




EXAMINATION OF THE RESPIRATORY SYSTEM

Review of procedure

- ▶ **Observation**
 - ▶ **General assessment of the patient**
 - ▶ **Face**
 - ▶ **Hands**
 - ▶ **Observation of the thoracic wall**
- ▶ **Palpation of the trachea**
- ▶ **Lymph nodes**
- ▶ **Apex of heart**
- ▶ **Assessment of chest expansion**
- ▶ **Vocal fremitus**
- ▶ **Percussion**
- ▶ **Auscultation**
- ▶ **Special tests**

Observation

Preliminary considerations

 **Observe the patient the moment they enter your practice, note:**

- Are they breathless?**
- Do they need to break their sentences in order to take breaths?**
- Any evidence of wheezing or stridor?**
- Do they suffer from weight loss or weight gain?**
- Any surgical scars?**
- Is the patient sitting or lying comfortably?**

Clubbing



Inspection of the thorax

- ▶ **Note any deformities in the chest wall such as:**
 - **Barrel chest deformity**
 - **Pigeon chest or pectus carinatum**
 - **Funnel chest or pectus excavatum**
 - **Kyphosis**
 - **Scoliosis**

Observation

- ▶ **A barrel chest deformity is increased antero-posterior diameter**

- ▶ **It is caused by:**
 - **Chronic obstructive airway diseases like:**
 - **Chronic bronchitis**
 - **Emphysema**

Observation

- ▶ **Pectus carinatum or pigeon chest deformity**
- ▶ **Often associated with:**
 - **Spinal deformities**
 - **Marfan's syndrome**
 - **Other congenital deformities of the chest**

Observation



Pectus excavatum or funnel chest is sunken sternum

- May be caused by the long term manifestation of asthma during childhood**
- Marfan's and Poland syndromes**
- Can also be congenital**

Chest deformities




- ▶ **Kyphosis is an anterior curvature of the spine**
- ▶ **Scoliosis is a lateral curvature of the spine**
- ▶ **Note the extent of any such deformities of the thorax and enquire how these may be significant in compromising the breathing mechanics**

Full assessment of the musculoskeletal system is covered under that video

Kyphoscoliosis

- ▶ **Idiopathic**
- ▶ **Congenital origin**
- ▶ **Develop as a result of pathological and degenerative process**

Examination of the face

-  **Check conjunctiva of the eyes the lips and mucus membranes of the mouth for evidence of anaemia and central cyanosis**
-  **Central cyanosis will signify either cardiac or respiratory anomaly**
-  **Respiratory conditions include pulmonary fibrosis or any condition which leads to a serious limitation of air flow**

Palpation

Palpation

- ▶ **Establish physical contact with the patient by first examining his hands**

- ▶ **Check for finger clubbing deformities of the nails and evidence of peripheral cyanosis**
 - **Peripheral cyanosis may be observed in exposed areas such as the tip of the nose and ears, the fingers and toes**

 - **It signifies poor perfusion to these tissues**

 - **Often seen in those with Raynaud's phenomenon**

Finger clubbing is caused by a variety of conditions which are covered in detail under the GENERAL EXAMINATION video

Palpation

- ▶ **Observe and palpate the trachea to determine whether its position is central**
 - **Fibrosis and collapsed lung pull the mediastinum towards the lesion**
 - **Pneumothorax and large effusions will push the mediastinal contents away from the lesion**
- ▶ **Palpate the supra-clavicular lymph nodes**
- ▶ **Elevating the shoulders may assist in the palpation of the supra-clavicular fossa**

Chest expansion

- Place your stretched out fingers over the chest wall with both thumbs just touching each other at the midline on the chest**
- Ask the patient to take a deep breath, ensuring that you allow your hands to move with the chest wall as he inspires**
- Assess whether the movement is symmetrical by looking at how your thumbs move away from the midline**

Palpation

Tactile vocal fremitus is the transmission of vibration through the chest wall



Place the flat of your hands or the Ulnar borders firmly on the chest wall and ask the patient to say out loud 99-99-99 or 1-1-1

Percussion

Percussion

- ▶ **Always attempt to visualise the underlying structures when percussing**
- ▶ **The posterior thoracic wall mostly overlies the lower lobes**
- ▶ **The anterior thoracic wall overlies the upper and middle lobes**
- ▶ **With the index finger of one hand briskly strike the middle finger of the other hand just above the nail**
- ▶ **Press your finger firmly on the patient's chest in the inter-costal spaces**

