

Primary Care Paramedic

# Drug Guide



# PCP Drug Guide

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## Activated Charcoal

### Mechanism of Action

Absorbs toxins, inhibiting absorption of toxins by body in GI tract.

### Prehospital Indications

Poisoning/Overdose

### Contraindications

- Hypersensitivity
- Ingestion of corrosive or caustic substance
- Ingestion of petroleum distillates
- Simultaneous administration of another oral medication
- Decreased level of consciousness
- Recent surgery
- Gastrointestinal obstruction/perforation

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- Hemorrhage
- Caution if impaired gastrointestinal motility
- Caution if volume depleted

## Dose

*Adult*

25-100g PO within 1h of ingestion

## Route

PO

## Sample Protocol

*(from Saskatchewan Poisoning BLS Protocol)*

- Contact Poison Control Center
- If recommended by Poison Control Center administer 25g of activated charcoal if the patient is conscious with an intact gag reflex. Do not administer to a patient who

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as ingested a caustic substance.

## Further Information

[Full Monograph at ePocrates Online](#)

[Medscape: Use of Activated Charcoal in Drug Overdose](#)

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## Aspirin

*ASA, Acetylsalicylic acid*

### Mechanism of Action

Exact mechanisms unknown. Inhibits prostoglandin synthesis. Permanently denatures COX molecules on platelet surfaces, inhibiting aggregation until platelets are replaced.

### Prehospital Indications

New onset substernal chest pain, thrombotic CVA.

### Contraindications

- Hypersensitivity
- GI Bleed
- Coagulopathy

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- Glucose-6-phosphatase dehydrogenase (G6PD) Deficiency
- Uncontrolled HTN
- Caution in thrombocytopenia
- Caution in recent surgery or trauma
- Caution in intracranial lesion or increase in ICP
- Caution in chronic ETOH use
- Caution in PUD
- Caution in hx of GI bleed
- Caution in GERD
- Caution in renal/hepatic impairment

## Dose

*Adult*

160-325mg chewed PO

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## Route

PO

## Sample Protocol

(from Dalhousie University Prehospital Evidence Based Protocols Project Chest Pain of Suspected Cardiac Origin Protocol)

- Chest pain of suspected cardiac origin
- HR 60-150
- Give 160mg PO

## Further Information

[Full Monograph at ePocrates Online](#)

### Sources

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## Epinephrine

*Adrenalin*®

### Mechanism of Action

Agonizes  $\alpha_1$ ,  $\alpha_2$  and  $\beta$  adrenergic receptors, prompting a systemic sympathetic response.

### Prehospital Indications

Anaphylaxis, Severe Asthma

### Contraindications

- Hypersensitivity
- Hypertension
- Pulmonary Edema
- Myocardial Ischemia
- Coronary Insufficiency
- Hypovolemic Shock
- Labor and Delivery

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- Organic Brain Syndrome
- Angle-closure glaucoma
- Caution in elderly patients
- Caution in hypertension
- Caution in diabetics
- Caution in hypertyroidism
- Caution in cerebrovascular disease
- Caution in pyschiatric disorders
- Caution in hypersensitivity to sulfites

## Dose

*Adult, anaphylaxis*

0.3-0.5ml 1:1000 SQ/IM

## Route

SQ, IM

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## Notes

Also used in treatment of cardiac arrest by ALS providers.

## Sample Protocol

*(from Nova Scotia Anaphylaxis Protocol)*

- Mild/Moderate anaphylaxis
- Give 0.3-0.5mg epinephrine 1:1000 IM
- Call for ALS if patient deteriorates
- repeat epinephrine q5-20min PRN

## Further Information

[Full monograph at ePocrates Online](#)

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## Glucagon

### Mechanism of Action

Prompts the conversion of hepatic glycogen to blood glucose.

### Prehospital Indications

Hypoglycemia

### Contraindications

- Hypersensitivity
- Hyperglycemia
- Caution if insulinoma
- Caution if pheochromocytoma

### Dose

*Adult*

0.5-1.0mg IM or SQ, may repeat after 7-10min

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## Route

IM, SQ

## Notes

Glucagon is also a first-line drug for treating  $\beta$  blocker and calcium channel blocker overdose. The mechanism is not fully understood, but it is proposed that the drug binds to G protein receptor sites and prompts the release of cAMP within the cell, prompting the release of Protein Kinase A, which then causes the opening of dormant calcium and  $\beta$ -adrenergic channels on the cell wall.

