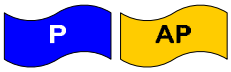
Clinical level: EMT P AP

Medication	Chlorphenamine
Class	Antihistamine
Descriptions	H_1 antagonist to counteract the effects of histamine release.
Presentation	10 mg in 1 mL ampoule. 4 mg tablet.
Administration	Intravenous (IV), Intramuscular (IM) and Orally (PO). (***CPG:*** 4/5/6.4.15, 4/5/6.7.31).
Indications	Anaphylaxis or allergic reaction.
Contra-Indications	Known severe adverse reaction / Pre-coma states.
Usual Dosages	**Adult:** *Allergic reaction* Mild: - 4 mg PO (EMT / P / AP). Moderate: - 4 mg PO or 10 mg IM (EMT / P) or 10 mg IV (AP). Severe/Anaphylaxis: - 10 mg IM (EMT / P) or 10 mg IV (AP). **Paediatric:** *Allergic reaction*: Mild: 6 to 11 years – 2 mg PO (EMT / P / AP). ≥ 12 years – 4 mg PO (EMT / P / AP). Moderate: < 1 year – 0.25 mg/Kg IM (EMT / P) or 0.25 mg/Kg IV (AP). 1 to 5 years – 2.5 mg IM (EMT / P) or 2.5 mg IV (AP). 6 to 11 years – 2 mg PO or 5 mg IM (EMT / P) or 5 mg IV (AP). ≥ 12 years – 4 mg PO or 10 mg IM (EMT / P) or 10 mg IV (AP). Severe / Anaphylaxis: < 1 year – 0.25 mg/Kg IM (EMT / P) or 0.25 mg/Kg IV (AP). 1 to 5 years – 2.5 mg IM (EMT / P) or 2.5 mg IV (AP). 6 to 11 years – 5 mg IM (EMT / P) or 5 mg IV (AP). ≥ 12 years – 10 mg IM (EMT / P) or 10 mg IV (AP).
Pharmacology / Action	Chlorphenamine is a potent antihistamine (H_1-receptor antagonist). Antihistamines diminish or abolish the action of histamine in the body by competitive reversible blockade of histamine 1 receptor sites on tissues. Chlorphenamine also has anticholinergic activity.
Side effects	Causes drowsiness and patients receiving it should not drive or operate machinery.
Additional information	Use with caution in epilepsy / Prostatic hypertrophy / Glaucoma / Hepatic disease / Bronchitis / Bronchiectasis / Thyrotoxicosis / Raised intra-ocular pressure / Severe hypertension / Cardiovascular disease / Bronchial asthma. For IV route, administer over 1 minute. If small dose required, dilute with NaCl 0.9%.

Clinical level: P AP

Medication	Hydrocortisone
Class	Corticosteroid and anti-inflammatory.
Descriptions	Hydrocortisone is a potent corticosteroid with anti-inflammatory properties.
Presentation	Powder and solvent for solution for injection or infusion. Vial containing off-white powder and vial containing water for injections. Prepare the solution aseptically by adding not more than 2 mL of sterile water for injections to the contents of one 100 mg vial, shake and withdraw for use.
Administration	Intravenous (IV infusion). Intramuscular (IM). The preferred route for initial emergency use is intravenous. (***CPG:*** 4/5/6.3.3, 4/5/6.3.4, 5/6.4.13, 4/5/6.4.15, 4/5/6.7.12, 5/6.7.30, 4/5/6.7.31).
Indications	Severe or recurrent anaphylactic reactions. Asthma refractory to Salbutamol and Ipratropium Bromide. Exacerbation of COPD (AP). Adrenal insufficiency (P).
Contra-Indications	No major contraindications in acute management of anaphylaxis.
Usual Dosages	***Adult:*** ***Anaphylactic reaction:*** (AP) 200 mg IV (infusion in 100 mL NaCl) or IM injection (P/AP). ***Exacerbation of COPD:*** 200 mg IV (infusion in 100 mL NaCl) or IM (AP). ***Asthma:*** 100 mg slow IV (infusion in 100 mL NaCl) (AP). ***Adrenal insufficiency:*** (AP) 100 mg IV (infusion in 100 mL NaCl) or IM (P/AP). ***Paediatric:*** ***Anaphylactic reaction:*** *< 1 year:* (AP) - 25 mg IV (infusion in 100 mL NaCl) or IM (P/AP). *1 to 5 years:* (AP) - 50 mg IV (infusion in 100 mL NaCl) or IM (P/AP). *> 5 years:* (AP) - 100 mg IV (infusion in 100 mL NaCl) or IM (P/AP). ***Asthma:*** (AP) *< 1 year:* 25 mg IV / *1 to 5 years:* 50 mg IV / *> 5 years:* 100 mg IV - (infusion in 100 mL NaCl). ***Adrenal insufficiency:*** *6 months to ≤ 5 years:* (AP) 50 mg IV (infusion in 100 mL NaCl) or IM injection (P/AP). *> 5 years:* (AP) 100 mg IV (infusion in 100 mL NaCl) or IM injection (P/AP).
Pharmacology / Action	Potent anti-inflammatory properties and inhibits many substances that cause inflammation.
Side effects **Long term side effects**	CCF / Hypertension / Abdominal distension / Vertigo / Headache / Nausea / Malaise and hiccups. Adrenal cortical atrophy develops during prolonged therapy and may persist for months after stopping treatment.
Additional information	Intramuscular injection should avoid the deltoid area because of the possibility of tissue atrophy. Dose should not be less than 25 mg. IV is the preferred route for adrenal crisis. If the patient, in an adrenal crisis, is still unwell following Hydrocortisone administration prior to arrival of the practitioner the standard dose of Hydrocortisone should be administered.