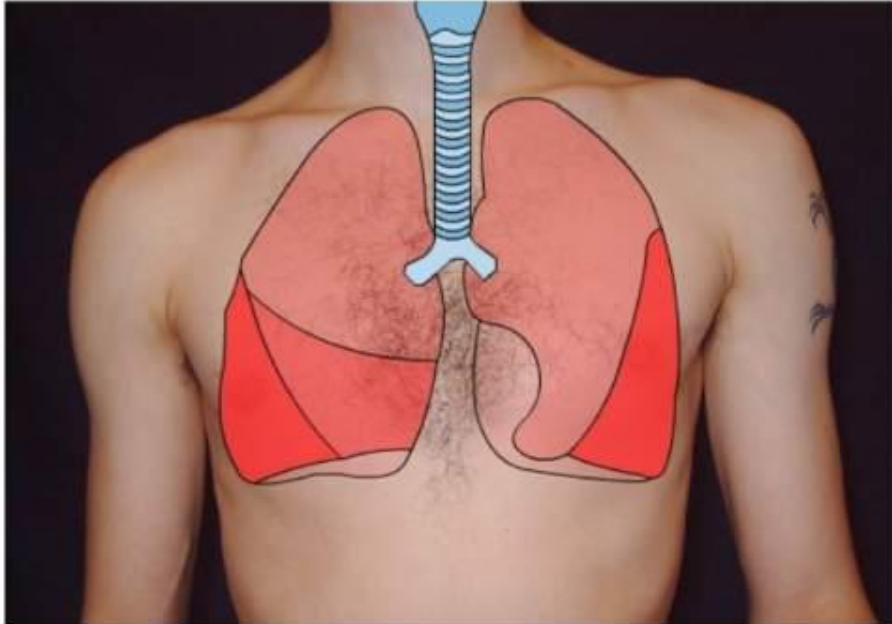
Percussion

- ▶ **Start from direct percussion over the centre of the clavicles for the apices of the lungs**
- ▶ **Percuss 3-5 places on the anterior thoracic wall**
- ▶ **Deviate laterally as you strike the lowest positions over the 7th intercostal spaces**
- ▶ **Percuss 2-4 positions laterally**
- ▶ **Percuss 5 positions posteriorly**

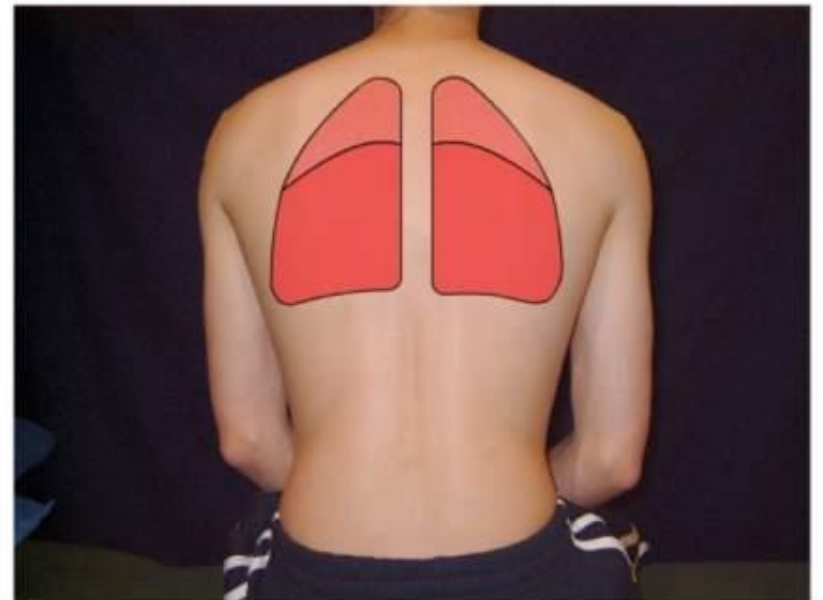
Percussion

- ▶ **When percussing the back, ask the patient to cross their arms to move the scapulae out of the way**
- ▶ **When percussing the sides ask the patient to place his hands over his neck to expose the sides**

Position of lung lobes - anteriorly



Position of lung lobes - posteriorly



Auscultation

Auscultation

- ▶ **Listen for the normal breathing sounds over the bronchii and over the lungs**
- ▶ **Listen for the presence of added sounds**
- ▶ **Determine whether these are heard during inspiration or expiration**

