Drug Treatment of Cough

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Drug Treatment of Cough

- Cough is a protective reflex mechanism.
- It can be stimulated by irritation, inflammation or tumors of the respiratory tract

Types of cough:

1. Useful cough (productive): serves a purpose and should not be suppressed.
2. Useless cough (unproductive): is distressing and can exhaust the patient if severe, both physically and psychologically. Should either be made useful or suppressed.

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- Drugs that suppress cough are called antitussives.
- Antitussives suppress cough without affecting the underlying cause. Therefore, they are only symptomatic treatment.
- They should not be used for the cough of bronchial asthma or that caused by suppurative lesions of the respiratory tract.
- The best antitussive treatment is treatment of the underlying cause.

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Sites of Action of Antitussives:

I. On the peripheral sites (afferent side of the cough reflex): reduction of input of stimuli from throat, larynx, trachea and bronchial tree by relieving irritation or producing a soothing effect.

Demulcents:

1. Warm moist atmosphere (warm water vapor): promotes secretion of dilute mucous that provide protective coating of the inflamed mucous membrane.

- Used for cough arising below the larynx.

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2. Lozenges, syrup or linctus of licorice or methylcellulose:

- **Provides coating of mucous membranes for cough arising above the larynx.**

Menthol or Eucalyptus vapor or lozenges:

- **They reduce irritation and thus tendency for cough**
- **They have local anesthetic effect.**
- **Can be combined with warm water vapor**

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II. Measures acting on the efferent side of the cough reflex:

- To render secretions more easily removable.
- Reduce the amount of coughing by increasing its efficiency.

1. **Mucolytics:**

   Are drugs which reduce viscosity of bronchial secretions, making them easily removable.

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Bromehexine

- **Causes depolymerization of the mucopolysaccharide fibers of mucous so that large, less viscous amounts can be expectorated.**

Acetylcysteine, Carbocysteine, Mecysteine

- **Contain free sulfhydryl (-SH) groups, that can open disulfide bonds (-S-S-) of mucous, and thus, reducing its viscosity.**

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- **Best results are achieved by inhalation or nebulization.**
- **Can also be given orally.**
- **Can cause GI irritation and allergic reactions.**
- **Water vapor inhalation or hydrating a dehydrated patient also reduce viscosity of bronchial secretions.**

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Dornase alfa

- It is a phosphorylated glycosylated recombinant human deoxyribonuclease.
- Given by inhalation or nebulization to patients with cystic fibrosis, where there is a genetic defect in Cl^- transport leading to viscous sputum.
- The blocked airways and sputum trap pathogens and inflammatory cells, which when lysed produce substantial amounts of free and very viscous DNA

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2. Expectorants:

- Agents which increase the amount of, and liquefy bronchial secretions.

Mentholyated water vapor

Guaifenesin:

- It reduces adhesiveness and surface tension which facilitates removal of mucus and soothes dry, irritated membranes
- It is of questionable clinical value.
- Adverse effects: Nausea, vomiting, headache.

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Drugs that act on the CNS:

- **Act by suppressing the medullary cough center.**

1. **Opioids and related drugs:**

- **Lower doses are needed to suppress cough than those needed to produce analgesia.**
- **Antitussive effect is not blocked by the opiate antagonist, Naloxone.**

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Codeine (Methylmorphine):

- Antitussive dose 15 mg (analgesic dose is 60 mg)
- It has less addictive and less respiratory depression than other opiates.
- Part of the antitussive effect is due to sedation.

Adverse effects:

1. Inhibition of ciliary activity in bronchioles and dryness of secretions lead to reduced clearance of thick sputum and sputum retention.
2. Constipation.

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Dextromethorphan

- **Non-narcotic, non-analgesic, non-addictive, non-constipating and does NOT inhibit mucociliary clearance.**
- **Antitussive action is equal to codeine.**
- **Adverse effects are minor at therapeutic doses.**

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H_1-histamine Receptor Blockers (Diphenhydramine):

- **Can suppress cough with substantial sedation.**
- **Can be used in children only at night.**
- **Usually, cough in children is almost always useful and should NOT be suppressed.**