Grŵp Strategaeth Meddyginiaethau Cymru Gyfan
All Wales Medicines Strategy Group

The All Wales Policy for Medicines Administration, Recording, Review, Storage and Disposal (MARRS)

April 2024

This document has been prepared by the All Wales Prescribing Advisory Group (AWPAG) with support from the All Wales Therapeutics and Toxicology Centre (AWTTC), and has subsequently been endorsed by the All Wales Medicines Strategy Group (AWMSG).

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Contents

1.0 Background

The All Wales Policy for Medicines Administration, Recording, Review, Storage and Disposal (MARRS) was first published in 2015 in response to medicines practice issues identified within the Trusted to Care report[1]. The updated MARRS policy ensures practice is aligned with changes to legislation and medicines management guidelines. The document is a framework of standards that healthcare workers, health boards and trusts in Wales must implement through local procedures.

2.0 Purpose and scope

The purpose of the MARRS policy is to set out the minimum standards of practice that must be adopted by all healthcare staff involved in the administration (including supporting patient/servicer user self-administration), recording, review, storage and disposal of medicines in healthcare organisations across Wales. The Medicines and Healthcare products Regulatory Agency (MHRA) defines a medicine as:

> *"any substance or combination of substances presented as having properties for treating or preventing disease; used or administered with a view to restoring, correcting or modifying physiological functions by exerting a pharmacological, immunological or metabolic action or to making a medical diagnosis."*[2]

Dietetic supplements and blood products, except for plasma prepared by industrial processes, are excluded.

The MARRS policy applies to all organisations that provide NHS and independent healthcare (such as health boards, trusts, general practices and private hospitals/clinics). The implementation of these standards will support the delivery of high-quality care and safeguard patient safety by ensuring consistency in the practice of medicines management across all healthcare sectors in Wales.

3.0 Responsibilities of health boards, NHS trusts, and healthcare organisations

Each health board, trust and healthcare organisation must ensure that:

- There is a formal process for the approval and review of procedures relating to the medicines use process (including prescribing, supply, administration, review, recording, monitoring, storage and disposal).
- Only documentation approved for use by organisations through this formal process is used by staff.
- All healthcare staff involved in the medicines use process have received appropriate education and training, have been assessed as competent and work within the limitations of their competence[3].
- Performance and competence are reviewed as part of an appraisal process, on an annual basis, and any learning needs identified. Organisations must have a system in place to support staff and address any areas of concern.
- Policies and procedures for reporting medicines related safety incidents and concerns around the safe use and storage of medicines are available. Staff are professionally accountable for adhering to these policies.

- Staff receive training on the procedures and use of reporting systems for raising concerns and for reporting, learning and sharing medicines related safety incidents to improve service delivery and to protect patients, staff and the public from harm.
- Risk management and patient safety teams of all organisations; Medication Safety Officers; and Specialist Medicines Management Nurses must adopt a systems approach (that is supportive, consistent, constructive and fair) to:
  - promote reporting of medicines related incidents
  - improve the quality of medicines related incident reports
  - effectively investigate medicines related incident reports
  - implement robust strategies to mitigate against future incident occurrence
  - review and monitor effectiveness of implemented risk reduction strategies for medicines related incidents.
- Organisations and healthcare staff exercise a duty of candour in accordance with legal, professional and organisational requirements to[4]:
  - report medicines related incidents and concerns that may impact on patient and/or public safety by submitting reports:
    - to the Yellow Card Scheme for adverse drug reactions[5] and
    - through local incident risk management systems (e.g. Datix Cymru, part of the Once for Wales Concerns Management System)[6].
  - take action to address concerns, in line with the National Policy on Patient Safety Incident Reporting and Management[7,8]
  - support staff to raise concerns that may impact on patient or public safety and to take the necessary action to address these concerns where appropriate without fear of being vilified or disciplined
  - foster a culture where reporting is supported by promoting a professional duty of openness and honesty.

4.0 Medicine administration

Medicines administration is the act of giving a person a medicine or supporting a person to take a medicine. The process of administering medication is informed by legislation and guidance from regulatory and professional bodies:

- General Medical Council. Good Practice in Prescribing and Managing Medicines and Devices[9]
- Royal College of Nursing. Medicines Management. An Overview for Nursing[10]
- Royal Pharmaceutical Society and Royal College of Nursing. Professional Guidance on the Administration of Medicines in Healthcare Settings[11].

Different processes for the order, supply and administration of unlicensed medicines may exist and must be considered by the healthcare staff involved[12].

