High-Risk Medicine Standard: Anticoagulants
PRINTABLE STANDARD

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Anticoagulant medicines are used extensively in clinical practice. They act through targeting different proteins that may limit or prevent thrombus formation.

Anticoagulant medicines have a narrow therapeutic index and over or under anticoagulation can result in significant adverse patient outcomes.

Errors involving anticoagulant medicines can include:

- duplication of therapy. For example, ordering pharmacological venous thromboembolism (VTE) prophylaxis for patients who are receiving therapeutic anticoagulation
- use of a therapeutic dose when a prophylactic dose was intended and vice versa
- failure to adjust an anticoagulant dose according to patient factors or changing patient factors. For example, haematology parameters, biochemistry, estimated creatinine clearance, age
- failure to adjust an anticoagulant dose due to insufficient or inadequately reviewed therapeutic drug monitoring
- incorrect protocol use resulting in inadvertent administration of the incorrect dose
- incorrect use following discharge. For example, inadequate patient and/or carer education for patients being discharged on anticoagulants resulting in adverse events
- failure to ensure appropriate perioperative anticoagulation individualised to the patient's level of risk and/or failure to recommence anticoagulant therapy after temporary cessation. For example, perioperatively or when temporary cessation is necessary due to short-term use of an interacting antimicrobial agent.

This standard outlines the minimum actions required to mitigate risks associated with anticoagulant medicine use. This standard does not contain clinical guidance on anticoagulant medicine use.

Minimum requirements for clinical protocols

The Drug and Therapeutics Committee must approve any clinical protocols relating to anticoagulants including, but not limited to; unfractionated heparin, warfarin, low molecular weight heparin and direct oral anticoagulants (DOACs), and ensure inclusion of the following, at a minimum:

- the requirement for recording accurate patient weight and height (where practical) for all patients receiving anticoagulant therapy
- instructions for calculating renal function for renally cleared anticoagulants

- evidence-based dosing guidelines and guidance for prescribing (see *Prescribing* section)
- managing anticoagulation in patients:
    - with absolute or relative contraindications to anticoagulation
    - with previous coagulation problems, for example, bleeding, heparin induced thrombocytopenia (HIT)
    - with bleeding risk, for example, planned surgery, platelet dysfunction
    - who are pregnant or breastfeeding
- monitoring for and the management of HIT for relevant anticoagulants
- monitoring for thrombocytopenia or monitoring for any new or extending thrombosis in patients receiving or recently discontinued from heparin
- management of bleeding in patients receiving anticoagulant medicines including referral processes
- instructions for switching to and from other anticoagulant medicines
- reference to locally endorsed perioperative guidelines for guidance on managing anticoagulants during the perioperative period
- any specific training, qualifications, skills or competencies required to prescribe or administer anticoagulants
- requirements for patient and/or carer education (see *Patient information/education* section).

Additional protocol requirements for intravenous unfractionated heparin

Where possible, intravenous unfractionated heparin protocols are to be standardised across Local Health Districts and Specialty Health Networks. Where it is not possible to standardise, protocols must address how risks associated with patient transfer between and within facilities will be mitigated.

- indications for intravenous unfractionated heparin
- clinical areas where intravenous unfractionated heparin may be used
- instructions for unfractionated heparin dose calculation, including advice on preferred use of actual body weight, ideal body weight or medically approved adjusted body weight in dose calculations
- recommended loading doses to be used for each indication
- explicit doses and corresponding infusion rates for each indication

- requirements for monitoring coagulation status
- therapeutic range for activated partial thromboplastin time (aPTT) (in consultation with local laboratory)
- dose adjustments based on aPTT results
- procedures for reversal of anticoagulation
- advice for ceasing and recommencing unfractionated heparin.

Additional protocol requirements for warfarin

- guidelines for dosing including adjustments based on:
    - bleeding risk factors
    - patient age
    - International Normalised Ratio (INR) results
    - presence of co-morbidities. For example, heart failure, liver disease, severe infection, recent major surgery, reduced oral intake, nutritional status and concomitant interacting medication
- the timing and frequency of blood collection for INR testing
- regular review of INR results
- the management of a high INR result in patients receiving warfarin (if bleeding or not bleeding) and instructions for warfarin reversal
- prompt to ascertain and continue brand of warfarin being taken by patients on existing therapy.

Governance requirements

Adherence to the requirements specified in this standard is to be monitored by governance committees (for example, Drug and Therapeutics Committee) and service managers (including, but not limited to, Directors of Pharmacy and Nurse Unit Managers). An implementation checklist is available and can be used by facilities and individual units to determine compliance with these requirements.

