

Drug Therapy Protocols

01- Adrenaline	1	16- Glyceryl trinitrate	34	31- Sodium bicarbonate 8.4%	75
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Drug class

Sympathomimetic

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Pharmacology

Adrenaline is a naturally occurring catecholamine which primarily acts on Alpha (α) and Beta (β) adrenergic receptors. The actions of those receptors cause an increase in heart rate (β_1), increase in the force of myocardial contraction (β_1), increase in the irritability of the ventricles (β_1), bronchodilation (β_2), and peripheral vasoconstriction (α_1).

Metabolism

The majority of circulating adrenaline is metabolised by sympathetic nerve endings. It is subject to the process of mitochondrial enzymatic breakdown by monoamine oxidase at the synaptic level.

Indications



- **Anaphylaxis OR severe allergic reaction**
- **Severe life-threatening bronchospasm OR silent chest.** (Patients must only be able to speak in single words AND/OR have haemodynamic compromise AND/OR an ALOC.)
- **Bradycardia with poor perfusion** (unresponsive to atropine AND/OR TCP)
- **Cardiac arrest**
- **Croup** (with stridor at rest)
- **Shock unresponsive to adequate fluid resuscitation** (excluding haemorrhagic cause)



Contraindications

- KSAR



Precautions

- Hypovolaemic shock
- Hypertension
- Patients taking monoamine oxidase inhibitors (MAOIs)



Side effects

- Anxiety
- Hypertension
- Palpitations/tachyarrhythmias
- Pupil dilation

Presentation

- Ampoule, 1 mg/1 mL (1:1,000) *adrenaline*
- Ampoule, 1 mg/10 mL (1:10,000) *adrenaline*
- *Minijet Ampoule*, 1mg/10 mL (1:10,000) *adrenaline*

Onset

30 seconds (IV)
60 seconds (IM)

Duration

5 – 10 minutes

Half-life

2 minutes

Schedule

- 1 mg/1 mL (1:1,000), S3 (therapeutic poisons).
- 1 mg/10 mL (1:10,000), unscheduled.

Routes of administration
Nebuliser (NEB)
Intramuscular injection (IM)
Intraosseous injection (IO)
Intravenous injection (IV)

Special notes

- 1:1,000 (1 mg/mL) adrenaline presentation should be used for all nebuliser administration.
- 1:10,000 (1 mg/10mL) or a 1:100,000 (100 mcg/10mL) adrenaline preparation should be used for all low dose IV injections (e.g. paediatric cardiac arrest) – ensure all syringes are appropriately labelled.
- Repeated IM injections to the same site may cause ischemia and/or necrosis.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Adult dosages

Anaphylaxis OR severe allergic reaction

SAP **Para** **ICP** **IM** **500 mcg**
Repeated at **5 minutes** if no improvement as per ARC guidelines

SAP **Para** **ICP** **NEB** **5 mg**
Single dose only
May be administered for minor facial or tongue swelling thought to be allergic in origin. If stridor present, IM or IV adrenaline must be administered.

ICP **IV / IO** **20 – 50 mcg**
Repeated at **1 minute** intervals

No maximum dose

Severe life-threatening bronchospasm OR silent chest

(patients must only be able to speak in single words AND/OR have haemodynamic compromise AND/OR an ALOC.)

SAP **Para** **ICP** **IM** **500 mcg**
Repeated at **5 minutes** if no improvement as per ARC guidelines

ICP **IV / IO** **20 mcg**
Repeated at **1 minute** intervals.
No maximum dose

Adult dosages *(continued)*

Bradycardia with poor perfusion

(unresponsive to atropine AND/OR TCP)

ICP **IV / IO** **20 mcg**
Repeated at **1 minute** intervals.
No maximum dose

Cardiac arrest

Para **ICP** **IV / IO** **1 mg**
Repeated at **3-5 minute** intervals as per ARC guidelines
No maximum dose

Shock unresponsive to adequate fluid resuscitation

(excluding haemorrhagic cause)

ICP **IV / IO** **20 mcg**
Repeated at **1 minute** intervals.
No maximum dose

Paediatric dosages

Anaphylaxis OR severe allergic reaction

SAP	Para	ICP	IM	≥ 6 years - 300 mcg Repeated at 5 minutes if no improvement as per ARC guidelines < 6 years - 150 mcg Repeated at 5 minutes if no improvement as per ARC guidelines

SAP	Para	ICP	NEB	5 mg Single dose only. <i>May be administered for minor facial or tongue swelling thought to be allergic in origin. If stridor present, IM or IV adrenaline must be administered.</i>

			ICP	IV / IO	2 mcg/kg Single dose not to exceed 50 mcg. Repeated at 2 minute intervals. No maximum dose

Severe life-threatening bronchospasm OR silent chest

(patients must only be able to speak in single words AND/OR have haemodynamic compromise AND/OR an ALOC.)

SAP	Para	ICP	IM	≥ 6 years - 300 mcg Repeated at 5 minutes if no improvement as per ARC guidelines < 6 years - 150 mcg Repeated at 5 minutes if no improvement as per ARC guidelines

			ICP	IV / IO	2 mcg/kg Single dose not to exceed 50 mcg. Repeated at 2 minute intervals. No maximum dose

Paediatric dosages (continued)

Cardiac arrest

			ICP	IV	10 mcg/kg as per ARC guidelines Repeated at 3-5 minute intervals. No maximum dose

		Para	ICP	IO	10 mcg/kg as per ARC guidelines Repeated at 3-5 minute intervals. No maximum dose

Croup (with stridor at rest)

SAP	Para	ICP	NEB	5 mg Single dose only

Shock unresponsive to adequate fluid resuscitation (excluding haemorrhagic cause)

			ICP	IV / IO	2 mcg/kg Single dose not to exceed 50 mcg. Repeated at 2 minute intervals. No maximum dose

Bradycardia with poor perfusion (unresponsive to atropine AND/OR TCP)

			ICP	IV / IO	2 mcg/kg Single dose not to exceed 50 mcg. Repeated at 2 minute intervals. No maximum dose

Drug class

Anti-arrhythmic

[Home](#)

Pharmacology

Amiodarone prolongs the duration of the action potential and therefore the refractory period of atrial, nodal and ventricular tissues. It also reduces conduction across all cardiac tissue – including myocardial and conducting system cells. Amiodarone demonstrates electrophysiological properties across all Vaughan-Williams Class groups, which enables a broad spectrum of activity.

Metabolism

The majority of Amiodarone is excreted via the liver and GI tract by biliary excretion; there may be some hepatic recirculation.

Indications



- **Cardiac arrest** (refractory VF or pulseless VT)

Contraindications



- Nil in Cardiac arrest (refractory VF or pulseless VT):

Precautions



- Cardiac arrest (refractory VF or pulseless VT):
  - concomitant use of anti-arrhythmics that prolong the QT interval
  - thyroid disease



Side effects

- Hypotension
- Bradycardia
- Nausea and/or vomiting
- Peripheral paraesthesia

Presentation

- Ampoule, 150 mg/3 mL *Amiodarone* (Cordarone X®)

Onset (IV)

5 minutes

Duration (IV)

30 minutes

Half-life (elimination)

14 – 110 days
(with chronic dosing)

Schedule

- S₄ (Restricted drugs).

Routes of administration

Intravenous injection (IV)

Intraosseous injection (IO)

Adult dosages

Cardiac arrest (refractory VF or pulseless VT) as per ARC guidelines

Para	ICP	IV	300 mg Slow push over 2 minutes. Repeat once at 150 mg after 5 minutes Total maximum dose – 450 mg
Para	ICP	IO	300 mg Slow push over 2 minutes. Repeated once at 150 mg after 5 minutes Total maximum dose – 450 mg

Special notes

- If patient is on oral Amiodarone, the protocols below continue to be authorised.
- If lignocaine 2% has been administered to a patient with conscious VT that progresses into cardiac arrest, the protocols below continue to be authorised.
- If the patient is in Torsade de Pointes due to suspected prolonged QT interval from excess Amiodarone administration, magnesium sulphate administration is to be considered.
- After completion of a risk/benefit analysis, the SJANT authorises the administration of sodium chloride 0.9% (flush or running IV line) following Amiodarone in cardiac arrest, despite manufacturer's recommendations.

Paediatric dosages

Cardiac arrest (refractory VF or pulseless VT) as per ARC Guidelines

ICP	IV	5 mg/kg Slow push over 2 minutes. Single dose only <i>Syringe preparation: Mix 150 mg (3 mL) of amiodarone with 12 mL of glucose 10% (totalling 15 mL) in a 20 mL syringe to achieve a final concentration of 10 mg/mL.</i>
Para	IO	5 mg/kg Slow push over 2 minutes. Single dose only <i>Syringe preparation: Mix 150 mg (3 mL) of amiodarone with 12 mL of glucose 10% (totalling 15 mL) in a 20 mL syringe to achieve a final concentration of 10 mg/mL.</i>

Drug class

Antiplatelet

[Home](#)

Pharmacology

Aspirin inhibits platelet aggregation by irreversibly inhibiting cyclo-oxygenase, reducing the synthesis of thromboxane A₂ (an inducer of platelet aggregation) for the life of the platelet. This action forms the basis of preventing platelets from aggregating to exposed collagen fibres at the site of vascular injury.

Metabolism

Aspirin is converted to salicylic acid in many tissues, but primarily in the GI mucosa and liver. It is subsequently excreted by the kidneys.

Indications



- Suspected ACS
- Acute cardiogenic pulmonary oedema



Contraindications

- KSAR to aspirin or other NSAIDs
- Chest pain associated with psych stimulant overdose
- Bleeding disorders
- Current GI bleeding or peptic ulcers
- Patients < 12 years



Precautions

- Possible aortic aneurysm or any other condition that may require surgery
- Pregnancy
- History of GI bleeding or peptic ulcers
- Concomitant anticoagulant therapy (excluding clopidogrel)



Side effects

- Epigastric pain/discomfort
- Nausea and/or vomiting
- Gastritis
- GI bleeding
- NSAID induced bronchospasm

Presentation

- Tablet (white), 300 mg *aspirin*

Onset

≈ 10 minutes
(variable)

Duration

≈ 1 week
(antiplatelet)

Half-life

3.2 hours
(300 – 650 mg)

Schedule

- S2 (Therapeutic poisons).

Routes of administration

Per oral (PO)

Special notes

- In suspected ACS or acute cardiogenic pulmonary oedema aspirin should be administered following the initial dose of glyceryl trinitrate (if indicated).
- Aspirin administration is indicated for patients with suspected ACS or acute cardiogenic pulmonary oedema, even if pain free.
- Patients who have had < 300 mg aspirin in the previous 24 hours and who present with suspected ACS or acute pulmonary oedema should be administered a dose of aspirin that equates to a total daily dose of 300 – 450 mg.

Adult dosages

- Suspected ACS
- Acute cardiogenic pulmonary oedema



PO

≥ 12 years - **300 mg**

Chewed and followed by a small sip of water (where possible)

Note: SJANT officers are not authorised to administer aspirin to patients under 12 years of age.

[Home](#)

Drug class

Anticholinergic (antimuscarinic)

Pharmacology

Atropine works by inhibiting the action of the parasympathetic nervous system allowing for an unchallenged sympathetic response. It successfully blocks the action of the vagus nerve of the heart, increases the rate of the SA node, conduction through the AV node and blocks exocrine gland activity.

Metabolism

Atropine is metabolised by the liver and excreted mainly by the kidneys.

Indications



- **Bradycardia** (with poor perfusion – Pre Adrenaline)
- **Envenomation** (with increased parasympathetic activity)
- **Hypersalivation** (with ketamine administration)
- **Organophosphate toxicity** (with cardiac AND/OR respiratory compromise).



Contraindications

- KSAR



Precautions

- Atrial flutter
- Atrial fibrillation
- AMI
- Glaucoma



Side effects

- Agitation
- Hallucinations
- Dilated pupils
- Dry mouth/dry skin/reduced bronchial and gastric secretions
- Tachycardia

Presentation

- Ampoule, 600 mcg/1 mL *atropine*

Onset (IV)

1 – 2 minutes
(peak 15 – 50 minutes)

Duration (IV)

Up to 5 hours

Half-life (elimination)

3 – 4 hours

Schedule

- S₄ (Restricted drugs).

Routes of administration

Intramuscular injection (IM)

Intravenous injection (IV)

Intraosseous injection (IO)

Special notes

- A dose of up to 1.2 mg of atropine is generally sufficient to resolve bradycardia in adult patients. Subsequent doses in patients who fail to respond is not usually beneficial.
- Small doses of atropine may cause paradoxical bradycardia.
- Atropine requirements for organophosphate toxicity vary enormously between patients and organophosphates as large doses often required.
- Target atropinisation for organophosphate toxicity is achieved when the patient has the following endpoints:
  - chest clear and no wheeze on auscultation
  - heart rate > 80 beats per minute
  - systolic BP > 80 mmHg
- Organophosphate toxicity induced tachycardia should not prohibit atropine administration if respiratory distress is present (e.g. profuse oral and/or bronchial secretions).
- Total loading dose is defined as the sum of the initial doses given at the beginning of a course of treatment prior to administering a lower maintenance dose.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Adult dosages

Bradycardia (with poor perfusion)



IV / IO 600 mcg
Repeated once after **2 minutes**

Total maximum dose 1.2 mg

- **Envenomation** (with increased parasympathetic activity)
- **Organophosphate toxicity** (with cardiac AND/OR respiratory compromise)



IM 1.2 mg
Repeated at **5 minute** intervals.

No maximum dose



IV / IO 1.2 mg
Repeated at **5 minute** intervals.
No maximum dose

Hypersalivation (with ketamine administration)



IV / IO 600 mcg
Single dose only

Paediatric dosages

Bradycardia (with poor perfusion)



IV / IO 20 mcg/kg
Single dose not to exceed 600 mcg.
Repeated once after **2 minutes**.

Total maximum dose 40 mcg/kg

- **Envenomation** (with increased parasympathetic activity)
- **Organophosphate toxicity** (with cardiac AND/OR respiratory compromise)



IM 20 mcg/ Kg
Single dose not to exceed 600 mcg.
Repeated at **5 minute** intervals.

No maximum dose



IV / IO 20 mcg/kg
Single dose not to exceed 600 mcg.
Repeated at **5 minute** intervals.

