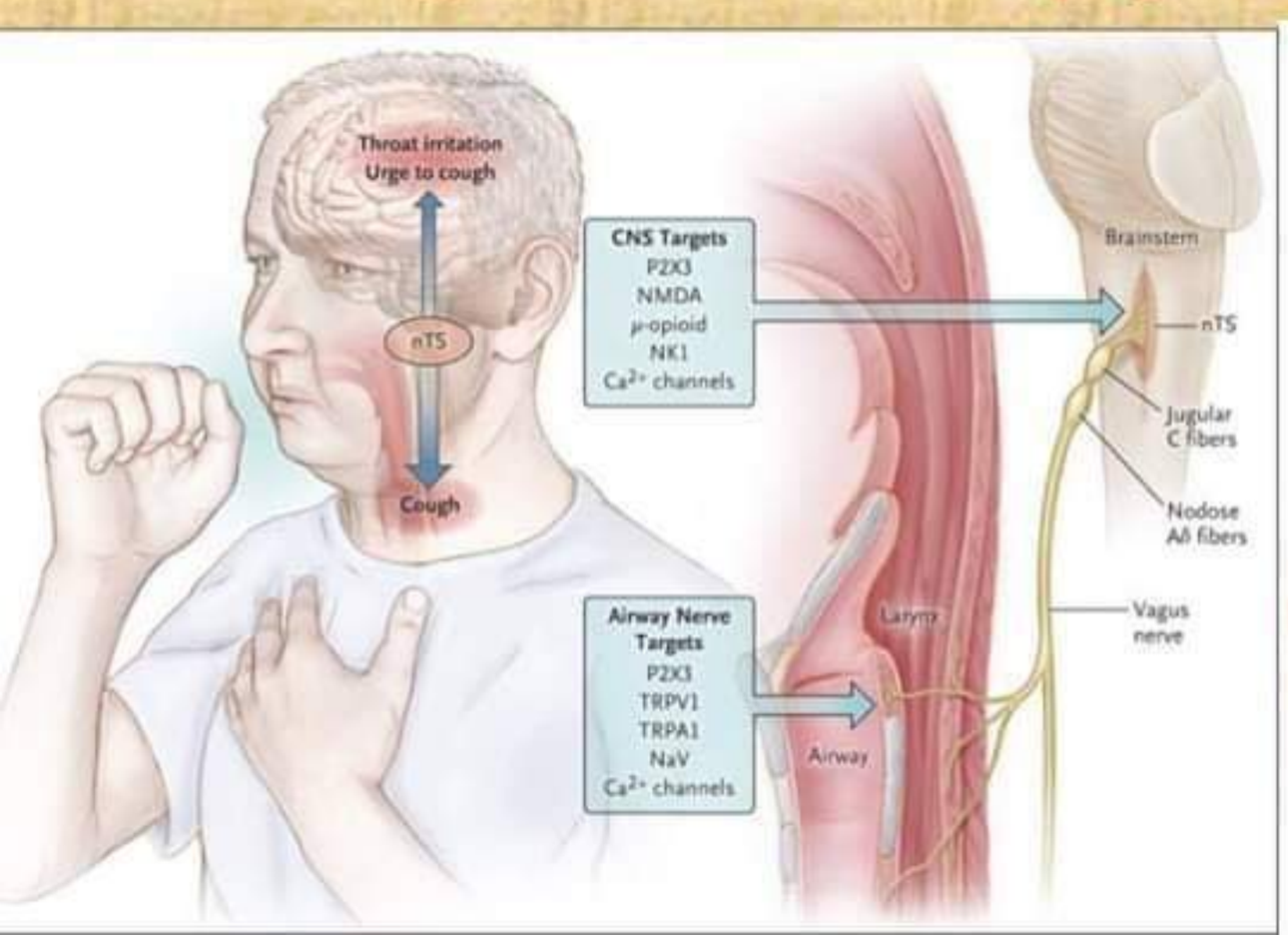
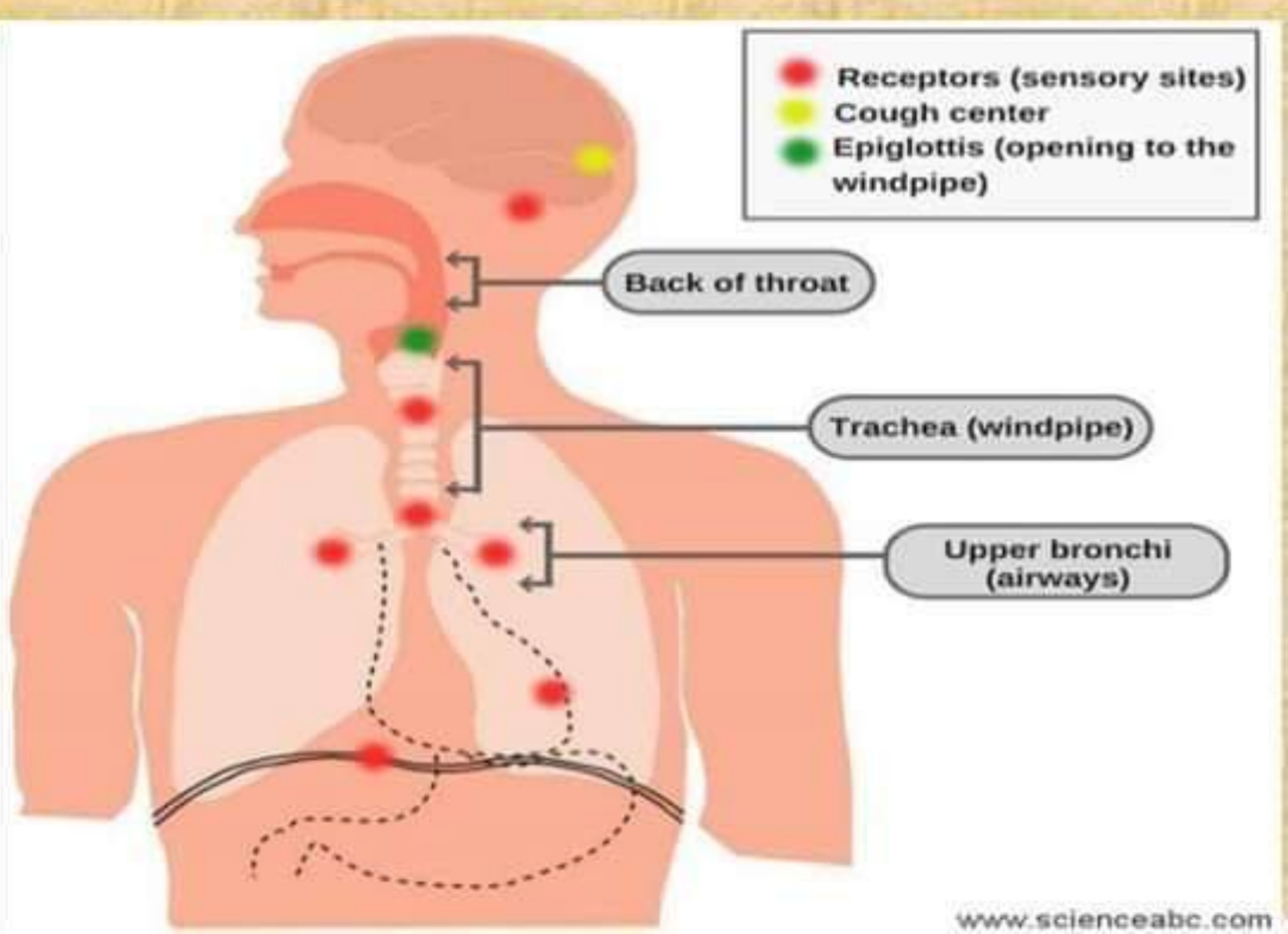
# Cough

