

NURS2201 Course Summary

Glossary

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| Adventitious Breath Sounds | Abnormal sounds that are heard over a patient's lungs and airways. These sounds include; fine and coarse crackles/rales, wheezes/rhonchi, pleural rubs and stridor |
| Atopy | Genetic tendency to develop allergic diseases such as allergic rhinitis, asthma and atopic dermatitis |
| Cor pulmonale | Increase in bulk of the right ventricle generally caused by chronic diseases of malfunction of the lungs |
| Dysarthria | A motor speech disorder. Results from impaired movement of the muscles used for speech production including lips, tongue, vocal folds, and/or diaphragm. Characterized by slurred or slowed speech that is difficult to understand. Often caused by stroke or other brain injury |
| Dysphagia | Difficulty swallowing |
| Dysphasia | Language disorder marked by deficiency in the generation of speech and sometimes also in its comprehension, due to brain disease or damage |
| Hypercapnia | When excessive CO_2 collects in the blood stream |
| Hypoxaemia | An abnormally low concentration of oxygen in the blood |
| Hypoxia | Deficiency in the amount of oxygen reaching the tissues |
| Obstructive (respiratory) | a group of lung disease that block airflow and make it difficult to breathe; asthma, COPD (emphysema & chronic bronchitis), bronchiectasis, cystic fibrosis |
| Restrictive (respiratory) | A group of extra pulmonary, pleural or parenchymal respiratory diseases that restrict lung expansion resulting in a decreased lung volume, an increased work of breathing and inadequate ventilation and/or oxygenation; interstitial lung disease, sarcoidosis, neuromuscular disease (amyotrophic lateral sclerosis ALS or muscular dystrophy), pulmonary fibrosis, asbestosis, silicosis, scoliosis, obesity |
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Medications

| | Salbutamol |
|----------------|---|
| Trade Name | |
| Mode of action | Relax bronchial smooth muscle by stimulating β_2 adrenoceptors. |
| Indication | <ul style="list-style-type: none"> - Symptom relief of asthma and COPD - Prevention of exercise-induced bronchoconstriction - Management of preterm labour |

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| | <p>Accepted</p> <ul style="list-style-type: none"> - Relief of bronchospasm in anaphylaxis <p>SABAs</p> <ul style="list-style-type: none"> - Symptom relief of asthma and COPD - Prevention of exercise induced bronchoconstriction <p>LABAs</p> <ul style="list-style-type: none"> - Maintenance treatment of asthma in patients receiving inhaled and corticosteroids (except indacaterol, olodaterol) - COPD |
| Contraindications | <ul style="list-style-type: none"> - Cardiovascular disorders- hypertension, ischaemic heart disease, heart failure, arrhythmias - Hyperthyroidism- risk of vascular adverse effects - Diabetes- risk of hyperglycaemia with high doses - Treatment with other sympathomimetic amines- may increase adverse effects - Elderly- lower dose, Pregnancy, Breastfeeding. |
| Practice points | <ul style="list-style-type: none"> - inhaled route is preferred due to fewer systemic adverse effects and faster onset of action; nebulisation is rarely used in asthma other than in emergencies - there are limited data for use of IV salbutamol and an increased risk of adverse effects; use only in critical care units with adequate monitoring - IM or SC administration is not recommended Practice points from Beta2 agonists - inhaled SABAs are first-line bronchodilators in acute asthma - high or increasing usage of SABAs indicates poorly controlled asthma and requires review of management <p>check inhaler technique and compliance regularly, especially when asthma control is poor</p> |

| | Ampicillin |
|----------------------------------|---|
| Trade Name | |
| Mode of action | <p>Board spectrum penicillin. Bactericidal: interfere with the bacterial cell wall peptidoglycan synthesis by binding to penicillin-binding proteins, eventually leading to cell lysis and death.</p> |
| Indication | <p>Infection due to susceptible Gram +ve, Gram -ve organisms</p> <ul style="list-style-type: none"> - Exacerbations of chronic bronchitis, community acquired pneumonia (respiratory) - Gonococcal infection, UTI - Bacterial meningitis - Septicaemia - Non-surgical prophylaxis of endocarditis - Acute cholecystitis, peritonitis, epididymo-orchitis, acute pyelonephritis, acute prostatitis |
| Contraindications | <ul style="list-style-type: none"> • B-lactam (penicillin, cephalosporin) hypersensitive history • Allergy- Hx of immediate (eg urticaria, bronchospasm or anaphylaxis) or severe (eg interstitial nephritis) hypersensitivity to penicillin. • Renal- reduce dose if CrCl<10mL/min • In impairment high parenteral dose/or prolonged treatment may result in an electrolyte imbalance. <p>Precautions- Sodium restriction, heart failure (contains 62mg of sodium per gram)</p> <ul style="list-style-type: none"> • Infectious mononucleosis, acute lymphoblastic leukaemia, chronic lymphoblastic leukaemia, HIV infection have a higher rate of rashes occurring. |
| Practice points / administration | <p>* Avoid rapid IV administration of large doses as this may result in seizures</p> <p>* IV penicillin's are physically incompatible with many substances (including aminoglycosides); give separately.</p> <p>Use frequent doses of penicillin for maximum antibacterial effect</p> <p>*monitor complete blood count and renal and hepatic function during prolonged high-dose treatment (>10days).</p> |

