

**VICTORIAN**  
**CLINICAL PRACTICE GUIDELINES**  
**MICA DRUG**  
**STUDY CARDS**



**Version 3.0**

**August 2009**



# READ BEFORE USE

The Drug Study Cards provided in this booklet are designed as a learning tool for the May 2009 Victorian Ambulance Service Clinical Practice Guidelines. These cards must not be used as a replacement to the Clinical Practice Guidelines, but rather as an adjunct to assist in their learning.

To assemble the study cards, this booklet should be printed double sided (printer setting - duplex ) and in colour to highlight important components of each guideline. Following printing, laminate and cut out each card.

**The author accepts no responsibility for any errors in these cards and cannot be held liable for any issues arising from their use. In using these cards, the user accepts all liabilities arising from their use.**



What IsThe  
**Presentation**  
Of  
**Adrenaline**

What IsThe  
**Pharmacology**  
Of  
**Adrenaline**

What Are The  
**Actions**  
Of  
**Adrenaline**

What IsThe  
**Metabolism**  
Of  
**Adrenaline**

What Are The  
**Primary Emergency**  
**Indications**  
Of  
**Adrenaline**

What Are The  
**Contraindications**  
Of  
**Adrenaline**

What Are The  
**Precautions**  
Of  
**Adrenaline**

What Is the  
**Administration Route**  
For  
**Adrenaline**

What Are The  
**Side Effects**  
Of  
**Adrenaline**

What Are The  
**Special Notes**  
Of  
**Adrenaline**

A naturally occurring Alpha and Beta-adrenergic stimulant

1 mg in 1ml amp (1:1,000)  
1mg in 10ml amp (1:10,000)

By monoamine oxidase and other enzymes in blood, liver and around nerve endings

Excreted by the kidneys

Hypovolaemic shock without adequate fluid replacement

- Increases pulse rate by increasing S.A. Node firing rate ( $\beta_1$ )
- Increases conduction velocity through the A.V. Node ( $\beta_1$ )
- Increases myocardial contractility ( $\beta_1$ )
- Increases irritability of ventricles ( $\beta_1$ )
- Causes bronchodilatation ( $\beta_2$ )
- Causes peripheral vasoconstriction ( $\alpha$ )

- Persistent VF or unconscious pulseless VT
- Asystole
- Electro-mechanical dissociation/PEA
- Inadequate perfusion (Cardiogenic)
- Inadequate Perfusion (Non Cardiogenic – Non Hypovolaemic)
- Anaphylactic reactions
- Severe asthma with no IV Access
- Asthma with no BP
- Croup or suspected croup
- Bradycardia with poor perfusion

- IV
- IM
- Nebulised
- ETT
- IV Infusion
- IO

- Elderly Pts
- Pts with cardiovascular disease
- Pts on monoamine oxidase (MAO) inhibitors
- Pts on Beta blockers as higher doses may be required

- Sinus tachycardia
- Supraventricular arrhythmias
- Ventricular arrhythmias
- Hypertension
- Pupillary dilatation
- May increase size of myocardial infarction
- Anxiety/Palpitations

- IV Adrenaline should be reserved for life threatening situations.
- IV Onset

What Is The  
**Presentation**  
Of  
**Amiodarone**

What Is The  
**Pharmacology**  
Of  
**Amiodarone**

What Are The  
**Actions**  
Of  
**Amiodarone**

What Is The  
**Metabolism**  
Of  
**Amiodarone**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Amiodarone**

What Are The  
**Contraindications**  
Of  
**Amiodarone**

What Are The  
**Precautions**  
Of  
**Amiodarone**

What Is the  
**Administration Route**  
For  
**Amiodarone**

What Are The  
**Side Effects**  
Of  
**Amiodarone**

What Are The  
**Special Notes**  
Of  
**Amiodarone**

A Class III  
anti-arrhythmic agent

150mg in 3ml ampoule

By the liver

Anti-arrhythmic

- Nil of significance in Pts with VF or Pulseless VT refractory to cardioversion
- Inadequate and rapidly deteriorating perfusion or Pregnancy in Pts with VT
- VF or Pulseless VT refractory to cardioversion
- Sustained or recurrent VT

IV

Nil of significance in  
above indications

- Amiodarone is incompatible with saline. Glucose 5% must be used as dilutant when administered to the conscious Pt.
- An intravenous infusion of Amiodarone may be required during interhospital transfer. This will be prescribed by the referring physician and will normally be at a rate of 15mg/kg/day minimum.
- Hypotension
- Bradycardia

What IsThe  
**Presentation**  
Of  
**Aramine**

What IsThe  
**Pharmacology**  
Of  
**Aramine**

What Are The  
**Actions**  
Of  
**Aramine**

What IsThe  
**Metabolism**  
Of  
**Aramine**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Aramine**

What Are The  
**Contraindications**  
Of  
**Aramine**

What Are The  
**Precautions**  
Of  
**Aramine**

What Is the  
**Administration Route**  
For  
**Aramine**

What Are The  
**Side Effects**  
Of  
**Aramine**

What Are The  
**Special Notes**  
Of  
**Aramine**

A synthetic adrenergic stimulant with primarily Alpha effects

10mg in 1ml amp

By monoamine oxidase and other enzymes in blood, liver and around nerve endings and excreted by the kidneys

- Causes peripheral vasoconstriction ( $\alpha$ )
- Increases myocardial contractility ( $\beta_1$ )
- Increases irritability of the ventricles ( $\beta_1$ )

Nil in the above setting

- SVT associated with inadequate perfusion and a BP <100 Adult
- Inadequate to extremely poor perfusion secondary to the combination of Sildenafil "Viagra", Vardenafil "Levitra" or Tadalafil "Cialis" and Glyceryl Trinitrate administration

IV

- Causes tissue necrosis, avoid leakage of the drug into the tissues
- Do not raise blood pressure over 90-100 systolic

Nil

- Sinus tachycardia
- Ventricular arrhythmias
- Hypertension

What Is The  
**Presentation**  
Of  
**Aspirin**

What Is The  
**Pharmacology**  
Of  
**Aspirin**

What Are The  
**Actions**  
Of  
**Aspirin**

What Is The  
**Metabolism**  
Of  
**Aspirin**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Aspirin**

What Are The  
**Contraindications**  
Of  
**Aspirin**

What Are The  
**Precautions**  
Of  
**Aspirin**

What Is the  
**Administration Route**  
For  
**Aspirin**

What Are The  
**Side Effects**  
Of  
**Aspirin**

What Are The  
**Special Notes**  
Of  
**Aspirin**

An analgesic, antipyretic, anti-inflammatory and antiplatelet aggregation agent.