Clinical level: 

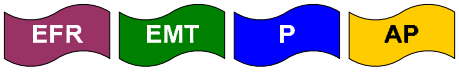
Medication	Ipratropium Bromide
Class	Anticholinergic.
Descriptions	It is a parasympatholytic bronchodilator that is chemically related to Atropine.
Presentation	Nebuliser Solution 0.25 mg (250 mcg) in 1 mL.
Administration	Nebulised (NEB) mixed with age specific dose of Salbutamol. (***CPG:*** 4/5/6.3.3, 4/5/6.3.4, 4/5/6.7.12).
Indications	Acute moderate asthma or exacerbation of COPD not responding to initial Salbutamol dose.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	***Adult:*** 0.5 mg (500 mcg) NEB. ***Paediatric:*** *< 12 years:* 0.25 mg (250 mcg) NEB. *≥ 12 years:* 0.5 mg (500 mcg) NEB.
Pharmacology / Action	It blocks muscarinic receptors associated with parasympathetic stimulation of the bronchial air passageways. This results in bronchial dilation and reduced bronchial secretions.
Side effects	Transient dry mouth / Blurred vision / Tachycardia / Headache.

Clinical level: AP

Medication	Magnesium Sulphate injection
Class	Electrolyte and Tocolytic agent.
Descriptions	It is a salt that is an essential element in numerous biochemical reactions that occur within the body.
Presentation	Ampoule 5 g in 10 mL.
Administration	Intravenous (IV). Intraosseous (IO). (***CPG:*** 4/5/6.3.4, 5/6.4.12, 5/6.4.23).
Indications	Life-threatening Asthma / Torsades de pointes / Persistent bronchospasm / Seizure associated with eclampsia.
Contra-Indications	None in cardiac arrest. Known severe adverse reaction.
Usual Dosages	***Adults:*** ***Life-threatening Asthma:*** 2 g IV (infusion in 100 mL NaCl) given over 20 minutes. ***Tachycardia – Irregular:*** *Torsades de pointes with a pulse:* 2 g IV (infusion in 100mL NaCl) given over 10 - 15 minutes. ***Persistent bronchospasm:*** 2 g IV (infusion in 100 mL NaCl) given over 20 minutes. ***Seizure associated with pre-eclampsia:*** 4 g IV (infusion in 100 mL NaCl) given over 15 minutes. ***Paediatric:*** Not indicated.
Pharmacology / Action	It acts as a physiological calcium channel blocker and blocks neuromuscular transmission**.**
Side effects	Bradycardia can occur during administration; this can be minimised by slowing the rate of infusion. Arrhythmias / Coma / Confusion / Drowsiness / Flushing of skin / Hypotension / Decreased deep tendon reflexes / Muscle weakness / Nausea / Respiratory depression / Thirst / Vomiting.
Additional Information	5 g in 10 mL is equivalent to 20 mmol/mg.

