

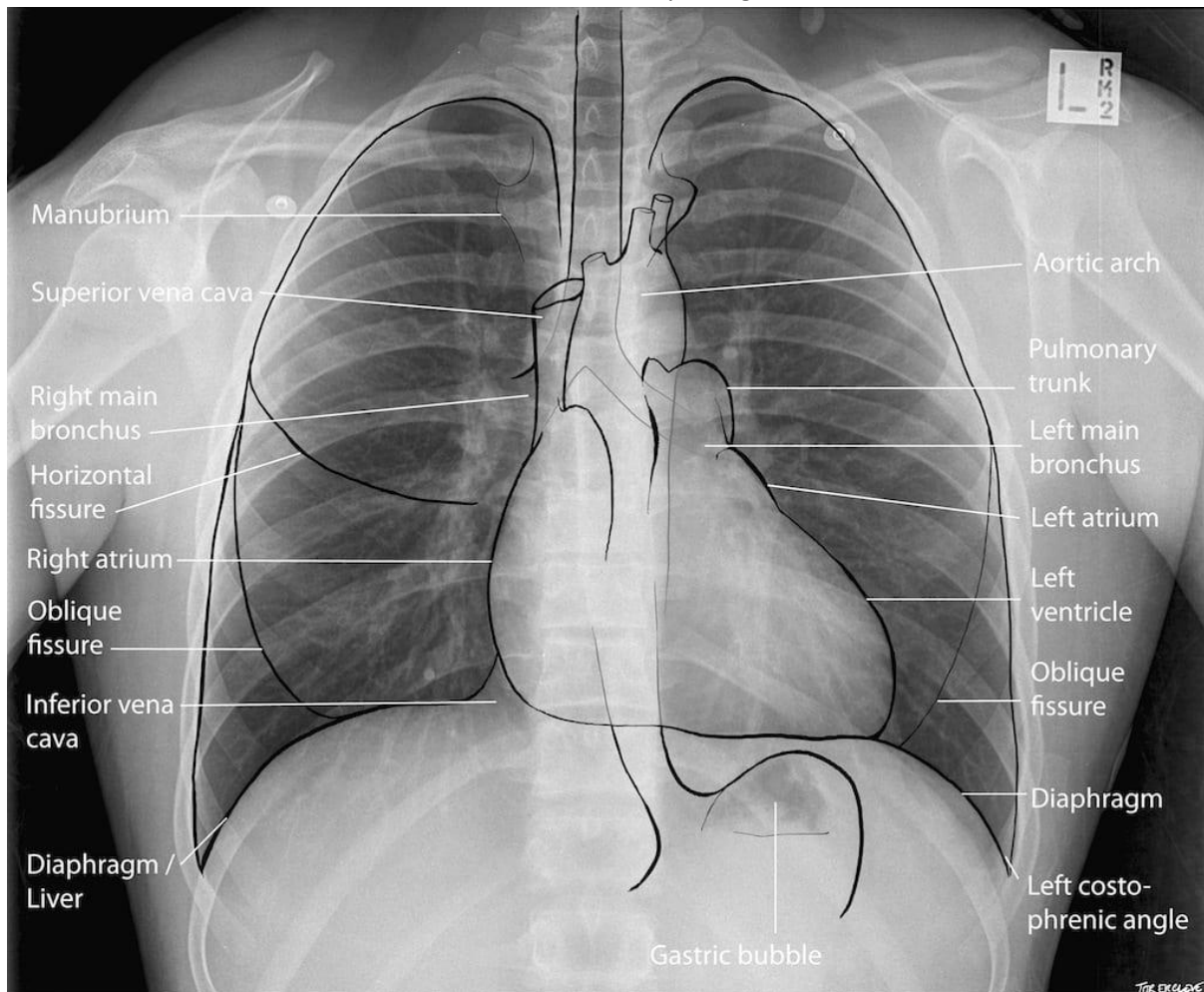
SGR clinical guides

An approach to interpreting chest x-rays

How to use this guide: when becoming familiar with a systematic approach to chest x-rays (CXR), it is best to practice and read through a few times with a CXR alongside and follow along as best as you can. A great resource for lots of interesting CXRs can be found here: <https://litfl.com/top-100/cxr/> or <https://radiopaedia.org/>.

Basic Anatomy:

Image 1: these are the main structures to be aware of when interpreting a CXR.



Approach: DR_{IPE}ABCDE

There are many different ways of interpreting CXRs out there, we will be using a modified DRABCDE method that you may have heard of before. This is a systematic approach we have found useful for our own study, on the wards or in assessments.