4.1 Authority to administer

Healthcare staff are authorised by law to administer medicines within their remit and/or appropriate to the condition stated within the Human Medicines Regulations (2012)[2]. Organisations must have policies and procedures in place that specify the staff that can administer or support patient administration of medicines. These policies and procedures must specify the training requirement to demonstrate competence for the role.

4.2 Training

All healthcare staff involved in the preparation and administration of medicines must receive medicines management training as part of their induction to the organisation. Knowledge of MARRS practices must be updated every three years by completing the All Wales MARRS education programme and any specific training provided by the employing organisation. Healthcare staff undertaking administration of intravenous, intramuscular and subcutaneous injections and fluids are required to undergo specific training and competency assessment provided by the employing organisation. Specialised training provided by the organisation must be completed by healthcare professionals administering medicines via central lines and intrathecal, epidural, intraocular and/or intraarticular routes. Where administration involves the use of infusion pumps, syringe drivers etc., healthcare staff must have received training in the use of these devices by the employing organisation prior to use.

All healthcare staff must have been assessed as competent at administering medicines via the relevant specialist routes specific to their roles and responsibilities before preparing and administering medicines independently (e.g. training for administration via a central line). Assessment of ongoing competence to prepare and administer medicines and medicines management practice must form part of the individual's annual review. The annual review should provide the member of staff and the reviewer an opportunity to identify any learning needs and an action plan on how to achieve this over the coming year, before undertaking the required learning programme every third year. Records of training and outcomes of competency assessments should be kept for all healthcare staff.

4.3 Administration by healthcare staff

Only healthcare staff who have been trained and assessed as competent can administer medicines. Where appropriate, competent healthcare staff may administer medicines independently (single responsible practitioner check [SRPC]), unless organisational policies mandate that an independent check is conducted by a second competent staff member (independent second practitioner check).

4.3.1 Delegation of medication administration

Medication administration can be delegated, in appropriate circumstances, by registered healthcare professionals to appropriately trained and competent healthcare staff[13]. Detailed guidance is provided by AWMSG on delegation of medicines management to care support workers in healthcare settings:

- All Wales Guidance for Health Boards/Trusts and Social Care Providers in Respect of Medicines and Care Support Workers[13,14].

Organisations must have policies and procedures to ensure medicines administration is only delegated where staff have sufficient support, supervision, education and training to competently undertake the task.

4.3.2 Single responsible practitioner check

A single responsible practitioner check (SRPC) involves a trained and competent practitioner who assumes full responsibility and accountability for verifying that a medicine corresponds to the correct patient's prescription and is appropriate based on the patient's clinical condition, existing therapies and monitored physiological parameters. This includes any medicines they have selected, assembled, prepared or administered to a patient and also includes any calculations, documentation and device programming.

A SRPC may be considered sufficient for some medicines and/or circumstances. Organisational policies and procedures must explicitly state the medicines and/or circumstances for which healthcare staff can adopt SRPCs. All healthcare staff performing SRPCs in accordance with policy must be allowed to request an independent second practitioner check.

Organisations are responsible for assessing the risk of SRPCs. Examples of medicines and/or circumstances where a SRPC may be considered sufficient include:

- administration of all oral/enteral, topical, ocular, auricular, nasal, rectal and vaginal medicines within the scope of practice and competency of the practitioner
- preparation and administration of medicines, regardless of route of administration, by district and community nurses in primary care which is within their scope of practice and competency to prepare and administer
- preparation and administration of medicines, regardless of route of administration, by community midwives which is within their scope of practice and competency to prepare and administer
- preparation and administration of resuscitation and emergency/rescue medicines
- administration of ready-to-administer intravenous fluids with the exception of potassium, magnesium and calcium infusions
- preparation and administration of intravenous antibiotics
- administration of pre-filled, ready-to-administer injectables with the exception of controlled drugs and cytotoxic medications
- administration of subcutaneous insulin delivered via an insulin device where the patient has capacity to confirm medication, dose and device
- administration of oral warfarin
- calculations with the exception of dilutions of oral, injectable and topical medication and infusion rates.

4.3.3 Independent second practitioner check

An independent second practitioner check involves a second appropriately trained and competency assessed practitioner (second checker) assuming responsibility and accountability for independently verifying that a responsible practitioner prepares and administers medicines to a patient in accordance with the prescription and guidance (e.g. Summary of Product Characteristics, Injectable Medicines Guide).