| | Gentamycin |
|------------|-------------------|
| Trade name | |

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| Mode of action | It inhibits the synthesis by irreversibly binding to the 30S ribosomal subunit and causing cell membrane damage. Concentration-dependent bactericidal effect |
| Indication | <p>-Aminoglycoside antibiotic. Infections that are due to susceptible organisms that are resistant to other antibacterials; bacteremia; respiratory tract infections; persistent UTIs; skin, skin structure, bone infections; peritonitis; septic abortion; burns complicated by sepsis.</p> <p>-Empirical treatment for <48hrs of serious Gram -ve infections; serious systemic enterococcal infections (with β-Lactam or vancomycin).</p> <p>-Surgical prophylaxis; P. aeruginosa infections, including cystic fibrosis, bronchiectasis (inhalation); Brucellosis; Eye infection.</p> |
| Contraindications | <ul style="list-style-type: none"> • Previous toxic reaction (oto/nephrotoxicity) to aminoglycoside therapy. • Serious reaction to an aminoglycoside • Contraindicated in people with a history of vestibular or auditory toxicity caused by aminoglycosides. Tinnitus, vertigo, hearing impairment, an abnormal audiogram or treatment with other ototoxic drugs may increase with the risk. • Those with the mitochondrial DNA mutation A1555G are highly likely to become deaf if receive this treatment. • Increased risk of renal impairment as a result of nephrotoxicity. |
| Practice points / administration | <ul style="list-style-type: none"> • infuse over 15-30 min for doses <120mg • if possible replace aminoglycosides with a safer antibacterial when sensitivity data is available calculate CrCl before starting treatment. • Ensure adequate hydration- be aware of factors that increase risk of toxicity. • Monitor cochlear toxicity • If renal function deteriorates, measure aminoglycoside concentration daily. |

| | Morphine |
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| Trade Name | |
| Mode of action | Narcotic agonist. An opioid analgesics act on opioid receptors that is unresponsive to nonopioids in the CNS and GIT producing analgesia, respiratory depression, sedation and constipation. They may act mainly at the mu-opioids receptor in the CNS, reducing the transmission of the pain impulse, and by modulating the descending inhibitory pathways from the brain. Cough suppression occurs in the medullary centre of the brain. |
| Indication | <p>Moderate to severe pain; opioids adjunct during general anaesthesia</p> <p>* Acute pulmonary oedema, and acute or chronic pain</p> <p>Relief symptoms of severe dyspnoea; acute and chronic pain</p> |
| Contraindications | <ul style="list-style-type: none"> • Avoid if severe hepatic impairment- may cause excessive sedation or coma • Opioid hypersensitivity; acute, severe bronchial asthma; obstructive airway disease; respiratory insufficiency, depression, esp. cyanosis, excessive bronchial secretion; respiratory reserve depletion eg, severe emphysema, chronic bronchitis, kyphoscoliosis; severe CNS depression; diabetic acidosis where there is a risk of coma; severe liver disease, incipient hepatic encephalopathy; post-op anastomosis, biliary tract surgery; suspected surgical abdomen; biliary colic; GI obstruction; MAOIs (recurrent, within 14days); heart failure sec to pulmonary disease; arrhythmia; cor pulmonale; acute alcoholism, delirium tremens; head injury; brain tumour; raise ICP, cerebrospinal pressure; convulsive states eg epilepticus, tetanus, strychnine poisoning; premature infants during labour, delivery of premature infants. |
| Practice points /administration | <p>Peak analgesia following a dose of morphine occurs within:</p> <p>*60 min after conventional oral liquid</p> <p>* 50-90min after SC injection (30-60min for IM)</p> <p>*20min after IV</p> <ul style="list-style-type: none"> - Don't use controlled release products for acute pain management as slow onset and offset make safe titration impossible - Reassess pain frequently and adjust dose - Always use with a laxative for people requiring regular doses. - Do not crush controlled release products - Naloxone is used to reverse opioid-related sedation and respiratory depression. |

| | Metoclopramide hydrochloride |
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| Trade Name | |
| Mode of action | Stimulates motility of upper GI tract and increases lower oesophageal sphincter tone and blocks dopamine receptors at chemoreceptors trigger zone. Also relaxes pyloric sphincter and duodenal bulb and increases peristalsis of duodenum and jejunum to increase gastric emptying. |
| Trade Name | |
| Indication | <p>Antiemetic, antinauseant, gastrokinetic.</p> <p>Adults ≥ 20 yrs: relief of nausea and vomiting assoc with migraine, cancer therapy (chemo/radiotherapy), malignant disease, labour, infectious disease, uraemia; postop vomiting control; small bowel intubation assistance 2nd line therapy in young adults < 20 yrs,</p> <p>Children > 1 yr: severe intractable vomiting of known cause; small bowel intubation assistance; vomiting assoc with radiotherapy, cytotoxic intolerance</p> |
| Contraindications | <ul style="list-style-type: none"> - Pheochromocytoma; conditions aggravated by incr GI motility eg GI haemorrhage, mechanical obstruction, perforation - porphyria - epilepsy - concomitant drugs with extrapyramidal effects eg neuroleptics incl phenothiazines - procaine, procainamide cross hypersensitivity (poss) - children < 1 yr |
| Practice points / administration | <p>* Use short term only (max. of 5days); risk of tardive dyskinesia increases with accumulated dose and length of treatment *</p> <p>Metochlopramide has been used for lactation stimulation but is not recommended due to safety and efficacy concerns.</p> |