No maximum dose

Hyper-salivation (with ketamine administration)



IV / IO 20 mcg/kg
Single dose only, not to exceed 600 mcg

Drug class

Electrolyte

[Home](#)**Pharmacology**

Calcium plays an integral role in the muscular and neural systems. It is involved in skeletal muscle contraction, excitation coupling in cardiac and smooth muscle and acts as an intracellular 2nd messenger. These effects combine to exert a positive inotropic effect in the post cardiac arrest patient. It additionally has a role in cardiac membrane stabilisation in hyperkalaemia.

Metabolism

Most of the calcium filtered by the renal glomeruli is reabsorbed; the remainder is excreted in faeces.

Indications

- **Suspected hyperkalaemic cardiac arrest.**
- **Severe hyperkalaemia** (with haemodynamic compromise AND/OR significant cardiac rhythm disturbance)
- **Calcium channel blocker toxicity**
- **Hypotension** associated with a **magnesium infusion** (that fails to respond to intravenous fluid therapy)

Contraindications

- KSAR
- Digoxin (*digitalis*) overdose

**Precautions**

- Respiratory acidosis.

**Side effects**

- Suspected hyperkalaemic cardiac arrest:
nil
- For all other SJANT indications IV administration may cause:
syncope
hypotension
bradycardia
cardiac dysrhythmias
cardiac arrest

Presentation

- Ampoule, 0.953 g/10 mL *calcium gluconate 10%*

Onset (IV)

1-3 minutes

Duration (IV)30 – 60 minutes
(in hyperkalaemia)**Half-life (elimination)**

Not applicable

Schedule

- Unscheduled

Routes of administration

Intravenous injection (IV)

Intraosseous injection (IO)

Special notes

- Consider hyperkalaemic cardiac arrest in the dialysis patient.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Adult dosages

- Suspected hyperkalaemic cardiac arrest
- Severe hyperkalaemia
(with haemodynamic compromise ANT/OR significant cardiac rhythm disturbance)
- Calcium channel blocker toxicity
- Hypotension associated with a magnesium infusion
(that fails to respond to intravenous fluid therapy)



IV / IO 10 mL

Slow push over 2 minutes
Repeated once at **10 minutes**

Paediatric dosages

- Suspected hyperkalaemic cardiac arrest
- Severe hyperkalaemia
(with haemodynamic compromise ANT/OR significant cardiac rhythm disturbance)
- Calcium channel blocker toxicity
- Hypotension associated with a magnesium infusion
(that fails to respond to intravenous fluid therapy)



IV / IO 0.2 mL/kg

Slow push over 2 minutes
Repeated once at **10 minutes**

Drug class

Antibiotic

[Home](#)**Pharmacology**

Ceftriaxone is a third generation cephalosporin antibiotic with a bactericidal action.

Metabolism

Ceftriaxone is excreted as a variety of active and inactive metabolites from the body through urine, bile and faeces.

Indications

- **Suspected meningococcal septicaemia** (with a non-blanching petechial AND/OR purpuric rash).

Contraindications

- < 1 month old
- KSAR to cephalosporin drugs
- Known anaphylaxis or severe allergic reaction to penicillin based drugs – (isolated minor drug rash attributed to penicillin does not contraindicate the use of ceftriaxone).

Precautions

- Nil

Side effects

- Nausea and/or vomiting
- Pain at the IM administration site.

Presentation

- Glass Vial (powder), 1 g *ceftriaxone* (Rocephin®)
- Glass Vial (powder), 2 g *ceftriaxone* (Rocephin®)

Onset

30 seconds (IV)
60 seconds (IM)

Duration

5 – 10 minutes

Half-life

5.8 – 8.7 hrs (adults)
4 – 6 hrs (paediatrics)

Schedule

- S₄ (Restricted drugs).

Routes of administration

Intramuscular injection (IM)

Intravenous injection (IV)

Special notes

- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Adult dosages

Suspected meningococcal septicaemia

(with a non-blanching petechial AND/OR purpuric rash)



IM

4 g

The solution should be administered by deep intramuscular injection

Syringe preparation:

Reconstitute two 2 gram vials with approximately 2.4 mL of water for injection to achieve a final concentration of

4 g/4 mL (1 g/mL).



IV

4 g

Slow push over 3 - 5 minutes

Syringe preparation:

Reconstitute two 2 gram vials with approximately 8.4 mL of water for injection to achieve a final concentration of

4 g/10 mL (400 mg/mL)

Paediatric dosages

Suspected meningococcal septicaemia

(with a non-blanching petechial AND/OR purpuric rash)



IM

100 mg/kg (> 1 month)

The solution should be administered by deep intramuscular injection

Syringe preparation:

Reconstitute 2 g of ceftriaxone with 3.6 mL of water for injection to achieve a final concentration of

2 g/4 mL (500 mg/mL)



IV

100 mg/kg (> 1 month)

Slow push over 3 - 5 minutes

Syringe preparation:

Reconstitute 2 g of ceftriaxone with 9.6 mL of water for injection to achieve a final concentration of

2 g/10 mL (200 mg/mL)

Drug class

Antiplatelet

[Home](#)

Pharmacology

Clopidogrel is a specific and potent platelet aggregation inhibitor. It selectively inhibits the binding of adenosine diphosphate (ADP) to its platelet receptor, thereby inhibiting platelet aggregation.

Metabolism

Hepatic metabolism with near equal amounts excreted in urine and faeces

Indications

- For patients with **STEMI**
(as defined in the SJANT Coronary artery reperfusion checklist) AND:
  - Who have been accepted for pPCI
(as an adjunct medication to aspirin and heparin)
- OR
- Who have **received fibrinolytic therapy**
(as an adjunct medication to aspirin, Enoxaparin and tenecteplase)

Contraindications



- Identical to the contraindication list for Prehospital fibrinolysis and anticoagulation, Unless specifically authorised under the relevant LWI. (Refer to SJANT coronary artery reperfusion checklist and LWI.)
- KSAR
- Patients currently taking clopidogrel
- Patients < 18 years

Precautions



- Severe renal impairment

Side effects



- Haemorrhage
- Stomach upset and/or pain
- Diarrhoea
- Constipation
- Headache and/or dizziness

Presentation

- Tablet (pink), 75 mg, clopidogrel (Iscover)

Onset (PO)	Duration (PO)	Half-life (PO)
≈ 30 min (within 5 hours of a 300 mg loading dose 80% of platelet activity will be inhibited)	7 -10 days (antiplatelet)	8 hours

Schedule

- S₄ (Restricted drug).

Routes of administration
Per oral (PO)

Special notes

- Clopidogrel is not to be given in isolation. If heparin or enoxaparin is contraindicated then Clopidogrel is also contraindicated.
- If the patient is on their own Clopidogrel (e.g. Plavix or Iscover) medication, there is no requirement for a loading dose.

Adult dosages

Patients with STEMI (as defined in the SJANT coronary artery reperfusion checklist) Who have been accepted for pPCI (and have been administered aspirin and heparin)



PO

≥ 18 years – 600 mg
Swallowed with a small quantity of water.

Patients with STEMI (as defined in the SJANT coronary artery reperfusion checklist) Who have received fibrinolytic therapy (and have been administered aspirin, enoxaparin and tenecteplase)



PO

≥ 18 years – 300 mg
Swallowed with a small quantity of water.

Note: SJANT officers are not authorised to administer clopidogrel to paediatric patients.

Drug class

Anticoagulant

[Home](#)**Pharmacology**

Enoxaparin has several actions on the coagulation pathway through its binding to antithrombin III. The antithrombotic activity is related to inhibition of thrombin generation and inhibition of two key coagulation factors: factor Xa and thrombin.

Metabolism

Metabolism at the liver but mostly eliminated unchanged.

**Precautions**

- Renal/hepatic impairment
- History of GI ulceration
- Diabetic retinopathy
- Low bodyweight (women < 45 kg and men < 57 kg)
- Elderly
- Pregnancy and/or lactation

**Indications**

- Patients with **STEMI** (as defined in the SJANT coronary artery reperfusion [checklist](#)) AND **who will receive SJANT fibrinolytic therapy** (as an adjunct medication to [aspirin](#), [Clopidogrel](#) and [tenecteplase](#))

**Side effects**

- Thrombocytopenia
- Haemorrhage

Presentation

- Ampoule, 40 mg/0.4 mL enoxaparin sodium (Clexane®)
- Injection (prefilled syringe with graduated markings), 100 mg/1 mL enoxaparin sodium (Clexane®)

**Contraindications**

- KSAR to enoxaparin or heparin
- Identical to contraindication list for prehospital fibrinolysis, unless specifically authorised under the relevant LWI. (See [tenecteplase DTP](#) and SJANT coronary artery reperfusion [checklist](#).)

Onset (IV)

Immediate
(peak 3 hours)

Duration (V)

12 – 24 hours

**Half-life
(elimination)**

4.4 hours for 40mg
dose

Schedule

- S₄ (Restricted drugs).

Routes of administration

Subcutaneous injection (SUBCUT)

Intravenous injection (IV)

Special notes

- For all IV administrations an enoxaparin 40 mg/0.4 mL ampoule is to be used.
- For all subcut administrations an enoxaparin 100 mg/1 mL a graduated prefilled syringe is to be used.
- The volume to be injected should be measured precisely according to the dosage recommended – the air bubble is not to be expelled while adjusting the dose.
- If the dose required is exactly 100 mg inject the full contents of the syringe

Adult dosages

Patients with STEMI

(as defined in the SJANT coronary artery reperfusion checklist)

who will receive SJANT fibrinolytic therapy

(as an adjunct medication to aspirin, clopidogrel and tenecteplase)



IV

Loading dose – 30 mg

Syringe preparation:

Mix 40 mg (0.4 mL) of enoxaparin with 3.6 mL of sodium chloride 0.9% (totaling 4 mL) in a 5 mL syringe to achieve a final concentration of 10 mg/mL.

Discard 1 mL of the prepared solution to achieve a final preparation of 30 mg/3 mL.

Subcutaneous injection maintenance dose (listed below) is to be administered 15 minutes following IV enoxaparin loading dose.



SUBCUT

Maintenance dose – 1 mg/kg

Single dose only, not to exceed 100 mg.

To be administered 15 minutes following IV enoxaparin loading dose (listed above).

Drug class

Narcotic analgesic

Pharmacology

Fentanyl is a synthetic narcotic analgesic that acts on the central nervous system by binding with the opioid receptors.

Metabolism

Hepatic metabolism and renal excretion

[Home](#)**Indications**

- Significant pain
- Sedation for the maintenance of an established ETT
- IFS Intubated facilitated by Sedation

Contraindications

- KSAR or hypersensitivity to fentanyl
- NAS administration:
  - GCS < 14
  - suspected nasal or mid fractures
  - blood or mucous obstructing the nasal passage

Precautions

- Elderly patients
- Hypotension
- Respiratory tract burns
- Respiratory depression and/or failure
- Known addiction to narcotics
- Patients taking monoamine oxidase inhibitors (MAOIs)

Side effects

- Bradycardia
- Drowsiness
- Hypotension
- Nausea and/or vomiting
- Pin point pupils
- Respiratory depression
- Muscular rigidity (particularly muscles of respiration)

Presentation

- Ampoule, 600 mcg/2 mL *fentanyl* - Intranasal use
- Ampoule, 100 mcg/2 mL *fentanyl* – Intravenous use / Intramuscular use

Onset (NAS/IV)

< 3 minutes

Duration (NAS/IV)

30 – 60 minutes

Half-life

2 – 3 hours

Schedule

- S8 (Controlled drug).

Routes of administration

Intranasal (NAS)

Intramuscular injection (IM)

Intravenous injection (IV)

Special notes

- The ideal volume for intranasal administration is ≤ 0.5 mL per nostril, although volumes up to 1 mL per nostril may be considered appropriate.
- There is no significant difference in the effectiveness of IV morphine to NAS fentanyl. The true benefit of paediatric NAS fentanyl administration is that it avoids painful IM or IV administration.
- Fentanyl administration should be considered for patients where a morphine allergy exists.

Adult dosages

Significant Pain



IM

25 – 100 mcg

Repeated at up to **50 mcg** every **10 minutes**

No maximum dose



IV / IO

25 – 50 mcg

Repeated at up to **50 mcg** every **5 minutes**

No maximum dose



NAS

1.5 mcg/kg

Repeated **once** at **1 mcg/kg** after **10 minutes**

Sedation for the maintenance of an established ETT



IV / IO

25 mcg

Consider administration with midazolam.

Repeated PRN

No maximum dose

Paediatric dosages

Significant pain



NAS

≥ 1 year – **1.5 mcg/kg**

Repeated **once** at **1 mcg/kg** at **10 minutes**.

Total maximum dose 100 mcg

< 1 year – SJANT on-call medical officer consult and approval required in all situations

Drug class

Loop diuretic

[Home](#)

Pharmacology

Frusemide is a potent loop diuretic that acts by inhibiting sodium and chloride absorption in the ascending Loop of Henle (proximal and distal tubules).

Metabolism

The majority of parenteral Frusemide is excreted in the urine within 24 hours; the remainder is excreted in the faeces.

Indications

- **Congestive cardiac failure**
- **Fluid overload**
- **Oliguria** (after correction of hypotension and hypovolaemia)

Contraindications

- KSAR
- Patients < 12 years of age

Precautions

- Hypotension

Side effects



- Marked diuresis can lead to hypotension
- Potassium loss associated with diuresis may aggravate or potentiate dysrhythmias

Presentation

- Ampoule, 20 mg/2 mL *Frusemide* (Lasix®)

Onset (IV)

3 – 5 minutes
(peak 30 mins)

Duration (IV)

≈ 2 hours (following
stat IV dose)

Half-life (elimination)

100 minutes

Schedule

- S₄ (Restricted drug).

Routes of administration

Intravenous (IV)

Special notes

- Increased infusion doses may be required in patients with chronic renal impairment and/or who take regular high dose oral Frusemide.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Adult dosages

- Congestive cardiac failure
- Fluid overload
- Oliguria
(after correction of hypotension and hypovolaemia)



IV

40 mg

Consider repeating after **5 minutes**.

Maximum total dose 80 mg

Paediatric dosages

Note: SJANT officers are not authorised to administer Frusemide to paediatric patients.

Drug class

Rehydration electrolyte

[Home](#)**Pharmacology**

Gastrolyte contains a balanced amount of electrolytes, starch and proteins in water. Oral hydration therapy with Gastrolyte enables a patient to be rehydrated rapidly. The presence of pre-cooked rice in the formulation enables watery stools to return to normal more rapidly. Contains Phenylalanine (aspartame).

