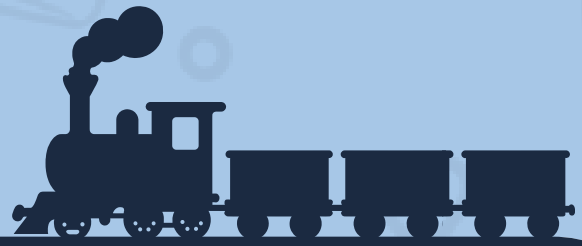




**HISTORY  
TAKING  
SERIES**



# **APPROACH TO COUGH**

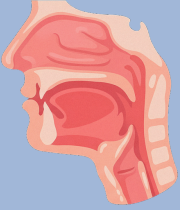
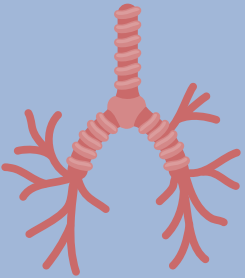
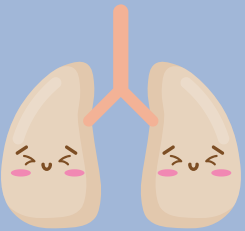


**MUM  
IM'S**



# CAUSES OF COUGH

## BASED ON ANATOMY

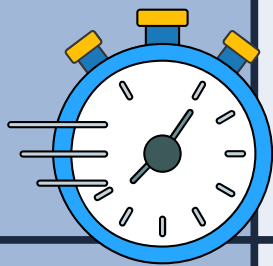
|                                                                                                                                                    |                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Upper Airway</b><br>(Most common region for chronic cough)<br> | <ul style="list-style-type: none"><li>• Viral upper respiratory tract infection (URTI)</li><li>• Sinusitis</li><li>• Allergic rhinitis</li><li>• Post-nasal drip (upper airway cough syndrome)</li></ul> |
| <b>Lower Airway (Bronchial)</b><br>                             | <ul style="list-style-type: none"><li>• Acute bronchitis</li><li>• Asthma</li><li>• COPD</li><li>• Bronchiectasis</li></ul>                                                                              |
| <b>Lung Parenchyma</b><br>                                      | <ul style="list-style-type: none"><li>• Pneumonia</li><li>• Interstitial lung disease</li><li>• Tuberculosis (TB)</li><li>• Lung malignancy</li></ul>                                                    |
| <b>Pleura</b>                                                                                                                                      | <ul style="list-style-type: none"><li>• Pleural effusion</li></ul>                                                                                                                                       |
| <b>Pulmonary vascular</b>                                                                                                                          | <ul style="list-style-type: none"><li>• Pulmonary embolism (PE)</li></ul>                                                                                                                                |
| <b>Extra-Pulmonary Causes</b><br>                               | <ul style="list-style-type: none"><li>• Gastro-oesophageal reflux disease (GORD)</li><li>• ACE inhibitor</li><li>• Heart failure</li><li>• Psychogenic cough</li></ul>                                   |



# CAUSES OF COUGH

## BASED ON DURATION

### Acute (<3 weeks)



- Viral URTI (most common)
- Acute bronchitis
- Pneumonia
- Asthma exacerbation
- COPD exacerbation
- Pulmonary embolism
- Foreign body (children)

### Subacute (3–8 weeks)



- Post-infectious cough
- Pertussis

### Chronic (>8 weeks)



- Common:
  - Asthma
  - GORD
  - Upper airway cough syndrome
  - COPD
- Others:
  - ACE inhibitor
  - Lung malignancy
  - Bronchiectasis
  - Cardiac failure



# CAUSES OF COUGH

| Dry Cough                                                                                                                                                                                                                                                                                                                                  | Productive Cough                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Inhaled foreign body</li><li>• Left ventricular failure</li><li>• ACE inhibitor</li><li>• Interstitial lung disease</li><li>• Viral infection</li><li>• Asthma</li><li>• GORD</li><li>• Psychogenic</li></ul>  | <ul style="list-style-type: none"><li>• Acute bronchitis</li><li>• Pneumonia</li><li>• COPD</li><li>• Bronchiectasis</li><li>• Lung abscess</li><li>• Tuberculosis</li></ul>  |



## RED FLAGS FOR COUGH

- Haemoptysis
- Weight loss
- Persistent fever
- Night sweats
- Dyspnoea (especially at rest or at night)
- Hoarseness
- Clubbing
- Heavy smoking history
- Recurrent pneumonia
- Immunosuppression