| | Amiodarone |
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| Trade name | |
| Mode of action | Decreases sinus node and junction automaticity, slows atrioventricular (AV) and bypass tract conduction and prolongs refractory period of myocardial tissue (atria, ventricles, AV node and bypass tract); also has weak beta-blocker activity. |
| Indication | <p>Class III antiarrhythmic.</p> <p>Treatment and prophylaxis of serious tachyarrhythmias refractory to other treatment, including VT, AF and SVT.</p> <p>Severe tachyarrhythmias (eg WPW, supraventricular/ nodal/ ventricular tachyarrhythmia, AF, atrial flutter, ventricular fibrillation) unresponsive to other therapy.</p> |
| Contraindications | <ul style="list-style-type: none"> • Bradycardia and A-V block with syncope, sick sinus syndrome, severe A-V conduction disorder (unless pacemaker in situ) • bi/ trifascicular conduction disorder (unless pacemaker or special care unit with electrosystolic pacing) • sinus bradycardia, S-A block; concomitant MAOIs, torsades de pointes inducing drugs incl antiarrhythmics (eg disopyramide, procainamide, quinidine, mexiletine, sotalol, bepridil), some neuroleptics, vincamine, cisapride, IV erythromycin, IV pentamidine; iodine hypersensitivity • thyroid dysfunction incl history • hypotension (incl severe arterial) • heart, severe respiratory failure; cardiomyopathy • circulatory collapse • pregnancy, lactation; neonates incl premature (benzyl alcohol content) • Cardiac- second or third-heart block without pacemaker, symptomatic bradycardia (without pacemaker) • Hepatic impairment- risk of accumulation and/or hepatotoxicity. |
| Practice points / administration | <p>Infuse amiodarone (via a large or central vein) in glucose 5% injection (incompatible with sodium chloride 0.9%). Use giving sets that do not contain DEHP (diethylhexyl phthalate); use glass or rigid PVC (without plasticisers) bottles.</p> <ul style="list-style-type: none"> • during IV administration monitor BP; severe hypotension and circulatory collapse can occur with rapid infusion |

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| | <ul style="list-style-type: none"> • before starting amiodarone, check baseline clinical status, serum electrolytes, thyroid and liver function, lung function (including chest x-ray), and ECG • monitor thyroid function, liver function and serum electrolytes every 6 months; obtain chest x-ray and ECG annually • amiodarone contains iodine and affects thyroxine metabolism; this complicates the diagnosis of thyroid dysfunction; when requesting thyroid function tests, notify laboratory that the patient is taking amiodarone • risk of thyroid function abnormalities and liver damage persist for up to a year after stopping treatment; continue monitoring • if dysnoea or non-productive cough develop, perform chest x-ray and pulmonary function tests as soon as possible and monitor closely. |
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| | Adrenaline |
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| Trade Name | |
| Mode of action | <p>Nonselective adrenergic agonist. Positive inotrope and chronotrope (beta1 receptors); vasodilator at low dose (beta2 receptors); vasoconstrictor at high dose (alpha receptors). Bronchial smooth muscle relaxant (beta2 receptors). Stabilises mast cells.</p> <p><i>Mode of action from Sympathomimetics</i></p> <p>Sympathomimetics partially or completely mimic the agonistic actions of noradrenaline or adrenaline on the alpha and/or beta adrenoreceptors. The effect of a specific agent is determined by receptor specificity, compensatory reflexes evoked and dose. Sympathomimetics have a range of therapeutic uses, eg treating hypotension, arrhythmias, heart failure, anaphylactic reactions and bronchospasm.</p> |
| Indication | |
| Contraindication | |
| Practice points / administration | <p>Give via central vein if possible; if using a peripheral vein, flush dose (with at least 20 mL IV fluid for an adult).</p> <ul style="list-style-type: none"> • treatment with sympathomimetics is guided by haemodynamic monitoring; individualise treatment depending on clinical response • use is restricted to settings where close monitoring of arterial and venous pressure, and continuous ECG can be performed • prolonged use of sympathomimetics may result in diminution of therapeutic effect (down-regulation of receptors) • combinations of sympathomimetics may be used |

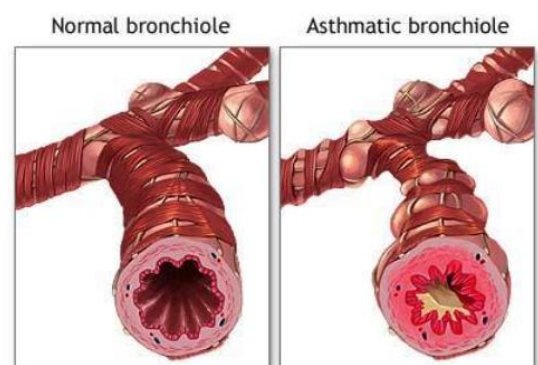
| | Glycerol Trinitrate (GTN) |
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| Trade name | |
| Mode of action | <p>Provide exogenous source of nitric oxide (which mediates vasodilator effects). Predominantly venodilators; reduce venous return and preload to the heart, reducing myocardial oxygen requirement.</p> |
| Indication | <ul style="list-style-type: none"> • Organic nitrate vasodilator. Perioperative hypertension esp CV procedures eg intratracheal intubation, anaesthesia, skin incision, sternotomy, cardiac bypass; CHF assoc with acute MI; angina pectoris unresponsive to organic nitrates, β-blocker; controlled hypotension during surgery (eg neurosurgery, orthopaedics). • Prevention and treatment of stable angina. • Heart failure associated with acute MI |
| Contraindications | <ul style="list-style-type: none"> • Organic nitrate idiosyncratic reaction history • hypotension, uncorrected hypovolaemia • incr ICP eg head trauma, cerebral haemorrhage • constrictive pericarditis, pericardial tamponade • severe anaemia, arterial hypoxaemia • concomitant sildenafil, soluble guanylate cyclase stimulator (eg riociguat) • obstructive cardiomyopathy esp with aortic, mitral stenosis, constrictive pericarditis |