Metabolism

Simple components into which food is broken down by digestion and which are subsequently built up into complex materials of body tissues e.g. proteins which are broken down into their component amino-acids by digestion and then metabolized back into further proteins in the body.

Indications

- Oral correction of fluid and electrolyte loss

Contraindications

- Not be administered to infants <2 year
- Intestinal obstruction

Precautions

- Only mixed with water

**Side effects**

- Nil

Presentation

- Sachets (Gastrolyte-R®)

Onset (PO)

Not applicable

Duration (PO)

Not applicable

Half-life (elimination)

Not applicable

Schedule

- Unscheduled

Routes of administration

Per oral (PO)

Adult dosages

Symptomatic dehydration

(with the ability to self administer)

SAP

Para

ICP

PO

1 sachet

Re-constituted with 200 ml water

May repeat PRN

Special notes

- Add 200 ml cooled water to the entire contents of one powder sachet.
- Shake or stir the container for 2 or 3 minutes until all the powder is dissolved.
- Do not add more water to the solution after it is mixed.
- For oral dosage - 50 to 100 milliliters (mL) per kilogram (kg) of body weight taken over four to six hours

• Paediatric dosages (infants >2 year)

Symptomatic dehydration

(with the ability to self administer)

Para

ICP

PO

1 sachet

Re-constituted with 200 ml water

May repeat PRN

Drug class

Hyperglycaemic

[Home](#)**Pharmacology**

Glucagon is a hyperglycaemic agent that mobilises hepatic glycogen, which is released into the blood as glucose.

Metabolism

Glucagon is metabolised by the liver, kidneys and in the plasma.

**Indications**

- **Symptomatic hypoglycaemia** (with the inability to self-administer oral glucose)

**Contraindications**

- KSAR

**Precautions**

- Nil

**Side effects**

- Nil

Presentation

- Vials (powder and solvent), 1 mg glucagon (GlucaGen® Hypokit)

Onset (IM)

4 – 7 minutes

Duration (IV)

Variable

Half-life (elimination)

3 – 6 minutes

Schedule

- S₃ (Therapeutic poisons).

Routes of administration

Intramuscular injection (IM)

Adult dosages

Symptomatic hypoglycaemia

(with the inability to self administer oral glucose)

SAP

Para

ICP

IM

1 mg

Single dose only

Paediatric dosages

Symptomatic hypoglycaemia

(with the inability to self administer oral glucose)

Para

ICP

IM

> 25 Kg - 1 mg

Single dose only

< 25 Kg – 500 mcg

Single dose only

Special notes

- Glucagon may be ineffective in patients lacking stored glycogen (e.g. alcoholic patients with impaired liver function and neonates).
- Oral carbohydrates should be given when the patient has responded to glucagon treatment to restore liver glycogen and to prevent secondary hypoglycaemia.
- IM glucagon should only be administered if IV glucose 10% cannot be administered in a suitable time frame.

Drug class

Pharmacological dilutant

[Home](#)

Pharmacology

Glucose is a sugar that is the principal energy source for body cells, especially the brain.

Metabolism

Broken down in most tissues and distributed throughout total body water.

Presentation

- 500 mL soft infusion pack, *glucose 5% (Dextrose)*

Onset

Not applicable

Duration

Not applicable

Half-life

Not applicable

Schedule

- Unscheduled.

Routes of administration

Intravenous infusion (IV INF)



Indications

- As a **vehicle for drug delivery** during IV drug infusion administration.



Contraindications

- Nil



Precautions

- Hyperglycaemia



Side effects

- Nil

Adult dosages

As a vehicle for drug delivery during IV drug infusion administration

Para

ICP

IV INF

As documented on DTP

Maximum Dosage 1000ml

Paediatric dosages

As a vehicle for drug delivery during IV drug infusion administration

ICP

IV INF

As documented on DTP

Maximum Dosage 500ml

Drug class

Hyperglycaemic

[Home](#)**Pharmacology**

Glucose is a sugar that is the principal energy source for body cells, especially the brain.

Metabolism

Broken down in most tissues and distributed throughout total body water.

Indications

- Symptomatic hypoglycaemia (with the inability to self-administer oral glucose)

Contraindications

- Nil

Precautions

- Tissue and/or vascular necrosis secondary to extravasation.

Side effects

- Nil

Presentation

- 500 mL soft infusion pack, *glucose 10%*

Onset

Rapid

Duration

Not applicable

Half-life

Not applicable

Schedule

- Unscheduled.

Routes of administration

Intravenous infusion (IV)

Intraosseous infusion (IO)

Adult dosages

Symptomatic hypoglycaemia (with the inability to self administer oral glucose)

		IV	150 mL Repeated at 100 mL boluses every 5 minutes until BGL > 4.0 mmol/L

		IO	150 mL Repeated at 100 mL boluses every 5 minutes until BGL > 4.0 mmol/L

Cardiac arrest - hypoglycaemia

		IV/IO	150 mL Repeated at 100 mL boluses every 5 minutes until BGL > 4.0 mmol/L

Paediatric dosages

Symptomatic hypoglycaemia (with the inability to self administer oral glucose)

		IV	2.5 mL/kg Repeated at 1 mL/kg boluses every 5 minutes until BGL > 4.0 mmol/L

		IO	2.5 mL/kg Repeated at 1 mL/kg boluses every 5 minutes until BGL > 4.0 mmol/L

Special notes

- Glucose 10% is the preferred treatment for hypoglycaemia for patients unable to take oral glucose. This is due to its rapid onset and ability to quickly restore blood glucose concentration to normal values.
- Glucose 10% is a slightly hypertonic sugar solution and is a principal energy source for body cells, especially the brain. It will cause tissue necrosis if extravasation occurs, therefore should be administered through the largest vein possible. Dextrose 10% may also aggravate brain damage in head injuries and strokes.

[Home](#)

Drug class

Hyperglycaemic

Pharmacology

Glucose gel is a form of pure glucose that is absorbed quickly in the intestinal tract after ingestion. It is the principal energy source for body cells especially the brain.

Metabolism

Glucose is broken down in most tissues and distributed throughout total body water.

Indications

- **Symptomatic hypoglycaemia** (with the ability to ingest oral glucose)

Contraindications

- KSAR
- Unconsciousness
- Patients with difficulty swallowing
- Patients < 2 years

Precautions

- Nil



Side effects

- Nausea and/or vomiting
- Diarrhoea

Presentation

- Tube, 15 g *glucose* (Glucose 15^{TM})

Onset

≈ 10 minutes

Duration

Variable

Half-life

Not applicable

Schedule

- Unscheduled.

Routes of administration

Per oral (PO)

Special notes

- Patients are to swallow the entire contents of the tube where possible, to maximise the rise in blood glucose levels.

Adult dosages

Symptomatic hypoglycaemia

(with the ability to ingest oral glucose)



PO

15 g

Repeated once at **15 minutes**
if BGL $\leq$ 4.0 mmol/L.

Total maximum dose 30 g

Paediatric dosages

Symptomatic hypoglycaemia

(with the ability ingest oral glucose)



PO

$\geq$ 2 years – **15 g**

Repeated once at **15 minutes**
if BGL $\leq$ 4.0 mmol/L

Total maximum dose 30 g

Drug class

Vasodilator

Pharmacology

Glyceryl trinitrate (GTN) is a potent vasodilator that decreases preload by increasing venous capacity, pooling venous blood in the peripheral veins, reducing ventricular filling pressure and decreasing arterial blood pressure (after load). Because of this cascade it also causes vasodilation in coronary arteries that are in spasm and may assist the redistribution of blood flow along the collateral channels in the heart.

Metabolism

GTN is readily absorbed and metabolised by the liver.

[Home](#)

Indications

- Suspected ACS
- Acute cardiogenic pulmonary oedema
- Autonomic dysreflexia (with a systolic BP $\geq$ 160 mmHg)
- Irukandji syndrome (with a systolic BP $\geq$ 160 mmHg)



Contraindications

- KSAR
- Heart rate < 50 OR > 150 beats per minute
- Systolic BP < 100 mmHg
- Acute CVA
- Head trauma
- Erectile dysfunction medication (e.g. Viagra® or Levitra®) in the previous 24 hours.



Precautions

- Suspected inferior AMI
- Cerebral vascular disease
- Risk of hypotension and/or syncope
- Intoxication (GTN effects are enhanced)
- Erectile dysfunction medication (e.g. Viagra® or Levitra®) in the previous 4 days



Side effects

- Dizziness
- Hypotension
- Syncope
- Reflex tachycardia
- Vascular headaches

Presentation

- *Tablet 600 mcg*

Onset (SL)	Duration (SL)	Half-life (elimination)
< 2 minutes	20 – 30 minutes	5.5 minutes

Schedule

- Tablet – S3 (Therapeutic poisons)

Routes of administration

Sublingual (SL)

Special notes

- Sublingual GTN is the first line treatment for ACS.
- Some patients with normal or low left ventricular filling pressures or pulmonary capillary pressure may be hypersensitive to the effects of GTN.
- For existing IV infusions officers are to display extreme caution when ceasing GTN infusions due to the potential of rebound symptoms.
- GTN is the first line treatment for autonomic dysreflexia, however morphine should be considered as part of the management regime, if the patient is unresponsive to initial treatment.

Adult dosages

Suspected ACS

(with a systolic BP $\geq$ 100 mmHg)

SAP

Para

ICP

SL

300 mcg - 600 mcg (Tablet)
Repeated at 5 minute intervals
No maximum dose

Acute cardiogenic pulmonary oedema

(with a systolic BP $\geq$ 100 mmHg)

SAP

Para

ICP

SL

300 mcg – 600 mcg (Tablet)
Repeated at 5 minute intervals
No maximum dose

- Autonomic dysreflexia
(with a systolic BP $\geq$ 160 mmHg)
- Irukandji syndrome
(with a systolic BP $\geq$ 160 mmHg)

SAP

Para

ICP

SL

300 mcg – 600 mcg (Tablet)
Repeated at 5 minute intervals
No maximum dose

Paediatric dosages

- Autonomic dysreflexia
(with a systolic BP $\geq$ 160 mmHg)
- Irukandji syndrome
(with a systolic BP $\geq$ 160 mmHg)

ICP

SL

*SJANT on-call medical officer
consultation and approval required in all
situations.*

Note: In all other instances, SJANT officers are not authorised to administer GTN to paediatric patients.

Drug class

Corticosteroid

Pharmacology

Hydrocortisone is an adrenocortical steroid that produces an anti-inflammatory process. This inhibits the accumulation of inflammatory cells at inflammation sites, phagocytosis, lysosomal enzyme release and synthesis and/or release of mediators of inflammation. Additionally, it prevents and suppresses cell mediated immune reactions.

Metabolism

Hepatic.

**Precautions**

- Hypertension

**Side effects**

- Nil

Presentation

- Vial, 100 mg *hydrocortisone* (Solu-Cortef®)

Schedule

- S₄ (Restricted drugs)

Onset (IV)	Duration (IV)	Half-life (elimination)
1 – 2 hours	6 – 12 hours	6 – 8 hours

Routes of administration

Intramuscular injection (IM)

Intravenous (IV)

**Indications**

- Moderate OR severe asthma.**
- Acute exacerbation of COPD**
(with evidence of respiratory distress).
- Severe allergic reaction OR anaphylaxis**
(requiring adrenaline administration).
- Symptomatic adrenal insufficiency**
(with a known history of Addison's disease, congenital adrenal hyperplasia, pan-hypopituitarism or long-term steroid administration).

**Contraindications**

- KSAR

Adult dosages

- Moderate OR severe asthma
- Acute exacerbation of COPD (with evidence of respiratory distress)
- Severe allergic reaction OR anaphylaxis (requiring adrenaline administration)



IM

200 mg
Single dose only



IV

200 mg
Slow push over 1 minute
Single dose only

Symptomatic adrenal insufficiency

(with a known history of Addison's disease, congenital adrenal hyperplasia, pan-hypopituitarism or long-term steroid administration)



IM

100 mg
Single dose only



IV

100 mg
Slow push over 1 minute
Single dose only

Paediatric dosages

- Moderate OR severe asthma
- Severe allergic reaction OR anaphylaxis (requiring adrenaline administration)
- Symptomatic adrenal insufficiency
(with a known history of Addison's disease, congenital adrenal hyperplasia, pan-hypopituitarism or long-term steroid administration)



IM

5 mg/kg
Single dose only, not to exceed 100 mg



IV

5 mg/kg
Slow push over 1 minute
Single dose only, not to exceed 100 mg

Note: In all other instances SJANT officers are not authorised to administer hydrocortisone to paediatric patients.

Special notes

- Each 100 mg hydrocortisone vial is to be reconstituted with 2 mL of water for injection.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Drug class

Anticholinergic agent

[Home](#)**Pharmacology**

Ipratropium bromide is an antimuscarinic agent which promotes bronchodilation by inhibiting cholinergic bronchomotor tone.

Metabolism

Hepatic with excretion by the kidneys.

Indications

- **Severe bronchospasm OR silent chest**

(Patients must only be able to speak in single words AND/OR have haemodynamic compromise AND/OR an ALOC).

Contraindications

- KSAR to anticholinergics
- Patients < 2 years.

Precautions

- Glaucoma
- Prostatic hypertrophy

Side effects

- Dilated pupils
- Dry mouth
- Palpitations

Presentation

- Nebule, 250 mcg/ 1 mL *Ipratropium bromide* (Atrovent®)

Onset

1.5 – 3 minutes
(peak 1.5 – 2 hours)

Duration

4 – 6 hours

Half-life (elimination)

2 hours

Schedule

- S₄ (Restricted drugs)

Routes of administration

Nebuliser (NEB)

Adult dosages

Severe life-threatening bronchospasm OR silent chest

(patients must only be able to speak in single words AND/OR have haemodynamic compromise AND/OR an ALOC)

Para

ICP

NEB 500 mcg
Single dose only

Paediatric dosages

Severe life-threatening bronchospasm OR silent chest

(patients must only be able to speak in single words AND/OR have haemodynamic compromise AND/OR an ALOC)

Para

ICP

NEB ≥ 2 years - 250 mcg
Single dose only

Note: SJANT officers are not authorised to administer ipratropium bromide to patients < 2 years of age.

Special notes

- Nebulised ipratropium bromide is not to be administered in isolation. It must be administered in conjunction with nebulised salbutamol – solutions may be mixed and administered via the same nebuliser mask.