- 300mg chewable tablets
- 300mg soluble or water dispersible tablets

Converted to salicylate in the gut mucosa and liver, excreted mainly by the kidneys

- Reduces platelet aggregation
- Inhibits synthesis of prostaglandins - anti-inflammatory actions

- Hypersensitivity to aspirin/salicylates
- Actively bleeding peptic ulcers
- Bleeding disorders
- Suspected dissecting aortic aneurysm
- Chest pain associated with psychostimulant overdose if BP >160

To minimise platelet aggregation and thrombus formation in order to retard the progression of coronary artery thrombosis in acute coronary syndrome

Oral

- Peptic ulcer
- Asthma
- Pts on anti-coagulants, e.g. Warfarin

- Aspirin is contraindicated for use in acute febrile illness in children and adolescents
- The anti-platelet effects of Aspirin persist for the natural life of platelets

- Heartburn, nausea, gastrointestinal bleeding
- Hypersensitivity reactions
- Increased bleeding time

What Is The  
**Presentation**  
Of  
**Atrovent**

What Is The  
**Pharmacology**  
Of  
**Atrovent**

What Are The  
**Actions**  
Of  
**Atrovent**

What Is The  
**Metabolism**  
Of  
**Atrovent**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Atrovent**

What Are The  
**Contraindications**  
Of  
**Atrovent**

What Are The  
**Precautions**  
Of  
**Atrovent**

What Is the  
**Administration Route**  
For  
**Atrovent**

What Are The  
**Side Effects**  
Of  
**Atrovent**

What Are The  
**Special Notes**  
Of  
**Atrovent**

Anticholinergic  
bronchodilator

250mcg in 1ml  
nebule or polyamp

Excreted by the kidneys

Allows bronchodilatation by  
inhibiting cholinergic  
bronchomotor tone  
(i.e. blocks vagal reflexes  
which mediate  
bronchoconstriction)

Known hypersensitivity to At-  
ropine or its derivatives

Severe respiratory  
distress associated with  
bronchospasm

Nebulised in combination  
with Salbutamol

- Glaucoma
- Avoid contact with eyes

- There have been isolated reports of ocular complications (mydriasis, increased intraocular pressure, acute angle glaucoma, eye pain) as a result of direct eye contact of Ipratropium Bromide formulations
- The nebuliser mask must therefore be fitted properly during inhalation and care taken to avoid Ipratropium Bromide solution entering the eyes
- Ipratropium Bromide must be nebulised in conjunction with Salbutamol and is to be administered as a single dose only

- Headache
- Nausea
- Dry mouth
- Skin Rash
- Tachycardia (rare)
- Palpitations (rare)
- Acute angle closure glaucoma secondary to direct eye contact

What Is The  
**Presentation**  
Of  
**Atropine**

What Is The  
**Pharmacology**  
Of  
**Atropine**

What Are The  
**Actions**  
Of  
**Atropine**

What Is The  
**Metabolism**  
Of  
**Atropine**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Atropine**

What Are The  
**Contraindications**  
Of  
**Atropine**

What Are The  
**Precautions**  
Of  
**Atropine**

What Is the  
**Administration Route**  
For  
**Atropine**

What Are The  
**Side Effects**  
Of  
**Atropine**

What Are The  
**Special Notes**  
Of  
**Atropine**

An anticholinergic agent

- 0.6 mg in 1ml amp
- 1.2 mg in 1ml amp

- By the liver and
- Excreted mainly by the kidneys

- Inhibits the actions of acetylcholine on post-ganglionic cholinergic nerves at the neuro-effector site, e.g. as a vagal blocker and allows sympathetic effect to:
  - 1.increase pulse rate by increasing S.A. Node firing rate
  - 2.increase conduction velocity through the A.V. Node
- Antidote to reverse the effects of cholinesterase inhibitors, e.g. organophosphate insecticides, at the post-ganglionic neuro-effector sites of cholinergic nerves, i.e. reduces the excessive salivary, sweat, gastrointestinal, and bronchial secretions, and relaxes smooth muscles.

Nil of significance in the above indications

- Bradycardia with poor perfusion

- Asystole

- PEA

- Organophosphate poisoning with excessive cholinergic effects

- Atrial flutter

- Atrial fibrillation

- Do not increase heart rate above 100/min except in children under 6 years

- Glaucoma

- Tachycardia

- Palpitations

- Dry mouth

- Dilated pupils

- Visual blurring

- Retention of urine

- Confusion, restlessness (in large doses)

- Hot, dry skin (in large doses)

- Intravenous

- Endotracheal

Nil

What Is The  
**Presentation**  
Of  
**Ceftriaxone**

What Is The  
**Pharmacology**  
Of  
**Ceftriaxone**

What Are The  
**Actions**  
Of  
**Ceftriaxone**

What Is The  
**Metabolism**  
Of  
**Ceftriaxone**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Ceftriaxone**

What Are The  
**Contraindications**  
Of  
**Ceftriaxone**

What Are The  
**Precautions**  
Of  
**Ceftriaxone**

What Is the  
**Administration Route**  
For  
**Ceftriaxone**

What Are The  
**Side Effects**  
Of  
**Ceftriaxone**

What Are The  
**Special Notes**  
Of  
**Ceftriaxone**

Cephalosporin Antibiotic

1g sterile powder in vial

Excreted unchanged in urine  
(33% - 67%) and in bile

Antibiotic

Allergy to Cephalosporin Antibiotics

- Suspected Meningococcal Septicaemia
- Severe Sepsis (Consult only)

- IV (preferred)
- IM (if IV access unable to be obtained)

Allergy to Penicillin Antibiotics

- Usual Dose: Adult 1g, Child 50mg/kg
- Ceftriaxone IV must be made up to 10ml using sterile water and dose administered over 2min.
- Ceftriaxone IM must be made up to 4ml using 1% Lignocaine and dose administered in lateral upper thigh

- Nausea, Vomiting
- Skin Rash

What Is The  
**Presentation**  
Of  
Dexamethasone

What Is The  
**Pharmacology**  
Of  
Dexamethasone

What Are The  
**Actions**  
Of  
Dexamethasone

What Is The  
**Metabolism**  
Of  
Dexamethasone

What Are The  
**Primary Emergency  
Indications**  
Of  
Dexamethasone

What Are The  
**Contraindications**  
Of  
Dexamethasone

What Are The  
**Precautions**  
Of  
Dexamethasone

What Is the  
**Administration Route**  
For  
Dexamethasone

What Are The  
**Side Effects**  
Of  
Dexamethasone

What Are The  
**Special Notes**  
Of  
Dexamethasone

A corticosteroid secreted by the adrenal cortex

8mg in 2ml Glass Vial

By the liver and other tissues, and excreted predominantly by the kidneys

Relieves inflammatory reactions and provides immunosuppression

Known hypersensitivity to Dexamethasone

- Bronchospasm associated with acute respiratory distress not responsive to nebulised Salbutamol
- Anaphylaxis
- Acute Exacerbation of COPD
- Severe Sepsis (Consult only)

