



Drug Therapy Protocols: Heparin

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Date	January, 2020
Purpose	To ensure a consistent procedural approach to heparin administration.
Scope	Applies to all Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless specifically mentioned.
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Drug class

Anticoagulant

Pharmacology

Heparin is an anticoagulant agent which combines with anti-thrombin III to inhibit Factor X and the conversion of pro-thrombin to thrombin.

Heparin therefore reduces the propensity for new clot formation and also inhibits other processes in the clotting cascade. Heparin is not a thrombolytic agent.^[1-4]

Metabolism

Heparin is metabolised via biotransformation in the liver and reticulo-endothelial system. The metabolites are then excreted in the urine.^[1]

Indications

- **Patients with STEMI** (as defined by the relevant QAS coronary artery reperfusion checklist) **who have been accepted for pPCI** (as an adjunct medication to aspirin **AND EITHER** ticagrelor **OR** clopidogrel)
- Critical care patients requiring anticoagulation during interfacility transport

Contraindications (absolute and relative)

- **Absolute** contraindications:
 - Allergy and/or Adverse Drug Reaction
 - Patient < 18 years
 - Active bleeding (excluding menses) **OR** clotting problem (haemophilia)
 - Prior intracranial haemorrhage
 - Current use of anticoagulants (e.g. warfarin)
- **Relative** contraindications (requires consultation with the accepting Interventional Cardiologist **OR** RSQ Clinical Coordinator (as appropriate) prior to administration)
 - Uncontrolled hypertension (systolic BP > 180 mmHg **AND/OR** diastolic BP > 110 mmHg at any stage during current acute episode)
 - Known cerebral disease, in particular a malignant intracranial neoplasm **OR** arteriovenous malformation
 - Ischaemic stroke or TIA within the last 3 months
 - History of significant closed head / facial trauma within last 3 months
 - History of major trauma or surgery (including laser eye surgery) within last 6 weeks

Precautions

- Renal impairment

Side effects

- Haemorrhage
- Thrombocytopenia

Presentation

- Ampoule, 5,000 units/5 mL *heparin sodium*

Onset (IV)

≈ 30 seconds

Duration (IV)

3–6 hours

Half-life

1.5 hours

Schedule

- S₄ (Restricted drugs).

Routes of administration

- Intravenous injection (IV)



- Intravenous infusion (IV INF)



Adult dosages

Patients with STEMI (as defined by the relevant QAS coronary artery reperfusion checklist) **and who have been accepted for pPCI** (as an adjunct medication to aspirin **AND EITHER** ticagrelor **OR** clopidogrel)



IV

5,000 units (or dose requested by the accepting interventional cardiologist)
Single dose only.

Adult dosages (cont.)

Critical care patients requiring anticoagulation during interfacility transport



IV

CCP ESoP aeromedical – RSQ Clinical Coordinator consultation and approval required in all situations.

Loading dose – 5,000 units

IV maintenance infusion (listed below) is to be administered immediately following IV loading dose.

IV
INF

CCP ESoP aeromedical – RSQ Clinical Coordinator consultation and approval required in all situations.

Heparin infusion is to be administered via a syringe driver using the following table:

Patient weight	Maintenance infusion dose (25,000 units in 50 mL)
< 70 kg	800 units/hour (1.6 mL/hour)
≥ 70 kg	1,000 units/hour (2.0 mL/hour)

Syringe preparation: Mix 25,000 units (25 mL) of heparin with 25 mL of sodium chloride 0.9% in a 50 mL syringe to achieve a final concentration of 500 units/mL. Ensure all syringes are appropriately labelled. Administer via syringe driver.

If the patient has an existing heparin infusion, CCP ESoP – aeromedical officers are to use the administration rate (units/hour) already preset.

Paediatric dosages

Note: QAS officers are **NOT** authorised to administer heparin to paediatric patients.

Special notes

- Ambulance offers must only administer medications for the listed indications and dosing range. Any consideration for treatment outside the listed scope of practice requires mandatory approval via the QAS Clinical Consult and Advice Line.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.