

ACEM Primary Examination Vivas > Pharmacology > Respiratory System	
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The Greatest Cure on Earth.

KARSWOOD CREOSOTE

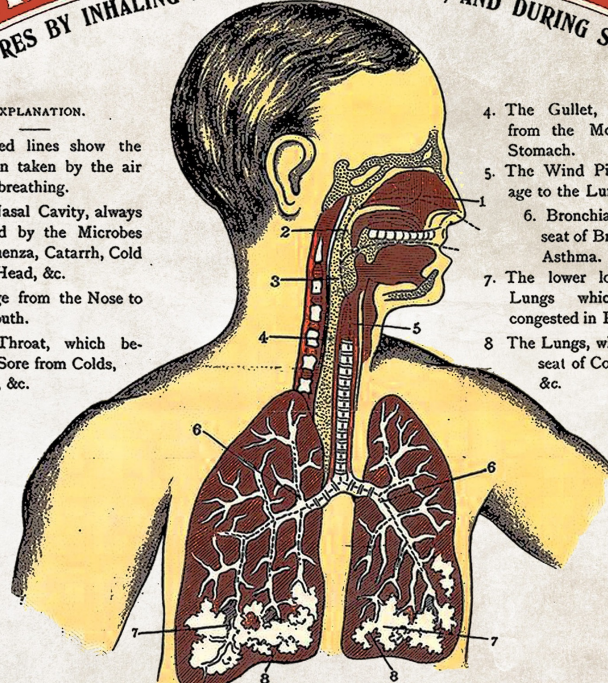
CURES BY INHALING FROM A HANDKERCHIEF, AND DURING SLEEP.

EXPLANATION.

The dotted lines show the direction taken by the air during breathing.

1. The Nasal Cavity, always attacked by the Microbes of Influenza, Catarrh, Cold in the Head, &c.
2. Passage from the Nose to the Mouth.
3. The Throat, which becomes Sore from Colds, Fevers, &c.

4. The Gullet, or Passage from the Mouth to the Stomach.
5. The Wind Pipe or Passage to the Lungs.
6. Bronchial Tubes, the seat of Bronchitis and Asthma.
7. The lower lobes of the Lungs which become congested in Pneumonia.
8. The Lungs, which are the seat of Consumption, &c.



It is a perfect, quick, and certain Cure for Cold in the Head, Catarrh, Influenza, Sore Throat, Bronchitis, Asthma, Whooping Cough, Croup, Incipient Consumption, Hay Fever, &c., and all Diseases affecting the Breathing Organs.

IT CURES TOOTHACHE LIKE MAGIC.

Bottles 1/1², 2/9, 4/6 each, from all Chemists, &c.

Manufacturer :—E. GRIFFITHS HUGHES, Chemist, VICTORIA STREET, MANCHESTER.

Asthma Medication 2009-2

<p>Question 2:</p> <p>Classification of drugs in acute asthma</p>	<p>(a) Outline the groups of drugs that might be used in asthma and give an example of each?</p>	<ul style="list-style-type: none"> • sympathomimetics • corticosteroids • muscarinic antagonists • other bronchodilators -magnesium • antihistamines (allergic basis) • methylxanthines • cromolyns • leukotriene inhibitors [antagonists] – montelukast, zafirlukast, zileuton • heliox –changing airflow dynamics • ?other smooth muscle dilators – ketamine; calcium channel blockers • Experimental -; IgE monoclonal antibodies - omalizumab 	<p>(2 of 3 bolds to pass)</p> <p>Must get 3 bolded groups and one other with one correct drug example per group to pass.</p>
	<p>(b) Outline the mechanism of action of corticosteroids in asthma</p>	<p>Corticosteroids do the following:</p> <ul style="list-style-type: none"> • Reduce bronchial reactivity • Inhibition of (lymphocytic and eosinophilic) airway mucosal inflammation • Increase airway calibre 	<p>Must get bolded point to pass</p>