- IV
- IM

Solutions which are not clear or are contaminated should be discarded

Does not contain an antimicrobial agent, therefore use solution immediately and discard any residue

Nil of significance in the above indications

<p>What Is The <b>Presentation</b> Of <b>Dextrose 5%</b></p>	<p>What Is The <b>Pharmacology</b> Of <b>Dextrose 5%</b></p>
<p>What Are The <b>Actions</b> Of <b>Dextrose 5%</b></p>	<p>What Is The <b>Metabolism</b> Of <b>Dextrose 5%</b></p>
<p>What Are The <b>Primary Emergency Indications</b> Of <b>Dextrose 5%</b></p>	<p>What Are The <b>Contraindications</b> Of <b>Dextrose 5%</b></p>
<p>What Are The <b>Precautions</b> Of <b>Dextrose 5%</b></p>	<p>What Is the <b>Administration Route</b> For <b>Dextrose 5%</b></p>
<p>What Are The <b>Side Effects</b> Of <b>Dextrose 5%</b></p>	<p>What Are The <b>Special Notes</b> Of <b>Dextrose 5%</b></p>

An isotonic crystalloid solution

Composition:

- Sugar: 5% dextrose
- Water

100ml infusion soft pack

Dextrose:

- Broken down in most tissues
- Stored in liver and muscle as glycogen

- Provides a small source of energy

Water:

- Excreted by the kidneys
- Distributed throughout total body water, mainly in the extracellular fluid compartment

- Supplies body water

Nil of significance in the above indication

Vehicle for dilution and administration of intravenous emergency drugs

Intravenous infusion

Nil of significance in the above indication

Nil

Nil of significance in the above indication

<p>What Is The <b>Presentation</b> Of <b>Dextrose 10%</b></p>	<p>What Is The <b>Pharmacology</b> Of <b>Dextrose 10%</b></p>
<p>What Are The <b>Actions</b> Of <b>Dextrose 10%</b></p>	<p>What Is The <b>Metabolism</b> Of <b>Dextrose 10%</b></p>
<p>What Are The <b>Primary Emergency Indications</b> Of <b>Dextrose 10%</b></p>	<p>What Are The <b>Contraindications</b> Of <b>Dextrose 10%</b></p>
<p>What Are The <b>Precautions</b> Of <b>Dextrose 10%</b></p>	<p>What Is the <b>Administration Route</b> For <b>Dextrose 10%</b></p>
<p>What Are The <b>Side Effects</b> Of <b>Dextrose 10%</b></p>	<p>What Are The <b>Special Notes</b> Of <b>Dextrose 10%</b></p>

A slightly hypertonic crystalloid solution

Composition:

- Sugar: 5% dextrose
- Water

50g in a 500 ml infusion soft pack

Dextrose:

- Broken down in most tissues
- Stored in liver and muscle as glycogen

Water:

- Excreted by the kidneys
- Distributed throughout total body water, mainly in the extracellular fluid compartment

• Provides a source of energy

• Supplies body water

Nil of significance in the above indication

Diabetic hypoglycaemia (BGL <4mmol/l) in Pts with an altered conscious state who are unable to self-administer oral glucose

Intravenous infusion

Nil of significance in the above indication

Nil

Nil of significance in the above indication

What Is The  
**Presentation**  
Of  
**Fentanyl**

What Is The  
**Pharmacology**  
Of  
**Fentanyl**

What Are The  
**Actions**  
Of  
**Fentanyl**

What Is The  
**Metabolism**  
Of  
**Fentanyl**

What Are The  
**Primary Emergency**  
**Indications**  
Of  
**Fentanyl**

What Are The  
**Contraindications**  
Of  
**Fentanyl**

What Are The  
**Precautions**  
Of  
**Fentanyl**

What Is the  
**Administration Route**  
For  
**Fentanyl**

What Are The  
**Side Effects**  
Of  
**Fentanyl**

What Are The  
**Special Notes**  
Of  
**Fentanyl**

A synthetic narcotic analgesic

By the liver and excreted  
by the kidneys

- 100mcg in 2ml amp
- 900mcg in 3ml (IN use only)
- Central Nervous System effects:
  - Depression, leading to analgesia
  - Respiratory depression, leading to apnoea
- Dependence (addiction)
- Cardiovascular effects:
  - Decreases conduction velocity through the A.V. Node
- Known hypersensitivity
- Analgesia
- Severe undiagnosed headache
- Intubation Facilitated by Sedation
- Late 2nd Stage Labour
- Rapid Sequence Intubation
- IV
- Elderly Pts
- Impaired renal/hepatic function
- Respiratory depression, e.g. COPD
- Current asthma
- Pts on monoamine oxidase inhibitors
- Known addiction to narcotics
- IN
- Respiratory depression
- Apnoea
- Fentanyl is a Schedule 8 drug under the Poisons Act and its use must be carefully controlled with accountability and responsibility.
- Rigidity of the diaphragm and intercostal muscles
- Respiratory depression can be reversed with Naloxone Hydrochloride.
- Bradycardia
- 100mcg Fentanyl is equivalent in analgesic activity to 10mg Morphine.

What Is The  
**Presentation**  
Of  
Glucagon

What Is The  
**Pharmacology**  
Of  
Glucagon

What Are The  
**Actions**  
Of  
Glucagon

What Is The  
**Metabolism**  
Of  
Glucagon

What Are The  
**Primary Emergency  
Indications**  
Of  
Glucagon

What Are The  
**Contraindications**  
Of  
Glucagon

What Are The  
**Precautions**  
Of  
Glucagon

What Is the  
**Administration Route**  
For  
Glucagon

What Are The  
**Side Effects**  
Of  
Glucagon

What Are The  
**Special Notes**  
Of  
Glucagon

A hormone normally secreted by the pancreas

1mg (IU) in 1ml Hypokit

Mainly by the liver, also by the kidneys and in the plasma

Causes an increase in blood glucose concentration by converting stored liver glycogen to glucose

Nil of significance in the above indication

Diabetic hypoglycaemia (BGL <4mmol/l) in Pts with an altered conscious state who are unable to self-administer oral glucose