Demographics & details	<p>Introductory sentence: come out of the gates strong and prove to that consultant you can at least read. For example: <i>"This is an PA chest x-ray of Mrs X, a 45yo female, taken today a 1030am for a suspected pneumonia."</i></p>
RIPE	<p>RIPE encompasses the technical aspects of the image itself.</p> <p>Rotation: A vertical line drawn through the center of the vertebrae should be approximately equidistant from the medial aspect of each clavicle (image 2).</p> <p>Inspiration: Anterior aspect of at least 6 ribs should lie above the right dome of the diaphragm.</p> <p>Projection: this describes the direction that the x-ray image was taken i.e. AP (anterior → posterior) vs PA (posterior → anterior) (image 3). Note: PA is more common as it doesn't distort the size of the heart.</p> <p>Exposure: this describes how "penetrating" the x-rays are in the image.</p> <p>Note:</p> <ul style="list-style-type: none"> • Thoracic vertebrae should be visible behind the heart • Underexposed: lung markings are more prominent • Overexposed: when everything is blacker than usual
Airways & lung zones	<p>Airways</p> <ul style="list-style-type: none"> • Is the trachea patent and mediastinum midline? • Pulling of trachea might suggest lobar collapse, pneumothorax • Pushing of trachea might suggest large pleural effusion, tension pneumothorax • Note: rotation can look like tracheal deviation <p>Lung zones</p> <ul style="list-style-type: none"> • Systematically look at upper, middle and lower zones • Areas that are too white = 'increased opacification' (increased density) and might indicate effusion, pneumonia, fat. • Areas that are too black = 'increased lucency' (decreased density) and might indicate pneumothorax, collapse.
Bones & soft-tissues	<ul style="list-style-type: none"> • Look for obvious fractures/dislocations to the humerus, clavicles and ribs.
Cardio-mediastinum	<ul style="list-style-type: none"> • Cardiomegaly (cardiac silhouette >50% of the chest diameter on AP) might be seen in chronic heart failure. • Mediastinum width: if wider than normal it might suggest aortic dissection.
Diaphragm	<ul style="list-style-type: none"> • Costophrenic angles: are the angles clear and well defined, or are they blunted? Blunting could indicate a pleural effusion. • Hemidiaphragms: normally the hemidiaphragms are curved and the right hemidiaphragm sits slightly higher than the left hemidiaphragm. (Image 3) Flat hemidiaphragms could indicate lung hyper-expansion due to COPD. • Gastric bubble: Can the gas in the stomach (gastric bubble) underneath the left diaphragm be visualised? (Image 3)
Everything else	<ul style="list-style-type: none"> • Hilum: the left hilum is normally higher than the right. • Lung parenchyma: some people will choose to systematically discuss the lung zones last. • Devices/tubes/leads: always comment on the presence of any non-anatomical features e.g. pacemakers, NGTs, ECG electrodes, thoracotomy wires etc. • Any other obvious abnormalities.
Impression	<p>Strong concluding statement that ties together your main findings. For example: <i>"In conclusion, areas of increased opacification observed in Mrs X's CXR suggest a lobar pneumonia in the right middle zone which correlates to clinical findings of worsening dyspnoea, productive cough and subjective fevers."</i></p>

