Drug Therapy Protocols: Midazolam

Policy code	DTP_MID_0922
Date	September, 2022
Purpose	To ensure a consistent procedural approach to midazolam 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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Midazolam

September, 2022

Drug class

Benzodiazepine (short acting) [1,2]

Pharmacology

Midazolam hydrochloride is a short acting CNS depressant that induces amnesia, anaesthesia, hypnosis and sedation. It achieves this by enhancing the action of the inhibitory neurotransmitter gamma-amino butyric acid (GABA). Depressant effects occur at all levels of the CNS.[1–2]

Metabolism

By the liver and excreted by the kidneys.[1]

Indications

- **Generalised seizures/focal seizure** (GSC ≤ 12)
- **Sedation:**
  - for maintenance of an established SAD/ETT
  - for procedures (e.g. TCP or cardioversion)
  - CPR induced consciousness
  - to facilitate safe assessment and treatment of agitated head injured patient
  - as an adjunct to opiate analgesia (fracture splinting/extrication/burns)
  - for ketamine emergence
- **Acute behavioural disturbance** (with a SAT score ≥ 2) unresponsive to droperidol (max dose) administration

Contraindications

- Allergy AND/OR Adverse Drug Reaction

Precautions

- Reduced dosages must be considered in:
  - Low body weight, older, cachectic or frail patients;
  - Patients with chronic renal failure, congestive cardiac failure or shock
- Can cause severe respiratory depression in patients with COPD
- Myasthenia gravis
- Multiple sclerosis

Side effects [1,2]

- Hypotension
- Respiratory depression particularly when associated with other CNS depressants including alcohol and narcotics

Midazolam

Presentation

- Ampoule, 5 mg/1 mL, *midazolam*

Onset	Duration	Half-life
5–15 minutes (IM) 1–3 minutes (IV)	Variable	2.5 hours

Schedule

- S4 (Restricted drugs).

Routes of administration

Intranasal (NAS)	ACP1, ACP2, CCP
Intramuscular injection (IM)	ACP1, ACP2, CCP
Intravenous injection (IV)	ACP2, CCP
Intraosseous injection (IO)	CCP

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*.
- Focal seizure activity in a patient who is unconscious or has altered level of consciousness (GCS ≤ 12) should be treated as a generalised seizure. For patients with a GCS > 12, officers should discuss treatment options with the QAS on-call medical officer.
- If a patient has received midazolam or diazepam prior to arrival of paramedics, the amount administered must be taken into account in the total dose administered.
- The *QAS Clinical Consultation and Advice Line* should be contacted for all seizures failing to response to QAS initiated treatment.
- The first dose of midazolam for seizures must be administered either intra-nasally or by intramuscular injection unless a patent intravenous cannula is already in situ.
- All intravenous midazolam must be diluted with sodium chloride 0.9% to make a 5 mg midazolam in 5 mL presentation.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.

Midazolam

Adult dosages[1–5]

Generalised seizure / focal seizure (GCS ≤ 12)

ACP1 ACP2 CCP	NAS/IM	**5 mg** Repeated every **10 minutes.** **Total maximum dose 20 mg.**
ACP2 CCP	IV	**5 mg** Repeated every **5 minutes.** **Total maximum dose 20 mg.**
CCP	IO	**5 mg** Repeated every **5 minutes.** **Total maximum dose 20 mg.**

- **Sedation:**
  - for maintenance of an established SAD/ETT
  - for procedures (e.g. TCP or cardioversion)
  - CPR induced consciousness
  - to facilitate safe assessment and treatment of the agitated head injured patient
  - as an adjunct to opiate analgesia (fracture splinting / extrication / burns)
  - for ketamine emergence

CCP	IV/IO	**1–2.5 mg** Should be avoided in significant hypovolaemia. Repeated every **3–5 minutes.** **No maximum dose.**

Acute behavioural disturbance (with a SAT score ≥ 2) unresponsive to droperidol (max dose) administration

ACP2	IM/IV	*QAS Clinical Consultation and Advice Line* approval required in all situations.

Paediatric dosages[1–6]

Generalised seizure / focal seizure (GCS ≤ 12)

ACP1 — **NAS/IM**

Initial dose of midazolam must be administered using the following scale:

Weight	Dose	Volume
< 5 kg	1 mg	0.2 mL
5 – < 10 kg	2 mg	0.4 mL
10 – < 15 kg	3 mg	0.6 mL
15–20 kg	4 mg	0.8 mL
> 20 kg	5 mg	1 mL

Repeated at **half the initial dose (max 2.5 mg)** at **10 minute** intervals. **Total maximum dose 10 mg.**

Weight	Dose	Volume
< 5 kg	0.5 mg	0.1 mL
5 – < 10 kg	1 mg	0.2 mL
10 – < 15 kg	1.5 mg	0.3 mL
15–20 kg	2 mg	0.4 mL
> 20 kg	2.5 mg	0.5 mL

Paediatric dosages *(cont.)*

Generalised seizure / focal seizure (GCS ≤ 12)

ACP2 CCP	NAS/IM	**200 microg/kg** **Single dose not to exceed 5 mg.** Repeated at half the initial dose (max 2.5 mg) at **10 minute** intervals. **Total maximum dose 10 mg.**
CCP	IV/IO	**100 microg/kg** **Single dose not to exceed 2.5 mg.** Repeated at **5 minute** intervals. **Total maximum dose 10 mg.**

Acute behavioural disturbance (with a SAT score ≥ 2) unresponsive to droperidol (max dose) administration

ACP2	IM/IV	*QAS Clinical Consultation and Advice Line* approval required in all situations.

Sedation:

- for maintenance of an established SAD/ETT
- for procedures (e.g. TCP or cardioversion)
- to facilitate safe assessment and treatment of the agitated head injured patient
- as an adjunct to opiate analgesia (fracture splinting / extrication / burns)
- for ketamine emergence

CCP	IV/IO	**Up to 100 microg/kg** **Single dose not to exceed 2.5 mg.** Repeated at **3–5 minute** intervals. **Total maximum dose 5 mg.**