Auscultation

- ▶ **Start in a systematic way**
- ▶ **Listening to both lungs at successive levels and make a comparison**
- ▶ **Listen to at least 4 positions or levels anteriorly**
- ▶ **4 levels posteriorly**
- ▶ **2-3 levels laterally**

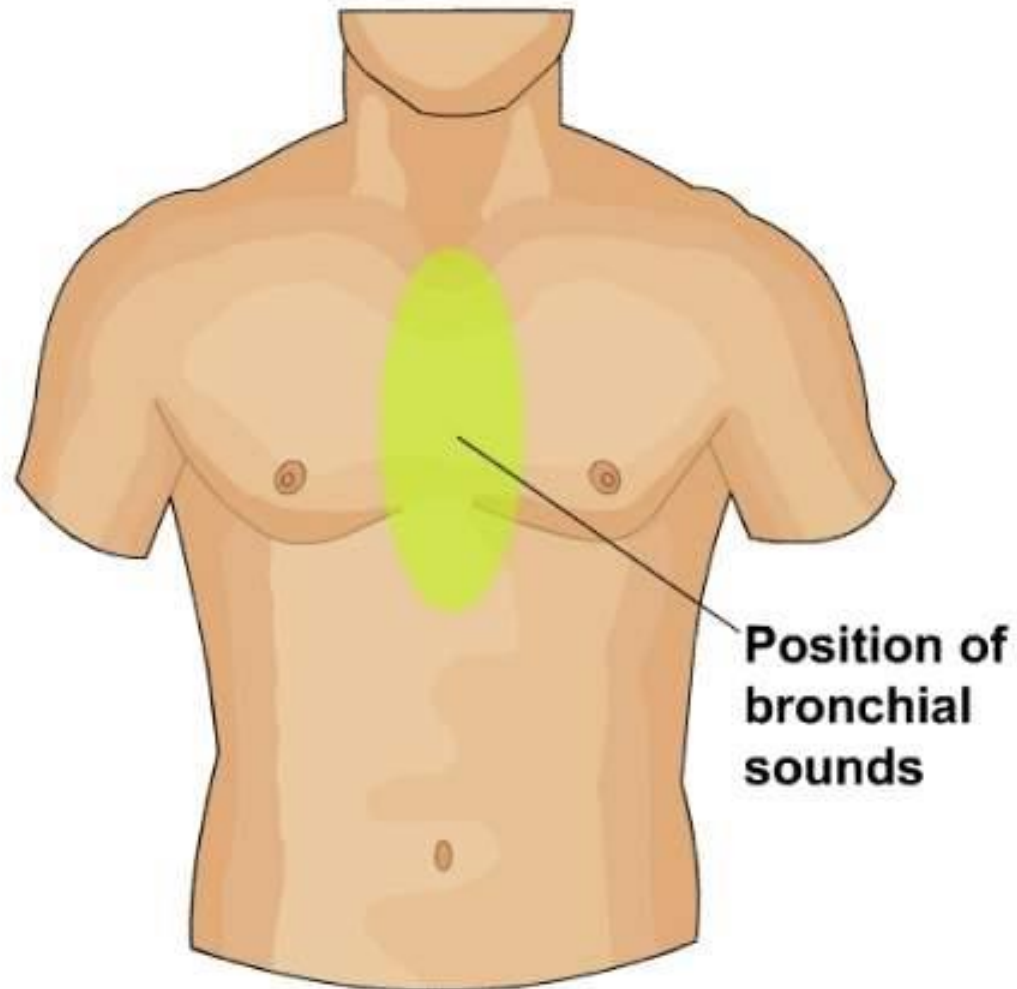
Auscultation

- ▶ **Bronchial sounds are:**
 - loud
 - relatively high in frequency
 - dominant during the expiratory phase
 - the expiratory part is longer than inspiration
 - are normally heard over the central airways
 - and near the mediastinum

- ▶ **Increased bronchial sounds indicate lung tissue consolidation, although airways remain open, for example consolidation due to pneumonia**

