CHEST X-RAY

A systematic read · what the findings mean

SAME ORDER
every film

CHECK QUALITY FIRST · RIPE

a bad film misleads

ROTATION
Spinous process midway between the clavicle heads.

INSPIRATION
5-6 anterior (or 8-10 posterior) ribs above the diaphragm.

PROJECTION
PA (standard) vs AP (portable, magnifies heart). Erect vs supine.

EXPOSURE
Vertebrae just visible behind the heart; discs faintly seen.

THEN READ IT · ABCDE

the same order every time

	Look at	Ask
A Airway	Trachea + carina, main bronchi	Central? Deviated (shift)? Tube position?
B Breathing	Both lungs, zone by zone; pleura	Opacity? Lucency (pneumothorax)? Effusion? Symmetry?
C Circulation	Heart size + borders, mediastinum, hila	CTR < 50% (PA)? Widened mediastinum? Big hila?
D Diaphragm	Both hemidiaphragms, costophrenic angles	Blunted angle (fluid)? Free air below? Gastric bubble?
E Everything else	Bones, soft tissues, lines & tubes, review areas	Fracture? Mass? Surgical emphysema? Missed corners?

COMMON PATTERNS · WHAT THE FINDING MEANS

Finding	How it looks	What it means
Consolidation	Fluffy opacity + AIR BRONCHOGRAMS; silhouette sign	Pneumonia (also pulmonary oedema, blood, aspiration)
Pleural effusion	Blunted costophrenic angle; meniscus; layers if supine	Fluid: infection, heart failure, malignancy, blood
Pneumothorax	Visible pleural line; NO lung markings peripheral to it	Air in pleural space; tension if shift AWAY + unwell
Collapse / atelectasis	Volume loss: raised diaphragm, crowded ribs, shift TOWARDS	Mucus plug, tumour, foreign body obstructing a bronchus
Pulmonary oedema	Bat-wing, Kerley B lines, upper-lobe diversion, effusions, big heart	Cardiogenic (LV failure) or ARDS if heart normal
Cardiomegaly	Cardiothoracic ratio > 50% on a PA film	Enlarged heart / effusion (confirm with echo)
Widened mediastinum	> 8 cm on a supine AP film	Aortic dissection / rupture, mass, lymphadenopathy
Free air under diaphragm	Lucent crescent under the (usually right) hemidiaphragm (erect)	Perforated viscus - surgical emergency
Nodule / mass	Rounded opacity; check old films for change	Malignancy, granuloma, abscess - needs work-up

SILHOUETTE SIGN

a lost border localises it

- **Right heart border lost →** right middle lobe
- **Left heart border lost →** lingula
- **Hemidiaphragm lost →** lower lobe
- **Rule →** an opacity that erases a border sits in the SAME plane as it

TRACHEAL SHIFT

the key differentiator

PUSHED AWAY: tension pneumothorax · large pleural effusion · large mass.

PULLED TOWARDS: lobar / lung collapse · pneumonectomy · fibrosis.

A whited-out lung: shift AWAY = effusion; shift TOWARDS = collapse; no shift = consolidation.

LINES & TUBES - CHECK THE TIP: ETT 3-5 cm above the carina · central line at the cavo-atrial junction / lower SVC · NG tube bisects the carina and sits BELOW the left hemidiaphragm · chest drain in the pleural space · always exclude a pneumothorax after any line.

PEARLS & PITFALLS

- Review the hidden areas every time: apices, behind the heart, hila, costophrenic angles, and below the diaphragm.
- On a supine or AP film you cannot reliably judge heart size or a small effusion / pneumothorax - note the projection.
- Air bronchograms mean the airspace is filled but the bronchi are patent - that is consolidation, not collapse.
- Always compare with old films; a stable nodule for 2 years is reassuring, a new or growing one is not.

References: Standard radiology references · RCR / Radiopaedia systematic CXR approach.

Educational aid; verify doses against local protocol and patient factors.