

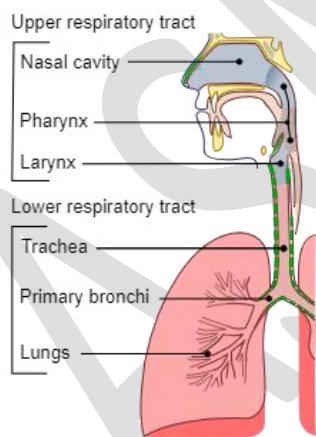
NASAL DECONGESTANT AND RESPIRATORY STIMULANTS

NASAL CONGESTION

- ❑ Nasal congestion can be caused by **anything that irritates or inflames the nasal tissues.**
- ❑ Infections such as **cold, flu or sinusitis and allergies** are frequent causes of nasal congestion and runny nose.
- ❑ Sometimes a congested and runny nose can be caused by irritants such as **tobacco, smoke** etc...

NASAL DECONGESTANTS

- ❑ Nasal decongestants are pharmaceutical drugs that are used to **relieve nasal congestion in the upper respiratory tract.**



- ❑ "These are **α agonists** which on topical application as dilute solution (0.05—0.1%) produce **local vasoconstriction.**"
- ❑ Simply, nasal decongestants are the drugs that reduce congestion of nasal passages, which in **turn open clogged nasal passages and enhances drainages of the sinuses.**
- ❑ Nasal decongestants are prescribed in patients **with allergic or vasomotor rhinitis** and in **acute rhinitis** in patients with **upper respiratory infections.**
- ❑ Major limitation with chronic nasal decongestants therapy or withdrawal of therapy is loss of efficacy, "**rebound**" **hyperemia**, and worsening of symptoms may due to **receptor desensitization and damage to the mucosa.**

CLASSIFICATION

A. Depends upon duration of action;

- 1. Short-acting decongestants administered topically;**
 - Phenylephrine, Phenylpropanolamine.
- 2. Long-acting decongestants administered orally;**

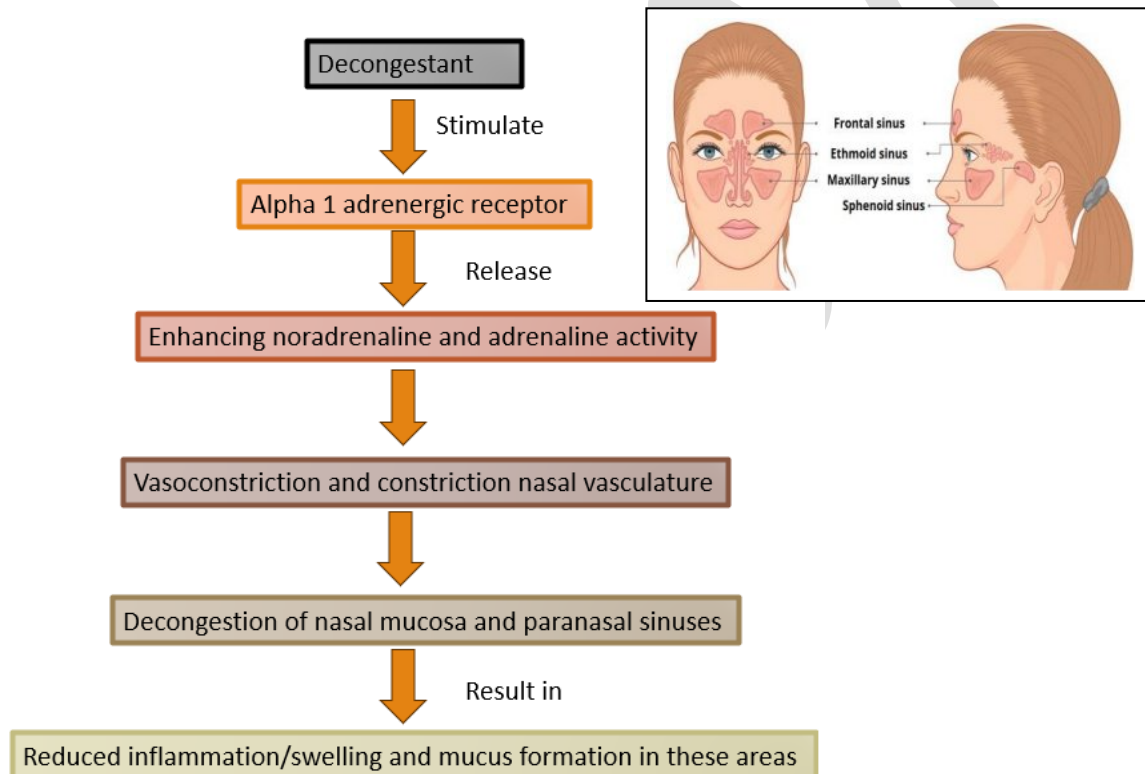
- Ephedrine, Pseudoephedrine, Naphazoline.