IM

Nil of significance in the above indication

Not all Pts will respond to Glucagon, for example those with inadequate glycogen storage in the liver – alcoholics, malnourishment

Nausea and vomiting (rare)

What Is The  
**Presentation**  
Of  
**GTN**

What Is The  
**Pharmacology**  
Of  
**GTN**

What Are The  
**Actions**  
Of  
**GTN**

What Is The  
**Metabolism**  
Of  
**GTN**

What Are The  
**Primary Emergency  
Indications**  
Of  
**GTN**

What Are The  
**Contraindications**  
Of  
**GTN**

What Are The  
**Precautions**  
Of  
**GTN**

What Is the  
**Administration Route**  
For  
**GTN**

What Are The  
**Side Effects**  
Of  
**GTN**

What Are The  
**Special Notes**  
Of  
**GTN**

Principally, a vascular smooth muscle relaxant

By the liver

- Known hypersensitivity
- Systolic blood pressure <110 (tablet)
- Systolic blood pressure <90 (patch)
- Sildenafil "Viagra" or Vardenafil "Levitra" administration in the previous 24 hr. or Tadalafil "Cialis" administration in the previous 4 days (PED5 inhibitors)
- Heart rate >150
- Bradycardia HR <50 (exclAutonomic Dysreflexia)
- Ventricular Tachycardia
- Inferior STEMI with systolic BP <160
- Right Ventricular Infarct

• Buccal/Sub-lingual

• Transdermal

• IV Infusion - interhospital transfer only

• Storage:

- Glyceryl Trinitrate is susceptible to heat and moisture.
- Make sure that tablets are stored in their original, light-resistant, tightly sealed bottles.
- tablets should be discarded and replaced after 1 month.
- The foil pack of the patches should be intact.
- patches should be discarded prior to use by date.
- Do not administer the patient's own medication, as its storage may not have been in optimum conditions or may be old.
- Since both men and women can be prescribed "VIAGRA", "LEVITRA" or "CIALIS", all patients should be asked if and when they last have had the drug to determine if Glyceryl Trinitrate is contraindicated.
- Glyceryl Trinitrate by intravenous infusion may be required for an interhospital Transfer as per Doctor's orders .

• 0.6mg tablets

• Transdermal GTN Patch (0.4mg/hr)

- Venous dilatation promotes venous pooling and reduces venous return to the heart (reduces preload)
- Arterial dilatation reduces systemic vascular resistance and arterial pressure (reduces afterload)
- The effects of the above are:
  - ◇ reduced myocardial oxygen demand
  - ◇ reduced systolic, diastolic and mean arterial blood pressure, whilst usually maintaining coronary perfusion pressure
  - ◇ Mild collateral coronary arterial dilatation may improve blood supply to ischaemic areas of myocardium
  - ◇ Mild tachycardia secondary to slight fall in blood pres-

• Chest pain associated with Acute Coronary Syndrome

Acute Pulmonary Oedema

• Hypertension associated with Acute Coronary Syndrome

• Autonomic Dysreflexia

• No previous administration

• Elderly Pts

• Recent acute myocardial infarction

• Tachycardia

• Hypotension

• Headache

• Skin flushing (uncommon)

• Bradycardia (occasionally)

What Is The  
**Presentation**  
Of  
**Lasix**

What Is The  
**Pharmacology**  
Of  
**Lasix**

What Are The  
**Actions**  
Of  
**Lasix**

What Is The  
**Metabolism**  
Of  
**Lasix**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Lasix**

What Are The  
**Contraindications**  
Of  
**Lasix**

What Are The  
**Precautions**  
Of  
**Lasix**

What Is the  
**Administration Route**  
For  
**Lasix**

What Are The  
**Side Effects**  
Of  
**Lasix**

What Are The  
**Special Notes**  
Of  
**Lasix**

A diuretic

- 20mg in 2ml amp
- 40mg in 4ml amp

Excreted by the kidneys

- Causes venous dilatation and reduces venous return
- Promotes diuresis

Nil of significance in the above indication

Pulmonary Oedema

IV

Hypotension

- The effect of vasopressor drugs will often be reduced after treatment with Frusemide

• **IV**

Onset: 5min  
Peak: 20-60min  
Duration: 2-3hrs

Hypotension

What Is The  
**Presentation**  
Of  
**Lignocaine**

What Is The  
**Pharmacology**  
Of  
**Lignocaine**

What Are The  
**Actions**  
Of  
**Lignocaine**

What Is The  
**Metabolism**  
Of  
**Lignocaine**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Lignocaine**

What Are The  
**Contraindications**  
Of  
**Lignocaine**

What Are The  
**Precautions**  
Of  
**Lignocaine**

What Is the  
**Administration Route**  
For  
**Lignocaine**

What Are The  
**Side Effects**  
Of  
**Lignocaine**

What Are The  
**Special Notes**  
Of  
**Lignocaine**

A local anaesthetic agent

50mg in 5ml amp (1%)

- By the liver (90%)
- Excreted unchanged by the kidneys (10%)

Prevents initiation and transmission of nerve impulses causing local anaesthesia

Known hypersensitivity

Diluent for Ceftriaxone for IM administration in suspected meningococcal disease

Intramuscular with Ceftriaxone only

When using Lignocaine 1% as diluent for IM Ceftriaxone it is important to rule out inadvertent IV administration due to potential CNS complications

Nil

Nil, unless inadvertent intravenous administration

What IsThe  
**Presentation**  
Of  
**Maxalon**

What IsThe  
**Pharmacology**  
Of  
**Maxalon**

What Are The  
**Actions**  
Of  
**Maxalon**

What Is The  
**Metabolism**  
Of  
**Maxalon**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Maxalon**

What Are The  
**Contraindications**  
Of  
**Maxalon**

What Are The  
**Precautions**  
Of  
**Maxalon**

What Is the  
**Administration Route**  
For  
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What Are The  
**Side Effects**  
Of  
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**Special Notes**  
Of  
**Maxalon**

Antiemetic

10mg in 2ml ampoule

By the liver and excreted by  
the kidneys

- Accelerates gastric emptying and peristalsis
- Mild 5HT<sub>3</sub>-receptor antagonist

- Children
- Suspected bowel obstruction or perforation
- GI haemorrhage

**Nausea/vomiting Adult associated with:**

- Chest pain/discomfort of a cardiac nature
- Opioid administration for pain
- Previously diagnosed Migraine
- Cytotoxic or radiotherapy
- Severe gastroenteritis
- Treatment or prophylaxis in awake spinal immobilised Pts
- Eye trauma