## Sample Protocol

(from Dalhousie University Prehospital Evidence Based Protocols Project Hypoglycemia Protocol)

- Blood Glucose  $< 4\text{mmol/l}$
- Patient not a candidate for oral glucose, or

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fails to improve after oral glucose administration

- Administer 1mg glucagon SQ

## Further Information

Full Monograph at ePocrates Online

### Sources

Caroline, N. L. (2010). *Nancy Caroline's emergency care in the streets (Canadian Content Edition)* (6th ed.) (A. Pollak, R. MacDonald, & R. Burgess, Eds.) Sudbury, MA: Jones and Bartlett.

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## **Naloxone Hydrochloride**

*Narcan*®

### Mechanism of Action

Competitively binds to opioid receptor sites.

### Prehospital Indications

Opioid overdose, decreased level of consciousness of unknown origin

### Contraindications

- Hypersensitivity
- Caution in narcotic-addicted patients
- Caution in neonates of narcotic-addicted mothers
- Caution in hepatic or renal impairment
- Caution if cardiotoxic drugs onboard

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## Dose

### *Adult*

0.4-2 mg IM/SQ q2-3min q5min PRN up to cumulative dose of 10mg

## Route

IM, SQ

## Sample Protocol

*(From Manitoba protocol for Suspected Opioid Overdose Management)*

- Establish NS IV TKVO
- Assess bG: if  $< 4.0\text{mmol/l}$  then treat per hypoglycemia protocol
- If  $\text{RR} < 12/\text{min}$ , administer 0.4mg IV, IM, or SQ
- Repeat assessment, if RR remains below 12/min and bG remains above 4mmol/l repeat dose

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## Further Information

Full monograph at ePocrates Online

### Sources

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## Nitroglycerine

*NTG, Nitrostat*

### Mechanism of Action

Exact mechanism is unknown. It is theorized that enzymes involved in the metabolism of nitroglycerine (mtALDH, ALDH2) stimulate the release of a secondary messenger (cGMP) which causes smooth muscle relaxation in the smooth muscles of the vasculature.

### Prehospital Indications

Chest pain of suspected cardiac origin

### Contraindications

- Hypersensitivity
- SBP < 90mmHg
- Use sildenafil (Viagra®, Revatio®) or

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ildenafil (Levitra®) within past 24H

- Use of tadalafil (Cialis®, Adcirca®) within past 48h
- methemoglobinemia
- Increased ICP
- Anemia
- Constrictive pericarditis
- Restrictive cardiomyopathy
- Pericardial tamponade
- Compensatory hypertension
- Extreme caution in suspected right ventricular infarction
- Caution if SBP < 100mmHg
- Caution in known inferior wall MI
- Caution in Idiopathic Hypertrophic Subaortic Stenosis
- Caution in head injury

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## Dose

*Adult*

0.3-0.6 mg SL q5min up to 3 doses

## Route

Sublingual

## Notes

Effectively relieves symptoms, but randomized, controlled studies have failed to demonstrate improved outcomes in AMI. Reduced preload, potentially causing profound hypotension in inferior wall or right ventricular infarctions.

## Sample Protocol

(from Dalhousie University Prehospital Evidence Based Protocols Project Chest Pain of Suspected Cardiac Origin Protocol)

- Chest pain of suspected cardiac origin
- HR 60-150

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- Give 0.4mg SL q5 if SBP > 100mmHg

## Further Information

Full Monograph at ePocrates Online

ECC Acute Coronary Syndrome Guidelines

### Sources

Caroline, N. L. (2010). *Nancy Caroline's emergency care in the streets (Canadian Content Edition)* (6th ed.) (A. Pollak, R. MacDonald, & R. Burgess, Eds.) Sudbury, MA: Jones and Bartlett.

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## Oxygen

O<sub>2</sub>

### Mechanism of Action

Increases PaO<sub>2</sub>, improving alveolar gas exchange in patients in whom it is impaired, and hypersaturating the blood when gas exchange is not impaired.