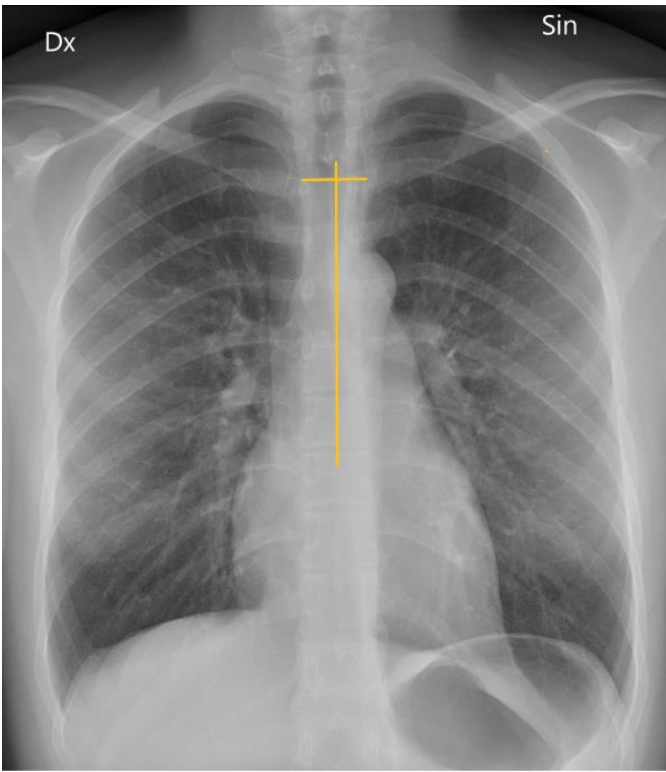


Image 2: Rotation

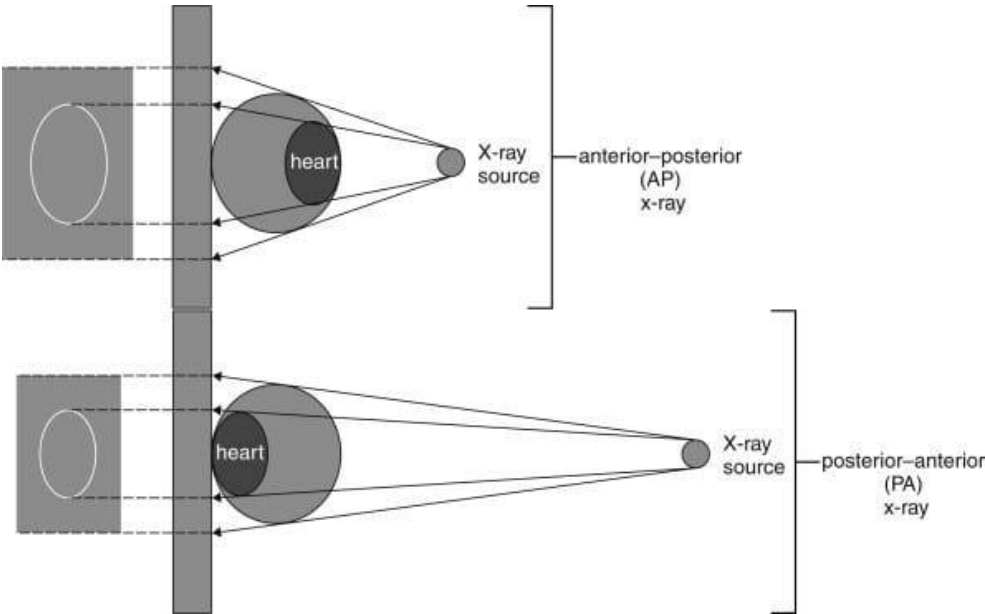


Image 3: Projection

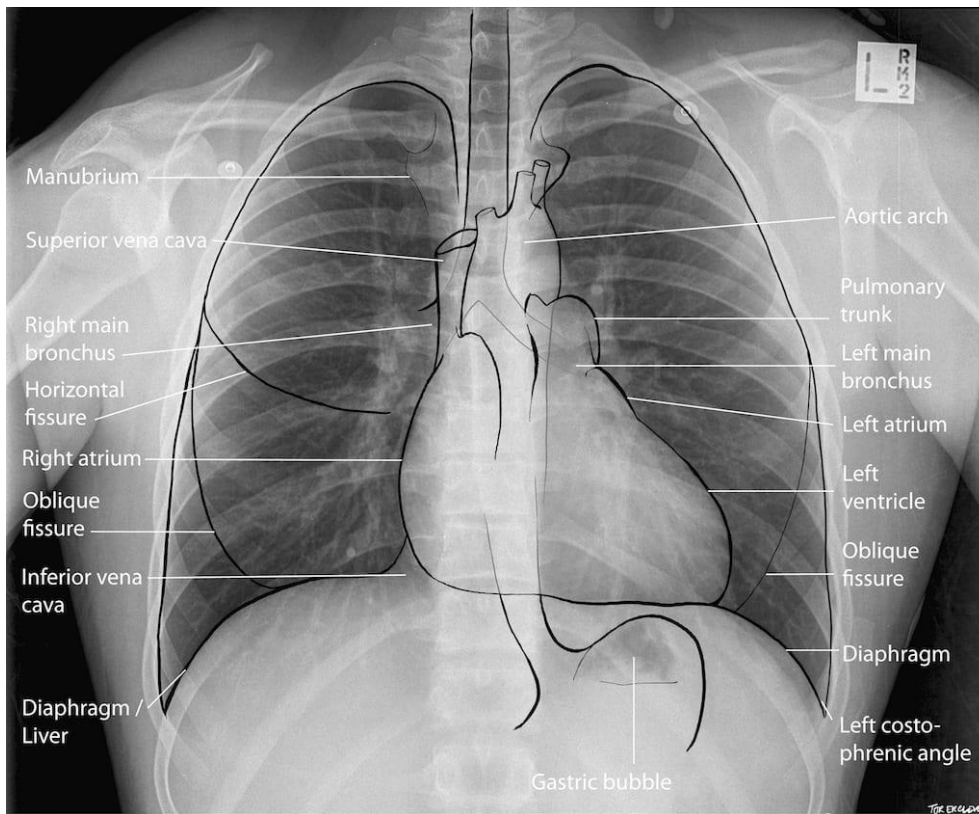


Image 4: Important landmarks in CXR interpretation.