Auscultation

Bronchial sounds



Auscultation



Vesicular sounds

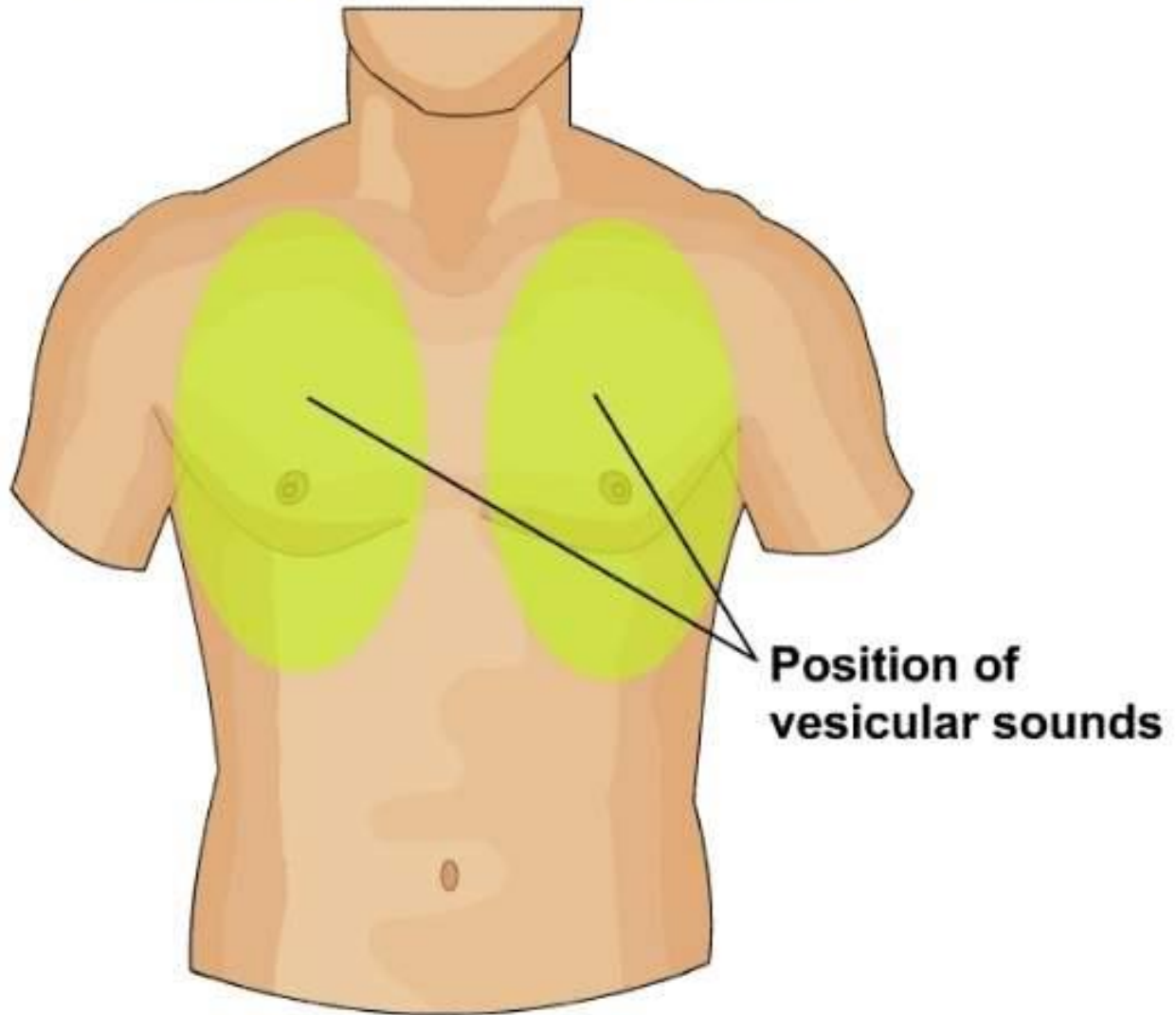
- Transmitted over the lung tissues and their peripheries
- They are softer and lower in frequency
- Can be heard over most of the lungs
- You will hear them well in inspiration but only in the first part of expiration
- Inspiration is more dominant or lasts longer than expiration
- There is no gap in between




Conditions which cause airway obstruction such as asthma or emphysema cause a reduction in vesicular breath sounds

