



One Minute Revision Guides

Respiratory Exam

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In any encounter you may be given a short history or have taken a short history yourself.

Introduction

Use 2 names e.g. James Bateman / Mr Bateman **not** James. It can be seen as unprofessional to use your first name only and is not acceptable for clinical use. Seek permission for the examination and be polite to the patient. "Stop me at any time if it becomes uncomfortable or I cause you any discomfort."

Positioning and inspection

Position the patient correctly - at 45 degrees and with chest fully exposed but be guided by the examiners and the clinical setting.

For example:

60 y male: consider exposing thorax immediately

35 y female: take into account the clinical situation / examiners etc.

Firstly inspect the patient from **the end of the bed**.

Note peripheral signs and clues around the bed: Stand with your hands behind your back and take time to inspect only.

Patient - General appearance

- SOB?
- Pursed lips
- Cachexia
- Cyanosis
- Using accessory muscles of respiration
- Wheezing
- Prolonged expiratory phase seen in COPD
- Oedema
- Respiratory rate: Count this and demonstrate it confidently.
- Features of SVCO
- Cough: is it dry/ productive. Is there a sputum pot? If so, look in it.

Around the bed

- Inhalers/ flutter devices (bronchiectasis/ cystic fibrosis)
- Oxygen
- CPAP machine (Obstructive sleep apnoea - 2% population)
- Sputum Pots

Examination of the hands

- Nicotine staining
- Clubbing - lung cancer/ chronic suppurative lung diseases (bronchiectasis/CF/lung abscess/empyema), pulmonary fibrosis, mesothelioma
- CO2 retention flap
- Bruising/ thin skin: steroid therapy
- Peripheral cyanosis
- Other conditions: e.g. Yellow Nails/ RA hands/ Scleroderma/ Wasting of the intrinsic muscles of the hands (cachexia/ pancoast tumour)
- Hypertrophic pulmonary osteoarthropathy (HPOA) associated with lung malignancy

Pulse

- Pulse: palpate rate, rhythm, character.
- Tachycardia: e.g. AF associated with pulmonary disease. Tachycardia associated with beta 2 agonists (nebulised salbutamol)

Face

- Horner's Syndrome (MEAP! Myosis, enophthalmos, anhydrosis, ptosis)
- Central Cyanosis (4g of Hb has to be deoxygenated)
- Acneform eruptions associated with immunosuppressive therapy
- Cushingoid appearance with long-term steroid use – fibrosis etc.

The Neck

- Position of the trachea
- Lymph node enlargement (tuberculosis, lymphoma, malignancy, sarcoidosis)
- Scars (phrenic nerve crush for old TB)
- Tracheostomy scar → previous ventilation in COPD etc. Central line scars
- Scar from LN biopsy
- JVP - ? right sided heart failure (cor pulmonale as a result of chronic lung disease)

Chest

Inspection

Scars

- Pneumonectomy
- Lobectomy
- Transplant
- VATS
- Chest Drains
- Thoracocentesis
- Radiation Tattoo's (previous radiotherapy)

- Chest wall deformity – pectus excavatum / carinatum

Size

- Hyper-inflated?

Movements

- Expansion. Equal or reduced on one side?

Palpation

- Chest expansion – upper and lower chest expansion

Percussion

- Technique
- Look slick
- Simple
- Compare like with like
- Normal distribution but don't forget the axillae
- Hyper resonant/ normal/ dull or stony dull. Nothing else. Compare both sides
- Hyper = pneumothorax/ COPD
Dull = Consolidation/collapse
Stony Dull = Fluid

Auscultation

Comparing two sides:

Breath sounds

Louder

Normal

Reduced: Reduced air entry/ perceiving less air entry due to fluid/ consolidation/ collapse/ fat

How do you know which side is abnormal?

You don't unless there are other features present → you have to hypothesise

e.g. one side sounds to have "louder" air entry than the other? It is probably the quiet side that has the pathology due to

- Inspiration
- Expiration
- Added sounds **and their timing e.g. inspiratory / expiratory/ pan inspiratory**
 - Wheeze
 - Crackles. **They are not creps or crepitations, they are crackles**

Key Clinical Fact

Always describe the chest in terms of anterior and posterior.

Then describe the lungs as zones **NOT** lobes
I.e. Upper/ Middle/ Lower Zones

Remember the Left lung has 2 lobes (upper lower & lower lobe with the upper lobe being anterior / LL posterior)

Right lung has 3 lobes upper middle and lower, and it's difficult to locate chest signs specifically to each lobe. Instead use ZONE.