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| Practice points / administration | <p>Infusion: glyceryl trinitrate is adsorbed onto some plastics, eg PVC. Use glass infusion bottle and polyethylene giving set. Dilute with NaCl 0.9% or glucose 5% for admin by IV infusion pump and nonabsorptive tubing (non-PVC).</p> <p>Individualise dose. Initially 5 mcg/min, may incr by 5 mcg/min every 3-5 min until response noted; if no response at 20 mcg/min may incr by 10-20 mcg/min; continuous monitoring nec</p> <ul style="list-style-type: none"> • ensure a nitrate-free period of 10–12 hours each day with long-acting glyceryl trinitrate (patch) to avoid tolerance • do not stop IV infusion abruptly because of the potential for rebound symptoms. |
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ASTHMA

Asthma is a chronic obstructive lung disease. It is a respiratory condition marked by episodic attacks of spasm in the bronchi of the lungs, causing difficulty in breathing. It is usually connected to allergic reaction or other forms of hypersensitivity.

- excessive variation in lung function (variable airflow limitation)
- symptoms that vary over time



Signs and symptoms;

- coughing
- wheezing
- shortness of breath
- tachypnoea
- tightness of chest
- tachycardia

Risk factors;

- genetic- family history
- viral respiratory infections in infancy
- allergies
- occupational exposures
- air pollution
- obesity

Characteristics;

- chronic inflammation involving many cells and cellular elements
- airway hyper-responsiveness
- intermittent airway narrowing due to bronchoconstriction, congestion or oedema or bronchial mucosa or mucus

Mechanisms;

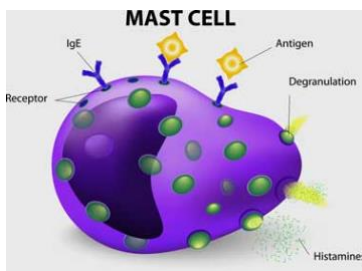
flow obstruction results from:

- bronchoconstriction
- contraction of airway smooth muscle
- swelling of the airway wall
- Mucous hypersecretion

Atopy

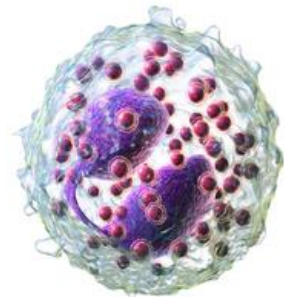
group of conditions resulting from hypersensitiveness unable to produce the antibody IgE*. e.g. hay fever, asthma, eczema etc

Immune cells in airways of asthmatics (elevated cells)



Mast Cells; (cells that are present in tissues, packed full of histamine) activation by allergens due to IgE on surface, but when sensitized, also react to osmotic stimuli (cold air inhalation or exercise induced).

Eosinophils; most asthmatics have higher than normal numbers in airways. Increase often correlates with severity. Release proinflammatory cytokines leukotrienes.



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Aetiology & Pathophysiology

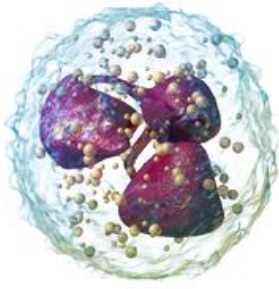
- No known exact cause; genetic and environmental factors play key role

Antigen presentation by the dendritic cell with the lymphocyte and cytokine response leading to airway inflammation and asthma symptoms

Diagnosis

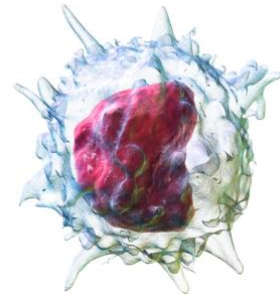
- monitored exposure to allergens
- spirometry test
- detailed family history and personal history
- pulmonary function test
- allergy testing
- chest x-ray

* IgE = immunoglobulin E, antibodies produced by the immune systems, if you have an allergy your immune system overreacts to an allergen by producing IgE, they travel to cells that release chemicals causing an allergic reaction



Neutrophils; increased in severe disease, during exacerbations and in smokers. Role in asthma not certain, but may determine poor response to corticosteroid treatment.

Macrophages; most numerous cells in airways. In addition to normal response, can also be primed by IgE. Release inflammatory mediators and cytokines



in

Cytokines

- cyto = cell
- kine = movement

These are cell moving messenger chemicals that are very important in ensuring immune responses occur.