Asthma Preventers 2006-1

<p>Inhaled asthma preventers</p>	<p>Outline the types of drugs used as preventers in the management of asthma?</p> <p>What are the potential adverse clinical effects of inhaled steroid therapy?</p> <p>Describe the mechanism of action of cromoglycate?</p> <p>What are the clinical uses of cromoglycate?</p>	<p>Corticosteroids Cromolyn / nedocromil (+/- long acting cromolyn – tilade)</p> <p>Oropharyngeal candidiasis Any 1 of list</p> <p>Mast cell stabilisation</p> <p>Antigen induced, exercise induced, occupational, young with extrinsic asthma 2 of above prompt allowed</p>	<p>Leukotriene pathway inhibitors (Singular, Accolate): Zafirlukast, montelukast) Long acting antichol; Long acting Beta 2 agonists; Anti IgE monoclonal Ab; Ca channel blockers; Nitric oxide donors</p> <p>Hoarseness; Osteoporosis; Cataracts Slows rate of growth in kids; ? delayed puberty</p> <p>Changed function of delayed Cl channels; inhibits cellular activation: -airway neurones (cough), mast cells, eosinophils</p>
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B2 Agonists 2012-1

<p>Question 3 LOA: 1 SELECTIVE B2 AGONISTS</p>	<p>What B-receptor types are there?</p> <p>What cellular processes do B-agonist - B-receptor coupling initiate?</p> <p>What are the clinical uses of B2 selective agonists?</p>	<p>B1, B2 + B3</p> <p>Activation of all 3 receptor types results in stimulation of adenylyl cyclase and increased conversion of ATP to cAMP. Mediated by stimulatory coupling protein (Gs) via GDP and GTP</p> <p>Respiratory, uterine and vascular smooth muscle relaxation Skeletal muscle K⁺ uptake</p>	<p>Need B1 + B2</p> <p>Need adenylyl cyclase</p> <p>Need respiratory bronchodilation + one other</p>
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B2 Agonists 2007-2

1.2 Beta 2 agonists (JT)	What are the actions of beta 2 agonists in the treatment of asthma?	Sm M relaxation/ Bronchodilatation , inhibit mast cell release, increase mucociliary activity act via Gs protein, adenylyl cyclase and cAMP	
	Compare salmeterol and salbutamol	Salbutamol- IV oral, or inhaled, short acting (4 hours) Salmeterol – long acting (12 hours) – high lipid solubility – dissolves in sm m membrane (partial agonist) Not useful for acute	
	What are the side effects of beta 2 agonists?	Skeletal Muscle tremor, (lactic acidosis), tachycardia, (tachyphylaxis), hypokalaemia, – transient hypoxaemia (any 2)	/2

Corticosteroids in Asthma 2011-1

<p>Drugs used in Asthma</p>	<p>a) What are the effects of corticosteroids on airways in asthma treatment?</p> <p>b) Describe the cellular mechanisms by which corticosteroids are believed to exert their effects acutely.</p>	<p>Increase in airway calibre by inhibition of airway inflammation, decrease in bronchial reactivity and local immune suppression</p> <ol style="list-style-type: none"> 1. Decreased activation of lymphoid cells/eosinophils 2. Decreased cytokine production and action 3. Decreased production vasodilator prostaglandins 4. Decreased histamine release 5. Decreased production of IgE and IgG 	<p>bold</p> <p>2/5 to pass</p>
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Salbutamol 2016-2-A

Stem: Moving onto Pharmacology. She has been treated with Salbutamol for her dyspnoea.			
Question 5 Salbutamol Subject: Pharmacology LOA: 1	1) What class of drug is salbutamol	A selective beta 2 agonist that is used as a bronchodilator	Bold to pass
	2) What are the different routes of administration of salbutamol <i>Prompt: Any other route?</i>	Inhaled- nebulized, puffer +/- spacer Oral, IV, IM, SC	Bold to pass
	3) What are the advantages of the different methods of administration of inhaled salbutamol	<u>Nebulized:</u> Rapidly absorbed, no co-ordination required, not much education required, no first pass metabolism <u>Puffer +/- spacer:</u> As effective as nebulized when used properly, targeted, lower dose, less side effects	Bold to pass
	4) What are the advantages and disadvantages of IV salbutamol in asthma	Pros- no first pass metabolism, maybe useful in severe/life threatening asthma Cons- Requires IV (disadvantage in children), more systemic side effects	2/4 to pass