This goes the same for chest radiographs: however on X-rays there are clues as to where the consolidation is. e.g. if the right heart border is obscured by the consolidation on a chest x-ray then this implies it's a middle lobe pathology.

If the consolidation sits above the horizontal fissure then it must be in the RUL.

Do not say "x-ray" in the exam, say radiograph

Crackles

- Quality
 - Fine: Pulmonary oedema/ interstitial lung disease (fibrosis etc)
 - Velcro: Fibrosis
 - Course: Infection or bronchiectasis
- When do they occur?
 - Early inspiratory: COPD/Bronchitis
 - Mid-Late inspiratory:
 - Velcro™ like crackles of pulmonary fibrosis*
 - Pulmonary oedema
- Do they clear / change on coughing?
 - Yes = Bronchiectasis (will not totally clear but may change)
 - No = Pulmonary fibrosis/ Pulmonary oedema*

**If you've got pulmonary oedema you're generally unwell and the signs will come and go. For exams held in "out patients" with patients coming from home, they're very unlikely to have pulmonary oedema. So Mid-late inspiratory crackles in this situation → Pulmonary Fibrosis*

Tactile Vocal Fremitus & Vocal resonance

- These techniques aim to detect the same findings
- Louder if consolidated lung that transmits the sound
- Quieter if there's either
 - An effusion leading to an insulating layer of water outside the lung
 - Fat
 - COPD (hyperinflated lungs with holes in them!)

"Normally I would like to complete my examination by reviewing the temperature and observations chart and examine for features of cor pulmonale. (inspect the JVP / look for peripheral oedema / other signs of right heart failure)

I would like to check the patient's peak flow and forced expiratory time" (see video on website).

Forced expiratory time

Clever stuff like this often impresses examiners. To do this, instruct the patient:

I am going to ask you to take in as deep breath in as deep as you can and then hold it. On my instruction, I will then ask you breathe out as forcefully and as quickly as possible. For this to work you have to blow as hard as you can until all the air has emptied from your lungs.

Then do the above and time it with your wristwatch. If you had a spirometer the air blown out in 1 second would be the FEV₁ (forced expiratory volume in 1 second). If you can't empty your lungs in 6 seconds, this suggests a degree of obstruction i.e. COPD. It's a surrogate for bedside spirometry.

Condition	Expansion	Air entry	Percussion	Auscultation	Vocal resonance
Pneumothorax	Reduced affected side	Reduced affected side	Hyper-resonant	Reduced air entry	Reduced
COPD	Reduced both sides & hyper inflated chest	Reduced bilaterally	Hyper-resonant if predominant emphysematous changes	Wheeze+/-: expiratory polyphonic	Reduced
Pulmonary fibrosis	Reduced both sides	Reduced bilaterally	Resonant	Crackles-fine inspiratory Mid-late DO NOT clear on coughing	No change / Reduced
Bronchiectasis	Reduced both sides	Reduced bilaterally	No change / Reduced	Crackles-fine inspiratory DO clear / change on coughing	No change / Reduced
Asthma	Reduced both sides during active disease	↓both sides during active disease	Hyper-resonant	Wheeze: expiratory polyphonic	No change
Stridor	Reduced both sides	↓both sides	No change	Wheeze: inspiratory often monophonic	No change
Lobar Collapse	Reduced side of collapse(ipsilaterally), trachea pulled to that side	Reduced ipsilaterally	Reduced ipsilaterally	Reduced air entry	Reduced
Pneumonia	Reduced side of collapse	Reduced ipsilaterally	Reduced ipsilaterally	Bronchial breathing or reduced air entry	Increased
Pulmonary Embolism	No change	No change	No change (Reduced if infarcted tissue)	Possible pleural rub (crunching through snow) often heard over area	No change
Pulmonary oedema	Usually no change. <i>Reduced bilaterally only if effusions present with pulmonary oedema</i>	Usually no change. <i>Reduced bilaterally only if effusions present with pulmonary oedema</i>	<i>Stony dull if effusions present with pulmonary oedema. Usually normal otherwise</i>	Mid –late inspiratory fine crackles – more coarse than those of fibrosis. DO NOT clear on coughing	<i>Reduced bilaterally only if effusions present with pulmonary oedema</i>
Pleural Effusion	Reduced side of effusion (ipsilaterally), trachea pushed to other side	Reduced ipsilaterally	Reduced ipsilaterally, stony dull	Reduced air entry	Reduced

Respiratory Findings on Examination