The second checker must:

- witness the responsible practitioner preparing and administering the medicine but must not influence or contribute to the process, unless to inform the responsible practitioner of an error
- verify the medicine selected, prepared and administered to the patient (including any calculations, documentation and device programming) corresponds to the patient's prescription and is appropriate based on the patient's clinical condition, existing therapies and physiological parameters.

Both the second checker and the responsible practitioner who has prepared and is administering the medicine must sign the prescription chart and any other associated documentation at the point of administration.

Both the responsible practitioner and second checker are equally accountable and responsible for an error in the process of preparing and administering a medicine that requires an independent second practitioner check.

Organisations must have policies outlining which medicines and/or administration of medicines to certain patient groups requires an independent second practitioner check, who can conduct the independent second check and the process of conducting the independent second check.

Examples of medicines and situations that may require an independent second practitioner check include:

- reconstitution and preparation of medicines for parenteral administration
- intravenous administration of potassium, calcium and magnesium
- preparation and administration of controlled drugs
- administration of cytotoxic medication (exemptions may be granted in haematology/oncology wards or clinics)
- administration of intravenous or subcutaneous medicines assessed as high risk for the clinical setting by the organisation (such as heparin, insulin)
- recipient of medicine is a child (< 16 years), young person or neonate
- calculation of dosages, dose adjustments for infusions in progress, infusion rates, and dilutions of injectable, oral and topical medicines
- starting and changing the rate of an intravenous, subcutaneous or other parenteral infusion.

Practitioners that are considered appropriate to perform a second practitioner check previously defined by the Nursing and Midwifery Council (NMC) are:

- registered nurses, midwives, doctors, dentists and pharmacists
- other registered healthcare professionals who have been suitably trained and assessed as competent to prepare, check and administer medication within their scope of practice (e.g. operating department practitioners, radiographers etc.)
- other healthcare staff who have been suitably trained and assessed as competent to prepare, check and administer medication within their scope of practice.

4.4 Self-administration in hospital

Self-administration of medication (SAM) involves the patient, and carer in certain circumstances, looking after and taking their own medication whilst in hospital. Taking medicines is an activity of daily living. Hospitals must have a procedure in place that supports patient self-administration. Hospital in-patients should self-administer medication during hospitalisation if:

- they take their medication at home
- an individual lockable patient bedside locker is available for safe, secure storage of medicines (secure storage requirement exemptions may be appropriate for some medicines following a risk assessment e.g. insulin, medication for Parkinson's disease and rescue medication)
- they have been assessed on admission by a suitably trained registered healthcare professional as:
  - having capacity
  - having no known or possible risk of self-harm
  - correctly using their medication

- the medication regimen and dosages are stable
- the medication is suitable for self-administration such as:
  - medicines administered to self at home (exception schedule 2 and 3 controlled drugs subject to safe custody and record keeping requirements)
  - new oral medicines
  - topical medicines
  - inhalers
  - subcutaneous injections
  - rectal and/or vaginal medicines.

Patients and/or carers deemed able and willing to self-administer medication should be assessed for the level of support required by a suitably trained healthcare professional (Table 1). The assessment of patient and/or carer suitability and level of support needed for self-administration should be documented in the medical notes or associated documentation and signed by the patient and/or carer.

If patient self-administration is inappropriate, this must be documented in the medical notes or associated documentation and responsibility for medication administration is assumed by the nurse/midwife caring for the patient (level 1 support). Patient's ability to self-administer medication should be reassessed daily during hospitalisation and on discharge to ensure the patient can safely and effectively use their medication and any support required on discharge is identified.

Organisations must have policies and procedures in place to facilitate patient/carer SAM. The procedure must include guidance for assessing the ability of a patient to self-medicate.

Table 1: Levels of supervision for patient/carer self-administration of medication (SAM) defined by the Nursing and Midwifery Council (NMC)

Level 1	Nurse/midwife administration: registered nurse/midwife responsible for safe storage of medicines and supervision of medication administration, ensuring that the patient understands the medicine being administered.
Level 2	Supervised patient/carer self-administration: registered nurse/midwife responsible for safe storage of medicines. At administration time, patient requests nurse/midwife to open medicine cabinet/locker and patient self-administers under nurse/midwife supervision.
Level 3	Independent patient self-administration: patient accepts full responsibility for the storage and administration of medicine.

Organisations can permit the delegation of medicines administration to suitably trained and competent healthcare support workers if a patient is assessed as unable to independently self-administer medication. Healthcare professionals can only delegate administration where the organisation has risk-assessed appropriateness for the clinical area and staff have been suitably trained.

