Examination of the Respiratory System

**Introduce yourself**
Explain the purpose of the examination
Ask permission

**General Inspection**
Acceptable variation in the order of these components:
- General- ?wasting ?pigmentation (ectopic ACTH syndrome from bronchial carcinoma)
- Hands for evidence of digital clubbing
- Wrists extended and arms stretched out for flapping tremor
- Eyes for Horner’s syndrome (Pancoast syndrome- upper lobe tumour interrupting sympathetic outflow with T1 nerve root)
  - Anaemia
  - Central cyanosis
  - Breathless at rest; if so, respiratory rate over at least 30 seconds

Examiner’s photograph showing Pectus excavatum

**Chest inspection**
- Scars
- One side flatter than the other
- Symmetrical movement
- Chest shape- increased AP diameter (barrel chest) in COPD
- Pectus excavatum (funnel) or carinatum (pigeon-chested)
- Evidence of airflow obstruction- audible wheeze, use of accessory muscles

**Pursed lips expiration**
Sign of emphysema
Airways collapse early in expiration
Loss of support from surrounding tissue
Pursed lips create positive end expiratory pressure to keep airways open
Equivalent to “PEEP” on a ventilator- positive end expiratory pressure
Pursed lips expiration

**Palpation**
- Trachea
- Chest expansion
- Tactile vocal fremitus

**Trachea**
In loss of lung volume, the trachea is deviated towards the affected side.
Very rarely, deviated away from the affected side (tension pneumothorax or massive pleural effusion)

**Collapse of Left Lower Lobe**

**Loss of lung volume**
- Pneumonectomy
- TB or unilateral fibrosis for any reason
- Collapse of a lobe
Expansion
Grip the skin tightly to make it taut; if not the laxity might reduce any asymmetry in movement of the chest wall, making it less obvious
Expansion is reduced on the side of the lesion

Tactile vocal fremitus
Reduced with pleural effusions, collapse
Probably no need to do this as well as vocal resonance (on auscultation)
Increased with consolidation- better conduction through consolidated lung tissue
Vocal resonance also increased- whispering pectorolouqy; a whisper is louder on the side of the consolidation

Percussion
Dull over pleural effusion, lobar pneumonia and collapse
Increased in emphysema

Auscultation
Normal breath sounds are vesicular and do not have a gap between inspiration and expiration
Bronchial breathing- smooth blowing quality (non-vesicular) and distinct gap between inspiration and expiration

Signs of CO2 retention
Flapping tremor; if found look for other signs:
Tachycardia with high volume “bounding pulse”
Warm peripheries
Dilated superficial veins
Reduced conscious level
Papilloedema

Conditions with specific patterns of physical signs
• Airflow obstruction
• Pleural effusion
• Collapse
• Pneumothorax
• Tension pneumothorax
• Consolidation

Airflow Obstruction
• Audible wheeze
• Accessory muscles
• Barrel chest
• Tracheal tug- exaggerated descent on inspiration
• Hyper-resonance to percussion
• Prolonged expiratory phase
• Wheezes
**Effusion and Collapse**
- Reduced expansion
- Reduced tactile vocal fremitus
- Dull to percussion
- Reduced air entry

**Pleural Effusion**
- Stony dull to percussion
- Bronchial breathing above it
- Trachea normal
- If massive, trachea pushed away from the side of the effusion

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**Massive Pleural Effusion**

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**Loss of lung volume**
- Pneumonectomy
- Collapsed lobe
- Treated "old" tuberculosis
In loss of lung volume
the trachea is deviated towards the affected side

Collapse of left lung

Trachea deviated to left

Heart displaced to left
(Normally one third of heart shadow visible on right of spine)

Pneumothorax
- Reduced expansion
- Reduced or absent tactile vocal fremitus
- Hyper-resonant percussion
- Reduced or absent breath sounds
- Trachea normal unless tension
Trachea deviated AWAY
- Increase in volume of pleural space
- Massive pleural effusion
- Tension pneumothorax (see x-ray): mediastinal shift to right

Consolidation
- Reduced expansion
- Dullness to percussion
- Bronchial breathing
- Coarse inspiratory crackles
- Increased tactile vocal fremitus
- Increased vocal resonance (whispering pectoriloquy)