Guidance April 2019].

All Flushes must be prescribed/directed unless a prefilled syringe (eg BD Posiflush) is used.

Vasoactive Medicines

For some infusions, e.g. those containing a vasoactive medicine (e.g. inotropes, antihypertensive agents, vasodilators, anti-arrhythmic agents), the central venous access device should not be flushed when the infusion is discontinued. Refer to local guidelines and the Injectable Medicines Guide

- **IV infusion via a central venous access device:** Do not flush the central venous access device. After the infusion is discontinued, disconnect the administration set, aspirate the cannula contents and then flush with sodium chloride 0.9%.
- **IV infusion via peripheral cannula:** Flush the cannula with sodium chloride 0.9% at the same speed as the rate of infusion to avoid adverse haemodynamic effects.

Residual anaesthetic or sedative drugs

These may be left in intravenous (IV) lines and cannulae unless they are effectively flushed at the end of the procedure**.**

The Patient Safety Alert (NHS/PSA/D/2017/0060 recommends the following actions to reduce this risk:

- Amend the Sign Out section of the WHO Checklist or equivalent in local use to include confirmation that before a patient leaves the procedural area:
    a. All IV administration sets and extension sets without active flow have been removed.
    b. Any multi-lumen connector without active flow through all its arms is removed; or, if this is not possible because a patient cannot tolerate even brief interruptions to essential drug or fluid delivery, that all arms have been adequately flushed.
    c. All cannulae have been identified and either removed or adequately flushed.
- Include in local documentation for handover from procedural area to recovery, and recovery to the subsequent place of care, the requirement for documented and verbal confirmation that lines not in active use have been removed and multi-lumen connectors and cannulae removed or flushed.

6.9 Monitoring of the patient

After completion of an intravenous infusion or injection, flush the access device according to Royal Marsden procedures

After administration, if possible, ask the patient/carer to report any soreness at the injection site or discomfort.

The Medusa IV guide monographs contain information on the specific monitoring required for individual medicines. Additional clinical advice should be sought from the prescriber or pharmacist. Check that the arrangements for monitoring fluid balance or clinical parameters have been made.

Make a detailed record of administration on the appropriate Infusion Monitoring ('Pump') Chart/Fluid Balance Chart. Continuous or long infusions need a record of administration at the start and the end of the infusion on either the All Wales In-patient Medicines Administration Record or Infusion Monitoring Chart.

Re-check the administration site for signs of leakage, infection or inflammation and document observations in the appropriate peripheral or central venous line bundle and continue to monitor the patient, contents of the infusion container and the rate of infusion according to local policy.

Infusions should be monitored to ensure safe administration of prescribed treatment. A minimum standard for active infusions recommends monitoring of the patient, the cannula and infusion site, the administration set, and the infusion pump or device on the relevant infusion monitoring chart.

Once an injection is administered or an infusion is commenced, discard the empty ampoules/vials from which the injection was prepared and any unused medicine following the HDUHB 258 Waste Management Policy. Single ampoules or vials should never be used for more than one patient or to prepare more than one injection unless specifically identified by the manufacturer that the product is licensed for 'multi-dose' use.

6.10 Infection Control

All staff must adhere to the following polices when handling any type of medicine/infusion:

- 354 – Standard Infection Prevention and Control Precautions (SICPs) Policy
- 700 – Aseptic Non touch Technique (ANTT)'

Disposable gloves and plastic aprons must be used to protect both the staff member and patient against contamination by blood, body fluids and micro-organisms or spillage of medicines/chemicals.

Non sterile, non powdered, non latex gloves are adequate. Gloves and aprons must be discarded after each procedure as “orange bag” waste – refer to HDUHB 258 Waste Management Policy

Chlorhexidine 2% and isopropyl alcohol 70% must be used in the cleaning and preparation of all IV ampoules, vials and injectable ports and bungs. The port on top of the peripheral cannula may only be used post insertion to confirm cannula position; any bolus administration following this must go through a needle free adaptor port.