Clinical Level: EFR EMT P AP

Medication	Oxygen
Class	Gas.
Descriptions	Odourless / Tasteless / Colourless gas necessary for life.
Presentation	***Medical gas:*** D, E or F cylinders, coloured black with white shoulders. ***CD cylinder:*** White cylinder.
Administration	***Inhalation via:*** High concentration reservoir (non-rebreather) mask / Simple face mask / Venturi mask / Tracheostomy mask / Nasal cannulae / CPAP device / Bag Valve Mask. **(*CPG:* Oxygen is used extensively throughout the CPGs).**
Indications	Absent / Inadequate ventilation following an acute medical or traumatic event. SpO_2 < 94% adults and < 96% paediatrics. SpO_2 < 92% for patients with acute exacerbation of COPD. SpO_2 < 90% for patients with acute onset of Pulmonary Oedema.
Contra-Indications	Bleomycin lung injury.
Usual Dosages	***Adult:*** Cardiac and respiratory arrest or sickle cell crisis; 100%. Life threats identified during primary survey; 100% until a reliable SpO_2 measurement obtained then titrate O_2 to achieve SpO_2 of 94% - 98%. For patients with acute exacerbation of COPD, administer O_2 titrate to achieve SpO_2 92% or as specified on COPD Oxygen Alert Card. All other acute medical and trauma titrate O_2 to achieve SpO_2 94% - 98%. ***Paediatric:*** Cardiac and respiratory arrest or sickle cell crisis; 100%. Life threats identified during primary survey; 100% until a reliable SpO_2 measurement obtained then titrate O_2 to achieve SpO_2 of 96% - 98%. Neonatal resuscitation (< 4 weeks) consider supplemental O_2 (≤ 30%). All other acute medical and trauma titrate O_2 to achieve SpO_2 of 96% - 98%.
Pharmacology / Action	Oxygenation of tissue/organs.
Side effects	Prolonged use of O_2 with chronic COPD patients may lead to reduction in ventilation stimulus.
Additional information	A written record must be made of what oxygen therapy is given to every patient. Documentation recording oximetry measurements should state whether the patient is breathing air or a specified dose of supplemental Oxygen. Consider humidifier if oxygen therapy for paediatric patients is > 30 minutes duration. Caution with paraquat poisoning, administer Oxygen if SpO_2 < 92%. Avoid naked flames, powerful oxidising agent.

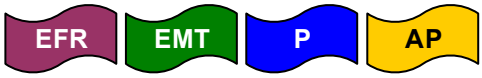
Clinical Level: 

Medication	Salbutamol
Class	Sympathetic agonist.
Descriptions	Sympathomimetic that is selective for beta-2 adrenergic receptors.
Presentation	Nebule 2.5 mg in 2.5 mL. Nebule 5 mg in 2.5 mL. *Aerosol inhaler:* Metered dose 0.1 mg (100 mcg).
Administration	NEB. Inhalation via aerosol inhaler. (***CPG:*** 4/5/6.3.3, 3.3.4, 4/5/6.3.4, 2/3.4.15, 4/5/6.4.15, 4/5/6.6.10, 4/5/6.7.12, 2/3.7.31, 4/5/6.7.31).
Indications	Bronchospasm / Exacerbation of COPD / Respiratory distress following submersion incident.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	***Adult:*** 5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 11) Repeat NEB at 5 minute intervals prn ***EFR*** assist patient with Asthma/ Anaphylaxis. - 0.1 mg metered aerosol spray (repeat aerosol x 11 prn) ***Paediatric:*** < *5 yrs* - 2.5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 5). ≥ *5 yrs* - 5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 11). (Repeat NEB at 5 minute intervals prn). ***EFR:*** assist patient with Asthma/ Anaphylaxis – < *5 yrs* - 0.1 mg metered aerosol spray (repeat aerosol x 5 prn). ≥ *5 yrs* - 0.1 mg metered aerosol spray (repeat aerosol x 11 prn).
Pharmacology / Action	Beta-2 agonist / Bronchodilation / Relaxation of smooth muscle.
Side effects	Tachycardia / Tremors / Tachyarrhythmias / High doses may cause Hypokalaemia.
Additional information	It is more efficient to use a volumiser in conjunction with an aerosol inhaler when administering Salbutamol. If an oxygen driven nebuliser is used to administer Salbutamol for a patient with acute exacerbation of COPD it should be limited to 6 minutes maximum.