4.5 Delayed or omitted medication administration

All medicines must be administered in a timely manner. An omitted medicine is a medication dose that was not given or taken before the next dose is due, without a

documented clinical reason discussed with the prescriber. Delayed medication administration is the administration of a medication dose two hours or more after the prescribed time or not within the specified timeframe for time-critical medicines without a documented clinical reason discussed with the prescriber (please refer to Appendix 1 for examples).

Delays and omission of medication, without a documented clinical reason discussed with the prescriber, is not acceptable and should be reported via the local risk management system (e.g. Datix Cymru) or another appropriate incident reporting system. Organisations must have policies and procedures in place for healthcare staff to follow to prevent delayed or omitted medicine doses in the following circumstances:

- a patient is unable to take a medication (e.g. where a medication is prescribed for administration via the oral route but the patient is 'nil by mouth' or where a medication is prescribed to be administered by the intravenous route but there is no cannula in place)
- a patient refuses to take a medicine
- a medication is unavailable when it is due to be administered.

Time-critical medicines are medicines where early or delayed administration from the prescribed time may cause harm or result in sub-optimal therapy or pharmacological effect. Appendix 1 gives a suggested timeframe for the administration of some time-critical medicines. Owing to diverse population groups, differing specialist care provided by organisations, and expanding market of medicines, each organisation should have a local list of time-critical medicines and a policy on the management and administration of these identified time-critical medicines.

5.0 Recording

A clear, accurate and immediate record of all medicines administered must be made by the member of healthcare staff responsible for administration only after observing the patient taking the medication. If the medicine is unlicensed, the indication, rationale for use and treatment plan must be accurately recorded in the patient's record[12]. Medicines scheduled to be taken by the patient but which are not taken (e.g. due to a lack of availability or refusal by the patient) must also be recorded with any advice given to the patient documented on the medication chart and medical notes. Healthcare staff must not sign the medication administration record until after they have observed the patient take the medication. If the medicine or fluid is given as an intermittent or continuous infusion, the medication administration record must be signed immediately after the infusion has commenced by the practitioner responsible for administration and, where applicable, the practitioner performing the independent second practitioner check. Specific guidance related to controlled drugs may be found within Royal Pharmaceutical Society resources and controlled drug regulations:

- Royal Pharmaceutical Society. Destruction of Controlled Drugs in Medicines, Ethics and Practice (MEP)[15] (RPS membership required for access)
- Royal Pharmaceutical Society. Professional guidance on the safe and secure handling of medicines[16].

In the event of an emergency (e.g. cardiac arrest), a list of medicines administered to the patient must be documented and a copy held within the patient's notes in accordance with local procedures.

6.0 Review

Organisations must have policies and processes in place for appropriate and timely review of a patient's medicines regimen.

It is the responsibility of the person administering a medicine to contact the prescriber of the medicine or another authorised prescriber without delay where:

- the prescription or instruction to administer is not clear or is unreadable
- contraindications to the prescribed medicine are discovered, unless there is documented evidence in the medical notes/prescription chart that this is known and intended
- drug interactions are identified which are serious or there are concerns for patient safety
- the patient has a documented allergy, or reports an allergy, to a prescribed medication
- the patient develops an adverse reaction to the medicine
- assessment of the patient indicates that the medicine is no longer suitable
- the medicine has been omitted, at which point:
  - the reason for omission should be established and documented
  - local processes should be followed to obtain supply with the pharmacy team contacted to obtain supply if necessary and
  - the patient's responsible clinician should be contacted to determine the risk of an adverse outcome occurring.

Suspected adverse drug reactions should be reported to both the Yellow Card Scheme and local risk management system (e.g. Datix Cymru)[5,6].

Prescribers have a responsibility to ensure that the medicines they have prescribed are appropriate for the patient and are reviewed. Staff administering medicines should prompt prescribers to review medication and inform prescribers about the effectiveness of medication and any concerns or side-effects. When prescribing or reviewing medication, prescribers are responsible for ensuring that medicines are administered/taken according to instructions. The Welsh National Standards for Medication Review[17] and Polypharmacy in Older People: A Guide for Healthcare Professionals[18] provides guidance for prescribers on reviewing medication for necessity, appropriateness and safety. Registered healthcare professionals caring for patients deemed suitable for self-administration have continuing responsibility for daily assessment of SAM, to ensure the practice remains safe. Patients must be directly informed of any changes to their medication during hospitalisation and on discharge.