Auscultation

Vesicular sounds position

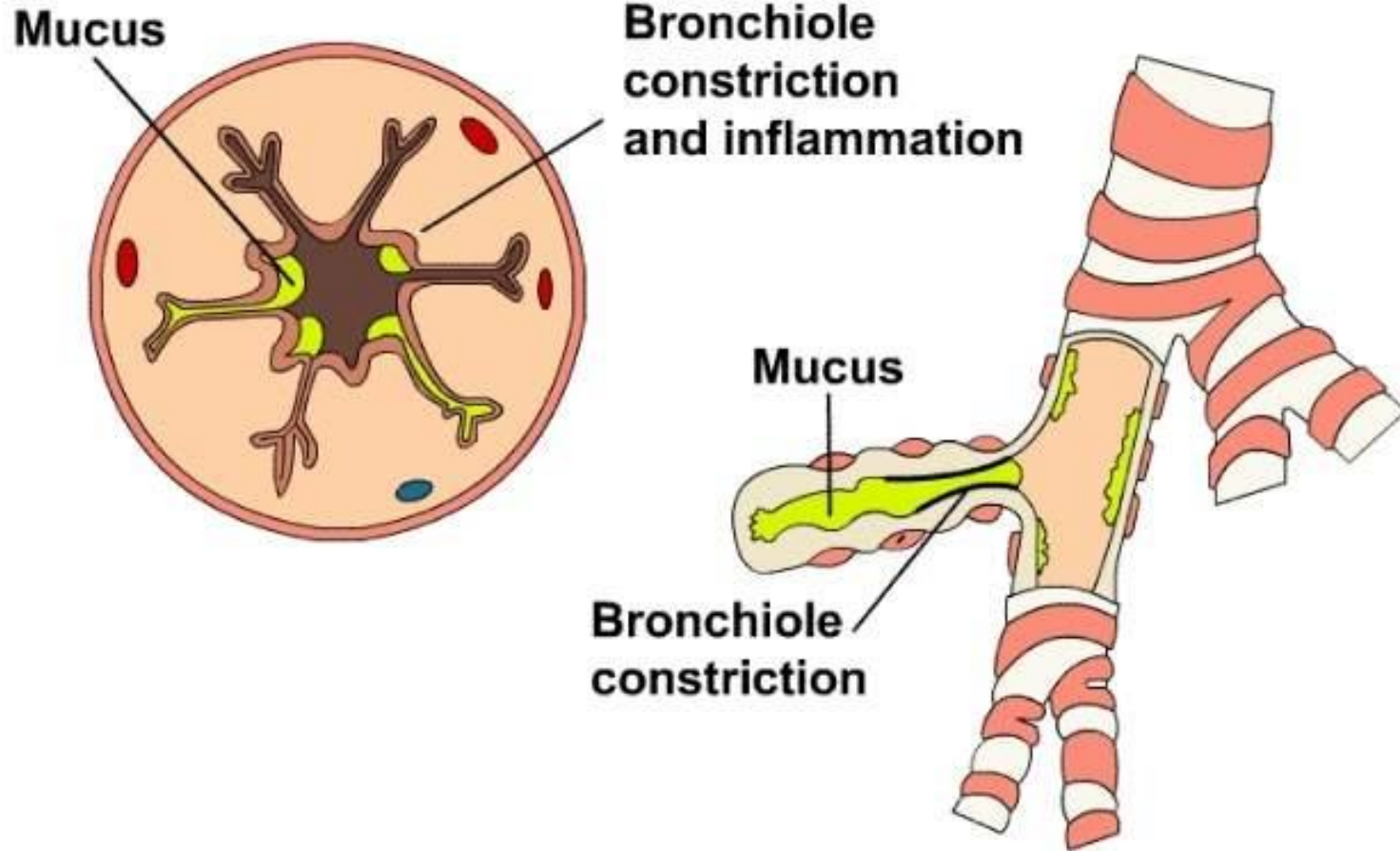


Auscultation

-  **Crackles, crepitations or rales:**
- Are fine non-continuous sounds**
 - They are produced relatively late during inspiration**
 - They may signify mucus or fluid in the lungs**

Auscultation

Bronchial constriction



Auscultation

Wheezes

- ▶ **Prolonged musical sounds**
- ▶ **Mostly heard during expiration**
- ▶ **Caused by obstructive lung disease ie asthma and emphysema**

Auscultation

Pleural rubs

- ▶ **Produced by pneumonia, pulmonary embolism, pleurisy**
- ▶ **Usually confined to localised areas**
- ▶ ***Do not mistake them with the friction of the stethoscope when rubbed against the skin or on hairy chest***

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END