Expectorant and Antitussive

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COUGH

- Protective reflex, its propose being expulsion of respiratory secretions or foreign particles from air passages.
- Occurs due to mechano- or chemoreceptors in throat, respiratory passages or stretch receptors in the lungs.
- annoy the patient or prevent rest and sleep

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Types of Cough

1. Productive (Useful) cough
- Presence of excessive sputum
- needs coughing/clearing out of the sputum

2. Unproductive (Useless) cough
- Increases discomfort to the patient
- needs suppression

Classification of drugs for Cough

- **Pharyngeal demulcents:** Lozenges, cough drops, linctuses containing syrup, Glycerine, Liquorice
- **Expectorants:**
  1. **Mucokinetics (Bronchial secretion enhancers):** Sodium or potassium citrate, Potassium iodide, Guaphenisin (Glyeryl guaiacolate), balsum of Tolu, Vasaka, Ammonium chloride.
  2. **Mucolytics:** Bromhexene, Ambroxol, Acetylcystein, Carbocystein
- **Antitussives (Cough center supressants):**
  a) **Opioids:** Codein, Pholcodein
  b) **Non-opioids:** Noscapine, Dextromethorphan, Chlophedianol
  c) **Antihistaminics:**Chlorpheniramine, Diphenhydramine, Promethazine
- **Adjuvant antitussives:**
  Bronchodilators: Salbutamol, Terbutaline

Pharyngeal Demulcents

- **Soothe the throat** (directly as well as by promoting salivation)
- reduce afferent impulses from inflammed/irritated pharyngeal mucosa
- provide **symptomatic relief** in dry cough arising from throat.

Expectorants

- Act Peripherally
- Increases the bronchial secretion or reduce its viscosity, facilitating its removal by coughing.
- Loosen cough which becomes less tiring and more productive.

Mucokinetics

- Sodium and Potassium Citrate or Acetate (0.3-1g): increases bronchial secretion by salt action
- Potassium Iodide (0.2-0.3g): increases the volume of bronchial secretion by irritating bronchial glands.
  Prolong use: Goiter and hypothyroidism
- Gauifenesin: Increase bronchial secretion and mucosal ciliary action
- Ammonium salts: Gastric irritants ↬ reflexly ↑bronchial secretions + sweating
  Unpleasant taste ↬ nausea

ii. Mucolytics

- Help in expectoration by liquefy the viscous tracheobronchial secretion

Bromhexine

- Alkaloid vasacine obtained from Adhatoda Vasaka.
- Potent mucolytic and mucokinetic, capable of inducing thin copious bronchial secretion.
- Depolymerise mucopolysachharides directly as well as by liberating lysosomal enzymes
- Network of fibres in tenacious sputum is broken.

- A/E: rhinorrhea and lacrymation, gastric irritation, hypersensitivity
- *Dose: adult 8 mg TDS, children 1-5 years 4mg BD, 5-10 years 4 mg TDS*

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Ambroxol

- metabolite of bromhexine having similar mucolytic action, uses and side effects.
- Dose: 15-30 mg TDS

Acetylcysteine

- Given directly into respiratory tract
- Opens disulfide bond in mucoprotein of sputum ↓viscosity
- Uses: Cystic fibrosis (to ↓viscosity)

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Expectorants: Nursing Interventions

- Encourage client to drink fluids.

ANTITUSSIVES

- These act in CNS to raise the threshold of cough center (and/or) peripherally in respiratory tract to reduce tussal impulse
- Should be used only for dry unproductive cough **OR**
- if cough is unduely tiring, disturbs sleep **OR**
- is hazardous (hernia, piles, cardiac disease, ocular surgery)

Opioids

Codiene

- Opium alkaloids, qualitatively similar to but less potent than morphine.
- More selective for cough centre and is treated as the standard antitussive.
- Suppress cough for 6 hours.
- Antitussive action blocked by naloxone
- Has less addiction
- Side effect: Constipation
- Respiratory depression and drowsiness at higher doses
- Dose: 10-30mg

Opioids

Pholcodieine

- Practically no analgesic or addicting property
- Similar in efficacy as antitussive to codeine
- Longer acting (act for 12 hours or more)
- Dose: 10-15mg

Non-Opioids

Dextromethorphan

- a chemical derivative of the opiate narcotics
- Suppresses the cough reflex by direct action on the cough center in the medulla
- As effective as codeine
- no respiratory depression or dependence or constipation
- Antitussive action not blocked by naloxone
- Side effect: Dizziness, nausea, drowsiness, ataxia
- Dose: 10-20mg

Non-Opioids

Noscapine

- Suppress cough but do not have addictive, analgesic & constipating properties
- Useful in spasmodic cough
- Side effect: headache and nausea
  Can release histamine and produce bronchoconstriction in asthmatics
- Dose: 15-30mg

Antitussive Agents: Nursing Interventions

- Perform respiratory assessment.
- Instruct clients to:
  - Avoid driving or operating heavy equipment
  - Not drink liquids for 30 to 35 minutes after taking a cough syrup or using a cough lozenge

Antihistamines

- Added to antitussives/expectorant formulation
- Due to sedative & anticholinergic actions produce relief in cough but lack selectivity for cough centre
- No expectorant action; may reduce secretions by anticholinergic effect.
- Suitable for allergic cough

E.g. *Chlorpheniramine (2-5 mg), diphenhydramine (15-25 mg), promethazine (15-25mg)*

A/E: sedation, diminished alertness and concentration, fatigue, dryness of mouth, headache

- Used as Allergic disorder, common cold, motion sickness, vertigo, cough, as sedative, hypnotic and anxiolytic agent