# **CAUSES OF HAEMOPTYSIS**

**Haemoptysis** must be distinguished from **blood-stained saliva** caused by nasopharyngeal bleeding or sinusitis, and also from **haematemesis**.

|                       |                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bronchial</b>      | <ul style="list-style-type: none"> <li>• Bronchitis (acute*/chronic)</li> <li>• Bronchiectasis*</li> <li>• Lung malignancy*</li> </ul> |
| <b>Parenchymal</b>    | <ul style="list-style-type: none"> <li>• Pneumonia, lung abscess, fungal infection</li> <li>• TB*</li> </ul>                           |
| <b>Vascular</b>       | <ul style="list-style-type: none"> <li>• PE*</li> <li>• Pulmonary hypertension</li> <li>• AV malformation</li> </ul>                   |
| <b>Cardiovascular</b> | <ul style="list-style-type: none"> <li>• Acute left ventricular failure*</li> </ul>                                                    |
| <b>Autoimmune</b>     | <ul style="list-style-type: none"> <li>• Granulomatosis with polyangiitis (Wegener's)</li> <li>• Goodpasture syndrome</li> </ul>       |
| <b>Iatrogenic</b>     | <ul style="list-style-type: none"> <li>• Anticoagulation</li> <li>• Post-bronchoscopy</li> </ul>                                       |

(\* = common causes)

**LIFE-THREATENING CAUSES NOT TO MISS**  
 Massive haemoptysis ( $\geq 150\text{mL}/24\text{h}$  or  $\geq 100\text{mL}/\text{hr}$ )
 

- Lung malignancy
- PE
- TB



# HISTORY TAKING

## 1. Onset



- **Sudden:** PE, Aspiration of foreign body
- **Gradual:** Infection, Malignancy, COPD
- Acute vs Chronic (explained above)

## 2. Character



- Dry vs Wet
- **Associated Sounds:**
  - Barking cough: Croup
  - Whooping cough: Pertussis
  - Wheeze with cough: Asthma
  - Bovine (no power): Vocal cord paralysis
- For **Haemoptysis:**
  - Bright red & frothy: Pulmonary origin
  - Blood-streaked sputum: Often bronchitis
  - Clots/Large volume

Features distinguishing haemoptysis from haematemesis and nasopharyngeal bleeding

| Favours haemoptysis                                                                 | Favours haematemesis                                                                       | Favours nasopharyngeal bleeding                                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Mixed with sputum</li></ul>                 | <ul style="list-style-type: none"><li>• Follows nausea</li></ul>                           | <ul style="list-style-type: none"><li>• Blood appears in mouth</li></ul> |
| <ul style="list-style-type: none"><li>• Occurs immediately after coughing</li></ul> | <ul style="list-style-type: none"><li>• Mixed with vomitus; follows dry retching</li></ul> |                                                                          |

## 3. Timing



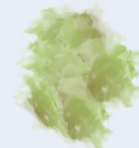
- **Nocturnal:** Asthma, Heart failure
- **Post-prandial:** GORD
- **Early morning productive:** COPD

## 4. Frequency



- **Persistent daily:** Chronic bronchitis, Bronchiectasis
- **Episodic attacks:** Asthma
- **Progressive worsening:** Malignancy

## 5. Sputum



- **Amount**
  - Scanty → Viral
  - Large volume → Bronchiectasis
- **Colour**
  - Clear/white: Viral
  - Yellow/green: Infection
  - Rust-coloured: Pneumococcal pneumonia
  - Foul-smelling: Lung abscess

## 6. Associated Symptoms

- **Infective**
  - Fever
  - Night sweats
- **Malignancy**
  - Weight loss
  - Fatigue
- **Asthma**
  - Wheeze
  - Atopy
  - Reversible with bronchodilators
- **PE**
  - Pleuritic chest pain
  - Dyspnoea
  - Signs of deep vein thrombosis
- **Vasculitis**
  - Haematuria
  - Rash
  - Arthralgia

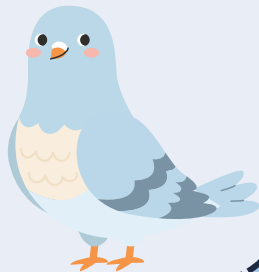




# HISTORY TAKING

## CONTACT HISTORY

- TB contact
- Household sick contacts
- Occupational exposure (healthcare, mining)
- Exposure to mould/birds (hypersensitivity pneumonitis)