### Prehospital Indications

Cardiac arrest, confirmed or suspected hypoxia, respiratory distress or insufficiency, chest pain of suspected cardiac origin, decreased level of consciousness, confirmed or suspected carbon monoxide exposure, any other condition which could result in hypoxic tissue.

### Contraindications

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- Inflammable environment
- Caution in chronic COPD
- Caution in neonates

## Dose

### *Adult*

0.5-5lpm by NC, 10-25lpm by NRB or BVM.

## Route

Inhalation

## Notes

Compressed gasses such as oxygen pose a significant explosion hazard, and must be treated with respect. Also be aware that patients on home oxygen may be using it in unexpected and highly dangerous ways: for instance, the U.S. N.F.P.A. Has documented cases of flash fires occurring in the homes of

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patients using a blast of medical oxygen to cool themselves off. Caution should also be used if approaching MRI equipment: oxygen tanks constructed of ferrous materials can become projectiles.

## Sample Protocol

*(From New York State Basic Life Support Protocols)*

- Assure a patent airway
- Administer oxygen by NRB at 12LPM. If reservoir fails to refill adequately, increase flow rate to 15LPM.
- If patient cannot tolerate NRB, administer 6LPM by NC.

## Further Information

[The Merck Manual: Oxygen Desaturation](#)

[British Medical Journal: Acute Oxygen Therapy](#)

[YouTube: Oxygen Safety Video](#)

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YouTube: Aftermath of an Oxygen Tank Explosion

YouTube: Oxygen Tank vs MRI

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## Salbutamol

*Ventolin, albuterol (U.S.P.)*

### Mechanism of Action

Selectively agonizes  $\beta_2$ -adrenergic receptors, stimulating the sympathetic nervous system and relaxing the smooth muscle of the airway.

### Prehospital Indications

Treatment of bronchospasm in patients with reversible obstructive airway disease.  
Prevention of exercise-induced bronchospasm.

### Contraindications

- Hypersensitivity
- Tachydysrhythmias
- Caution if other sympathomimetics already onboard

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- Caution in ischemic heart disease
- Caution in arrhythmias
- Caution in hypokalemia
- Caution in diabetics
- Caution in seizure disorders
- Caution in hyperthyroidism
- Caution in pheochromocytoma
- Caution in pregnant patients
- Caution in geriatric patients

## Dose

### *Adult Solution for Aerosolization*

2.5-5.0mg, diluted at a ratio of 0.5-1.0ml of 0.5% solution in 2-3ml of normal saline.

### *Adult MDI*

Up to two inhalations five minutes apart.  
(100µg/dose)

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## *Pediatric*

0.5-0.15mg/kg diluted in 2ml normal saline, up to three doses 20 minutes apart.

## Route

Inhalation

## Sample Protocol

(from Dalhousie University Prehospital Evidence Based Protocols Project Asthma protocol)

- Mild/Moderate to Severe asthma
- 5mg by nebulizer mask, or 4-6 puffs of MDI with spacer.
- Repeat PRN

## Sources

Caroline, N. L. (2010). *Nancy Caroline's emergency care in the streets (Canadian Content Edition)* (6th ed.) (A. Pollak, R. MacDonald, & R. Burgess, Eds.) Sudbury, MA: Jones and Bartlett.

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[ehsprotocols/protocols/TOC.cfm](#)

*Ventolin HFA*. (n.d.). Retrieved October 13, 2010, from Epocrates Online.

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## **Tetracaine**

### *Tetracaine Ophthalmic*

#### Mechanism of Action

Inhibits Na<sup>+</sup> ion channels, preventing stabilizing neuron cell membranes and preventing them from depolarizing, effecting local anesthesia.

#### Prehospital Indications

Eye irritation

#### Contraindications

- Hypersensitivity
- Hypersensitivity to other ester anesthetics
- Hypersensitivity to Para-Aminobenzoic Acid (PABA)
- caution if cholinesterase deficiency

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- caution if allergies
- caution if cardiac disease
- caution if hyperthyroidism

## Dose

### *Adult*

1-2 gtt in eye q5-10min x3-5 doses

## Route

Ocular membrane

## Notes

Useful in patients whose eyes have been pepper sprayed.

## Further Information

[Full Monograph at ePocrates Online](#)

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## Sources

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## Six Rights of Medication Administration

- Right Patient
- Right Drug
- Right Dose
- Right Route
- Right Time
- Right Documentation

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