- IV
- IM

Undiagnosed abdominal pain

- Not effective for established motion sickness
- Not effective for nausea prophylaxis in the setting of narcotic administration
- Drowsiness
- Lethargy
- Dry mouth
- Muscle tremor
- Extrapiramidal reactions (usually the dystonic type)

What Is The  
**Presentation**  
Of  
**Midazolam**

What Is The  
**Pharmacology**  
Of  
**Midazolam**

What Are The  
**Actions**  
Of  
**Midazolam**

What Is The  
**Metabolism**  
Of  
**Midazolam**

What Are The  
**Primary Emergency**  
**Indications**  
Of  
**Midazolam**

What Are The  
**Contraindications**  
Of  
**Midazolam**

What Are The  
**Precautions**  
Of  
**Midazolam**

What Is the  
**Administration Route**  
For  
**Midazolam**

What Are The  
**Side Effects**  
Of  
**Midazolam**

What Are The  
**Special Notes**  
Of  
**Midazolam**

## Short acting CNS depressant

- In the liver
- Excreted by the kidneys
- 5mg in 1ml amp
- 15mg in 3ml amp
- Anxiolytic, reducing anxiety
- Sedative
- Anti-convulsant

## Known hypersensitivity to benzodiazepines

- IM
- IV

- Continuous/recurrent seizures
- Intubation Facilitated by Sedation
- Rapid Sequence Intubation
- Post Intubation Sedation *following:*
  - *Unassisted Intubation Adult Paed*
  - *Intubation Facilitated by Sedation*
  - *Rapid Sequence Intubation Adult*
- Sedation to enable synch cardioversion
- Sedation in the agitated
- Pt Sedation in psychostimulant overdose
- Convulsions associated with Lignocaine toxicity

- Reduced doses may be required for the elderly, Pts with chronic renal failure, congestive cardiac failure or shock
- The CNS depressant effects of benzodiazepines are enhanced in the presence of narcotics and other tranquillisers including alcohol
- Can cause severe respiratory depression in Pts with COPD
- Pts with myasthenia gravis

Midazolam is not permitted for use to facilitate the transport of Pts who have been recommended for transport under the Mental Health Act.

- Depressed level of consciousness
- Respiratory depression

If sedation is required in these circumstances then the Act requires that this only be administered by a pre-registered Medical Practitioner or Registered Nurse.

- Loss of airway control
- Hypotension

What IsThe  
**Presentation**  
Of  
**Morphine**

What IsThe  
**Pharmacology**  
Of  
**Morphine**

What Are The  
**Actions**  
Of  
**Morphine**

What Is The  
**Metabolism**  
Of  
**Morphine**

What Are The  
**Primary Emergency**  
**Indications**  
Of  
**Morphine**

What Are The  
**Contraindications**  
Of  
**Morphine**

What Are The  
**Precautions**  
Of  
**Morphine**

What Is the  
**Administration Route**  
For  
**Morphine**

What Are The  
**Side Effects**  
Of  
**Morphine**

What Are The  
**Special Notes**  
Of  
**Morphine**

A narcotic analgesic

10mg in 1ml amp

By the liver and excreted by  
the kidneys

- Known hypersensitivity
- Late second stage of labour

• IV

• IM

• Intravenous infusion

- Morphine Sulphate is a Schedule 8 drug under the Poisons Act and its use must be carefully controlled with accountability and responsibility.
- Side effects of Morphine Sulphate can be reversed with Naloxone Hydrochloride.
- Occasional wheals are seen in the line of the vein being used for IV injection. This is not an allergy, only a histamine release

**Central Nervous System effects:**

- Depression - leading to analgesia
- Respiratory depression
- Depression of cough reflex
- Stimulation - changes of mood, euphoria or dysphoria, vomiting, pin-point pupils
- Dependence (addiction)

**Cardiovascular effects:**

- Vasodilatation
- Decreases conduction velocity through the

- Pain Relief Adult Paed
- Pulmonary Oedema with shortness of breath and full field crackles
- Post Intubation Sedation *following:*
  - *Unassisted Intubation*
  - *Intubation Facilitated by Sedation*
  - *Rapid Sequence Intubation*

- Elderly Pts
- Hypotension
- Respiratory depression
- Current asthma
- Respiratory tract burns
- Known addiction to narcotics
- Acute alcoholism
- Pts on monoamine oxidase inhibitors

**Central Nervous System effects:**

- Drowsiness
- Respiratory depression
- Euphoria
- Nausea, vomiting
- Pin-point pupils
- Addiction

**Cardiovascular effects**

- Hypotension
- Bradycardia

What Is The  
**Presentation**  
Of  
**Narcan**

What Is The  
**Pharmacology**  
Of  
**Narcan**

What Are The  
**Actions**  
Of  
**Narcan**

What Is The  
**Metabolism**  
Of  
**Narcan**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Narcan**

What Are The  
**Contraindications**  
Of  
**Narcan**

What Are The  
**Precautions**  
Of  
**Narcan**

What Is the  
**Administration Route**  
For  
**Narcan**

What Are The  
**Side Effects**  
Of  
**Narcan**

What Are The  
**Special Notes**  
Of  
**Narcan**

A narcotic antagonist

0.4mg in 1ml amp

By the liver

Prevents or reverses the effects of narcotics

Nil of significance in the above indication

Altered Conscious State and respiratory depression secondary to administration of narcotics or related drugs

- IM
- IV

- If Pt is known to be physically dependent on narcotics, be prepared to deal with a combative Pt after administration
- Neonates

Since the duration of action of Naloxone is often less than that of the narcotic used repeated doses may be required.

- Naloxone reverses the effects of narcotics with none of the actions produced by other narcotic antagonists when no narcotic is present in the body. (For example, it does not depress respiration or cause pupillary constriction). In the absence of narcotics, Naloxone has no perceivable effects.
- Following a narcotic associated cardiac arrest Naloxone should not be administered. Maintain assisted ventilation.
- Following head injury Naloxone should not be administered. Maintain assisted ventilation if required.
- In neonates if the mother has had a narcotic analgesic within one hour prior to delivery, the baby may have narcotic related respiratory depression for which diluted

### **Symptoms of narcotic withdrawal:**

- Sweating, goose fesh, tremor
- Nausea and vomiting
- Agitation
- Dilatation of pupils,
- Excessive lacrimation
- Convulsions

