

## Revision of Respiratory Exam Procedure

### *How you do it – what you find – what it means*

Examination Procedure	How is this done?	What you find	What this means		
<b>Observation</b>					
<b>Observation of face</b>	Observe from afar and also inspect closely	Pale	Anaemia		
		Flushed	Dyspnoea, emphysema		
		Cyanosed	Hypoxia, respiratory or cardiac failure		
		'Blue bloater'	Chronic bronchitis		
		'Pink puffer'	Emphysema		
		Rhinorrhoea	Infection: viral, bacterial. Allergy, sinusitis		
		Red congested face	Sinusitis		
		puffy face, engorged neck, chest and arm veins	Superior vena cava obstruction:		
		dyspnoea tachypnoea use of accessory muscles of respiration wheezing or stridor	Evidence of respiratory distress		
		signs of respiratory failure:	reduced level of consciousness central cyanosis, asterixis		
		Hoarse voice	Lesion on the recurrent laryngeal nerve Mediastinal or local lesions		
		Horner's syndrome (PEAS)	Sympathetic nerves lesion, apical tumours		
		<b>Observation of hands</b>	Inspect them closely	Finger clubbing	Chronic lung infection, lung abscess, cystic fibrosis, cancer
Ask pt to outstretch hands	Flapping tremor			Hypercapnoea: respiratory or liver pathologies	
Inspect intrinsic muscles	Wasting			Malignancy, TB, cachexia	
Look at index and middle fingers	Yellow			Nicotine stains / smoker	
<b>Observation of thorax and abdomen</b>	Ask pt to stand, sit on edge of couch or lie supine	Deformities of the spine and thorax	Spinal deformities: Kyphosis, scoliosis Thorax deformities: Barrel chest: COPD, chronic asthma Pectus excavatum: Pectus carinatum:		
		Breathing pattern and rate	Breaths per minute, increased, decreased, deep, shallow, regular, irregular		
		Asymmetrical expansion	Musculoskeletal (thoracic/spinal) deformities, unilateral pleural pathology, advanced lung pathology		
		Surgical scars	Operations, emergencies, accidents		
		Possible tracking to the surface. Cold abscesses from underlying TB	Mesothelioma or TB		
		Harrison's sulcus and intercostal recession	Prolonged respiratory distress		
		<b>PALPATION</b>			
		<b>Palpate lymph nodes</b>	Use finger tips and with rolling motion feel the lymph nodes	Supraclavicular or cervical lymph nodes enlarged or tender	Intrathoracic infection, malignancy, autoimmunity

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<b>Palpate the trachea</b>	Use a gentle gripping hold and feel along course until suprasternal notch Place index finger over suprasternal notch	Distance from suprasternal notch to cricoid cartilage: 2-3 cm. Tagging?	A reduction in this distance, particularly on inspiration is a reliable sign of hyperinflation
<b>Chest expansion</b>	Ask patient to take very deep slow inspirations while you place both hands flat over apex, mid-thorax and bases both anteriorly and posteriorly.	Asymmetrical expansion	Musculoskeletal (thoracic/spinal) deformities, unilateral pleural pathology, advance lung pathology, neurological lesion.
<b>Tactile vocal fremitus</b>	Place both hands firmly flat, with ulnar borders or in a fist-like manner over apex, mid-thorax and bases both anteriorly and posteriorly. Ask pt to repeat out loud the phrase 'ninety-nine' or 'one-one-one'. Repeat over apex, mid-thorax and bases both anteriorly, posteriorly and laterally. Fell for vibrations	Vibrations: symmetrical, non-symmetrical, increased, decreased and absent.	Vibrations unilaterally <b>increased</b> : infiltrating tumor, consolidation  Vibrations unilaterally <b>decreased</b> : pleural effusion, lung collapse, pneumothorax,  Bilaterally increased: fibrosis, consolidation. Bilaterally decreased: soft voice, bad technique.
<b>Percussion</b>			
<b>Percussion of the thorax</b>	Place index or middle finger firmly between intercostal spaces and with other index finger percuss in hammer-like fashion. Direct percussion over clavicles Over apex, clavicles, and every 2-3 spaces both anteriorly, posteriorly and laterally. Listen to the quality of resonant sound.		<b>increased resonance:</b> o emphysema o pneumothorax <b>decreased resonance:</b> o consolidation o collapse o abscess o neoplasm o fibrosis <b>stony dull:</b> o pleural effusion
<b>Auscultation</b>			
<b>Auscultation of the thorax</b>	<ul style="list-style-type: none"> <li>• Ask patient to cough up any sputum before listening</li> <li>• Use the diaphragm</li> <li>• Ask the patient to breathe deeply through the mouth</li> <li>• Listen at top, middle and bottom of both sides of the chest at the front and back and then in the axilla</li> <li>• Assess the character of the breath sounds</li> <li>• Assess the vocal resonance</li> </ul>	<p>Normal position and character of sounds: tracheal, bronchial, broncho-vesicular, and vesicular.</p> <p><b>Increased</b> bronchial sounds</p> <p><b>Decreased</b> bronchial sounds</p>	<p><b>Tracheal</b> over trachea and sternum <b>Bronchial</b> over mediastinum and post chest wall</p> <p><b>Vesicular</b> over lung tissue proper.</p> <p><b>Increased</b> bronchial sounds often caused by lung consolidation eg pneumonia. Also localised pulmonary fibrosis large lung cavities, for example in tuberculosis, pleural effusion - if listening above the effusion</p> <p><b>Decreased</b> bronchial sounds often caused by</p> <ul style="list-style-type: none"> <li>o pleural effusion (listening over it)</li> <li>o pneumothorax</li> <li>o emphysema</li> <li>o lung collapse</li> </ul> <p>Bronchial breath sounds are harsh and poor in nature. Unlike normal vesicular breath sounds there is an audible gap between the inspiratory and expiratory phase sounds. If heard in the chest they are abnormal and suggest the presence of consolidation or fibrosis.</p> <p>The sounds of bronchial breathing are generated by turbulent air flow in large airways and similar sounds can be heard in healthy patients by listening over the trachea.</p> <p>Bronchial sounds should not be present over lung tissue as they are attenuated by air filled alveoli and lung parenchyma.</p>