- produced and released by T- lymphocytes eg. killer cells but especially T-helper cells that are a major source

Cytokine Types – ideally balance is wanted between the two for a good immune system

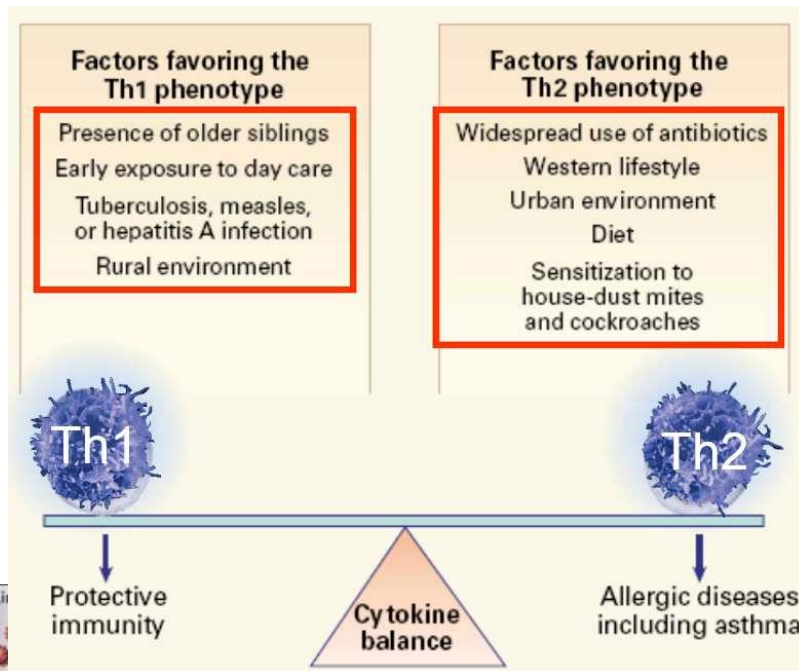
Th1 tend to generate responses against intracellular parasites such as bacteria and viruses
PROINFLAMMATORY

- increase inflammatory response
- interferon gamma is the main cytokine
- kill intracellular parasites
- help promote phagocytic activity
- responsible for autoimmune responses
- excess (not well balance with Th2) activation leads to tissue damage

Th2 produce immune responses against helminths and other extracellular parasites
ANTI-INFLAMMATORY

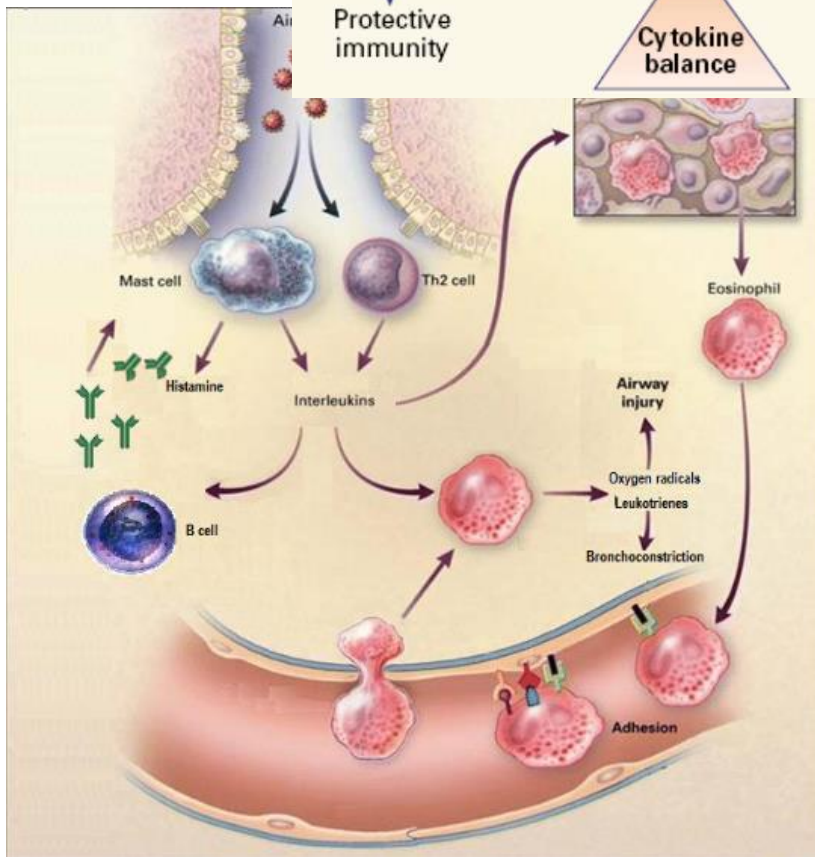
- Interleukins is the main cytokine
- responsible for promotion of antibody responses including IgE and atopy
- inhibits phagocytic activity
- counteracts Th1 and prevents uncontrolled inflammation tissue damage