<p>What IsThe <b>Presentation</b> Of <b>Normal Saline</b></p>	<p>What IsThe <b>Pharmacology</b> Of <b>Normal Saline</b></p>
<p>What Are The <b>Actions</b> Of <b>Normal Saline</b></p>	<p>What Is The <b>Metabolism</b> Of <b>Normal Saline</b></p>
<p>What Are The <b>Primary Emergency</b> <b>Indications</b> Of <b>Normal Saline</b></p>	<p>What Are The <b>Contraindications</b> Of <b>Normal Saline</b></p>
<p>What Are The <b>Precautions</b> Of <b>Normal Saline</b></p>	<p>What Is the <b>Administration Route</b> For <b>Normal Saline</b></p>
<p>What Are The <b>Side Effects</b> Of <b>Normal Saline</b></p>	<p>What Are The <b>Special Notes</b> Of <b>Normal Saline</b></p>

**An isotonic crystalloid solution Composition:**

- Electrolytes, sodium and chloride in a similar concentration to that of extracellular fluid
- Water

**Electrolytes:**

- Excreted by the kidneys

**Water**

- Excreted by the kidneys
- Distributed throughout total body water, mainly in the extracellular fluid compartment

Nil of significance in the above indications

- IV

Nil

- 10ml polyamp
- 500ml and 1000ml infusion soft pack

Transiently increases the volume of the intravascular compartment

- As a replacement fluid in volume-depleted Pts
- To expand intravascular volume in the non-cardiac, non-hypovolaemic, hypotensive Pt  
- e.g. Anaphylaxis Adult Paed, Burns Adult Paed, Sepsis
- As a fluid challenge in unresponsive non-hypovolaemic hypotensive Pts, other than LVF  
- e.g. PEA Adult Paed, Asthma
- Vehicle for diluting and intravenous administration of emergency drugs
- Fluid to keep vein open for IV administration of emergency drugs

Nil of significance in the above indications

Nil of significance in the above indications

What IsThe  
**Presentation**  
Of  
**Pancuronium**

What IsThe  
**Pharmacology**  
Of  
**Pancuronium**

What Are The  
**Actions**  
Of  
**Pancuronium**

What Is The  
**Metabolism**  
Of  
**Pancuronium**

What Are The  
**Primary Emergency**  
**Indications**  
Of  
**Pancuronium**

What Are The  
**Contraindications**  
Of  
**Pancuronium**

What Are The  
**Precautions**  
Of  
**Pancuronium**

What Is the  
**Administration Route**  
For  
**Pancuronium**

What Are The  
**Side Effects**  
Of  
**Pancuronium**

What Are The  
**Special Notes**  
Of  
**Pancuronium**

## A non-depolarising neuromuscular blocking agent

4mg in 2ml amp

- By the kidneys
- Excreted mainly unchanged in the urine
- Pancuronium must not be given if continuous monitoring of Pt vital signs including pulse oximetry and end tidal CO<sub>2</sub> monitoring are not available
  - Status Epilepticus
- Blocks transmission of impulses at the neuromuscular junction of striated muscles resulting in skeletal muscle paralysis.
- Due to weak vagolytic action, a slight rise in pulse rate and mean arterial pressure may be expected
- To maintain skeletal muscle paralysis and allow mechanical ventilation in intubated Pts following:
  - Intubation Facilitated Sedation (IFS)
  - Rapid Sequence Intubation (RSI)
  - or during interhospital transport of ventilated Pts
- Ensure patency of IV access
- Sedatives must always be administered prior to Pancuronium Bromide
- Endotracheal tube placement, adequacy of ventilation, oxygen saturation, end tidal CO<sub>2</sub>, pulse and blood pressure must be continuously monitored
- Pts with myasthenia gravis should be given much smaller doses and monitored carefully due to the potential of increased degree of neuromuscular block
- Care in Pts with renal impairment
- Allergic reactions such as urticaria, laryngeal oedema, bronchospasm and anaphylactic shock have been reported.
- Pancuronium Bromide infusions required during interhospital transfers are to be prescribed and signed by the referring hospital medical officer. The initial dose is usually 0.1mg/kg.
- Slight increase in heart rate
- Slight increase in mean arterial pressure
- Localised reaction at injection site (rare)

## IV

What Is The  
**Presentation**  
Of  
**Penthrane**

What Is The  
**Pharmacology**  
Of  
**Penthrane**

What Are The  
**Actions**  
Of  
**Penthrane**

What Is The  
**Metabolism**  
Of  
**Penthrane**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Penthrane**

What Are The  
**Contraindications**  
Of  
**Penthrane**

What Are The  
**Precautions**  
Of  
**Penthrane**

What Is the  
**Administration Route**  
For  
**Penthrane**

What Are The  
**Side Effects**  
Of  
**Penthrane**

What Are The  
**Special Notes**  
Of  
**Penthrane**

An analgesic agent

3ml glass bottle  
with plastic seal

- By the liver
- Excreted mainly by the lungs

Inhalational analgesic agent  
at low concentrations

- Pre-existing renal disease/renal impairment
- Concurrent use of tetracycline antibiotics
- Exceeding total dose of 6ml in a 24 hr. period

Pain relief

Self-administration under  
supervision using the hand held  
approved Inhaler with oxygen  
supplementation

The max. initial priming dose for  
Methoxyflurane is 3ml.

This will provide approximately 25min  
of analgesia and may be followed by  
one further 3ml dose once the initial  
dose is exhausted if required

- The approved inhaler must be hand-held by the patient so that if unconsciousness occurs it will fall from the patient's face. (Occasionally the operator may need to assist but must continuously assess the level of consciousness).
- Pre-eclampsia
- Drowsiness
- Decrease in blood pressure and bradycardia (rare)
- Exceeding the max. total dose of 6ml in a 24 hr period may lead to renal toxicity

What IsThe  
**Presentation**  
Of  
**Salbutamol**

What IsThe  
**Pharmacology**  
Of  
**Salbutamol**

What Are The  
**Actions**  
Of  
**Salbutamol**

What Is The  
**Metabolism**  
Of  
**Salbutamol**

What Are The  
**Primary Emergency**  
**Indications**  
Of  
**Salbutamol**

What Are The  
**Contraindications**  
Of  
**Salbutamol**

What Are The  
**Precautions**  
Of  
**Salbutamol**

What Is the  
**Administration Route**  
For  
**Salbutamol**

What Are The  
**Side Effects**  
Of  
**Salbutamol**

What Are The  
**Special Notes**  
Of  
**Salbutamol**

A synthetic Beta-adrenergic stimulant, with primarily  $\beta_2$  effects

- 5mg in 2.5ml nebulizer/polyamp
- 500mcg in 1ml amp
- 5mg in 5ml amp

By the liver and excreted by the kidneys

Causes bronchodilatation

Nil of significance in the above indications

Respiratory distress with suspected bronchospasm, associated with:

- Asthma
- Pulmonary oedema
- Severe allergic reactions
- COPD
- Smoke inhalation
- Oleoresin Capsicum spray