Drug class

- Anaesthetic
- Analgesic

Pharmacology

Ketamine is an anaesthetic agent that acts as a NMDA receptor antagonist. At lower doses this drug produces significant analgesia, whilst the airway reflexes and respiratory drive are preserved. Unlike other general anaesthetics, there is minimal haemodynamic compromise as ketamine acts as a sympathomimetic agent. However this may result in potentially transient tachycardia and hypertension. Ketamine produces a dissociative state and this will cause the patient to potentially have significant issues with perception, resulting in disinhibition or emergence phenomenon.

Metabolism

Ketamine undergoes extensive hepatic metabolism with approximately 90% of the drug excreted in the urine as metabolites.



Contraindications

- KSAR
- Age < 5 years
- GCS $\leq$ 12
- Uncontrolled hypertension (SBP $\geq$ 180 mmHg AND/OR DBP $\geq$ 110 mmHg)
- Suspected acute ACS or acute heart failure
- Known hydrocephalus or raised intra-ocular pressure



Precautions

- Age > 65 years
- Patients who have been administered midazolam or other CNS depressant medication
- Patients with significant hypovolaemia – exaggerated effects and a delayed onset of action
- Globe injuries
- Complex facial injuries and fractures
- Patients who have impaired respiratory function
- Patients exhibiting psychotic symptoms



Indications

- Severe traumatic **pain**
(following 0.1 – 0.2 mg/kg morphine) associated with:
fracture reduction and splinting;
multiple or significant fractures requiring facilitated extrication.
- Severe traumatic **pain**
(following 0.2 – 0.3 mg/kg morphine) associated with **burns.**



Side effects

- Dissociation and trance-like state
- Transient hypertonicity and nystagmus
- Disinhibition
- Emergence (up to 10% more common in Adults)
- Hypertension
- Tachycardia
- Depression of consciousness
- Hypersalivation
- Nausea and/or vomiting
- Laryngospasm
- Respiratory depression (rare)

Schedule

- S8 (Controlled drugs).

Routes of administration

Intravenous injection (IV)

Presentation

- Vial, 200 mg/2 mL *ketamine* (Ketalar®)

Onset (IV)	Duration (IV)	Half-life (elimination)
30 seconds	5 – 20 minutes	10 – 15 minutes

Special notes

- Paramedics are to adhere to all the requirements of the Procedural sedation CPP, including the application of EtCO₂ measurement where practical.
- Transient hypertension and tachycardia may occur following ketamine administration in some patients. Unless the hypertension or tachycardia is profound and/or sustained, ketamine administration may continue. For all borderline cases ICPs are to consult with the SJANT on-call medical officer.
- Midazolam is not to be administered unless the patient displays significant signs of agitated emergence that are not attenuated with reassurance.
- Once a maximum dose of 1 mg/kg is administered, the SJANT on-call medical officer must be called in the first instance before any further ketamine is administered.
- Cases of independent ketamine administration by ICPs are to be reported to the SJANT on-call medical officer (24/7). Cases after 12 midnight can be telephoned through the next morning if there were no complications.

Adult dosages

Severe traumatic pain

(following 0.1 – 0.2 mg/kg morphine) associated with:

- fracture reduction and splinting;
- multiple or significant fractures requiring facilitated extrication



IV /IO 10 – 20 mg
Repeated every 2 – 3 minutes
Total maximum dose 1 mg/kg

Syringe preparation:

Mix 200 mg (2 mL) of ketamine with 18 mL sodium chloride 0.9% OR water for injection in a 20 mL syringe to achieve a final concentration of 10 mg/mL.

Severe traumatic pain

(following 0.2 – 0.3 mg/kg morphine) associated with:

- burns



IV /IO 10 – 20 mg
Repeated every 2 – 3 minutes
Total maximum dose 1 mg/kg

Syringe preparation:

Mix 200 mg (2 mL) of ketamine with 18 mL sodium chloride 0.9% OR water for injection in a 20 mL syringe to achieve a final concentration of 10 mg/mL.

Paediatric dosages

Severe traumatic pain

(following 0.1 – 0.2 mg/kg morphine) associated with:

- fracture reduction and splinting;
- multiple or significant fractures requiring facilitated extrication



IV /IO ≥ 5 years - 100 mcg/kg (0.1 mg/kg)
Repeated every 2 – 3 minutes
Total maximum dose 1 mg/kg

Syringe preparation:

Mix 200 mg (2 mL) of ketamine with 18 mL sodium chloride 0.9% OR water for injection in a 20 mL syringe to achieve a final concentration of 10 mg/mL.

Decant 18 mL of the prepared solution and dilute with a further 18mL of sodium chloride 0.9% in a 20 mL syringe to achieve a final concentration of 1 mg/mL.

Severe traumatic pain

(following 0.2 – 0.3 mg/kg morphine) associated with:

- burns



IV /IO ≥ 5 years - 100 mcg/kg (0.1 mg/kg)
Repeated every 2 – 3 minutes
Total maximum dose 1 mg/kg

Note: SJANT officers are not authorised to administer ketamine to patients < 5 years of age.

Drug class

- Anti-arrhythmic
- Local anaesthetic

[Home](#)

Pharmacology

Lignocaine is a sodium channel blocking agent which stabilises all potentially excitable membranes and prevents the initiation and transmission of nerve impulses. It is for this reason that it is successful in decreasing excitability of the cardiac muscle and conduction velocity through the AV node. Furthermore, it is also used as a local anaesthetic.

Metabolism

80% metabolised by the liver and the remainder is excreted by the kidneys.

Indications

- **Conscious VT** (without haemodynamic compromise)
- To reduce the pain associated with IO drug and fluid administration **following EZ-IO® needle insertion** (when the patient is not in cardiac arrest)
- **Local anaesthesia**

Contraindications

- Conscious VT without haemodynamic compromise:
  - KSAR
  - bradycardia
  - current heart failure
  - heart block or conduction defects
  - Torsades de Pointes
- To reduce the pain associated with IO drug and fluid administration following EZ-IO® needle inserted (when patient is not in cardiac arrest):
  - KSAR
- Local anaesthesia for the purpose of radial artery line placement:
  - KSAR

Precautions

- Conscious VT without haemodynamic compromise:
  - hypotension and poor perfusion
- Local anaesthesia for the purpose of radial artery line placement:
  - potential for intravascular injection

Side effects

- Convulsions
- Hypotension
- Nausea
- Tinnitus

Presentation

- Ampoule, 100 mg/5 mL *lignocaine 2%*

Onset (IV)	Duration (IV)	Half-life (elimination)
1 – 2 minutes	20 – 30 minutes	1 – 2 hours

Schedule

- S₄ (Restricted drugs).

Routes of administration

Intravenous injection (IV)

Intraosseous injection (IO)

Subcutaneous injection (SUBCUT) as a local anaesthesia

Special notes

- Local anaesthesia injections should always be made slowly with frequent aspirations to avoid inadvertent intravascular injection.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Adult dosages

Conscious VT

(without haemodynamic compromise)



IV

1 – 1.5 mg/kg slow IV push over 2 minutes
Repeated once at half the initial dose at 10 minutes.
Total maximum dose 300 mg

To reduce pain associated with IO drug and fluid administration following EZ-IO® needle insertion

(when the patient is not in cardiac arrest)



IO

60 mg (40 mg followed by a rapid sodium chloride 0.9% 10 mL flush, followed by an additional 20 mg).
Total maximum dose 60 mg.

Paediatric dosages

To reduce pain associated with IO drug and fluid administration following EZ-IO® needle insertion

(when the patient is not in cardiac arrest)



IO

1 mg/kg
single dose only
Maximum dose 20 mg

Note: In all other instances, SJANT officers are not authorised to administer lignocaine 2% to paediatric patients.

Drug class

Electrolyte

[Home](#)**Pharmacology**

It is an important cofactor in multiple processes. It causes vasodilation and bronchodilation through inhibition of smooth muscle contraction. Magnesium ions also possess anticonvulsant and anti-dysrhythmic properties.

Metabolism

Magnesium is filtered in the kidneys and excreted predominantly in urine with small amounts in faeces and saliva.

**Indications**

- **Box jellyfish (*Chironex fleckeri*) envenomation** (unresponsive to vinegar, ice, narcotic)
- **Eclampsia**
- **Irukandji syndrome** (with intractable pain unrelieved by narcotic analgesia AND/OR systolic BP > 160 mmHg)
- **Torsades de Pointes**
- **Severe life-threatening asthma** (only in patients who require IM/IV adrenaline)

**Contraindications**

- KSAR
- Heart block
- Renal failure

**Precautions**

- Renal impairment

**Side effects**

- Pain at the cannulation site
- Magnesium toxicity
  - hypotension/respiratory depression
  - loss of deep tendon reflexes

Presentation

- Ampoule, 10 mmol (2.47 g)/5 mL, *magnesium sulphate*

Onset (IV)	Duration (IV)	Half-life (elimination)
Immediate	30 minutes	Variable

Schedule

- Unscheduled

Routes of administration
Intravenous injection (IV)
Intraosseous injection (IO)

Special notes

- Irukandji syndrome is described as a tropical sting (usually minimal discomfort) followed in 15 – 40 minutes of significant systemic symptoms of pain, agitation, restlessness, and clinically associated with signs of catecholamine excess.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Adult dosages

Severe life-threatening asthma

(only in patients who have required IM/IV adrenaline)



IV

10 mmol

Slow push over 10 minutes.

Single dose only



IO

10 mmol

Slow push over 10 minutes.

Single dose only

Torsades de Pointes



IV / IO

10 mmol

Slow push over 10 minutes.

Repeated once at 10 minutes

Total maximum dose 20 mmol

Irukandji syndrome

(with intractable pain unrelieved by narcotic analgesia AND/OR systolic BP > 160 mmHg)



IV / IO

Loading dose – 20 mmol

Slow push over 10 minutes.

Repeated once at 10 minutes (only if indicated for ongoing treatment).

Adult dosages *(continued)*

Eclampsia



IV

Loading dose – 20 mmol

Slow push over 10 minutes.

Repeated once at 10 minutes (only if indicated for ongoing treatment).

Box jellyfish (*Chironex fleckeri*) envenomation

(unresponsive to vinegar, ice, narcotic)



IV / IO

20 mmol

Slow push over 10 minutes.

Single dose only

Paediatric dosages

Severe life-threatening asthma

(only in patients who have required IM/IV adrenaline)



IV / IO 0.1 mmol/kg
(rounded up to the nearest 0.5 mmol)
Slow push over 10 minutes.
Single dose only, not to exceed 5 mmol

Torsades de Pointes



IV / IO 0.1 mmol/kg
(rounded up to the nearest 0.5 mmol)
Slow push over 10 minutes.
Single dose not to exceed 5 mmol
Repeated once at 10 minutes
Total maximum dose 10 mmol

Paediatric dosages *(continued)*

- **Irukandji syndrome**
(with intractable pain unrelieved by narcotic analgesia AND/OR systolic BP > 160 mmHg)
- **Box jellyfish (*Chironex fleckeri*) envenomation**
(unresponsive to vinegar, ice, narcotic)



IV / IO 0.1 mmol/kg
(rounded up to the nearest 0.5 mmol)
Slow push over 10 minutes.
Single dose not to exceed 5 mmol
Repeated once at 10 minutes.
Total maximum dose 10 mmol

Drug class

Analgesic (at low doses), a halogenated ether.

[Home](#)**Pharmacology**

Methoxyflurane is an inhalation agent providing analgesia at low concentrations. Methoxyflurane is more susceptible to metabolism than other halogenated ethers and has a greater propensity to diffuse into fatty tissue.

Metabolism

By the liver and excreted mainly by the lungs

Indications

- Pain

Contraindications

- KSAR
- Patients < 5 year
- Concurrent use of tetracycline antibiotics
- History of significant liver or renal disease
- Pre eclampsia
- History of malignant hyperthermia

Precautions

- ALOC
- Intoxicated or drug affected patients

Side effects

- ALOC
- Cough
- Renal/hepatic failure (following repeated high dose exposure)

Presentation

- Bottle, 3 ml *methoxyflurane*

Onset (INH)

1 – 3 minutes

Duration (INH)

5 – 10 minutes

Half-life (elimination)

Not available

Schedule

- S₄ (Restricted drugs)

Routes of administration

Inhalation (INH)

Special notes

- The manufacturer recommends use only by children who can self monitor pain and self-administer methoxyflurane with the inhaler, poor administration will lead to ineffective analgesia.
- Deep sedation has been identified with methoxyflurane administration in patients < 5 years.
- At no time should unconsciousness be deliberately induced using methoxyflurane.
- At no time should a patient self-administering methoxyflurane be left unattended.
- The lowest dose of methoxyflurane to provide analgesia should be used.
- If the patient prefers simultaneous inhalation through both the nose and mouth, the inhaler may be connected into a standard anaesthetic face mask prior to administration.
- The total weekly dose should not exceed 15 mL with administration on consecutive days not recommended.
- To reduce the risk of occupational exposure to methoxyflurane, officers are to ensure the following:
  - where possible, ambulance vehicles are to be adequately ventilated and use of charcoal filters.
  - oxygen administration via the Pentrox^{TM} inhaler should not be initiated in a confined area.

Adult dosages

Pain



INH 3 mL self-administered
Repeated once after 20 minutes.
Total maximum dose 6 mL.

Paediatric dosages

Pain

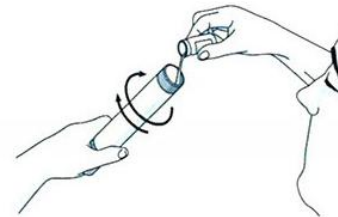


INH 3 mL ≥ 5 year, self-administered
Single dose only.

Note: SJANT officers are not authorised to administer methoxyflurane to patients < 1 year of age.

METHOXYFLURANE PREPARATION / ADMINISTRATION INSTRUCTION

- 1 Tilt the PENTHROX® inhaler to a 45° angle and pour the contents of one 3 mL bottle into the base whilst rotating.



- 2 Instruct the patient to inhale and exhale gently through the mouthpiece.



- 3 If stronger analgesia is required, the patient may be instructed to temporarily cover the dilution hole with their own finger to increase concentration.



Drug class

Antiemetic

[Home](#)

Pharmacology

Metoclopramide hydrochloride is a dopamine receptor antagonist. It works by inhibiting gastric smooth muscle relaxation, accelerating intestinal transit and gastric emptying. Further, it raises the threshold of chemoreceptor trigger zone in the floor of the fourth ventricle.