Factors that may interrupt the cytokine balance

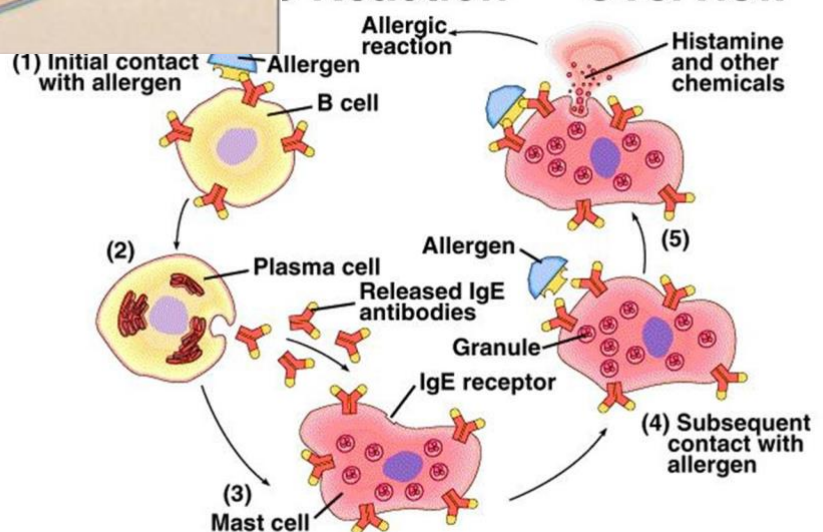


What happens in Asthma when someone becomes sensitized to an allergen?

- ←
1. arrival of allergen; activates a lymphocyte/ t-helper cell
 2. this then causes the release of cytokine of the Th2
 3. activates IgE; allergic response
 4. release interleukins, release eosinophils
 5. release of free/oxygen radical; airway injury, then release of leukotrienes, bronchospasm.
 6. release of B cell and Histamines from mast cell



Reaction — Overview



<http://www.google.co.uk/imgres?num=10&hl=en&client=firefox-a&rlz=org.mozilla.en-US:official&biw=1366&bih=649&thr=usch&thid=nl293V9y4m2kM&imgrefurl=http://blog.nutri-living.com/%3Fp%3D588&docid=3943b390QAJT7M&imgurl=http://blog.nutri-living.com/wp-content/uploads/2011/03/allergicresponse1.jpg&w=640&h=480&se=mL6KT>

Triggered by;

- a whole range of allergens
- stress
- exercise

Obstruction of airways due to bronchoconstriction and airway inflammation

Signs;

- wheezing (expiratory)
- coughing
- chest pain
- chest tightness
- air trapping

Respiratory distress

signs;

- pt in tripod position
- tachypnoea
- cyanosis
- wheezing
- sweating
- intercostal retractions
- nostril flaring
- grunting sound on exhalation
- pursed lip breathing (in through nose, out through mouth lips pursed)

Retractions during respiratory distress

Severe: suprasternal (supraclavicular)

Moderate: sternal (intercostal)

Mild: substernal (subcostal)

Simple non-medication ways to relieve respiratory distress

- sit in high fowlers or orthopnoeic position
- breathing exercises
- oxygen if O_2 below ideal range; 95-100% spo_2 , arterial oxygen between 75-100mmHg (below 60mmHg O_2 therapy required)

Medical interventions of asthma

- corticosteroids
- bronchodilators
- anticholinergics
- air humidifiers
- anti-inflammatory agents
- nebulizing administration
- removing allergens and irritants
- Beta 2 adrenergic agonists (long and short acting)

ASTHMA & COPD MEDICATIONS

SABA RELIEVERS

- Brigand Turbuhaler 1⁺ (salbutamol 200mg)
- Verdehaler Inhaler 1⁺ (salbutamol 100mg)
- Advair Diskus Inhaler 1⁺ (salbutamol 200mg)
- Asmet Inhaler 1⁺ (salbutamol 100mg)

ICS PREVENTERS

- Flutide Inhaler 1⁺ (fluticasone propionate 50mcg/110mcg + 100mcg/200mcg)
- Flutide Accuhaler 1⁺ (fluticasone propionate 100mcg/200mcg + 100mcg/200mcg)
- Flutide Inhaler 1⁺ (fluticasone propionate 50mcg/110mcg + 100mcg/200mcg)
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- Flutide Inhaler 1⁺ (fluticasone propionate 50mcg/110mcg + 100mcg/200mcg)

ICS/LABA COMBINATIONS

- Symbicort Turbuhaler 2⁺ (budesonide/formoterol 160/4.5 + 320/9)
- Symbicort Inhaler 2⁺ (budesonide/formoterol 160/4.5 + 320/9)
- Symbicort Accuhaler 2⁺ (budesonide/formoterol 160/4.5 + 320/9)
- Symbicort Inhaler 2⁺ (budesonide/formoterol 160/4.5 + 320/9)
- Symbicort Inhaler 2⁺ (budesonide/formoterol 160/4.5 + 320/9)
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- Symbicort Inhaler 2⁺ (budesonide/formoterol 160/4.5 + 320/9)
- Symbicort Inhaler 2⁺ (budesonide/formoterol 160/4.5 + 320/9)

LAMA MEDICATIONS

- Spiriva Respimat 1⁺ (tiotropium bromide 5mcg)
- Spiriva Handihaler 1⁺ (tiotropium bromide 5mcg)
- Spiriva Inhaler 1⁺ (tiotropium bromide 5mcg)
- Spiriva Inhaler 1⁺ (tiotropium bromide 5mcg)
- Spiriva Inhaler 1⁺ (tiotropium bromide 5mcg)
- Spiriva Inhaler 1⁺ (tiotropium bromide 5mcg)
- Spiriva Inhaler 1⁺ (tiotropium bromide 5mcg)
- Spiriva Inhaler 1⁺ (tiotropium bromide 5mcg)

