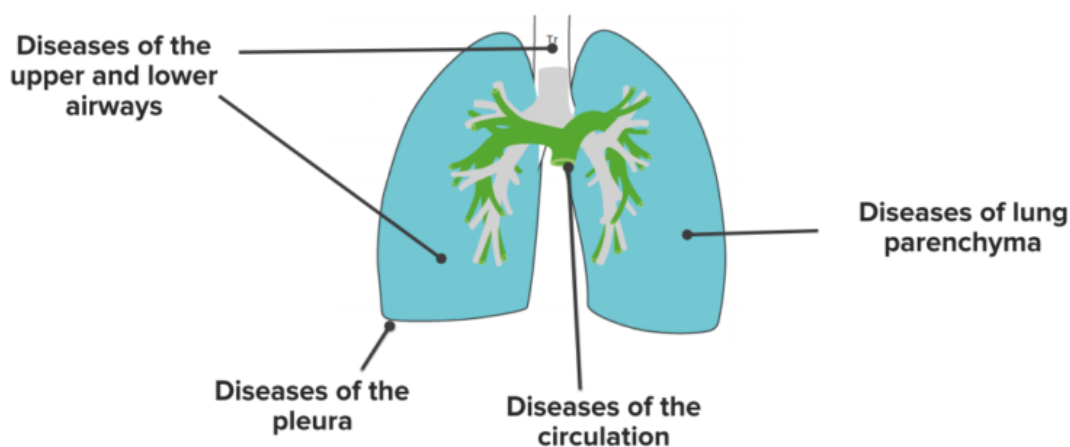


Common Lung Diseases — Overview and Investigations

[See online here](#)

This article should provide an overview of the main type of diseases that affect the lung. You will find a description of the important diagnostic tests used for investigating respiratory diseases, like general principles, emphasis on lung function testing role and interpretation and examples of diagnostic testing approach for some common presentations.



The Big 4 Lung Diseases

1. [Chronic obstructive pulmonary disease \(COPD\)](#) — the most common cause of acute medical admissions
2. [Asthma](#) — the most common chronic respiratory disease
3. [Lung cancer](#) — the most common fatal cancer in the Western world for both men and women
4. [Pneumonia](#) — the most common serious infectious disease

Other common respiratory diseases

- Infectious: [tuberculosis](#), [empyema](#)
- [Pulmonary emboli](#)
- [Bronchiectasis](#)
- [Interstitial lung disease](#) and [sarcoidosis](#)
- [Pleural effusions](#) and [pneumothorax](#)
- [Obstructive sleep apnea](#)

Range of Lung Diseases

Diseases of the airways

Upper airway obstruction	
Lower airway obstruction	<ul style="list-style-type: none"> • Asthma • COPD • Rarer causes
Airway infection	<ul style="list-style-type: none"> • Acute bronchitis • Chronic: bronchiectasis and cystic fibrosis
Airway tumors	<ul style="list-style-type: none"> • Lung cancer: squamous and small cell • Rarer tumors, e.g., carcinoid, metastases

Upper airways obstruction

Lower airway obstruction

- Asthma
- COPD
- Rarer causes

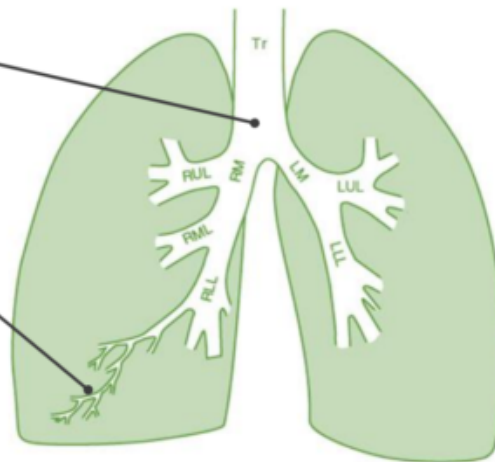


Image: Classification of lung diseases. By Lecturio

Lung parenchyma (alveoli and interstitium)

Infections	<ul style="list-style-type: none"> • Pneumonia • Tuberculosis
Interstitial Lung Diseases	<ul style="list-style-type: none"> • Pulmonary fibrosis • Sarcoidosis • Hypersensitivity pneumonitis • Pneumoconiosis • Rarer causes
Adult respiratory distress syndrome	
Parenchymal tumors	<ul style="list-style-type: none"> • Lung cancer: adenocarcinoma • Pulmonary metastases

Circulation

Pulmonary emboli (PE)	
Pulmonary hypertension	<ul style="list-style-type: none"> • Cor pulmonale • Chronic PEs • Other causes
Hemoptysis	
Vasculitis	

Pulmonary emboli (PE)

Pulmonary hypertension

- Cor pulmonale
- Chronic PEs
- Other causes

Haemoptysis

Vasculitis

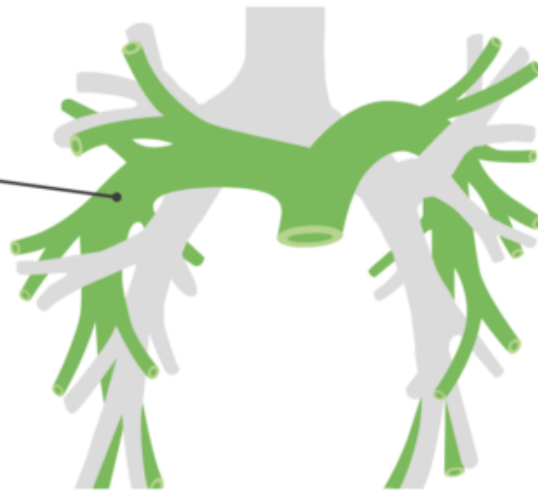


Image: Range of lung diseases By Lecturio

Pleural diseases

Pneumothorax	<ul style="list-style-type: none">• Transudates• Exudates
Pleural infection	<ul style="list-style-type: none">• Empyema• Complex para-pneumonic effusions• Tuberculosis
Pleural malignancy	<ul style="list-style-type: none">• Primary: mesothelioma• Secondary: metastases