3. Long-acting topical decongestants;

- Xylometazoline, Oxymetazoline

B. Depends upon a Receptor agonists/ Sympathomimetic decongestants

- ❑ These agents used with great caution in patients with hypertension and in men with prostatic enlargement, and they are contraindicated in patients who are taking MAO inhibitors.
- ❑ **α_1 agonist:**
 - Phenylephrine.
- ❑ **α_2 receptors agonists/ Imidazoline compounds :**
 - Clonidine, Naphazoline, xylometazoline, oxymetazoline.



SIDE EFFECTS

- ❑ The effects are not limited to the nose, and these medicines may cause hypertension (high blood pressure) through vasoconstriction; it is for this reason that people with hypertension are advised to avoid them.
- ❑ Common side-effects include
 - ❑ **Sleeplessness, Anxiety, Dizziness, Excitability and nervousness.**

- Topical nasal or ophthalmic decongestants** quickly develop **tachyphylaxis** (a rapid decrease in the response to a drug after repeated doses over a short period of time).
- Long-term use is not recommended, since lose effectiveness after a few days.

RESPIRATORY STIMULANTS

- Also called as "**Analeptics**"
- These are '**Chemical agents**' or '**Drugs**' which stimulate respiratory system 'or' restore the normal respiration when '**lungs are unable**' to do normal respiration
- They have resuscitative value (i.e., restore consciousness)
- Resuscitation = Bringing back to the life
- At **low doses, they stimulate respiration.**
- At **high doses, they produce convulsions, coma, fainting etc.,**
- They have **narrow therapeutic window**
- Margin of safety is narrow**
- Hence, instead of giving respiratory stimulants, initially it is advised to give **mechanical support to respiration**
- They **stimulate CNS** (Also known as CNS stimulants)
- They **stimulate 'Chemoreceptor & Vasomotor Center** (Regulates blood vessel diameter)
- They **stimulate bronchi, trachea, lungs by irritating epithelial lining of air passage way.**

ROLE OF ANALEPTICS

Role in therapeutics is very limited used in conditions like;

- (a) **Overdose with sedatives or hypnotic** until mechanical ventilation is instituted.
- (b) **Suffocation on drowning, acute respiratory insufficiency** or in **postanaesthetic respiratory depression.**
- (c) **Apnoea in premature infant.**
- (d) **Failure to ventilate spontaneously after general anaesthesia.**
- (e) **Idiopathic hypoventilation.**

CLASSIFICATION

A) Drugs directly activating respiratory centre:

- Caffeine, Doxapram, Bemegride, Etimizole.

B) Drugs acting by reflex action:

- Cytiton, Lobeline.

C) Drugs shows mixed type of action:

- Nikethamide, Carbogen.

DOXAPRAM

- Short acting respiratory stimulant**
- Excites CNS**
- Stimulates Respiratory center in medulla**
- Stimulates carotic and aortic chemoreceptors**
- ADVERSE EFFECTS: Nausea, Coughing, Restlessness**
- Dose: 40-80 mg I.M (or) I.V, 0.5—2 mg/kg/hr i.v. infusion.**
- Advice: Use in acute respiratory failure**

CAFFEINE

- Also called as Methylxanthine
- Found in coffee, tea etc.,
- Mechanism of action:**
 - Inhibits phosphodiesterase enzyme, hence, it promotes cAMP (Cyclic adenosine monophosphate), leads to increased sensitivity of respiratory center to CO₂**
 - Further, it acts as **adenosine receptor antagonist**, and thus prevents the **death due to sleeping apnea (death in sleep)**