Prescribing

- Before prescribing an anticoagulant, the prescriber is to determine if a female of childbearing age is pregnant or breastfeeding. If there is any doubt, a pregnancy test is to be ordered.
- Doses of anticoagulants are not to be omitted or delayed unless intended and documented clearly by the prescriber (for example, prior to surgery).
- Where a dose(s) of anticoagulant is to be omitted or the dosing schedule adjusted for a period of time (for example, for the duration of another course of medicine or therapy where there is known interaction or contraindication) the plan is to be clearly documented in the patient's health care record and the medication order withheld.
- Treatment guidelines are to be referred to for recommended dosage and duration of therapy in relation to the indication for use. For example, the Clinical Excellence Commission Direct Oral Anticoagulant (DOAC) Guidelines.
- The indication for anticoagulation and therapeutic targets, where appropriate, are to be documented in the health care record. The details are to include:
    - the anticoagulant name
    - dose and/or dose adjustments
    - intended duration of therapy, timeframe for review
    - whether anticoagulation is newly initiated or a continuation of previous therapy.
- When assessing VTE risk, the prescriber is to ascertain if the patient is already receiving any other anticoagulant medicines.
- A VTE risk assessment tool is to be used to reassess the patient's VTE risk regularly, particularly when there are any changes to clinical condition or mobility status, unplanned delays to surgery or increases in length of stay. VTE prophylaxis is to be monitored and doses adjusted accordingly.
- Where electronic Medication Management (eMM) systems are in use, anticoagulant prescribing is to be in accordance with local eMM guidelines.

- Where National Inpatient Medication Charts (NIMC) are in use, any dedicated sections for warfarin, VTE prophylaxis and regular medicines are to be used for anticoagulant medicine prescribing according to the Australian Commission on Safety and Quality in Health Care National Inpatient Medication Chart (NIMC) – User Guide.
- In adult patients, renal function is to be calculated to aid selection of the correct dose for renally excreted anticoagulants.
- Where patients are intentionally prescribed multiple anticoagulants for bridging therapy, the reason is to be clearly documented in the patient's health care record.

Storage and supply

- Where unfractionated heparin solutions are required, commercially prepared pre-mixed solutions are to be used wherever possible.
- Where ampoules of concentrated unfractionated heparin injection are available as imprest stock, the strength should not exceed 5000 units per unit dose.
- Where multiple concentrations are available, for example heparin 5000 units in 0.2 mL and 5000 units in 5 mL, they are to be physically separated and clearly distinguishable to prevent inadvertent selection errors.

Administration

- An independent second person check is required for administration of oral (warfarin, apixaban, rivaroxaban and dabigatran) and parenteral (dalteparin, danaparoid, enoxaparin, heparin, nadroparin, bivalirudin and fondaparinux) anticoagulants. The second person check processes are outlined in the NSW Health Policy Medication Handling (PD2022_032) including circumstances where a second person check is not mandated (for example, when a medicine is administered by an authorised prescriber).
- Where patients have difficulty swallowing or are on enteral feeding tubes, ability to crush or disperse the tablet, or open the capsule, is to be determined prior to administration of oral anticoagulants.

Patient monitoring

- Instructions for monitoring patients at higher risk of bleeding is to be recorded in the patient health care record. For example, laboratory tests, clinical observation requirements and actions to be taken. Clinicians are to refer to local guidance on the management of bleeding.
- Patients on anticoagulants who fall are at an increased risk of bleeding and serious trauma including brain injury and will require close observation and monitoring according to local guidelines.

Medication review

- Where possible, all patients receiving an anticoagulant medicine are to have a medication review within 24 hours of admission (if continuation of existing therapy) or within 24 hours of initiation (if commenced as a new medication).

Patient information/education

- Patients and/or their carer who are discharged home on anticoagulant therapy are to receive confirmation of their current anticoagulation regimen at the time of discharge. If patients have been initiated on new anticoagulation therapy, the patients and/or their carer are to be provided with verbal and written information on their medication.
- Information and education are to address:
    - name, dose and frequency of prescribed anticoagulant
    - intended duration of therapy and timeframe for medical review
    - how to identify signs of bleeding, who to contact and actions to be taken
    - what to do in the case of a missed dose
    - instructions for any laboratory testing and review
    - any medication or food interactions and other lifestyle factors that may influence therapy
    - any specific storage and administration instructions.
- Patients and/or carers are to be given the opportunity to discuss anticoagulant therapy with a health practitioner.
- Patients on warfarin are to be provided with either a warfarin booklet for tracking warfarin therapy and results, or an update to an existing warfarin book to record INR results during their hospital stay.
- Provision of anticoagulant education is to be documented in the health care record.
- Professional Health Care Interpreters are to be utilised for patients and/or carers who are not fluent in English or who have hearing or visual impairments.

Staff education

- Local protocols are to address any specific training, qualifications, skills or competencies required to prescribe or administer anticoagulants.

- Clinicians (where relevant to their scope of practice) are to receive education on the safe use of anticoagulants when working in clinical areas where anticoagulants are used. The Health Education and Training Institute eLearning module 'Safe Use of Anticoagulants' (Course code: 237965997) is available for this purpose.

References

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