# Drug Therapy Protocols: Methoxyflurane

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| **Policy code** | DTP_METH_0924 |
| **Date** | September, 2025 |
| **Purpose** | To ensure a consistent procedural approach to methoxyflurane 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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# Methoxyflurane



## Drug class

Analgesic (at low concentrations) [1]

## Pharmacology

Methoxyflurane is a flourinated hydrocarbon anaesthetic that provides analgesia when inhaled at low concentrations. The precise mechanism of action is not established but may involve modulation of excitation and inhibitory ion channel activity in the brain and spinal cord.[1,2]

## Metabolism

Extensive hepatic metabolism (50–70%) [1,3–4] with urinary (~30%) and exhalation (~20%) excretion.[1]

### Indications [1]

- **Pain** (with the ability to self-administer inhaled methoxyflurane)

### Contraindications

- Allergy AND/OR Adverse Drug Reaction
- Patients less than 1 year of age
- Known liver OR renal disease
- Malignant hyperthermia (known or genetic susceptibility)

### Precautions

- Altered level of consciousness
- Intoxicated or drug affected patients
- Cardiac instability
- Respiratory depression

### Side effects

- Altered level of consciousness
- Dizziness
- Cough

### Presentation

- Bottle, 3 mL *methoxyflurane* / Penthrox® inhaler

| Onset (INH) | Duration (INH) | Half-life |
|---|---|---|
| 1 minute | 25 minutes (with continuous inhalation) | 3.2 hours |

# Methoxyflurane

## Schedule

- S4 (Restricted drugs).

### Routes of administration

Inhalation (INH) — FR, C, AT, P, ACP1, ACP2, CCP

## Adult/Paediatric dosages[1]

**Pain** (with the ability to self-administer inhaled methoxyflurane)

FR, C, AT, P, ACP1, ACP2, CCP

| | |
|---|---|
| **INH** | **3 mL**<br>Repeated once after **20 minutes.**<br>**Total maximum dose 6 mL in 24 hours.**<br>**Total maximum dose 15 mL in 7 days.**<br>*The administration of methoxyflurane on consecutive days is not recommended.* |

### 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*.
- Nephrotoxicity has not been reported with analgesic doses of methoxyflurane.[1,5]

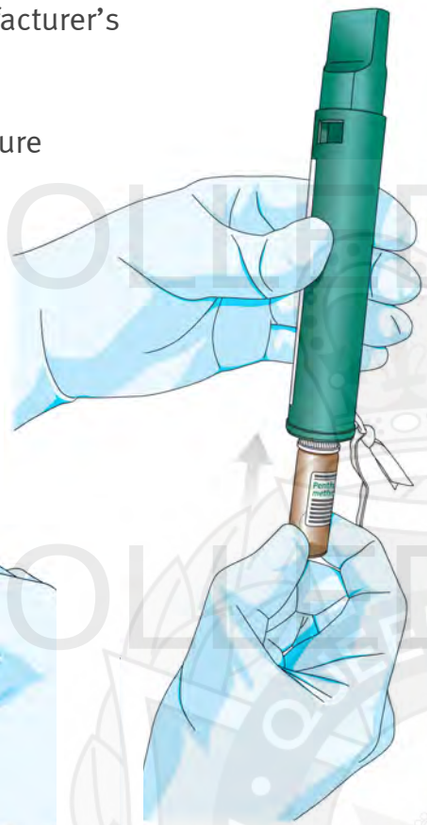
### Special notes *(cont.)*

- The presence of an odour during methoxyflurane administration does not equate to unsafe exposure to clinicians. At analgesic concentrations, methoxyflurane poses little to no risk of occupational exposure of clinicians.[6]
- At no time should unconsciousness be deliberately induced.
- Intermittent inhalation will increase the duration of pain relief.
- If ineffective consider alternate or multimodal analgesia options.
- Methoxyflurane may cause drowsiness and an altered level of consciousness. Patients should be advised to not resume activities requiring mental alertness, such as driving a motor vehicle if they are affected.