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		<p><b>Pleural rub / friction</b></p> <p><b>Wheezes</b></p> <p><b>Crepitations</b></p>	<p>With consolidation or fibrosis the sound of air flow in the bronchi is conducted more effectively to the chest wall and bronchial rather than vesicular breath sounds are heard.</p> <p><b>Pleural rub:</b> pleurisy, autoimmune connective tissue disease.</p> <p><b>Wheezes:</b> asthma, constricted air passages may cause dry tubular sounds that are often maximal on expiration. Also in fibrosis, bronchitis, emphysema, congestive heart failure</p> <p><b>Crepitations:</b> fluid or mucus in bronchioles.</p> <ul style="list-style-type: none"> <li>• fine crepitations are characteristic of early pneumonia, tuberculosis and bronchiolitis</li> <li>• medium crepitations are found in pulmonary oedema and alveolitis</li> <li>• coarse and low pitched are typical of bronchiectasis</li> <li>• infection may cause any type of crepitation</li> <li>• crepitations are not significant if they disappear with coughing</li> </ul>
<b>Vocal resonance</b>	The patient is asked to repeat the phrase 'ninety-nine' whilst the examiner listens over his chest with a stethoscope.	<p><b>Increased resonance</b></p> <p><b>Decreased or absent resonance</b></p>	<p>In consolidation. In this case the numbers will become clearly audible. Over normal lung the numbers are normally muffled. Vocal resonance may be so great that whispered speech may be distinctly heard (whispering pectoriloquy).</p> <p>Note that over consolidated lung there is an increased transmission of high frequencies and speech heard through the stethoscope may take on a bleating quality (aeogophony - goat voice).</p> <p>Vocal resonance may be decreased or absent in the presence of effusion or collapse.</p>
<b>Additional procedures</b>			
<b>Aegophony</b>	While listening to the lungs with a stethoscope, the patient is asked to say the letter "e."	The voice is said to assume a bleating quality.	The voice is said to assume a bleating higher pitch quality when the chest wall overlying an area of lung consolidation is auscultated. This is because consolidated lung tends to transmit high frequencies of sound, which normally are attenuated.
<b>Whispering pectoriloquy</b>	Listen to chest with stethoscope whilst patients whispers a few words.	Increased quality and loudness of whispers	An area of lung consolidation
<b>Peak flow measurements</b>	Ask patient to blow into a peak flow meter as hard and as fast as they can. Repeat three time and take highest reading.	<p>Male average (depends on age and body built)</p> <p>Male average (depends on age and body built)</p> <p>Decreased lung capacity</p>	<p>550 -650 l/min</p> <p>400 – 450 l/min</p> <p>Asthma, COPD, many other lung pathologies</p>
<b>JVP measurement</b>	Estimate JVP level. Pt at 45° Use int. jugular	<p>Internal jugular not visible</p> <p>Filled up to 3cm above sternal angle</p> <p>Engorged more than 3cm above sternal angle</p>	<p>Not significant / normal</p> <p>Normal</p> <p>Heart failure, pericarditis, lung disease (pulmonary embolus, pulmonary hypertension, fibrosis), cardiac tamponade, fluid overload, SVC obstruction (no wave)</p>