Other

Diseases of physiology	<ul style="list-style-type: none">• Obstructive sleep apnea• Obesity hypoventilation• Chest wall/neuromuscular causes of hypoventilation
Iatrogenic lung disease	<ul style="list-style-type: none">• Procedure-related• Caused by drugs• Associated with radiotherapy

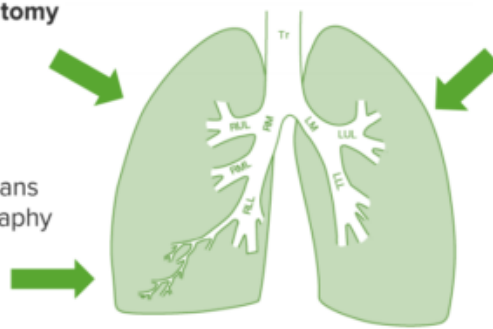
Investigation of Lung Disease

Assessing the Anatomy

Chest X ray
CT scans
Ultrasound
MRI
Radionucleotide scans
Pulmonary angiography

Measuring Function

Lung function tests
ABGs
CPEX testing
V/Q scans
PET scans



Obtaining Samples

Sputum
Bronchoscopy
EBUS / EUS
Cryo bronchoscopic biopsies
CT guided biopsies
US guided biopsies
Pleural taps
Pleural biopsies
Medical thoracoscopy
VATs pleural biopsies
VATs lung biopsies
Mediastinoscopy / otomy
Wedge / lobar / lung resection

+ Immunological Function

Blood tests
Skin tests
Genetic testing

Image: Pulmonary artery diseases. By Lecturio

Different Causes of Large Airway Obstruction

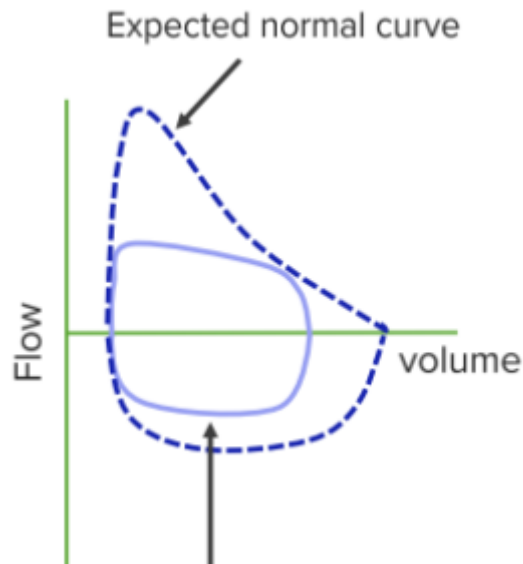
Acute upper airway obstruction

Speed of onset	Cause	Clinical presentation
Sudden	Aspiration of a foreign body; mucous plug	Very acute dyspnea and stridor
Acute	Epiglottitis/ tonsillar abscess Diphtheria Smoke inhalation Deteriorations of subacute/chronic causes	Acute dyspnea and stridor Saliva drooling Fever (infective cause)

Chronic upper airway obstruction

Speed of onset	Cause	Clinical symptoms and signs
Subacute/progressive	Cancer: lung/larynx/thyroid Benign tracheal tumors Massive mediastinal nodes Vocal cord paralysis	Progressive/positional dyspnea Cough Hemoptysis Stridor (can be intermittent) Post-obstructive bronchiectasis Dysphagia (esophageal invasion) Pain (malignant causes)
Chronic/non-progressive	Post-intubation tracheal stenosis Post-infective, e.g., tuberculosis Goiter Previous upper airway surgery Vasculitis Tracheomalacia	

Large Airway Obstructions: Clues



1. Image: 'Squared off' flow volume loop of tracheal obstruction.
By Lecturio

Minimal variability in peak flow/spirometry

2. Positional symptoms rather than diurnal
3. Inspiratory wheeze (stridor)
4. History of intubation/tracheal disease
5. Characteristic flow-volume loop
6. Fall in peak expiratory flow rate (PEFR) relatively greater than fall in forced expiratory volume in the 1st second (FEV1)

Bronchoscopy

- Visual confirmation
- Biopsies to confirm the cause (but can bleed...)
- Treatment

Treatment of acute presentation

1. Sit the patient up
2. High flow oxygen or heliox (a mixture of oxygen and helium) via a mask
3. Intravenous high-dose corticosteroids (reduce edema around obstruction)
4. Nebulized salbutamol and adrenaline
5. Intravenous fluid replacement
6. Potentially urgent intubation or tracheostomy or bronchoscopy intervention

Treatment of chronic obstruction

Chronic—relieve the obstruction by

1. Treating the underlying cause if possible
2. Bronchoscopic interventions e.g.,
 - Stents
 - Laser ablation
3. Surgical interventions

- Remove cause
- Tracheostomy

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Notes