Drug Therapy Protocols:
Insulin – Short-acting neutral (Actrapid®)

Policy code	DTP_INS_0722
Date	July, 2022
Purpose	To ensure a consistent procedural approach to insulin – short-acting neutral (Actrapid®) 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
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Insulin – Short-acting neutral (Actrapid®)

July, 2022

Drug class[1,2]

Glucose regulatory hormone

Pharmacology[1,2]

Insulin is a regulatory anabolic protein hormone that lowers blood glucose levels by binding to insulin receptors to increase glucose uptake, inhibit hepatic glucose output and promote glycogen production.[1,2]

Metabolism

The majority of circulating insulin is metabolised by the kidneys.[1]

Indications

- **Diabetic ketoacidosis** (DKA)
- **Hyperosmolar hyperglycaemic syndrome** (HHS)
- **Critical care patients during interfacility transport**

Contraindications

- Hypoglycaemia

Precautions

- Rapid correction of hyperglycaemia may contribute to cerebral oedema and electrolyte imbalances
- Hypoglycaemia may occur if the insulin dose is too high in relation to the insulin requirement

Side effects

- Irritation and redness at IV cannulation site

Presentation

- Vial, 10 mL (1,000 units) *insulin neutral (short acting)* Actrapid®

Onset (IV INF)	Duration (INF IV)	Half-life
≈ 30 minutes	Hours	5–7 hours

Insulin – Short-acting neutral (Actrapid®)

Schedule

- S4 (Restricted drugs).

Routes of administration

Intravenous infusion (IV INF) ECCP

Special notes

- Ambulance officers 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 insulin infusions must be initiated using hospital supplies. Insulin will not be carried by QAS.
- Minimum half-hourly BGL monitoring is required for all patients on Actrapid® infusions.
- All parenteral medications must be prepared in an aseptic manner. The rubber stopper of all vials must be disinfected with an appropriate antimicrobial swab and allowed to dry prior to piercing.

Adult dosages [3]

- **Diabetic ketoacidosis** (DKA)
- **Hyperosmolar Hyperglycaemic Syndrome** (HHS)
- **Critical care patients during interfacility transport**

ECCP

IV INF

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

Actrapid® infusions must be administered via a syringe driver using the following sliding scale.

Blood glucose level (mmol/L)	Infusion dose (50 units in 50 mL)
5 or less	0 units/hour (mL/hour)
5.1 – 7	0.5 units/hour (mL/hour)
7.1 – 10	1 unit/hour (mL/hour)
10.1 – 15	2 units/hour (mL/hour)
15.1 – 20	3 units/hour (mL/hour)
Greater than 20	4 units/hour (mL/hour)

Syringe preparation: *Mix 50 units (0.5 mL) of Actrapid® with 49.5 mL of sodium chloride 0.9% in a 50 mL syringe to achieve a final concentration of 1 unit/mL. Ensure all syringes are appropriately labelled. Administer via syringe driver.*

Paediatric dosages

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