NON STEROIDAL PREVENTERS

- Singulair Tablet 1⁺ (montelukast 5mg/10mg)
- Montelukast Tablet 1⁺ (montelukast 5mg/10mg)
- Montelukast Inhaler 1⁺ (montelukast 5mg/10mg)
- Montelukast Inhaler 1⁺ (montelukast 5mg/10mg)
- Montelukast Inhaler 1⁺ (montelukast 5mg/10mg)
- Montelukast Inhaler 1⁺ (montelukast 5mg/10mg)
- Montelukast Inhaler 1⁺ (montelukast 5mg/10mg)
- Montelukast Inhaler 1⁺ (montelukast 5mg/10mg)

LABA MEDICATIONS

- Salmeterol Turbuhaler 1⁺ (salmeterol 50mcg/100mcg)
- Salmeterol Inhaler 1⁺ (salmeterol 50mcg/100mcg)
- Salmeterol Inhaler 1⁺ (salmeterol 50mcg/100mcg)
- Salmeterol Inhaler 1⁺ (salmeterol 50mcg/100mcg)
- Salmeterol Inhaler 1⁺ (salmeterol 50mcg/100mcg)
- Salmeterol Inhaler 1⁺ (salmeterol 50mcg/100mcg)
- Salmeterol Inhaler 1⁺ (salmeterol 50mcg/100mcg)
- Salmeterol Inhaler 1⁺ (salmeterol 50mcg/100mcg)

LAMA/LABA COMBINATIONS

- Spiriva Respimat 1⁺ (tiotropium bromide 5mcg)
- Spiriva Handihaler 1⁺ (tiotropium bromide 5mcg)
- Spiriva Inhaler 1⁺ (tiotropium bromide 5mcg)
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SAMA MEDICATION

- Advair Diskus Inhaler 1⁺ (fluticasone propionate 50mcg/110mcg + 100mcg/200mcg)
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- Advair Diskus Inhaler 1⁺ (fluticasone propionate 50mcg/110mcg + 100mcg/200mcg)

RESOURCES

TREATMENT GUIDELINES

INHALER TECHNIQUE

PBS PRESCRIBERS

National Asthma Council Australia

2016 © National Asthma Council Australia

Management of Asthma

1. Medication –

- preventers/relievers/symptom controllers
- self- monitoring- peak flows and symptoms
- educations and skills- knowledge, inhaler technique, adherence, written asthma action plans
- Avoidance of triggers
- Regular review (every 6 months)

Goals of Asthma management

- symptom control
- risk reduction

ASTHMA ACTION PLAN

Take this ASTHMA ACTION PLAN with you when you visit your doctor



| | | |
|--------------------------------|--------------------------------|---------------------------------|
| NAME _____ | DOCTOR'S CONTACT DETAILS _____ | EMERGENCY CONTACT DETAILS _____ |
| DATE _____ | | Name _____ |
| NEXT ASTHMA CHECK-UP DUE _____ | | Phone _____ |
| | | Relationship _____ |

WHEN WELL *Asthma under control (almost no symptoms)*

ALWAYS CARRY YOUR RELIEVER WITH YOU

Your preventer is: _____
 Take _____ puffs/tablets _____ times every day
☐ Use a spacer with your inhaler

Your reliever is: _____
 Take _____ puffs
 When: You have symptoms like wheezing, coughing or shortness of breath
☐ Use a spacer with your inhaler

OTHER INSTRUCTIONS
 (e.g. other medicines, trigger avoidance, when to do before exercise)

Peak flow* (if used) above: _____

WHEN NOT WELL *Asthma getting worse (needing more reliever than usual, having more symptoms than usual, waking up with asthma, asthma is interfering with usual activities)*

Keep taking preventer: _____
 Take _____ puffs/tablets _____ times every day
☐ Use a spacer with your inhaler

Your reliever is: _____
 Take _____ puffs
☐ Use a spacer with your inhaler

OTHER INSTRUCTIONS
 (e.g. other medicines, when to stop taking extra medicines)

☐ Contact your doctor

Peak flow* (if used) between _____ and _____

IF SYMPTOMS GET WORSE *Severe asthma flare-up/attack (needing reliever again within 3 hours, increasing difficulty breathing, waking often at night with asthma symptoms)*

Keep taking preventer: _____
 Take _____ puffs/tablets _____ times every day
☐ Use a spacer with your inhaler

Your reliever is: _____
 Take _____ puffs
☐ Use a spacer with your inhaler

OTHER INSTRUCTIONS
 (e.g. other medicines, when to stop taking extra medicines)

☒ Contact your doctor today

Prednisolone/prednisone:
 Take _____ each morning for _____ days

Peak flow* (if used) between _____ and _____

DANGER SIGNS *Asthma emergency (severe breathing problems, symptoms get worse very quickly, reliever has little or no effect)*

DIAL 000 FOR AMBULANCE

Call an ambulance immediately
 Say that this is an asthma emergency
 Keep taking reliever as often as needed
☐ Use your adrenaline autoinjector (EpiPen or Anapen)

Peak flow* (if used) below: _____

National Asthma Council Australia
 Leading the attack against asthma
nationalasthma.org.au

* Peak flow not recommended for children under 12 years

ASTHMA ACTION PLAN
 Facilitates early detection and treatment of an asthma exacerbation; a set of personalized instructions prescribed for the self-management of deteriorating asthma

main written factors to an effective action plan:

- when to increase treatment
- how to increase treatment
- how long to stay on increased treatment
- when to seek urgent medical assessment
- patient engagement and acceptance

PEAK FLOWS

- Peak = expiratory
- Flow = PEF

if patients don't recognize asthma symptoms, PEF may be more sensitive in determining exacerbations

This is the measurement of peak expiratory flow, it gives an idea of how narrow or obstructed a person's airways are by measuring the maximum/peak rate at which they can blow air into a peak flow meter after a deep breath.