6.11 Injectable Medicines used in Theatres

If medicines are drawn up and labelled in a theatre setting ideally this should be done by the person who will administer them at the time of preparation. Where this is not possible and when a practitioner requires that a medicine is drawn up on their behalf, e.g. when working in a sterile field, these medicines are:

- Checked with the requesting practitioner before they are opened
- Drawn up in the presence of the requesting practitioner – and checked (medicine, route of administration, diluent, dose, and expiry date) against the original container (e.g. vials) prior to administration.
- Adequate uncluttered surface space and appropriate trays, clean for each patient, are provided for drawing up, arranging and holding the syringes and drugs used in each procedure.
- Medicines and infusion fluids used in theatre areas are readily identifiable at all times during a procedure. Pre-labelled empty syringes and unlabelled or poorly labelled presentations are considered unsafe and must be immediately discarded.

The second checking of medicines does not apply in areas of anaesthesia and resuscitation where the doctor, dentist or ALS provider can administer medicines alone.

6.12 Extravasation

As the signs of extravasations can occur during or after administration this should be considered when an area of inflammation is identified in a patient who has had a venous access device in situ.

Extravasation should be suspected if one or more of the following are present:

- Patient complains of burning, stinging or any discomfort at the injection site of the vascular access device or the surrounding tissues
- Inability to aspirate blood from a central vascular access device
- Resistance is felt when the medicine is given as a bolus.
- There is an obstruction to the flow of fluid when an infusion is in progress.
- Swelling, leakage or redness is observed at the injection site.

Information on the action to be taken and treatment of extravasation can be found in the Royal Marsden Manual of Clinical Nursing Procedures, Chapter 12: Medicines Management Extravasation. 12.27 Extravasation Management: peripheral cannula procedure.

The HDUHB procedure 491 PVC – Insertion and Management of a Peripheral Vascular Cannula (PVC) details the steps to be taken to minimise the risk of extravasation and monitor the cannula in use for signs of extravasation developing.

A cytotoxic extravasation kit is available on the Chemotherapy Day Units, pharmacy and other areas where cytotoxics are administered. This kit contains the Swansea Bay UHB Extravasation Guideline.

6.13 Anaphylaxis

Anaphylaxis is a severe, life-threatening generalised or systemic hypersensitivity reaction. It is characterised by rapidly developing life-threatening airway and/or breathing and/or circulation problems usually associated with skin or mucosal changes

Certain antibiotics, anaesthetic, NSAIDs, aspirin or other medicines have been implicated as triggers.

Staff should be aware of the signs and symptoms of anaphylaxis and how to access help quickly if required.

See the HDUHB 352 Resuscitation Policy and www.resus.org.uk for further information.

All clinical areas involved in the administration of any type of medicines should have access to medicines for treating anaphylactic reactions.

Community staff must have immediate access to adrenaline 1 in 1000 for intramuscular injection for administration prior to the emergency services arriving.

6.14 Patient Self Administration of Injectable Medicines

Patients and their carers may be trained to self administer injectable medicines. In such cases the patient / carer should be assessed as suitable to self administer, trained and competency assessed in the relevant methods of preparation, administration (including the use of any infusion device), monitoring and disposal using HDUHB approved documentation which can be found in the Self-Administration Guideline

6.15 Incident Reporting

All incidents that involve injectable medicines and infusions at any stage of the process – prescribing, supply, preparing, administering and monitoring must be reported via the Datix Incident Reporting System. See the Incident Reporting webpage for more information.

Never events are defined as serious, largely preventable patient safety incidents that should not occur if the available preventative measures have been implemented. In 2011/2012 wrongly prepared injectable medicines were added to the NHS Never Events list for NHS Wales.

Any **adverse drug reaction** (ADR) associated with injectable medicines and infusions must be reported to the patient's medical team (or on-call medical team) and reported via the MHRA Yellow Card Scheme (either on-line or using the form in the back of the paper BNF) in accordance with the criteria for established medicines or medicines requiring intensive monitoring (▼'black triangle' medicines).