@MD,Sun Bunlorn page



# Definition

*Cough is physiological protective mechanism which is characterized by explosive expectoration following a deep inspiration. Its function is to clear the tracheobronchial tree of excessive secretions and foreign body.*

# COUGH



Cough provide an essential protective function for human airways and lungs.

Withought an effective cough reflex we are at risk for -

- *retained airway secretion*
- *Aspirated material*
- *Predisposing infection*
- *Respiratory compromise*

At the other extreme, excessive coughing

- *can be exhausting*
- *Can be complicated with – emesis, syncope, muscular pain, rib fracture*
- *And can aggravate hernia and urinary incontinence.*

Cough is often a clue to presence of Respiratory disease.

# Impaired cough

Weak or ineffective cough compromises the ability to clear lower respiratory tract infection, predisposing to more serious infections and their sequelae.



**Causes of impaired cough**

- Decrease respiratory muscle strength.
- Chest wall deformity
- Impaired glottic closure or tracheostomy
- Abnormal airway secretions
- Central respiratory depression (anesthesia, sedation or coma)

# Cough mechanism

- Spontaneous cough is triggered by stimulation of sensory nerve endings that are thought to be Primarily Rapidly adopting receptor and C-fibers.

- both chemical (Capsaician) and mechanical stimuli may initiate the cough.



- Afferent nerve ending richly innervate the *Pharynx, Larynx, Air way to the level of terminal bronchioles and also found in External auditory meatus & Esophagus.*

- Sensory signal travel via the Vagus and Superior laryngeal nerve.

**Cough reflex involve a highly orchestrated series of involuntary muscular actions.**

Vocal cord adduct

transient upper airway occlusion

Expiratory muscle contract

generating positive intra thoracic pressure as high as 300mmhg.