Clinical level: AP

Medication	Epinephrine (1:10,000)
Class	Sympathetic agonist.
Descriptions	Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta receptors is more profound.
Presentation	Pre-filled syringe. 1 mg/10 mL (1:10,000) as 0.1 mg/mL.
Administration	Intravenous (IV). Intraosseous (IO). (***CPG:*** 4/5/6.4.3, 5/6.4.4, 4/5/6.4.6, 5/6.5.2, 4/5/6.7.22, 4/5/6.7.23, 4/5/6.7.24).
Indications	Cardiac arrest / Paediatric bradycardia unresponsive to other measures.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	***Adult:*** ***Cardiac arrest:*** 1 mg (1:10,000) IV/IO. (Repeat every 3-5 mins). ***Paediatric:*** ***Cardiac arrest:*** 0.01 mg/Kg (10 mcg/Kg) (0.1 mL/Kg of 1:10,000) IV/IO. (Repeat every 3-5 mins). ***Bradycardia:*** 0.01 mg/Kg (10 mcg/Kg) (0.1 mL/Kg of 1:10,000) IV/IO (Repeat every 3-5 mins).
Pharmacology / Action	***Alpha and beta adrenergic stimulant:*** Increases heart rate – Chronotropic effect. Increases myocardial contractions – Inotropic effect. Increases BP. Increases electrical activity in the myocardium. Increases cerebral and coronary blood flow. Dilation of bronchioles.
Side effects	***In non-cardiac arrest patients:*** Palpitations / Tachyarrhythmias / Hypertension.
Additional Information	***N.B.*** Double check concentrations on pack before use.

APPENDIX 1 - Medication Formulary

Clinical level: 

Medication	Epinephrine (1:1,000)
Class	Sympathetic agonist.
Descriptions	Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta receptors is more profound.
Presentation	Pre-filled syringe, ampoule or Auto injector. 1 mg/1 mL (1:1,000).
Administration	Intramuscular (IM), Intravenous (IV) and Nebulisation (Neb) (***CPG:*** 2/3.4.15, 2/3.7.31, 5/6.4.7 4/5/6.4.11, 4/5/6.4.15, 4/5/6.7.13, 4/5/6.7.31).
Indications	Severe anaphylaxis, Stridor, Symptomatic Bradycardia and Cardiogenic shock.
Contra-Indications	None known.
Usual Dosages	***Adult:*** 0.5 mg **(**500 mcg) IM (0.5 mL of 1: 1,000). ***EFR*** assist patient – 0.3 mg (Auto injector) (Repeat every 5 minutes' prn). ***Adult: Symptomatic Bradycardia/ Cardiogenic shock:*** 0.01 mg IV/IO repeat prn. (Dilute 1 mg Epinephrine in 100 mL NaCl and draw up in 1 mL syringe, administer the dose over 1 minute). ***Anaphylaxis Paediatric:*** *< 6 months:* - 0.05 mg (50 mcg) IM (0.05 mL of 1:1,000) *6 months to 5 years:* - 0.125 mg (125 mcg) IM (0.13 mL of 1:1,000) *6 to 8 years:* - 0.25 mg (250 mcg) IM (0.25 mL of 1:1,000) *> 8 years:* - 0.5 mg (500 mcg) IM (0.5 mL of 1:1,000) ***EFR*** assist patient – *6 Months < 10 years:* 0.15 mg (Auto injector) (repeat every 5 minutes prn). *≥ 10 years:* 0.3 mg (Auto injector) (repeat every 5 minutes prn). ***Stridor (AP):*** ***< 1 Year:*** 2.5 mg NEB ***≥ 1 year:*** 5 mg NEB (repeat after 30 minutes' prn) (AP).
Pharmacology / Action	***Alpha and beta adrenergic stimulant:*** Reversal of laryngeal oedema and bronchospasm in anaphylaxis. Antagonises the effects of histamine.
Side effects	Palpitations / Tachyarrhythmias / Hypertension / Angina-like symptoms.
Additional information	***N.B.*** Double check the concentration on pack before use.