Metabolism

By the liver and excreted by the kidneys

Indications

- **Nausea AND/OR vomiting**
- **Prophylactic** use if the patient has previously experienced **nausea AND/OR vomiting with narcotics AND/OR motion sickness**
- **Suspected Spinal Injuries**
- **Aero Medical Evacuation**

Contraindications

- KSAR
- Patients < 12 years
- History of dystonic reactions
- Not to be given within 6 hours of phenothiazine administration (e.g. Stemetil® (prochlorperazine)/promethazine)
- GI haemorrhage
- Patients with bowel obstruction or perforation



Precautions

- Patients with undiagnosed abdominal pain



Side effects

- Drowsiness, lethargy
- Dry mouth
- Oculogyric crisis
- Dystonic reaction

Presentation

- Ampoule, 10 mg/2 mL *metoclopramide* (Maxalon®)

Onset (IV)

1 – 3 minutes (IV)/
10 – 15 minutes (IM)

Duration (IV)

1 – 2 hours

Half-life (elimination)

2.5 – 5 hours

Schedule

- S₄ (Restricted drugs)

Routes of administration

Intramuscular injection (IM)

Intravenous injection (IV)

Special notes

- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.
- Children have a high incidence of dystonic reactions following administration

Adult dosages

- Nausea AND/OR vomiting
- Prophylactic use if the patient has previously experienced nausea AND/OR vomiting with narcotics AND/OR motion sickness
- Suspected Spinal Injuries
- Aero Medical Evacuation



IM

≥ 12 years – 10 mg

Single dose only



IV

≥ 12 years – 10 mg

Slow push over 1 – 2 minutes.

Single dose only

Paediatric dosages

Note: SJANT officers are not authorised to administer metoclopramide to paediatric patients.

Drug class

Benzodiazepine

[Home](#)**Pharmacology**

Midazolam hydrochloride is a short acting central NS depressant that induces amnesia, anaesthesia, hypnosis and sedation. It achieves this by enhancing the action of inhibitory neurotransmitter gamma-aminobutyric acid (GABA). Depressant effects occur at all levels of the CNS.

Metabolism

By the liver and excreted by the kidneys

Indications

- **Seizures/convulsions**
- **Sedation** for:
  - maintenance of established ETT
  - severely agitated patients (not due to pain)
  - agitated head injuries to facilitate assessment and treatment
  - procedures (e.g. TCP or cardioversion)
  - ketamine disinhibition or agitated emergence
  - **IFS** Intubated facilitated by Sedation

Contraindications

- KSAR to benzodiazepines
- Patients being restrained in a prone position

Precautions

- Reduced dosages may be required in elderly 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

- Hypotension
- Respiratory depression particularly when associated with alcohol or narcotics.

Presentation

- Ampoule, 5 mg/1 mL *midazolam*

Onset

5 – 15 minutes (IM)
1 – 3 minutes (IV)

Duration

Variable

Half-life (elimination)

2.5 hours

Schedule

- S₄ (Restricted drugs)

Routes of administration

Intranasal (NAS)

Intramuscular injection (IM)

Intravenous injection (IV)

Intraosseous injection (IO)

Special notes

- Focal seizure activity in a patient who is unconscious or has altered level of consciousness ($GCS \leq 12$) should be treated as a generalised seizure.
- If a patient has received midazolam or diazepam prior to arrival of paramedics, the amount administered is to be taken into account in the total dose administered.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.
- Extreme caution in administering to patients who are being physically restrained.

Adult dosages

Seizures/convulsions

SAP	Para	ICP	NAS	5 mg Repeated PRN after 2 minutes Maximum dose 10 mg
	Para	ICP	IM	5 mg Repeated PRN every 10 minutes Maximum dose 20 mg
	Para	ICP	IV	Up to 2.5 mg Repeated PRN every 5 minutes No maximum dose
		ICP	IO	Up to 2.5 mg Repeated PRN every 5 minutes No maximum dose

Sedation for maintenance of an established ETT

ICP	IV / IO	1 - 2.5 mg Consider administration with morphine/fentanyl. Repeated PRN. Maximum dose 20 mg

Sedation for agitated head injuries (to facilitate assessment and treatment)

ICP	IV / IO	1 - 2.5 mg Repeated PRN every 5 minutes until patient is cooperative or allows administration of oxygen and maintenance of spinal immobilisation. Should be avoided in significant hypovolaemia. Maximum dose 20 mg <i>SJANT medical officer consultation and approval required to exceed maximum dose.</i>

Adult dosages (continued)

Sedation for procedures (e.g. TCP or cardioversion)

ICP	IV / IO	1 mg Repeated every 2 minutes until moderate level of sedation achieved. Maximum dose 20 mg

Sedation for severely agitated patients (not due to pain)

Para	ICP	IM	2.5 - 5 mg Repeated PRN every 10 minutes to achieve moderate sedation. Total maximum dose 20 mg.
Para	ICP	IV	1 - 2.5 mg Repeated PRN every 5 minutes to achieve moderate sedation. Total maximum dose 20 mg. <i>SJANT medical officer consultation and approval required to exceed maximum dose.</i>

Sedation for ketamine disinhibition or agitated emergence

ICP	IV	1 - 2.5 mg Repeated PRN. Total maximum dose 5 mg

Paediatric dosages

Seizures/convulsions



IM **200 mcg/kg**
Single dose not to exceed 5 mg
Repeated at half the initial dose (max 2.5 mg) at **10 minute** intervals.
No maximum dose



NAS **5 mg**
Repeated PRN after **2 minutes**
Maximum dose 10 mg



IV / IO **100 mcg/kg**
Single dose not to exceed 2.5 mg.
Repeated at **5 minute** intervals.
No maximum dose

Sedation for patients suffering ketamine disinhibition or agitated emergence



IV / IO **50 mcg/kg**
Single dose not to exceed 2.5 mg.
Repeated after 5 minutes
Total maximum dose of 5 mg

Sedation for maintenance of an established ETT



IV / IO **Up to 100 mcg/kg**
Single dose not to exceed 2.5 mg.
Consider administration with morphine.
Repeated after 5 minutes
No maximum dose

Paediatric dosages *(continued)*

Sedation for all other indications



IM *SJANT on-call medical officer consultation and approval required in all situations.*
100 mcg/kg
Single dose not to exceed 2.5 mg.
Repeated PRN after **5 minutes**
Total maximum dose 5 mg



IV / IO *SJANT on-call medical officer consultation and approval required in all situations.*
100 mcg/kg
Single dose not to exceed 2.5 mg.
Repeated PRN after **5 minutes**
Total maximum dose 5 mg

Drug class

Narcotic analgesic

[Home](#)

Pharmacology

Morphine is a narcotic analgesic that acts on the central nervous system by binding with opioid receptors, altering processes affecting pain perception and emotional response to pain. It also combines to cause respiratory depression, decreases in the gag reflex, decreases in the rate of AV node conduction and vasodilation.

Metabolism

By the liver, kidneys and lungs

Indications

- **Significant pain**
- **Autonomic dysreflexia**
(with a systolic BP $\geq$ 160 mmHg)
- **Sedation** for the maintenance of an established ETT

Contraindications

- KSAR

Precautions

- Elderly patients
- Hypotension
- Respiratory tract burns
- Respiratory depression and/or failure
- Known addiction to narcotics
- Patients on monoamine oxidase inhibitors (MAOIs)

Side effects

- Bradycardia
- Drowsiness
- Hypotension
- Nausea and/or vomiting
- Pin point pupils
- Respiratory depression

Presentation

- Ampoule, 10 mg/1 mL *morphine*

Onset	Duration	Half-life (elimination)
5 – 10 minutes (peak 20 – 30 minute (IM)) 2 – 5 minutes (peak 20 minutes (IV))	1 – 2 hours	2 hours

Schedule

- S8 (Controlled drugs)

Routes of administration
Intramuscular injection (IM)
Intravenous injection (IV)
Intraosseous injection (IO)

Special notes

- When morphine is administered to a hypotensive patient, Para's must call for ICP backup where available.
- In the setting of the hypotensive adult patient (SBP < 90 mmHg) all incremental morphine doses are to be no greater than 2.5 mg IV or 5 mg IM.
- For doses above 20 mg, intravenous access must be obtained and morphine administered via that route. If intravenous access is not able to be obtained and greater than 20 mg is required, paramedics must seek medical consultation and approval via the SJANT medical officer
- GTN is the first line of treatment for autonomic dysreflexia, but morphine should be considered as part of the management regime if the patient is unresponsive to initial treatment.
- When administering morphine and midazolam to maintain sedation in the intubated patient, appropriate management is to be instituted to address any adverse side effects such as hypotension. The addition of morphine in this setting will reduce midazolam requirements, provide analgesia and ultimately decrease the risk of hypotension. Under no circumstances are morphine and midazolam to be mixed in the one syringe.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines following each medication administration.

Adult dosages

- Significant pain
- Autonomic dysreflexia (with a significant BP > 160 mmHg)

Para **ICP** **IM** **2.5 – 10 mg**
Repeated at up to 5 mg every **10 minutes**
Maximum dose 20 mg

Para **ICP** **IV** **2.5 - 5 mg**
Repeated at up to 5 mg every **5 minutes**
Titrate to pain control
No maximum dose

ICP **IO** **2.5 - 5 mg**
Repeated at up to 5 mg every **5 minutes**
Titrate to pain control
No maximum dose

Sedation for the maintenance of an established ETT

ICP **IV** **2.5 mg**
Consider administration with midazolam.
Repeated PRN.
No maximum dose

ICP **IO** **2.5 mg**
Consider administration with midazolam.
Repeated PRN.
No maximum dose

Paediatric dosages

- Significant pain
- Autonomic dysreflexia (with a significant BP > 160 mmHg)

Para **ICP** **IM** **≥ 1 year – 100 – 200 mcg/kg**
Single maximum dose 5 mg
Total maximum dose 200 mcg/kg

< 1 year – *SJANT on-call medical officer consultation and approval required in all situations.*

ICP **IV / IO** **≥ 1 year – 100 mcg/kg**
Single maximum dose 2.5 mg
Repeated at 50 mcg/kg (maximum 2.5 mg) at 10 minute intervals
No maximum dose

< 1 year – *SJANT on-call medical officer consultation and approval required in all situations.*

Paediatric dosages *(continued)*

Sedation for the maintenance of an established ETT



IV / IO ≥ 1 year – **100 mcg/kg**

Single dose not to exceed 2.5 mg.

Consider administration with midazolam

No maximum dose

*< 1 year – SJANT on-call medical officer
consultation and approval required in all
situations.*

Note: SJANT officers are not authorised to administer morphine to paediatric patients presenting with cardiogenic chest pain.

Drug class

Opioid antagonist

[Home](#)**Pharmacology**

Naloxone is an opioid antagonist that prevents or reverses the effects of opioids including respiratory depression, sedation and hypotension. Naloxone antagonises the opioid effects by competing for the same receptor sites.

Metabolism

Hepatic.

Indications

- **Respiratory depression** (secondary to the administration of narcotic drugs).

Contraindications

- KSAR

Precautions

- Use with caution on patients with pre-existing cardiac disease

Side effects

- Narcotic reversal can cause combativeness, vomiting, sweating, tachycardia and hypertension.
- May produce acute withdrawal convulsions in the chronic narcotic user.
- Pulmonary oedema

Presentation

- Ampoule, 400 mcg/1 mL *naloxone* (Narcan)

Onset

3 – 5 minutes (IM)
1 – 3 minutes (IV)

Duration

≈ 60 minutes

Half-life (elimination)

60 minutes

Schedule

- S₄ (Restricted drugs)

Routes of administration

Intramuscular injection (IM)

Intravenous injection (IV/IO)

Special notes

- Naloxone should only be administered following adequate patient oxygenation and ventilation.
- Naloxone should be administered cautiously to patients who are known or suspected to be physically dependent on narcotics. This includes newborn infants where the mother is known, or suspected or narcotic dependence.
- In the vast majority of cases, naloxone should not be required and the patient will need only supportive therapy followed by transport to a medical facility.
- The duration of the narcotic may exceed that of naloxone and renarcotisation is always a possibility.
- Administration of naloxone in the pre-hospital environment may unmask potentially unwanted side effects in the setting of poly pharmacy overdose.

Adult dosages

Respiratory depression (secondary to the administration of narcotic drugs)

SAP	Para	ICP	IM	800 mcg Repeated PRN to facilitate airway management, titrating to patients response. Maximum Dose : 4.0 mg
	Para	ICP	IV	50 mcg Repeated PRN to facilitate airway management, titrating to patients response. No maximum dose.

Paediatric dosages

Respiratory depression (secondary to the administration of narcotic drugs)

Para	ICP	IM	20 mcg/kg Single dose only, not to exceed 800 mcg.
	ICP	IV/IO	20 mcg Repeated PRN to facilitate airway management, titrating to patients response No maximum dose.

Drug class

Anti-emetic

[Home](#)

Pharmacology

Ondansetron is a serotonin 5-HT₃ receptor antagonist used primarily as an antiemetic. Its effects are thought to be on both peripheral and central nerves. Ondansetron reduces the activity of the vagus nerve, which activates the vomiting centre in the medulla oblongata, and also blocks serotonin receptors in the chemoreceptor trigger zone. Orally Disintegrating Tablets (ODT).

Metabolism

The majority of circulating ondansetron is metabolised by the liver and excreted by the kidneys.

Indications

- **Nausea AND/OR vomiting.**
- **Prophylactic** use if the patient has previously experienced nausea AND/OR vomiting with narcotics.
- **Suspected Spinal Injuries**
- **Aero Medical Evacuation**

Contraindications

- KSAR to Ondansetron or other 5-HT₃ receptor antagonists.
- Patients under the age of 3 years

Precautions

- Hepatic impairment
- Intestinal obstruction

Side effects

- Headache
- Constipation
- Sensation of warmth or flushing
- Extrapyramidal effects
- Dysrhythmias

Presentation

- Wafer 4 mg

Onset

5 minutes

Duration

Several hours

Half-life (elimination)

3 – 4 hours

Schedule

- S₄ (Restricted drugs)

Routes of administration

Orally Disintegrating Tablets (ODT)

Special notes

- Ondansetron Wafer should be protected from light and is not to be removed from foil blister until use.
- Ondansetron may be given in conjunction with, or independent of, metoclopramide administration.