## RISK FACTORS

- Smoking
- ACE inhibitor use
- Previous TB
- COPD
- Known bronchiectasis
- Immunosuppression
- Use of anticoagulants
- Occupational dust exposure



## TRAVEL HISTORY

- TB endemic countries
- Recent long-haul travel: PE risk
- Fungal endemic regions
- Parasitic infections (rare but important in endemic regions)





# INVESTIGATIONS

## BEDSIDE



Peak Expiratory Flow Rate (PEFR)

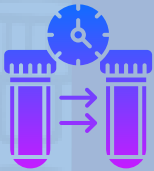
- Asthma

## LABORATORY TESTS



FBC

- Anaemia
- Infections (pneumonia, lung abscess)



CRP/ESR

- Inflammation/Infection (non-specific)



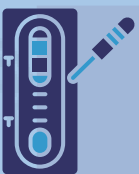
Sputum Examination

- Infections → Microscopy, culture & sensitivity
- TB → Acid-Fast Bacilli
- Malignancy → Cytology



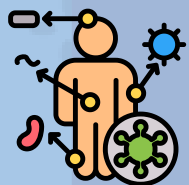
Coagulation Profile

- For haemoptysis
- Anticoagulants



D-Dimer

- PE



Autoimmune

- Granulomatosis with polyangiitis → c-ANCA
- Microscopic polyangiitis → p-ANCA
- Goodpasture's syndrome → Anti-GBM antibodies
- SLE → ANA, anti-dsDNA

>>Continue next page



# INVESTIGATIONS

## IMAGING



Chest X-Ray

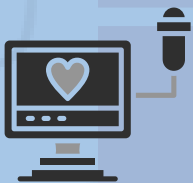
- Indications:
  - Chronic cough (>8 weeks)
  - Haemoptysis
  - Red flags
  - Abnormal examination



CT Chest

- Indications:
  - Abnormal CXR
  - Normal CXR but persistent haemoptysis
  - High suspicion of malignancy
  - Recurrent haemoptysis
  - Diagnosing and staging lung cancer
  - Guiding biopsy
  - Diagnosis of bronchiectasis

**! More sensitive than CXR for malignancy**



Echocardiogram

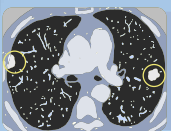
- Pulmonary hypertension
- Cardiac failure



High-Resolution CT (HRCT)

- Bronchiectasis
- Interstitial lung disease

## SPECIAL TESTS



CTPA

- PE



Spirometry

- Reversible obstruction → Asthma
- Fixed obstruction → COPD



Bronchoscopy

- Indications:
  - Persistent unexplained haemoptysis
  - Endobronchial tumour
  - Massive haemoptysis
  - Pneumonia in the immunosuppressed

**! Allows biopsy and therapeutic intervention**



# REFERENCES

1. Murtagh J. John Murtagh's General Practice, 7th Edition
2. Davidson's Principles & Practice of Medicine, 24th Edition
3. Kumar & Clark Clinical Medicine. 10th ed.
4. Lung Foundation Australia: Diagnosis and assessment of chronic cough in adults – a brief guide and clinical algorithm for primary care
5. Therapeutic Guidelines: Respiratory (Australia)
6. eTG Complete (Respiratory)
7. UpToDate



# TEST YOUR KNOWLEDGE!

1. A 56-year-old man presents to the emergency department because of cough, dyspnea, and haemoptysis. Chest X-ray shows dilation of his airways, which is confirmed by bronchoscopy.

**Which of the following conditions is most likely responsible for the dilation of this patient's airways?**

- A. Adult respiratory distress syndrome
- B. Asthma
- C. Atelectasis
- D. Bronchiectasis
- E. Churg-Strauss syndrome

2. A 26-year-old man presents with gradually worsening cough and dyspnoea on exertion. He has had recurrent infections and was recently treated for oesophageal candidiasis. Oxygen saturation falls significantly on minimal exertion. Chest examination is unremarkable.

**What is the most likely diagnosis?**

- A. Asthma
- B. COPD
- C. Lung abscess
- D. Pneumocystis jirovecii pneumonia
- E. Pulmonary embolism