7.0 Storage

7.1 Responsibilities

Organisations must ensure medicines are stored in accordance with current legislation and national guidance:

- Royal Pharmaceutical Society. Professional guidance on the safe and secure handling of medicines[16]
- Welsh Government and NHS Wales. Patient Safety Notice. PSN015/July 2015. The storage of medicines: Refrigerators[19]

- Welsh Government and NHS Wales. Patient Safety Notice. PSN 055/October 2020. The Safe Storage of Medicines: Cupboards[20]
- Welsh Health Building Note 14-02 – Medicines storage in clinical areas[21].

The service director or lead for medicines management is responsible for establishing a system for the security of medicines in consultation with appropriate medical and senior nursing/midwifery staff. Organisations must have policies and procedures in place to ensure that medication storage units (e.g. cupboards, trolleys and lockers) procured and fitted meet current legislation and national standards. The ward sister/charge nurse or clinical lead is responsible for the storage of medication within their area. The ward sister/charge nurse or clinical lead may delegate some duties involved in the storage of medicines but cannot delegate responsibility. The Nursing and Midwifery Council Code dictates that a registered nurse or midwife takes all steps to ensure medicines are stored securely on in clinical areas[22].

7.2 Storage areas

There must be separate lockable cupboards, fridges and, where required, freezers for:

- controlled drugs: to be stored within a controlled drugs cabinet (that complies with the Misuse of Drugs [Safe Custody] Regulations 1973[23])
- oral medicines: to be stored within a cupboard
- injectable medicines: to be stored within a cupboard
- topical medicines: to be stored within a cupboard
- medicines that require storage in a fridge or freezer
- epidural infusions (where permitted): to be stored within a cupboard.

Suitable storage areas must also be provided for the following:

- diagnostic reagents, including urine testing
- intravenous fluids and sterile topical fluids
- flammable preparations
- dressings.

All medication storage units (including cupboards, medicine trolleys, lockers and fridges/freezers) must comply with current specifications[20,21]. Where computer-controlled cabinets are used for medicines, they should comply with current specifications[20,21]. Medicine trolleys and patient's own lockers, where used, should be lockable and immobilised when not in use. Treatment room doors must be locked when not in use, with access restricted to designated staff.

The task of stocking medication storage units (including cupboards, medicine trolleys, patient's own lockers and fridges/freezers) in clinical areas can be delegated by the ward sister/charge nurse or director or lead for medicines management to healthcare staff competent for the role, but responsibility for medication storage cannot be delegated. Healthcare support workers may be permitted to put away delivery of stock medicines in general medicines cupboards only. They must carefully check the picking list and make the nurse in charge/clinical lead aware of any discrepancies.

When schemes for SAM and/or dispensing for discharge are in operation, each patient involved in the scheme should have a lockable area for medicines (such as a drawer or individual cupboard). Only a registered healthcare professional or

competent pharmacy staff can place medicines into the patient's bedside medicine storage cupboard.

For clinical emergencies (e.g. cardiac arrest), wards and departments must have a source of urgent medical products. The content must be agreed by the Resuscitation Committee. These contents should be held in boxes clearly marked "For emergency use". These boxes should be tamper evident and should not be held in a locked cupboard, but at strategic and accessible sites.

8.0 Disposal

It is a legal requirement that all waste is disposed of correctly. Medicines are categorised as clinical waste for waste management and segregation purposes. All medication must be disposed of safely in accordance with the Hazardous Waste Regulations (2005)[24]. Controlled drugs must be destroyed in such a way that the medicine is denatured or rendered irretrievable so that it cannot be reconstituted or reused. Expired and unused controlled drug stock (Schedule 2, 3 or 4 [part 1]) must only be destroyed in the presence of an authorised witness and an entry should be made in the controlled drug register. It is good practice that patient returned controlled drugs (Schedule 2, 3 or 4 [part 1]) are witnessed being denatured and destroyed by another member of staff (preferably a registered healthcare professional) with records of destruction kept in a record book specifically for this purpose and not the controlled drug register. Where denaturing is carried out on the wards, the methods used must be those currently recommended by the Royal Pharmaceutical Society[15]. With regards to disposal for primary care, policies must be in place to ensure the safe disposal of medicines in accordance with both local authority regulations and the Hazardous Waste Regulations (2005). Patients should be encouraged to return expired, unwanted or unused medicines to their supplier (e.g. a community pharmacy or dispensing doctor) for safe disposal[25].