With sudden release of laryngeal contraction

rapid expiratory flow are generated.

Bronchial smooth muscle contraction together with dynamic compression of airway narrows airway lumen

maximizes the velocity of exhalation

# Cough History



| Acute | Sub-acute | Chronic |
| --- | --- | --- |
| Less than 3 wk | 3-8 wk | More than 8 wk |
| R.T.I. ,<br>Aspiration,<br>Inhalation of noxious chemical or smoke . | Tracheobronchitis-pertussis<br>post viral tussive syndrome | Cardiopulmonary d's-inflammatory, infectious, neoplastic and cardiovascular etiology. |

**Acute cough** occurring in context of more serious disease such as *pneumonia, aspiration, CHF, pulmonary embolism* is usually easy to diagnose due to the presence of other clinical features.

Cough of less than 8 wk duration may be the early manifestation of a disease causing chronic cough.

# Assessment of chronic cough

•Regardless of cause cough often worsen when one *first lies down at night or with talking or in association with hyperpnea of exercise; it frequently improve with sleep.*

Exception- pertusis, asthma



•Physical examination seeks clue to the presence of cardiopulmonary disease, including finding such as wheezing or crackles on chest examination.

•Examination of auditory canal and tympanic membranes, nasal passage ways and nails.

•Cough may be manifestation of systemic disease such as *Sarcoidosis* or *Vasculitis.*

•In virtually all instances, evaluation of chronic cough merits a chest radiograph.

## Chronic cough with a normal chest radiograph

When initial assessment with chest examination and radiograph is normal.

- Cough variant asthma
- Gastro-esophageal reflux
- Post-nasal drainage
- Medication (ACE inhibitor)

# The characteristic of cough originating at various level of RT

| ORIGIN | COMMON CAUSE | CLINICAL FEATURE |
|---|---|---|
| **Pharynx** | Post-nasal-drip | *History of chronic rhinitis* |
| **Larynx** | Laryngitis, tumor | *Voice or swallowing altered, harsh or painful voice* |
| | Whooping cough, croup | *Paroxysm of cough, often associated with strider* |
| **Trachea** | Tracheitis | *Raw restrosternal pain with cough* |
| **Bronchi** | Bronchitis(acute), COPD | *Dry or productive, worse in morning* |
| | Asthma | *Usually dry, worse at night* |
| | Bronchial carcinoma | *Persistent (often with haemoptysis)* |
| **Lung Parenchyma** | Tuberculosis | *Productive, often with haemoptysis* |
| | Pneumonia | *Dry initially, productive later* |
| | Boncheiectasis | *Productive, change in posture induce sputum production* |
| | Pulmonary edema | *Often at night (may be productive of pink, frothy sputum)* |
| | Interstitial fibrosis | *Dry, irritant and distressing* |



## DRY COUGH

- *URTI*
- *Initial phase of TB*
- *TPE*
- *Cigrette smooking*
- *Brochogenic carcinoma*
- *Compression of trachea*
- *Funtional*

## WET COUGH

(Foul smell)

- *Lung abscess*
- *Bronceactasis*
- *Infected cavity*
- *Gangrene of lung*
- *Fungal infection*

(Mucoid)

- *Acute bronchitis*
- *Bronchopneumonia*
- *Post nasal drip and sinusitis*

## Sputum color associated with various conditions



| Color | Condition |
|---|---|
| Reddish | Hemoptysis |
| Blackish | Industrial infections, Cole miner cough |
| Rusty/khaki | Pneumonia |
| Yellow | Actinomycosis |
| Creamy yellow | Staphylococcal infection |
| Frothy pink | Pulmonary edema |
| Mucoid brown to red | Klebseila infection |
| Current jelly | Bronchogenic carcinoma, influenza |
| Green | Pseudomonas infection |
| Blood oyster | TB |

# DRUGS FOR COUGH

**Pharyngeal Demulcents**

- Lozenges
- Glycerin
- Linctuses containing syp

**Expectorant (Mucokinetics)**

**A-Directly acting**

- Sodium and potassium citrate or accetate
- Potassium iodide
- Guaiphenesin
- Balsum of tolu
- Vasaka
- Terpin hydroid

**B-Reflexly acting**

- Ammonium chloride or carbonate
- Potassium iodide

**C-Mucolytics**

- Bromhexine
- Ambroxol
- Acetyl cysteine
- carbocisteine

**Antitussive (Cough center suppressants)**

**A-Opioids**

- Codeine
- Pholcodeine
- Ethylmorphine
- Morphine

**B-Non Opioids**

- Noscapine
- Dextromethorphane
- Oxyladine
- Chlorphedianol

**C-Antihistamines**

- Chlorpheniramine
- Diphenhydramine
- Promethazine