- Nebulised
- Intravenous
- Intravenous Infusion
- Endotracheal
- Pressurised Metered Dose Inhaler

- Between doses, oxygen must be administered continuously
- Large doses of IV Salbutamol have been reported to cause intracellular metabolic acidosis

Salbutamol Nebules/Polyamps have a shelf life of one month after the wrapping is opened. The date of opening of the packaging should be recorded and the drug should be stored in an environment of  $< 30^{\circ}\text{C}$

- IV Salbutamol has no advantage over nebulised Salbutamol provided that adequate ventilation is occurring.
- Salbutamol by intravenous infusion may be required during interhospital transfers of some women in pre-mature labour
  - The dose is to be prescribed and signed by the referring hospital medical officer

- Sinus tachycardia
- Muscle tremor (common)

What Is The  
**Presentation**  
Of  
**Stemetil**

What Is The  
**Pharmacology**  
Of  
**Stemetil**

What Are The  
**Actions**  
Of  
**Stemetil**

What Is The  
**Metabolism**  
Of  
**Stemetil**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Stemetil**

What Are The  
**Contraindications**  
Of  
**Stemetil**

What Are The  
**Precautions**  
Of  
**Stemetil**

What Is the  
**Administration Route**  
For  
**Stemetil**

What Are The  
**Side Effects**  
Of  
**Stemetil**

What Are The  
**Special Notes**  
Of  
**Stemetil**

Antiemetic

12.5mg in 1ml amp

Metabolised by the liver and excreted by the kidneys

Acts on several central neuro-transmitter systems

- Children
- Circulatory collapse
- CNS depression
- Previous hypersensitivity

- Treatment or prophylaxis of nausea/vomiting Adult for:
  - Motion sickness
  - Planned aeromedical evacuation
  - Known allergy or contraindication to Metoclopramide administration

IM

- Hypotension
- Epilepsy
- Pts effected by alcohol or on anti-depressants

Nil

- Drowsiness
- Blurred vision
- Hypotension
- Sinus tachycardia
- Skin rash
- Extrapramidal reactions, usually the dystonic type

What Is The  
**Presentation**  
Of  
Sodium Bicarbonate

What Is The  
**Pharmacology**  
Of  
Sodium Bicarbonate

What Are The  
**Actions**  
Of  
Sodium Bicarbonate

What Is The  
**Metabolism**  
Of  
Sodium Bicarbonate

What Are The  
**Primary Emergency  
Indications**  
Of  
Sodium Bicarbonate

What Are The  
**Contraindications**  
Of  
Sodium Bicarbonate

What Are The  
**Precautions**  
Of  
Sodium Bicarbonate

What Is the  
**Administration Route**  
For  
Sodium Bicarbonate

What Are The  
**Side Effects**  
Of  
Sodium Bicarbonate

What Are The  
**Special Notes**  
Of  
Sodium Bicarbonate

- A hypertonic crystalloid solution
- Contains sodium and bicarbonate ions in a solution of high pH

50ml prepared syringe

**Sodium:** Excreted by the kidneys

**Bicarbonate:** Excreted by the kidneys as bicarbonate ion, and by the lungs as carbon dioxide

Raises pH

Nil of significance in the above indications

To reduce metabolic acidosis during cardiopulmonary resuscitation after 15 minutes of Ambulance personnel CPR

Symptomatic Tricyclic Antidepressant Overdose

Administration of Sodium Bicarbonate 8.4% must be accompanied by effective ventilation and External Cardiac Compression if required

Since Sodium Bicarbonate 8.4% causes tissue necrosis, care must be taken to avoid leakage of the drug into the tissues

Because of the high pH of this solution do not mix or flush any other drug or solution with Sodium Bicarbonate 8.4%

Sodium overload may provoke pulmonary oedema

Excessive dosage of Sodium Bicarbonate 8.4%, especially without adequate ventilation and circulation may cause an intracellular acidosis

IV

What IsThe  
**Presentation**  
Of  
Suxamethonium

What IsThe  
**Pharmacology**  
Of  
Suxamethonium

What Are The  
**Actions**  
Of  
Suxamethonium

What Is The  
**Metabolism**  
Of  
Suxamethonium

What Are The  
**Primary Emergency  
Indications**  
Of  
Suxamethonium

What Are The  
**Contraindications**  
Of  
Suxamethonium

What Are The  
**Precautions**  
Of  
Suxamethonium

What Is the  
**Administration Route**  
For  
Suxamethonium

What Are The  
**Side Effects**  
Of  
Suxamethonium

What Are The  
**Special Notes**  
Of  
Suxamethonium

Depolarising neuromuscular blocking agent

100mg in 2ml amp

Complete muscle relaxation to allow endotracheal intubation

Short acting muscular relaxant

- Known hypersensitivity
- Upper airway obstruction
- Severe respiratory distress
- Penetrating eye injury
- ECG signs of hyperkalaemia in conditions such as muscle necrosis and renal failure
- Burns >24hrs post injury
- Organophosphate poisoning
- Ruptured Abdominal Aortic Aneurysm
- Known history of Suxamethonium apnoea
- Known history of malignant hyperthermia

Complete muscle relaxation to allow endotracheal intubation

## IV

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

- Sedation is required prior to use
- [Atropine](#) (600mcg) should be administered prior to Suxamethonium administration in adult Pts with a HR <60
- [Atropine](#) 20mcg/kg should be administered prior to Suxamethonium administration in children - (Qualified MICA Flight Paramedics only)
- A second dose of Suxamethonium usually causes profound bradycardia
- Refrigeration of Suxamethonium is required - requires weekly rotation or disposal when not refrigerated

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

What IsThe  
**Presentation**  
Of  
**Verapamil**

What IsThe  
**Pharmacology**  
Of  
**Verapamil**

What Are The  
**Actions**  
Of  
**Verapamil**

What Is The  
**Metabolism**  
Of  
**Verapamil**

What Are The  
**Primary Emergency  
Indications**  
Of  
**Verapamil**

What Are The  
**Contraindications**  
Of  
**Verapamil**

What Are The  
**Precautions**  
Of  
**Verapamil**

What Is the  
**Administration Route**  
For  
**Verapamil**

What Are The  
**Side Effects**  
Of  
**Verapamil**

What Are The  
**Special Notes**  
Of  
**Verapamil**

A calcium ion antagonist and antiarrhythmic agent

5mg in 2ml amp

By the liver and excreted by the kidneys

- Increases the refractory period of the A.V. Node
- Dilates coronary arteries
- Decreases myocardial contractility
- Reduces peripheral resistance
- The effects of 3 and 4 may lead to a fall in blood pressure