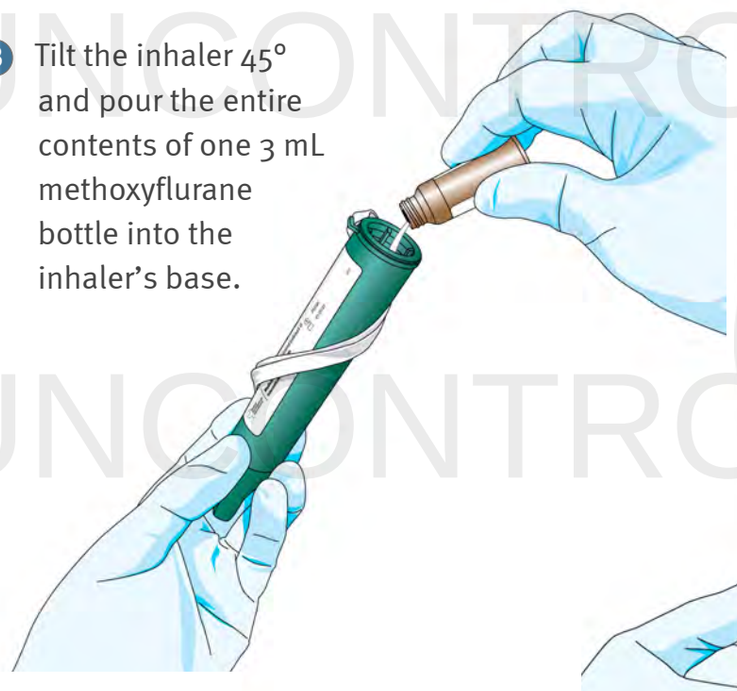
## Methoxyflurane Penthrox® inhaler instructions for use:

1. Remove the Penthrox® inhaler from the manufacturer's packaging.

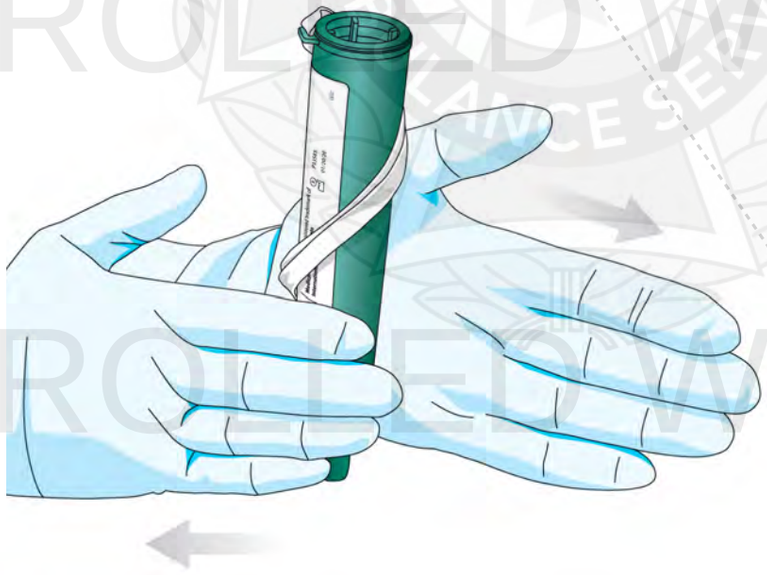
2. Inspect the 3 mL methoxyflurane bottle to ensure the tamper evident packaging is intact, then remove the seal and plastic cap. In the unlikely event that the cap is unable to be removed by hand, hold the methoxyflurane bottle upright and use the Penthrox® inhaler's base to rotate the cap ½ turn.



3. Tilt the inhaler 45° and pour the entire contents of one 3 mL methoxyflurane bottle into the inhaler's base.



4. Gently rotate the inhaler between the palms of your hand to allow the methoxyflurane to soak evenly into the inhaler's internal wick.



5. Place the wrist loop onto the wrist of the patient's preferred hand.


6. Instruct the patient to inhale and exhale through the mouthpiece to obtain analgesia. The first few breaths should be gentle, before instructing the patient to breathe normally through the inhaler.

7. If stronger analgesia is required, instruct the patient to cover the inhaler's dilutor port with their index finger to increase the inhaled concentration.