Instructions for Handling (ODT) Orally Disintegrating Tablets:

With dry hands, peel back the foil backing of 1 blister and gently remove the tablet. Confirm the dose required, if necessary break the tablet in half.

Immediately place the ODT on top of the tongue where it will dissolve in seconds, then swallow with saliva.

Administration with liquid is not necessary.

Adult dosages

- Nausea AND/OR vomiting
- Prophylactic use if the patient has previously experienced nausea AND/OR vomiting with narcotics
- Suspected Spinal Injuries
- Aero Medical Evacuation

Para

ICP

ODT

4 mg

Single dose only

Paediatric dosages

- Nausea AND/OR vomiting
- Prophylactic use if the patient has previously experienced nausea AND/OR vomiting with narcotics
- Suspected Spinal Injuries
- Aero Medical Evacuation

ICP

ODT

≥ 3 years – 2 mg

Single dose only

Note: SJANT officers are not authorised to administer Ondansetron to paediatric patients under the age of 3 years.

[Home](#)
Drug class

Gas

Pharmacology

A colourless, odourless gas essential for the production of cellular energy that constitutes 21% of the atmosphere.

Metabolism

N/A.

Indications

- Adult patients with:
  - critical illness requiring **HIGH** levels of supplemental oxygen (see Table 1);
  - serious illness with hypoxaemia requiring **MODERATE** levels of supplemental oxygen (see Table 2);
  - COPD or other conditions requiring **CONTROLLED** or **LOW DOSE** oxygen therapy (see Table 3);
  - oxygenation monitoring required, but oxygen therapy is not required unless the patient is hypoxaemic (see Table 4).
- Paediatric patients with:
  - significant illness AND/OR injury.**

Contraindications

- Known paraquat poisoning with $SpO_2 \geq 88$
- History of bleomycin therapy with $SpO_2 \geq 88$.

Precautions

- Patients with paraquat poisoning or bleomycin lung injury may be harmed by supplemental oxygen. Avoid oxygen unless the patient is hypoxaemic – target SpO_2 88 – 92%
- Prolonged administration to premature neonates.
- High concentration given to COPD patients with hypoxic drive.

Side effects

- Hypoventilation in some COPD patients with hypoxic drive. (Refer to Table 3 for guidance).
- Drying of airway mucous membranes.

Presentation

- Cylinder, ≈ 450 L (C size) *medical oxygen*
- Cylinder, ≈ 1600 L (D size) *medical oxygen*

Onset	Duration	Half-life (elimination)
Immediate	N/A	N/A

This guidance is based on O'Driscoll BR, Howard LS, Davison AG on behalf of the British Thoracic Society. BTS guideline for emergency oxygen use in adult patients. Thorax 2008;63 (Suppl_6):vi1-68.

Schedule

- Unscheduled

Routes of administration

Inhalation (INH)

- Nasal cannulae (NC)
- Simple face mask (SFM)
- Non-rebreather reservoir mask (NRBM)
- Bag-valve mask (BVM)
- Laryngeal mask airway (LMA)
- Endotracheal tube (ETT)

Special notes

- Underwater diving and diving accidents are not covered by this DTP – **officers are to administer high flow oxygen.**
- The administration of oxygen to correct hypoxaemia is evidence based. Severe hypoxaemia is harmful.
- SJANT oxygen saturation monitors are unable to differentiate between carboxyhaemoglobin and oxyhaemoglobin, therefore patients with carbon monoxide poisoning are to be administered the maximum oxygen dose irrespective of the SpO₂ result.
- If a patient with COPD sustains or develops a critical illness/injury, the target saturation for patients with critical illness takes priority (see Table 1).
- For patients with COPD, nebulised salbutamol is to be delivered via nebuliser mask at a rate of 6 L/minute. For all other patients 8 L/minute is appropriate.

Adult dosages

Critical illness requiring HIGH levels of supplemental oxygen (see Table 1)



INH

15 L/minute (BVM/NRBM)

Administer until the vital signs are normal, then reduce O₂ and aim for a **target SpO₂ of 94 – 98%.**

Serious illness with hypoxaemia requiring MODERATE levels of supplemental oxygen (see Table 2)



INH

SpO₂ < 85%: **15 L/minute (NRBM)**

Administer until a reliable SpO₂ measurement is available then adjust O₂ flow to aim for a **target SpO₂ of 94 – 98%.**



INH

SpO₂ ≥ 85 – 93%: **2 – 4 L/minute (NC)**
OR 5 – 10 L/minute (SFM)

Administer until a reliable SpO₂ measurement is available then adjust O₂ flow to aim for a **target SpO₂ of 94 – 98%.**

Conditions requiring CONTROLLED or LOW DOSE oxygen therapy (see Table 3)



INH

2 – 4 L/minute (NC)

Administer until a reliable SpO₂ measurement is available then adjust O₂ flow to aim for a **target SpO₂ of 88 – 92%.** If SpO₂ remains < 88% increase oxygen flow to 5 – 10 L/minute (SFM) to aim for a target SpO₂ of 88 – 92%.

Adult dosages *(continued)*

Oxygenation monitoring required however oxygen therapy is not required unless the patient is hypoxaemic (see Table 4)



INH SpO₂ < 85% - **15 L/minute (NRBM)**
Administer until a reliable SpO₂ measurement is available then adjust O₂ flow to aim for a **target SpO₂ of 94 – 98%**.



INH **2 – 4 L/minute (NC) OR 5 – 10 L/minute (SFM)**
Administer until a reliable SpO₂ measurement is available then adjust O₂ flow to aim for a **target SpO₂ of 94 – 98%**.

Paediatric dosages

Significant illness AND/OR injury



INH **15 L/minute (BVM/NRBM)**

Table 1 – Critical illnesses in adults requiring HIGH levels of supplemental oxygen

• Cardiac arrest OR resuscitation • Shock • Sepsis • Major trauma • Near-drowning	• Anaphylaxis • Major pulmonary haemorrhage • Major head injury • Carbon monoxide poisoning • Pregnancy and obstetric emergencies

Table 2 – Serious illness in adults requiring MODERATE levels of supplementary oxygen

• Acute hypoxaemia (cause unknown) • Acute asthma • Pneumonia • Lung cancer • Post-operative breathlessness • Acute heart failure • Pulmonary embolism	• Pleural effusion/s • Deterioration of lung fibrosis or other interstitial lung disease • Severe anaemia

Table 3 – COPD and other conditions in adults requiring CONTROLLED or LOW DOSE SUPPLEMENTAL OXYGEN

• COPD • Exacerbation of cystic fibrosis • Chronic neuromuscular disorders	• Chest wall disorders • Morbid obesity

Table 4 – Conditions in adults NOT requiring supplemental oxygen unless the patient is hypoxaemic

• AMI/ACS • Stroke • Hyperventilation or dysfunctional breathing • Most poisonings and drug overdoses (excluding carbon monoxide poisoning – refer to Table 1)	• Poisoning with paraquat OR bleomycin use • Metabolic and renal disorders • Acute or subacute neurological and muscular conditions producing muscle weakness.

ADULT OXYGEN ADMINISTRATION ALGORITHM

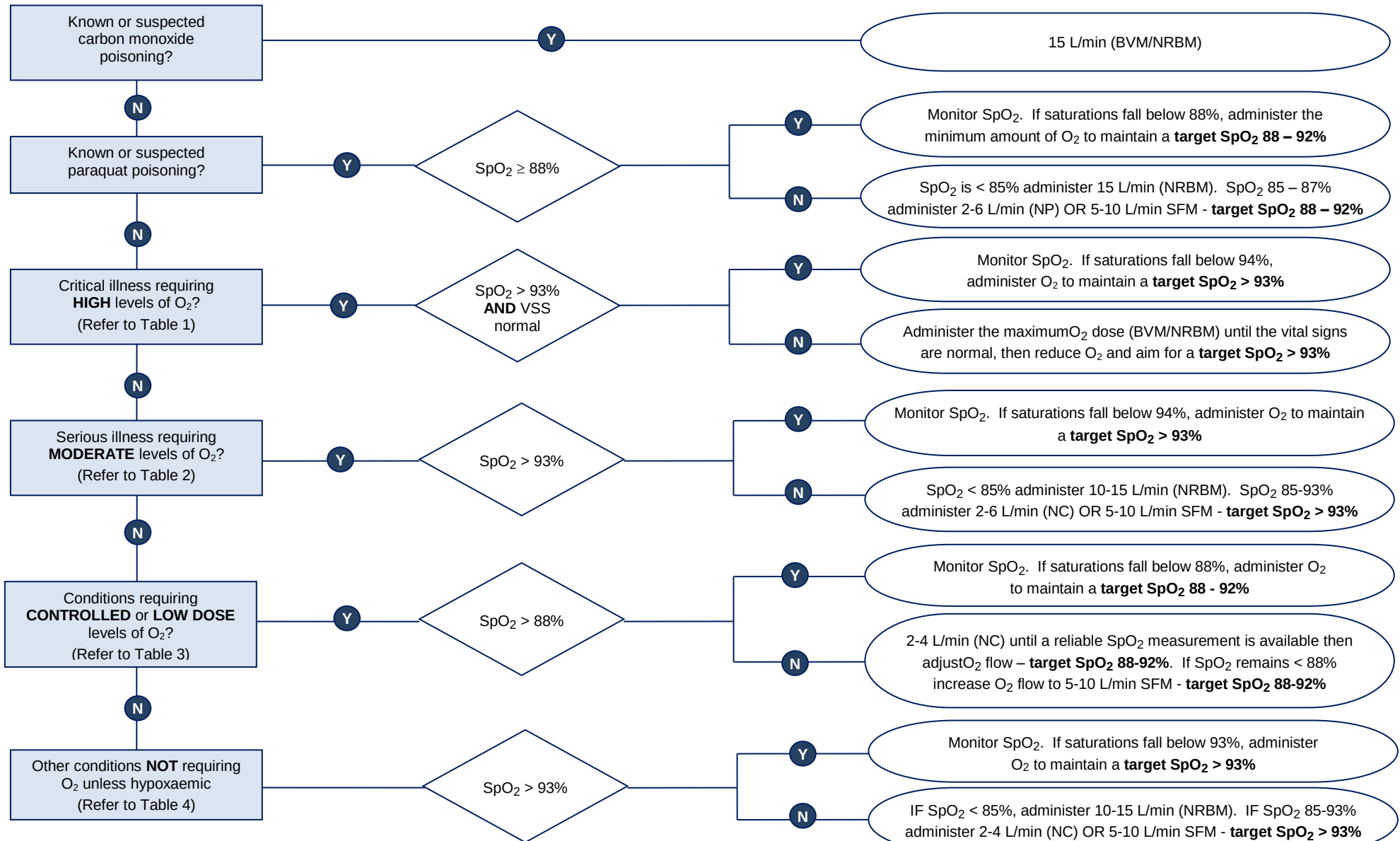


Diagram adapted from Joint Royal College of Ambulance Liaison (JRCALC), (April 2009).

Drug class

Analgesic

**Pharmacology**

Paracetamol is a p-aminophenol derivative that exhibits analgesic and antipyretic activity. It does not possess significant anti-inflammatory activity.

Metabolism

By the liver, excreted by the kidneys

Presentation

- Tablet, 500 mg *Paracetamol*

Onset (PO)

10 – 60 minutes

Duration (PO)

4 hours

Half-life (elimination)

≈ 2 hours

Schedule

- S2 (Therapeutic poisons).

Routes of administration

Per oral (PO)

**Indications**

- Minor pain and fever

**Contraindications**

- KSAR
- Patients < 25 Kg

**Precautions**

- Hepatic or renal dysfunction
- Patients taking anticoagulant medications

**Side effects**

- Nausea

Adult dosages

Minor pain and fever



PO 0.5 g – 1 g
Repeated every 4 hours
Total max dose 4 g in 24 hours

Special notes

- Consider previous dosages of paracetamol administered by the patient, parent or guardian.

Paediatric dosages

Minor pain and fever



PO ≥ 25 Kg - 20 mg/kg
Single dose only
Must not be administered within 4 hours
of previous paracetamol administration.

Note: SJANT officers are not authorised to administer paracetamol to paediatric patients less than < 25 Kg.

[Home](#)

Drug class

Beta-adrenergic agonist

Pharmacology

Salbutamol is a direct acting sympathomimetic agent which mainly effects Beta 2 (β_2) – adrenoceptors. It primarily acts as a bronchodilator but also has inotropic and chronotropic actions. Additionally it lowers serum potassium levels through its direct stimulation of the sodium/potassium ATPase pump, drawing potassium into cells.

Metabolism

Hepatic with excretion by the kidneys.

Indications

- Bronchospasm
- Suspected hyperkalaemia (with QRS widening AND/OR AV dissociation)

Contraindications

- KSAR
- Patients < 2 years

Precautions

- Acute pulmonary oedema
- Ischaemic heart disease

Side effects



- Anxiety
- Tachyarrhythmias
- Tremors
- Hypokalaemia and metabolic acidosis

Presentation

- Nebule, 5 mg/2.5 mL *salbutamol*

Onset

2 – 5 minutes (NEB)

Duration

16 – 60 minutes (NEB)

Half-life (elimination)

1.6 hours

Schedule

- S₄ (Restricted drugs).

Routes of administration

Nebuliser (NEB)

Special notes

- For optimal nebulisation consider adding 1.5 ml of normal saline or water for injection into the nebuliser.
- Different preparations of salbutamol are used for nebulised and IV routes. The inappropriate administration of nebuliser salbutamol solution IV will cause serious adverse effects.
- For patients with COPD, nebulised salbutamol is to be delivered via nebuliser mask at a rate of 6 L/minute. For all other patients 8 L/minute is appropriate.
- The manufacturer recommends that nebules must be stored within the foil packet and are to be discarded three months after opening. The date that the foil packet is opened should then be clearly marked on the packet when opened.

Adult dosages

Bronchospasm



NEB 5 mg
Repeated PRN
No maximum dose

Suspected hyperkalaemia (with QRS widening AND/OR AV dissociation)



NEB 10 mg
Repeated once only

Paediatric dosages

Bronchospasm



NEB ≥ 2 years - 5 mg
Repeated PRN
No maximum dose

Note:

SJANT officers are not authorised to administer salbutamol to paediatric patients presenting with bronchospasm under the age of 2 years.