- Hypotension
- Pts on [Beta-blocking](#) drugs

Supraventricular tachycardia with adequate or borderline perfusion, but symptomatic, i.e. rate related chest pain and/or shortness of breath with crackles present, which has not responded to abdominal valsalva manoeuvre

IV

- Partial A.V. block
- Left ventricular failure
- Concurrent chest pain of a cardiac nature

- Hypotension
- Left ventricular failure
- Bradycardia (uncommon)
- Ventricular fibrillation (uncommon)
- Asystole (uncommon)

What IsThe  
**Presentation**  
Of  
Water For Injection

What IsThe  
**Pharmacology**  
Of  
Water For Injection

What Are The  
**Actions**  
Of  
Water For Injection

What Is The  
**Metabolism**  
Of  
Water For Injection

What Are The  
**Primary Emergency  
Indications**  
Of  
Water For Injection

What Are The  
**Contraindications**  
Of  
Water For Injection

What Are The  
**Precautions**  
Of  
Water For Injection

What Is the  
**Administration Route**  
For  
Water For Injection

What Are The  
**Side Effects**  
Of  
Water For Injection

What Are The  
**Special Notes**  
Of  
Water For Injection

- Water for Injection is a clear, colourless, particle free, odourless and tasteless liquid.
- It is sterile, with a pH of 5.6 to 7.7 and contains no antimicrobial agents

10ml in ampoule/polyamp

Distributed throughout the body and excreted by the kidneys

Nil

Used to dissolve Ceftriaxone in preparation for intravenous injection

IV

Nil

Nil

Nil

What Are The  
**Therapeutic Effects**  
Of  
**Adrenaline**

What Are The  
**Therapeutic Effects**  
Of  
**Amiodarone**

What Are The  
**Therapeutic Effects**  
Of  
**Aramine**

What Are The  
**Therapeutic Effects**  
Of  
**Aspirin**

What Are The  
**Therapeutic Effects**  
Of  
**Atropine**

What Are The  
**Therapeutic Effects**  
Of  
**Atrovent**

What Are The  
**Therapeutic Effects**  
Of  
**Ceftriaxone**

What Are The  
**Therapeutic Effects**  
For  
**Dextrose 5%**

What Are The  
**Therapeutic Effects**  
Of  
**Dextrose 10%**

What Are The  
**Therapeutic Effects**  
Of  
**Glucagon**

**IV**  
Onset 2 min  
Peak 20 min  
Duration 120 min

**IV**  
Onset 30 sec  
Peak 3-5 min  
Duration 5-10 min

**IM**  
Onset 30-90 sec  
Peak 4-10 min  
Duration 5-10 min

Onset  
Peak  
Duration 8-10 days

**IV**  
Onset 1-2 min  
Peak 10 min  
Duration 20 min

**Neb**  
Onset 3-5 min  
Peak 90-120 min  
Duration 6 hr

**IV**  
Onset <2 min  
Peak < 5 min  
Duration 2-6 hrs

Intravascular Half Life  
20 - 40 min

**IV**  
Onset 3-5 min  
Peak  
Duration 12-25 min

**IV**  
Onset 3 min  
Peak  
Duration Depends on severity

What Are The  
**Therapeutic Effects**  
Of  
**GTN**

What Are The  
**Therapeutic Effects**  
Of  
**Dexamethasone**

What Are The  
**Therapeutic Effects**  
Of  
**Lasix**

What Are The  
**Therapeutic Effects**  
Of  
**Lignocaine**

What Are The  
**Therapeutic Effects**  
Of  
**Maxalon**

What Are The  
**Therapeutic Effects**  
Of  
**Midazolam**

What Are The  
**Therapeutic Effects**  
Of  
**Morphine**

What Are The  
**Therapeutic Effects**  
For  
**Narcan**

What Are The  
**Therapeutic Effects**  
Of  
**Normal Saline**

What Are The  
**Therapeutic Effects**  
Of  
**Pancuronium**

**IV**

Onset 30-60 min  
 Peak 2 hr  
 Duration 36-72 hr

**IM**

Onset  
 Peak  
 Duration

**Buccal**

Onset 30 sec-2 min  
 Peak 5-10 min  
 Duration 15-30 min

**Transdermal**

Onset up to 30 min  
 Peak 2 hr  
 Duration

**IM**

Onset Rapid  
 Peak  
 Duration 60-90 min

**IV**

Onset 5 min  
 Peak 20-60 min  
 Duration 2-3 hr

**IV**

Onset 1-3 min  
 Peak 10 min  
 Duration 20 min

**IV**

Onset 1-3 min  
 Peak  
 Duration 1-2 hr

**IM**

Onset 3-5 min  
 Peak 15 min  
 Duration 30 min

**IM**

Onset 10-15 min  
 Peak  
 Duration 1-2 hr

**IV**

Onset 1-3 min  
 Peak  
 Duration 30-45 min

**IV**

Onset 2-5 min  
 Peak 10 min  
 Duration 1-2 hr

**IM**

Onset 1-3 min  
 Peak  
 Duration 30-45 min

**IM**

Onset 10-30 min  
 Peak 30-60 min  
 Duration 1-2 hr

**IV**

Onset 2-3 min  
 Peak 8-10 min  
 Duration 35-45 min

Intravascular Half Life  
 30-60 min

What Are The  
**Therapeutic Effects**  
Of  
**Penthrane**

What Are The  
**Therapeutic Effects**  
Of  
**Salbutamol**

What Are The  
**Therapeutic Effects**  
Of  
**Sodium Bicarbonate**

What Are The  
**Therapeutic Effects**  
Of  
**Stemetil**

What Are The  
**Therapeutic Effects**  
Of  
**Suxemethonium**

What Are The  
**Therapeutic Effects**  
Of  
**Water For Injection**

What Are The  
**Therapeutic Effects**  
Of  
**Verapimal**

What Are The  
**Therapeutic Effects**  
Of  
**Fentanyl**

**Neb**

Onset 5-15 min

Peak

Analgesia after 8-10 breaths

Duration 15-50 min

**IV**

Lasts approx 3-5 mins once discontinued

Onset 1-2 min

Peak

Duration 30-60 min

**IM**

Onset 20 min

Peak 40 min

Duration 6 hr

**IV**

Onset 1-2 min

Peak

Duration Depends on cause & perfusion

**IV**

Onset 20-40 sec

Peak 60 sec

Duration 4-6 min

**IV**

Onset Immediate

Peak < 5 min

Duration 30-60 min

**IN**

Onset

Peak

Duration

**IV**

Onset 1-2 min

Peak 5-10 min

Duration 20-30 min