Any defects in the product (for example, discoloured powder, particles on reconstitution, cracked vials) must be reported as part of the Medicines Defect Reporting Scheme. The

process for reporting (HDUHB 268 Medicines Policy 9.6.2 Defective medicinal products) must be followed.

6.16 Additional Information Sources
If staff who are involved in the prescribing, preparing, administration or monitoring of injectable medicines and infusions are unclear about any aspect of this policy, then it is imperative that they clarify any issues before proceeding. Below are some recommended sources of information:

- The package insert/medicine information leaflet (found in the box)
- Injectable Medicines Guide (Medusa) Medusa is available via the intranet http://medusa.wales.nhs.uk/?ID=ca6df37243900495092e2d9b342f0d59848
- British National Formulary (BNF) – https://bnf.nice.org.uk/
- British National Formulary for Children (BNFC) available as a paper copy in appropriate clinical areas and as an e-copy at https://bnfc.nice.org.uk/
- Pharmacy department
- Hywel Dda University Health Board Medicines Information Centre (01437 783461) Open Monday to Friday 9am to 5pm to provide advice about medicines to any staff member in the HDUHB.
- Out-of-hours Pharmacy on-call service (contact via switchboard).

7. Responsibilities
7.1 Chief Executive and Board
The Chief Executive and Board are responsible for providing the resources to implement this policy and to monitor compliance with and investigate any non-compliance or incidents.

7.2 Head of Medicines Management, Medical Director, Director of Nursing, Quality and Patient Experience
The Head of Medicines Management, Medical Director and Head of Nursing, Quality and Patient Experience are jointly responsible for the implementation and monitoring of this policy and the provision of education and training to enable staff to work under this policy.

7.3 Ward / Department Sisters/Charge Nurses
It is the responsibility of ward / department sisters/charge nurses for ensuring all staff in their areas are competent in handling injectable medicines, are competent to prepare and administer injectable medicines and they are made aware of this policy. Ward/Department Sisters/Charge Nurses are also responsible for ensuring safe storage of injectable medicines and infusions. It must be included in the HDUHB competency training and local induction programmes for health professionals handling injectable medicines.

7.4 Individual Registered Healthcare Professionals and non-registered staff
See 6.1 Professional Responsibilities for Registered Healthcare Professionals and non-registered staff associated with Injectable Medicines and Infusion Therapy.

8. References

- NPSA template standard operating procedure for use of injectable medicines. March 2007.
- NPSA multi-professional safer practice standard for injectable medicines. March 2007
- Health and Safety (Sharp Instruments in Healthcare) Regulations 2013 http://www.hse.gov.uk/pubns/hsis7.pdf
- Royal College of Nursing (RCN) (2016) Standards for Infusion Therapy. Royal College of Nursing, London. https://www.rcn.org.uk/professional-development/publications/pub-005704

- Royal Pharmaceutical Society guidance on safe and secure handling of medicines: https://www.rpharms.com/recognition/setting-professional-standards/safe-and-secure-handling-of-medicines
- Royal Marsden Manual of Clinical Nursing Procedures, 9th Edition. Accessed at: https://www.rmmonline.co.uk/
- NICE CG174 Intravenous fluid therapy in adults in hospital (May 2017) https://www.nice.org.uk/guidance/cg174
- NICE NG29 Intravenous fluid therapy in children and young people in hospital (December 2015) https://www.nice.org.uk/guidance/ng29
- epic3: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England https://improvement.nhs.uk/documents/847/epic3_National_Evidence-Based_Guidelines_for_Preventing_HCAI_in_NHSE.pdf
- Patient Safety Alert PSA007/January 2017 Restricted use of open systems for injectable medication
- http://www.patientsafety.wales.nhs.uk/sitesplus/documents/1104/PSA007%20Restricted%20use%20injectable%20meds.pdf
- NIVAS Intravenous Infusion Drug Administration: Flushing Guidance April 2019
- https://medusa.wales.nhs.uk/Docs/NIVAS%20Flusing%20gudiance%202019%20final%20.pdf