SJANT officers are not authorised to administer salbutamol to paediatric patients presenting with suspected hyperkalaemia with QRS widening AND/OR AV dissociation.

Drug class

Alkalising agent

[Home](#)**Pharmacology**

Sodium bicarbonate 8.4% is a hypertonic solution that acts as a buffer. Excess hydrogen ions react with bicarbonate resulting in the formation of carbon dioxide and water. This action assists in restoring plasma pH to within normal ranges.

Metabolism

Metabolised to CO₂ and water.

Indications

- **Cardiac arrest:**
  - > 15 minutes duration;
  - secondary to suspected hyperkalaemia (e.g. chronic renal failure);
  - secondary to tricyclic antidepressant (TCA) overdose
- Significant injury with potential for **crush syndrome**
- **TCA overdose** with cardiac rhythm disturbance (prolonged QRS/QT interval) OR attributed seizure activity.
- **Suspected hyperkalaemia** (with QRS widening AND/OR AV dissociation)

Contraindications

- Nil.

Precautions

- Administration of sodium bicarbonate 8.4% in the paediatric resuscitation may worsen respiratory acidosis.

Side effects

- Cerebral oedema
- Congestive heart failure

Presentation

- Bottle, 100 mL *sodium bicarbonate 8.4%*

Onset (IV)

Immediate

Duration (IV)

Variable

Half-life (elimination)

Variable

Schedule

- Unscheduled.

Routes of administration

Intravenous injection (IV)

Intraosseous injection (IO)

Adult dosages

- Significant injury with potential for crush syndrome
- TCA overdose with cardiac rhythm disturbance (prolonged QRS/QT interval) OR attributed seizure activity
- Suspected hyperkalaemia (with QRS widening AND/OR AV dissociation)



IV

100mL
Single dose only



IO

100mL
Single dose only

- Cardiac arrest
  - > 15 minutes duration
  - secondary to suspected hyperkalaemia (e.g. chronic renal failure)
  - secondary to TCA overdose
- Significant injury with potential for crush syndrome



IV/IO

100mL
Single dose only

Paediatric dosages

- Cardiac arrest
  - > 15 minutes duration
  - secondary to suspected hyperkalaemia (e.g. chronic renal failure)
  - secondary to TCA overdose
- Significant injury with potential for crush syndrome
- TCA overdose with cardiac rhythm disturbance (prolonged QRS/QT interval) OR attributed seizure activity
- Suspected hyperkalaemia (with QRS widening AND/OR AV dissociation)



IV

1 mL /kg
Single dose only



IO

1 mL/kg
Single dose only

Special notes

- Care must be taken to avoid extravasation into tissues as necrosis may occur.
- All cannula and IV lines must be flushed thoroughly with sodium chloride 0.9% as per ARC guidelines before and following each medication administration.

Drug class

Isotonic crystalloid solution

[Home](#)

Pharmacology

Sodium chloride 0.9% is an isotonic crystalloid that acts as a vehicle for many parenteral drugs and as an electrolyte replenisher for maintenance or replacement of fluid deficits.

Metabolism

This drug has 100% bioavailability. Excess sodium is predominantly excreted by the kidneys.

Indications

- **Hypovolaemic shock** (Inadequate tissue perfusion)
- **Burns** deep dermal/full thickness > 15%
- **Cardiogenic shock** (Inadequate tissue perfusion)
- **To dissolve and dilute drugs** for the purpose of IM, IV or IO administration
- As a **flush** following IV or IO drug administration.

Contraindications

- Nil

Precautions

- Patients with acute and/or history of heart failure
- Pre-existing renal failure
- Uncontrolled haemorrhage (unless associated with severe head injury).

Side effects

- Excessive administration will result in fluid overload.

Presentation

- Ampoule, 10 mL *sodium chloride 0.9%*
- 1000 mL soft infusion pack, *sodium chloride 0.9%*
- 100 mL soft infusion pack, *sodium chloride 0.9%*

Onset

Immediate

Duration

Variable

Half-life (elimination)

N/A

Schedule

- Unscheduled

Routes of administration

Intravenous injection (IV)

Intravenous infusion (IV INF)

Intraosseous injection (IO)

Intraosseous infusion IO (IO INF)

Special notes

- Use of volume expansion in uncontrolled haemorrhage (without a concurrent traumatic brain injury) may be associated with poor outcomes. Paramedics are to administer the minimum amount of IV fluid required to maintain a radial pulse.
- Hypotension with a concurrent traumatic brain injury is associated with poor outcomes. Paramedics are to administer the minimum amount of IV fluid required to maintain a systolic BP of 100 – 120 mmHg (adult).
- Excessive fluid infusion may lead to neurogenic pulmonary oedema in the spinal cord injured patient.
- Excessive fluid infusion may lead to cardiogenic pulmonary oedema in the cardiac patient.
- Too rapid infusion of fluids in a patient without a fluid deficit, or with underlying cardiac problems, may cause pulmonary oedema and congestive heart failure.
- Benefits of fluid infusion must be carefully analysed against concerns with the patient's overall condition.
- A gentle fluid challenge may be considered for patients with suspected right ventricular infarct (following 12-Lead ECG acquisition with V₄R) and no signs of left ventricular failure (e.g. pulmonary oedema).
- Adult patients must be reassessed after every 250 – 500 mL of fluid administration.
- Paediatric patients must be reassessed after every 10 mL/kg of fluid administration.

Adult dosages

- **Hypovolaemic shock**
Inadequate tissue perfusion/shock
- **Burns** deep dermal/full thickness > 15%

Para
ICP

IV
INF

250 - 500mL aliquots

Repeat as required – titrate according to the patient's physiological response to treatment.

Total maximum dose 40 mL/kg.

ICP

IO
INF

250 - 500mL aliquots

Repeat as required – titrate according to the patient's physiological response to treatment.

Total maximum dose 40 mL/kg.

Further fluid may be administered by ICP officers following SJANT on-call medical officer consultation and approval.

- **Cardiogenic shock**
Inadequate tissue perfusion/shock

ICP

IV/IO
INF

250mL aliquots

Repeat as required – titrate according to the patient's physiological response to treatment.

- Excessive fluid infusion may lead to cardiogenic pulmonary oedema in the cardiac patient.

Total maximum dose 1000 ml

To dissolve and dilute drugs for the purpose of IM, IV or IO administration

SAP

Para

ICP

IM

As documented on DTP

Para

ICP

IV

As documented on DTP

Para

ICP

IO

As documented on DTP

As a flush following IV or IO drug administration

Para

ICP

IV

PRN

Para

ICP

IO

PRN

Paediatric dosages

- **Hypovolaemic shock**
Inadequate tissue perfusion/shock
- **Burns** deep dermal/full thickness > 15%



**IV/IO
INF**

20 mL/kg

May be repeated once following assessment of patient's needs and physiological response to treatment. **Total maximum dose 40 mL/kg.**

Further fluid may be administered by ICP officers following SJANT on-call medical officer consultation and approval.

- **Cardiogenic shock**
Inadequate tissue perfusion/shock



**IV/IO
INF**

SJANT on-call medical officer consultation and approval required in all situations.

To dissolve and dilute drugs for the purpose of IM, IV or IO administration



IM

As documented on DTP



IV

As documented on DTP



IO

As documented on DTP

As a flush following IV or IO drug administration



IV

PRN



IO

PRN

Drug class

Depolarizing skeletal muscle relaxant

[Home](#)

Pharmacology

Suxamethonium acts on the neuromuscular junction, as a depolarizing blocker.

Action: short acting muscular relaxant

Metabolism

Pseudo-cholinesterase in plasma

Indications

- Complete muscle relaxation to allow endotracheal intubation

Contraindications

- KSAR
- Upper airway obstruction
- Penetrating eye injury
- ECG signs of hyperkalaemia in conditions such as muscle necrosis and renal failure
- Burns > 24 hours post injury
- Organophosphate toxicity
- Ruptured abdominal aortic aneurysm
- Known history of Suxamethonium apnoea
- Known history of malignant hyperthermia

Precautions

- Liver disease
- Elderly patients
- Crush injuries
- Patients who have not fasted
- Airway trauma

Side effects

- Muscular fasciculation
- Increase in intraocular pressure
- Increase in intragastric pressure
- Elevated serum potassium levels

Presentation

- Ampoule, 100 mg/ 2 mL

Onset (IV)

20 – 40 seconds

Duration (IV)

4 – 6 minutes

Peak (IV)

60 seconds

Schedule

- S4 (Restricted drugs)

Routes of administration

Intravenous injection (IV)

Intraosseous (IO)

Special notes

- Sedation is required prior to use
- Adult patients, consider Atropine 600 mcg in patients with a heart rate < 60
- Children, Atropine 20 mcg/Kg should be administered prior to suxamethonium administration
- A second dose of suxamethonium usually causes profound bradycardia

Adult dosages

Complete muscle relaxation to allow endotracheal intubation



IV/IO 1.5 mg/Kg.
Repeated once after 5 minutes

Paediatric dosages

Complete muscle relaxation to allow endotracheal intubation



IV/IO 1 – 2 mg/Kg
Repeated once after 5 minutes at 1 mg/Kg

Drug class

Fibrinolytic

[Home](#)

Pharmacology

Tenecteplase is a thrombolytic agent which combines to the fibrin component of the thrombus and converts thrombus-bound plasminogen to plasmin, which degrades the fibrin matrix of the thrombus

Metabolism

Hepatic

Indications

Classic ongoing ischaemic chest pain (atypical chest pain excluded) and ECG criteria suggesting **STEMI** as demonstrated on a 12-Lead ECG **AND** the patient **meeting the criteria according to the SJANT coronary artery reperfusion checklist and LWI**.

Criteria:

- Ongoing Ischaemic chest pain < 6 hours duration
- 12-Lead ECG with persistent ST-segment elevation of ≥ 1 mm in two contiguous limb leads **AND/OR** ST-segment elevation of ≥ 2 mm in two contiguous chest leads (V1–V6)
- Normal QRS width (< 0.12 seconds) **OR** right BBB identified on 12-Lead ECG
- Patient is < 75 years
- Systolic BP < 180 (at all times during current acute episode)
- Diastolic BP < 110 (at all times during current acute episode)
- GCS = 15



Contraindications

- Known allergy to tenecteplase, enoxaparin or clopidogrel (as appropriate)
- Left BBB identified on 12-Lead ECG
- Current or history of thrombocytopenia
- Active tuberculosis
- Known structural nervous system disease, in particular a malignant intracranial neoplasm (primary or metastatic)
- Known structural cerebral vascular lesion (e.g. arteriovenous malformation)
- Prior intracranial haemorrhage
- Ischaemic stroke or transient ischaemic attack (TIA) within last 3 months
- Acute myocardial infarction in the setting of acute trauma
- History of significant closed head/facial trauma within last 3 months
- Suspected aortic dissection (including new neurological symptoms)
- History of major trauma or surgery (including laser eye surgery) within last 6 weeks
- Internal bleeding (e.g. gastrointestinal (GI) /urinary tract bleed) within last 4 weeks
- Active bleeding or bleeding disorder e.g. haemophilia (excluding menses)



Contraindications continued.

- Current use of anticoagulants (e.g. warfarin or dabigatran (Pradaxa®) – excludes antiplatelet medications e.g. aspirin AND/OR clopidogrel)
- Non-compressible vascular punctures
- Active peptic ulcers, as evidenced by recent malaena within last 6 weeks, or active ongoing symptoms prior to current cardiac event
- Prolonged (> 10 minutes) cardio pulmonary Resuscitation (CPR)
- Known pregnancy or delivered within the last 2 weeks
- History of serious systemic disease (advanced/terminal cancer, severe liver or kidney disease)
- Resident of an aged care facility requiring cares with daily living



Precautions

- Nil



Side effects

- Haemorrhage
- Headache
- Nausea and vomiting
- Post-administration dysrhythmias

Presentation

- Injection, (powder and solvent) 50 mg (10,000 IU)
Graduated syringe tenecteplase (Metalyse®)

Onset (IV)

15 minutes

Duration (IV)

Several hours

Half life (terminal)

≈ 2 hours

Schedule

- S₄ (Restricted drugs)

Routes of administration

Intravenous injection (IV)

Special notes

- Increased scrutiny and threshold must be applied to patients < 35 years due to the increased likelihood of STEMI mimics such as pericarditis in this age group. Paramedics should exercise **extreme** caution and demonstrate a low threshold for waiting to gain a second opinion at the receiving emergency department. If doubt exists regarding the diagnosis of STEMI the SJANT paramedic is not to administer reperfusion therapy.
- The administration table is to be used to specify the dose of Tenecteplase per kilogram of weight to a maximum of 50 mg.
- Tenecteplase should be reconstituted by adding the complete volume of water for injection from the pre-filled syringe to the vial containing the powder for injection. This should be done slowly to avoid foaming. The powder should be reconstituted by swirling gently. The appropriate amount should be withdrawn from the vial for injection.
- All STEMIs (or cases where there is a STEMI and reperfusion is contraindicated) are to be reported to the SJANT on-call medical officer (24/7) – cases after 12 midnight can be telephoned through the next morning if there were no complications.

Adult dosages

Classic ongoing ischaemic chest pain (atypical chest pain excluded) and ECG criteria suggesting STEMI as demonstrated on a 12-Lead ECG AND the patient meeting the criteria according to the SJANT coronary artery reperfusion checklist and LWI.

**IV**

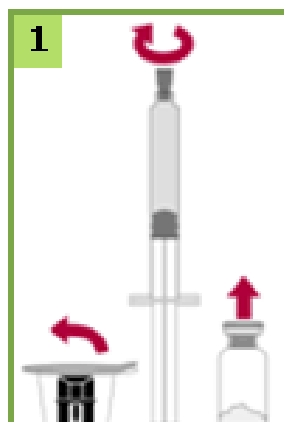
Weight calculated dose (as listed below) administered into a pre-existing IV line containing sodium chloride 0.9% over 10 seconds.

Patient weight (kg)	Tenecteplase dose to be administered (mg)	Corresponding volume of reconstituted solution (mL)
< 60	30	6
60 – < 70	35	7
70 – < 80	40	8
80 – < 90	45	9
≥ 90	50	10

Paediatric dosages

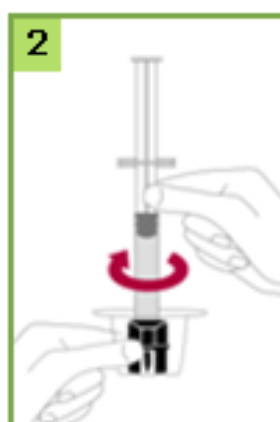
Note: SJANT officers are not authorised to administer tenecteplase to paediatric patients.