9.0 Medicines advice for healthcare professionals

The Welsh Medicines Advice Service (WMAS) provides information and support to healthcare professionals who work in primary and secondary care through the WMAS enquiry answering service[26]. These include pharmacists, nurses and doctors working within NHS hospitals, local GPs, practice nurses and community pharmacists.

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Appendix 1: Time-Critical Medicines, delayed medication administration timeframes (continued next page)

<table>
<tr><th>Timeframe for time-critical medicines</th><th>Medicine examples</th></tr>
<tr><td>Give immediately</td><td>

Resuscitation medicines e.g. adenosine, adrenaline, atropine, noradrenaline, IV fluids
Antidotes and reversal agents e.g. flumazenil, naloxone, vitamin K, prothrombin complex
Stat doses and medicines for emergency situations

<table>
<tr><td>Acute alcohol withdrawal e.g. diazepam, chlordiazepoxide</td><td>Antithrombotics and anticoagulants acute VTE, stroke, ACS e.g. heparin, enoxaparin, dalteparin, alteplase, abciximab, aspirin, clopidogrel</td><td>Hypertensive crisis e.g. IV labetalol, glyceryl trinitrate</td></tr>
<tr><td>Acute arrhythmias e.g. IV adenosine, amiodarone, digoxin, magnesium</td><td>Bradycardia e.g. IV atropine etc.</td><td>Hypoglycaemia treatment e.g. glucose, glucagon</td></tr>
<tr><td>Acute GI bleed e.g. IV omeprazole, terlipressin</td><td>Bronchodilators e.g. nebulised salbutamol and/or ipratropium</td><td>Neuroleptic malignant syndrome e.g. dantrolene</td></tr>
<tr><td>Adrenal crisis e.g. IV hydrocortisone</td><td>Diabetic ketoacidosis e.g. insulin</td><td>Sepsis e.g. antibiotics</td></tr>
<tr><td>Anaphylaxis treatment e.g. adrenaline, hydrocortisone, chlorphenamine</td><td>Electrolyte disturbances (severe) e.g. IV potassium, calcium, magnesium, phosphate etc.</td><td>Status epilepticus management e.g. IV phenytoin, buccal midazolam, rectal diazepam</td></tr>
<tr><td>Antifibrinolytics in acute haemorrhage e.g. IV tranexamic acid</td><td>Fluid overload e.g. IV furosemide</td><td>Thyrotoxicosis e.g. IV propranolol, hydrocortisone</td></tr>
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<tr><td>Give within 15 minutes of prescribed time</td><td>

Anti-parkinsonian medicines e.g. co-beneldopa (Madopar®), co-careldopa (Sinemet®), rotigotine, entacapone
Insulin (rapid acting or intermediate/biphasic) – within 15 minutes of meals.

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</table>

Timeframe for time-critical medicines	Medicine examples
Give within **30 minutes** of prescribed time	• **Anticholinesterase inhibitors** for myasthenia gravis e.g. neostigmine, pyridostigmine • **Antimicrobials – antibiotics, antifungals, antivirals** • **Anticoagulant (treatment)** e.g. heparin, low molecular weight heparins (enoxaparin, fondaparinux, dalteparin), direct oral anticoagulants (e.g. apixaban, rivaroxaban, edoxaban, dabigatran), warfarin • **Antiretroviral** e.g. Darunavir, ritonavir, tenofovir • **Desmopressin** for diabetes insipidus • **Insulin (long-acting)** (unless blood glucose levels indicate differently) • **Opioid analgesia (acute pain)** e.g. buprenorphine, fentanyl, morphine, oxycodone
Give within **1 hour** of prescribed time	• **Anticoagulant (prophylaxis)** e.g. heparin, low molecular weight heparins (enoxaparin, fondaparinux, dalteparin etc.), direct oral anticoagulants (e.g. apixaban, rivaroxaban, edoxaban, dabigatran), warfarin • **Anticonvulsants** e.g. carbamazepine, levetiracetam, phenytoin, sodium valproate • **Antidiabetic medication** e.g. gliclazide, metformin, dapagliflozin, sitagliptin, repaglinide, pioglitazone • **Antipsychotics e.g. clozapine** • **Immunosuppressant** e.g. azathioprine, ciclosporin, cyclophosphamide, mycophenolate mofetil, sirolimus, tacrolimus • **Steroids (long-term use)** e.g. prednisolone, dexamethasone, hydrocortisone, fludrocortisone