Salbutamol 2015-2-C

Stem: A 20 year old motor cyclist is brought to the ED with chest injuries. He is asthmatic.			
TOPIC	QUESTIONS	KNOWLEDGE (essential in bold)	NOTES
Stem: Let's start with Pharmacology. He has been given Salbutamol nebulisers for his wheeze.			
Question 1 Salbutamol Subject: Pharm LOA: 1	1. What is Salbutamol? 2. Describe the pharmacokinetics of salbutamol? (Prompt for t _{1/2}) 3. Describe the pros and cons of the different routes of delivery of salbutamol? Prompt: Is there any other route? (non-inhaled)	Salbutamol is a selective B ₂ agonist and used as a Bronchodilator 1. Absorption – Fast and complete (inhaled) a. GIT – rapidly absorbed b. Inhaled – Bronchodilation maximal within 15-30 min and persists for 3-4 hours. 2. Metabolism – 50% 1 st pass. Sulphated in the liver and metabolites excreted in the kidneys (also excreted unchanged in renal. No metabolism in lungs 3. t _{1/2} – 3-6 hours 1. Inhaled a. Spacer/inhaler Pro: Targeted, low dose, minimise systemic side effects. As effective as nebulised. No 1 st pass metabolism Con: Coordination and education required b. Nebulised Pro: Less coordination required and minimal education Con: Larger particles and hence dose required, noisy (children get frightened), higher incidence of systemic SE 2. Oral Pro: Easier in very young/disabled. Longer t _{1/2} Cons: Big doses, high SE profile (tachycardia, tremor, nervousness and weakness). Minimal advantage to inhaled. 50% first pass metabolism 3. IV/IMI/SC – useful in severe asthma Pro: No first pass metabolism Con: Needle, painful, higher cost and SE profile	A selective B₂ agonist 1. Absorption – Fast or complete (inhaled). 2. Rapid onset of action 3. t _{1/2} 3-6 hours (2 of 3 to pass) Need to describe pros and cons of Inhaled plus 1 other route

Salbutamol 2008-2

<p>Question 4:</p> <p>Salbutamol</p>	<p>1). Describe the pharmacokinetics of salbutamol?</p> <p>2). What are the pros and cons of the different routes of delivery <i>Prompt: MDI vs nebuliser</i></p>	<p>1). Absorption –complete all routes. Gut fast, resp tract slower- depends on mechanism delivery - gut 80% with Neb. 2). Metab/elim- 50% 1st pass (less if IV) (sulphated- inactive) liver, rest renal/unchanged. 3). No resp metabolism. 4). t1/2 3-6hr – prolonged if resp</p> <p>1.Inhaled- Inhaler/ spacer: targeted/ low dose – minimal systemic ? local effects, co-ordination education; ii) Nebulised- less co-ord required-> dose/systemic effects , noisy/frighten children- no benefit in co-ordinated patients</p> <p>2.Oral- easier in v young/ disabled- longer t1/2, > SE profile, big doses, tachyphylaxis- possible increased deaths</p> <p>3.IV/IM/SC – useful in asthma extremis or other indications, less 1st pass/.</p> <p>IV- pain/cost/staff use/high SE profile + high risk pts</p>	<p>good fast absorption- all routes Metab 50% + renal.</p> <p>Grasp of 2 different routes Inhaler/ spacer v Neb v IV minimum Targetted proven effectiveness inhalers/pacers SE profile: < to > Inh v Neb v Oral v Systemic Co-ordination/delivery in extremis (age or severity) important</p>
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