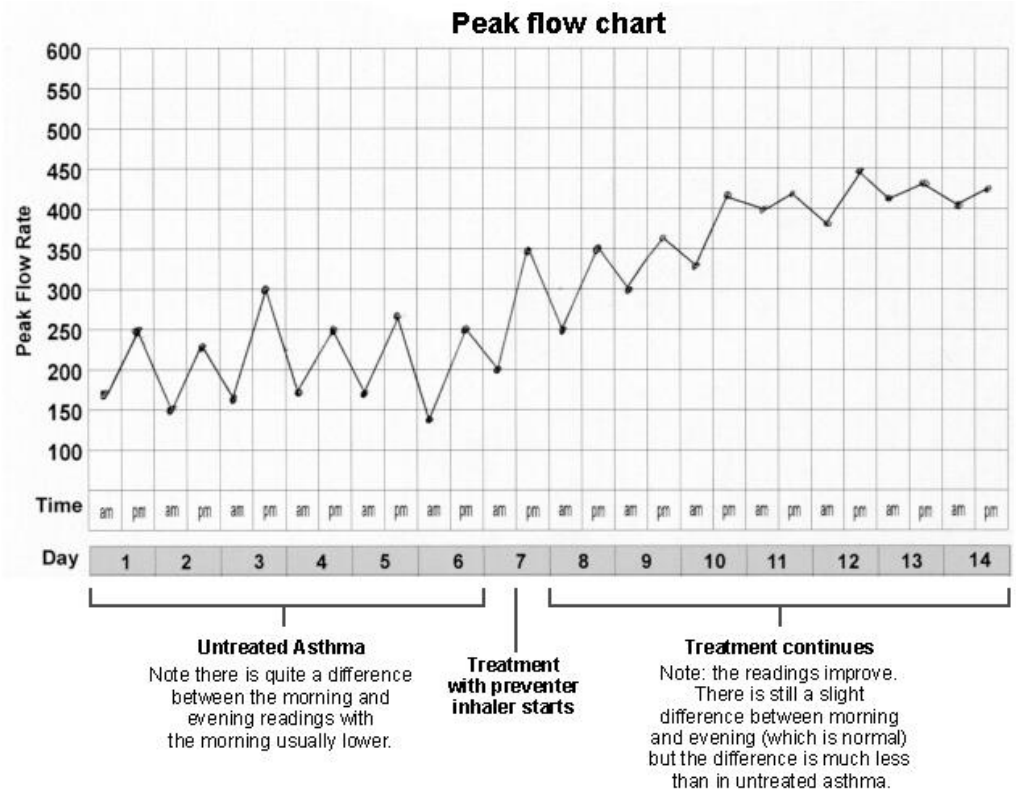
Peak flow monitoring helps measure how much and when the airways are changing.

Normal Ranges

- Child; a child with a height of 85cm should be 87L/min, 1.3m should be 212L/min, 1.7 should be 393L/min etc
- Adult; 340-530L/min for women and 440-740L/min for males

Normal ranges for both adults and children vary depending on sex, age and height.

RECORD ON PEAK FLOW CHART



Oxygen delivery

if oxygen saturation is less than 96% consider which respiratory variable is failing

- FLOW: Lung tissue; e.g. pneumonia, COPD
 - RATE: drive to breathe; e.g. spinal injury, fatigue
- and support with the appropriate option

MODE OF O₂ DELIVERY (variable performance)

Nasal Prongs/Cannula; max flow is 4 LPM.

| Flow (LPM) | O ₂ Concentration (FiO ₂) |
|------------|--|
| 1 | 25% |
| 2 | 29% |
| 3 | 33% |
| 4 | 37% |

Hudson Mask; minimum of 5-6 LPM for all masks to flush expired carbon dioxide and prevent rebreathing of CO₂

| Flow (LPM) | O ₂ Concentration (FiO ₂) |
|------------|--|
| 4 | 35% |
| 6 | 45% |
| 8 | 50% |
| 10 | 60% |

Non-rebreather; delivers the highest possible concentration without intubation. Reservoir bag must remain inflated at all times. if bag collapses, increase flow rate until inflated.

| Flow (LPM) | O ₂ Concentration (FiO ₂) |
|------------|--|
| 6 | 60% |
| 7 | 70% |
| 8 | 80% |
| 9 | 90% |
| 10 | Almost 100% |
| >10 | 100% |

Venturi Mask; high flow (fixed performance)

MO will prescribe FiO_2 rate required for patient
(use on COPD pt's)

| Venturi valve colour | Flow rate (L/min) | O ₂ Delivered (%) |
|----------------------|-------------------|------------------------------|
| Blue | 4 | 24 |
| Yellow | 4 | 28 |
| White | 6 | 31 |
| Green | 8 | 35 |
| Pink | 10 | 40 |
| Orange | 10 | 50 |