Open the
box of the
vial-adapter

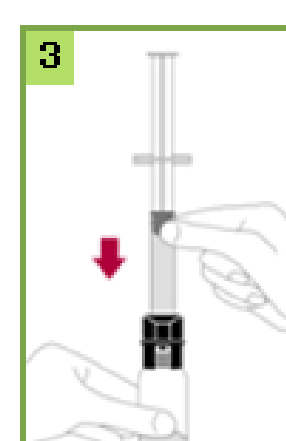


Remove tip
cap from
syringe.

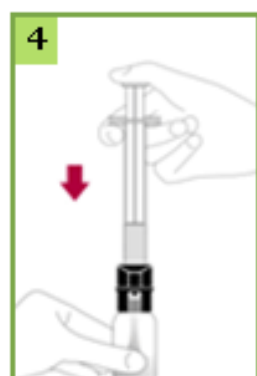
Remove the
flip-off cap
from the
vial.



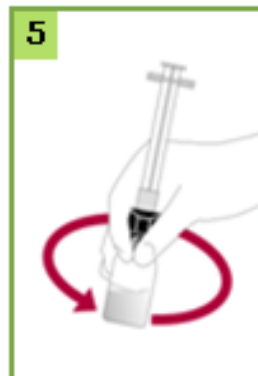
Crew pre-
filled syringe
on the vial-
adapter
tightly.



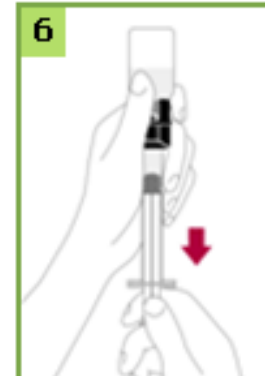
Penetrate the
vial stopper
in the middle
with the spike
of the
vial-adapter.



Add the
water for
injections by
pushing the
syringe
plunger
slowly down
to avoid
foaming.



Reconstitute
by swirling
gently.



Invert vial/
syringe and
transfer
appropriate
volume of
solution into
syringe
according
to dosing
instructions.



Disconnect
syringe from the
vial-adapter.
Now solution is
ready for i.v.
Bolus injection.

SJANT Coronary Artery Reperfusion Checklist

PATIENT DETAILS			
Patient Surname	Given Name		Incident Number
Age	Date		
INDICATIONS – If the answer is NO or UNSURE to ANY of the following do NOT administer any reperfusion drugs			
Ongoing ischaemic chest pain < 6 hours duration?			
12-Lead ECG with persistent ST-elevation ≥ 1 mm in at least two contiguous limb leads AND/OR 2mm in two contiguous chest leads $V_1 - V_2$			
Normal QRS width (< 0.12 seconds) OR right bundle branch block?			
Patient is < 75 years of age?			
Systolic BP < 180 (at all times during current acute episode)?			
Diastolic BP < 110 (at all times during current acute episode)?			
CGS = 15?			
CONTRA-INDICATIONS – If the answer is YES or UNSURE to ANY of the following do NOT administer any reperfusion drugs			
Known allergy to Tenecteplase, Enoxaparin/Heparin or Clopidogrel (as appropriate)?			
Left BBB identified on 12-Lead ECG?			
Current or history of thrombocytopenia?			
Active tuberculosis?			
Known structural nervous system disease, in particular a malignant intracranial neoplasm (primary or metastatic)?			
Known structural cerebral vascular lesion (e.g. arteriovenous malformation)?			
Prior intracranial haemorrhage?			
Ischaemic stroke or TIA within last 3 months?			
History of significant closed head/ facial trauma within last 3 months?			
Suspected aortic dissection (including new neurological symptoms)?			
History of major trauma or surgery (including laser eye surgery) within last 6 weeks?			
Internal bleeding (e.g. GI/urinary tract bleed) within last 4 weeks?			
Active bleeding or clotting problem (haemophilia etc), excluding menses?			
Current use of anticoagulants e.g. Warfarin (excluding Aspirin or Plavix)?			
Non-compressible vascular punctures?			
Active peptic ulcer, as evidenced by recent melaena within last 6 weeks, or active ongoing symptoms prior to this cardiac event?			
Prolonged (> 10 minutes) CPR?			
Known to be pregnant or delivered within last 2 weeks?			
History of serious systemic disease (e.g. advanced/terminal cancer, severe liver or kidney disease)?			
Resident of an aged care facility requiring cares with daily living and GCS < 15?			
Acute myocardial infarction the setting of acute trauma?			

SJANT Coronary Artery Reperfusion Checklist

(back of form)

CONSENT		
All patients eligible for reperfusion MUST read the following and, if consent is given, the patient must sign the bottom section of this form.		
It is likely that you are suffering a heart attack, and your treatment options include: (choose one of the following as appropriate)		
- a drug which reduces new clot formation called ENOXAPARIN; and - a clot dissolving drug called TENECTEPLASE; and - a drug called CLOPIDOGREL which will assist in preventing further clot formation. (cross out if not applicable)		
OR		
- a drug which reduces new clot formation called HEPARIN; and - a drug called CLOPIDOGREL which will assist in keeping a stent open should a cardiologist perform this procedure at hospital. (cross out if not applicable)		
The sooner you receive these drugs, the lower the risk from the heart attack – which is why it is recommended that the treatment is started as soon as possible. These drugs can cause serious side effects in a small number of patients but the risks attached to this treatment are much less than the likely benefit. I will now give you more details. (choose the appropriate paragraph)		
Enoxaparin/Tenecteplase/Clopidogrel therapy: Treatment at this stage improves the chances of survival by 20 – 25% but it can sometimes cause serious bleeding. The biggest risk is potentially life-threatening stroke which affects about 1 patient in every 100. Other significant bleeding which is not normally life-threatening can occur in about 4 in 100 patients. Some patients also have allergic reactions and other side effects that do not usually cause any major problem. Heparin/Clopidogrel therapy: Heparin and Clopidogrel can cause life threatening bleeding, albeit the risk is very small. The administration of these drugs in this setting has been recommended by national and international cardiology bodies. Medical records: I give permission for the SJANT to access my hospital record for information relating to this procedure.		
Patient signature	X	.....
PARAMEDIC DETAILS		
I certify that I have completed and read the SJANT Coronary Artery Reperfusion Checklist and the patient has given/has not given consent for the administration of the approved drugs. (circle appropriate response)		
Number	Signature	

[Home](#)**Drug class**

Not applicable

Pharmacology

Water for injection is sterile water used to dilute or dissolve drugs.

Metabolism

Not applicable

Presentation

- Ampoule, 10mL or 20 mL *Water for injection*

Onset

Not applicable

Duration

Not applicable

Half-life (elimination)

Not applicable

Schedule

- Unscheduled

Routes of administration

Intravenous injection (IV)

Intramuscular injection (IM)

Intraosseous (IO)

Indications

- **To dissolve and dilute drugs** for the purpose of IM, IV, NEB or IO administration.

Contraindications

- Nil

Precautions

- Nil

Side effects

- Nil

Adult dosages

To dissolve and dilute drugs for the purpose of IM, IV or IO administration

SAP	Para	ICP	IM	As documented on DTP
	Para	ICP	IV	As documented on DTP
	Para	ICP	IO	As documented on DTP

Special notes

- Under no circumstances should water for injection be injected unless it has been used to dissolve or dilute drugs for administration.
- SJANT medications approved for dilution with water for include: ceftriaxone, salbutamol, hydrocortisone and ketamine. (Refer to individual DTPs.)
- Water for injection may be used to assist with the administration of oral medication (aspirin and paracetamol) if required.
- Volumes of water for injection used as a flush, post iv drug administration, should be approximately;
  - Newborn - 2 mL
  - Infant - 5 mL
  - Child - 10 mL
  - Adult - 20 mL

Paediatric dosages

To dissolve and dilute drugs for the purpose of IM, IV or IO administration

SAP	Para	ICP	IM	As documented on DTP
		ICP	IV	As documented on DTP
	Para	ICP	IO	As documented on DTP

[Home](#)

Medical Abbreviations

A

AAA	abdominal aortic aneurysm
ABG	arterial blood gas
ACLS	advanced care life support
ACS	acute coronary syndrome
AED	automatic external defibrillator
AF	atrial fibrillation
AFlut	atrial flutter
AICD	automated implantable cardioverter defibrillator
ALOC	altered level of consciousness
ALS	advanced life support
AMI	acute myocardial infarction
amp	ampoule
ART	arterial line (used for invasive pressure monitoring)
ASUM	Australian society for ultrasound in medicine
ATLS	advanced trauma life support
AV	atrioventricular

B

BGL	blood glucose level
BLS	basic life support
BP	blood pressure
BSA	body surface area
BVM	bag valve mask

C

CABG	coronary artery bypass graft
CAD	coronary artery disease
CAL	Chronic airway limitations
cap	capsule
CCB	calcium channel blocker
CCF	congestive cardiac failure
CCU	coronary care unit
CF	cystic fibrosis

CHF	congestive heart failure
cmHg	centimetres of mercury
CNS	central nervous system
COAD	chronic obstructive airway disease
c/o	complaining of
CO	carbon monoxide
CO ₂	carbon dioxide
COPD	chronic obstructive pulmonary disease
c/t	called to
CPAP	continuous positive airways pressure
CPR	cardiopulmonary resuscitation
CSF	cerebrospinal fluid
CT	computerised tomography
CVA	cerebrovascular accident
CVL	central venous line
CWMS	colour warmth movement sensation
CXR	chest x-ray

D

DCCS	direct current counter shock
DCI	decompression illness
DIC	disseminated intravascular coagulation
DKA	diabetic ketoacidosis
DM	diabetes mellitus
DOA	dead on arrival
DVT	deep vein thrombosis

E

EBL	estimated blood loss
ECG	electrocardiogram
EEG	electroencephalograph
EMD	electromechanical dissociation
ENT	ear, nose and throat
ETT	endotracheal tube
ePCR	electronic patient care record

F

FAST	focused abdominal sonography for trauma
FBC	full blood count
FiO ₂	fractional inspired oxygen concentration
FR	first responder

G

g	Gram(s)
GA	general anaesthesia
GABA	gamma amino butyric acid
GCS	Glasgow coma scale
GI	gastrointestinal
GIT	gastrointestinal tract
GSW	gun shot wound
GU	gastric ulcer

H

Hb	haemoglobin
HI	head injury
hrs	hours
Hx	history

I

IM	intramuscular
IO	Intraosseous
IV	intravenous
ICC	intercostal catheter
ICD	implantable cardioverter defibrillator
ICP	intracranial pressure
ICP	intensive care paramedic
ICU	intensive care unit
IDC	in-dwelling catheter
ILCOR	international liaison committee on resuscitation
INH	inhalation
inj	injection

INR international normalised ration (of prothrombin time)
 IPPV intermittent positive pressure ventilations
 IV intravenous
 IV inf intravenous infusion

J

J joule
 JVP jugular venous pressure
 JVD jugular venous distension

K

kg kilogram
 Ko'd knocked out
 KSAR known severe adverse reactions

L

L) left
 LBBB left bundle branch block
 LLQ left lower quadrant
 LMA laryngeal mask airway
 L/min litres per min
 LMA laryngeal mask airway
 LMP last menstrual period
 LOC level of consciousness
 LUQ left upper quadrant
 LVF left ventricular failure
 LWI local work instruction

M

MAOIs monoamine oxidase inhibitors
 MAP mean arterial pressure
 Max Maximum

mcg microgram
 mg milligram
 MI myocardian infarction
 MILS manual inline stabilisation
 mL millimetre(s)
 mmHg millimetres of mercury
 mmol millimole

N

n/a not applicable
 NAD nil abnormality detected
 NAS intranasal
 NC nasal cannulae
 NEB nebulised
 NGT nasogastric tube
 NMDA N-Methyl D-Aspartate
 NOF neck of femur
 NSAIDs non steroidal anti inflammatory drugs
 NSTEMI non-ST elevation of myocardial infarct
 NTPol Northern Territory Police Service

O

O₂ oxygen
 O/A on arrival
 O/E on examination
 ODT Orally disintegrating tablet

P

PaCO₂ partial pressure of carbon dioxide (arterial)
 PaO₂ partial pressure of oxygen (arterial)
 PAC premature atrial contraction
 PCI percutaneous coronary intervention (coronary angioplasty)
 PE pulmonary embolism
 PEA pulseless electrical activity
 PEF peak expiratory flow
 PEARL pupils equal and reactive to light
 PIB pressure immobilisation bandage
 PJC premature junctional contraction
 PMHx past medical history

PO per oral
 POC products of conception
 PPE personal protective equipment
 PPH post-partum haemorrhage
 p.r per rectum
 prn when required
 Pt patient
 PV per vaginal
 PVC premature ventricular contraction

R

R) right
 RBBB right bundle branch block
 RLQ right lower quadrant
 ROSC return of spontaneous circulation
 RSI rapid sequence induction
 RTC road traffic crash
 RUQ right upper quadrant
 RV right ventricle
 RVF right ventricular failure
 Rx treatment
 RxBA treatment before arrival

S

SaO₂ oxygen saturation
 SB sinus bradycardia
 sc subcutaneous
 SFM simple face mask
 STJANT St John Ambulance Northern Territory
 SI sublingual
 SNRI serotonin and noradrenaline re-uptake inhibitor
 SOB shortness of breath
 SR sinus rhythm
 SSRI selective serotonin re-uptake inhibitor
 ST sinus tachycardia
 STEMI ST elevation myocardial infarction
 SUBCUT subcutaneous
 SUBLING sublingual
 SVT supraventricular tachycardia

T

TCA	tricyclic antidepressant
TCP	transcutaneous pacing
TIA	transient ischaemic attack
TNK	tenecteplase
Tx	transport

U

URTI	upper respiratory tract infection
UTI	urinary tract infection

V

V/Q	ventilation perfusion (lung scan)
VEB	ventricular ectopic beat
VF	ventricular fibrillation
VT	ventricular tachycardia
WNL	within normal limits

Y

y/o	year old

Miscellaneous

#	fracture
1/60	one minute
1/24	one hour
1/7	one day
1/52	one week
1/12	one month
<	less than
>	greater than
≤	less than or equal to
≥	greater than or equal to