Drug Therapy Protocols: Heparin

Policy code	DTP_HEP_0722
Date	July, 2022
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.
Source of funding	Internal – 100%
Author	Clinical Quality & Patient Safety Unit, QAS
Review date	July, 2024
Information security	UNCLASSIFIED – Queensland Government Information Security Classification Framework.
URL	https://ambulance.qld.gov.au/clinical.html

While the QAS has attempted to contact all copyright owners, this has not always been possible. The QAS would welcome notification from any copyright holder who has been omitted or incorrectly acknowledged.

All feedback and suggestions are welcome. Please forward to: Clinical.Guidelines@ambulance.qld.gov.au

Disclaimer

The Digital Clinical Practice Manual is expressly intended for use by appropriately qualified QAS clinicians when performing duties and delivering ambulance services for, and on behalf of, the QAS.

The QAS disclaims, to the maximum extent permitted by law, all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs incurred for any reason associated with the use of this manual, including the materials within or referred to throughout this document being in any way inaccurate, out of context, incomplete or unavailable.

Heparin

July, 2022

Drug class

Anticoagulant[1,2]

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.[1,2]

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 less than 18 years of age
  - 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 signifiant closed head/facial trauma within last 3 months
  - History of major trauma OR surgery (including laser eye surgery) within last 6 weeks

Heparin

Precautions

- Renal impairment

Side effects

- Haemorrhage
- Thrombocytopenia

Presentation

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

Onset (IV)	Duration (IV)	Half-life
≈ 30 seconds	3–6 hours	1.5 hours

Schedule

- S4 (Restricted drugs).

Routes of administration

Intravenous injection (IV) — ACP2, CCP

Intravenous infusion (IV INF) — E, CCP

Adult dosages[1–4]

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)

ACP2, CCP	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

CCP

IV

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

Loading dose – 5,000 units
IV maintenance infusion (listed below) must be administered immediately following IV loading dose.

IV INF

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

Heparin infusion must 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 must 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 Consultation and Advice Line*.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.