6. Appendix 1 IV Infusion Monitoring Chart

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INFUSION MONITORING CHART

ADDRESSOGRAPH/PATIENT DETAILS		PRESCRIPTION DETAILS		INFUSION DEVICE DETAILS	
		Prescribed fluid or drug(s) & dosage(s)		Tick if Gravity Device	
				Tick if Enteral Feed Pump	
				Make / Model of Pump	
		Diluent name & volume			
				Inventory no.	
		Final concentration of drug infusion			
				Check Device is *Fit for Purpose*	✓
		Total Volume To Be Infused (ml)	Infusion period (hours)	Visual inspection	
				Pump 'Next Test Due'	
				Cleanliness	
				Patient ID	
Ward	Consultant	Infusion rate (ml/hour or drops/minute) *- show calculation*	Route of Infusion *(IV/SC/Enteral)*	Appropriate device for application/patient/drug	
				Signature:	

Checks - at start of infusion

CHECK THE ROUTE OF INFUSION

Start date	Start time (24 hour format)	Volume at START (ml)	Infusion Rate setting (ml/hr)	Comments / Observations	Expected completion time	Initial as correct & counter-checked

Ensure that Management Plan for ALL fluids prescribed, whatever their route of administration, is reviewed DAILY and/or on Transfer to a new Ward

Frequencies of ongoing checks

- **Any fluid administered via a pump (IV/SC/enteral) :** initially after **15 mins**, then after **1 hour**, then *at least* every **4 hours** thereafter.
- **For Gravity infusions:** hourly checks to be recorded – ***any*** deviation from this requires entry in corresponding Comments/Observations.
- **For all infusions:** Two staff required to sign at **Start of Infusion, Handover, Change of Rate & Change of Bag/Syringe.** One signature required for routine checks.
- **IV site check:** minimum once per shift. *(NB:: to be used in conjunction with the 'Peripheral Vascular Cannula Care Bundle')*

Date	Time (24 hour format)	Volume remaining *(i.e. when shown on pump and visual check of actual volume remaining)*		Infusion Rate (ml/hr)	Total volume Infused (ml)	Comments / Observations *(including any subsequent infusion calculations etc)*	Initial as correct & counter-checked	
		(ml)	Visual check (✓)					

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INFUSION MONITORING CHART

Date	Time (24 hour format)	Volume remaining (i.e. when shown on pump and visual check of actual volume remaining.) (ml)	Visual check (✓)	Infusion Rate (ml/hr)	Total Volume Infused (ml)	Comments / Observations (including any subsequent infusion calculations etc)	Initial as correct & counter-checked	

NB:
ANY SIGNIFICANT DISCREPANCY ARISING BETWEEN THE EXPECTED AND RESIDUAL VOLUMES AT END OF INFUSION ARE TO BE INVESTIGATED AND REPORTED.

7. Appendix 2 Lines Written Control Documents

- 552 Insertion and Immediate Care of Skin Tunnelled Central Venous Catheter (Hickman's Line) Guideline
  http://howis.wales.nhs.uk/sitesplus/documents/862/552-Insertion%26ImmediateCareCVCGuideline-%20approved.pdf

- 215 Insertion and Maintenance Care of a Central Venous Catheter (CVCs) Procedure
  http://howis.wales.nhs.uk/sitesplus/documents/862/215-Insertion%26MaintenanceCareCVCProcedure.pdf

- 490 Insertion, Maintenance and Care of a Peripherally Inserted Central Catheter (PICC) Procedure
  http://howis.wales.nhs.uk/sitesplus/documents/862/490-PICCProcedure.pdf

- 504 Insertion & Maintenance of Midline Catheter Procedure
  http://howis.wales.nhs.uk/sitesplus/documents/862/504-InsertionMaintenanceofMidlineCathterProcedure-APPROVED.pdf

- 491 PVC - Insertion and Management of a Peripheral Vascular Cannula (PVC) Procedure
  http://howis.wales.nhs.uk/sitesplus/documents/862/491-Peripheralcannula%20procedure-final.pdf

8. Appendix 3 INTRAVENOUS THERAPY: ADMINISTRATION DEVICE SELECTION

752-RevisedApp3
INTRAVENOUS THER