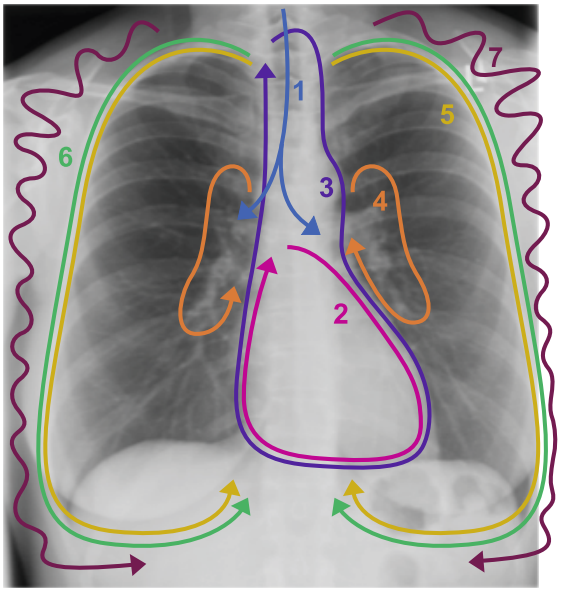
Chest X-Ray INTERPRETATION ALGORITHM

Starting from center and moving OUT:

1. Trachea & bronchi
2. Heart
3. Mediastinum
4. Hila
5. Lungs
6. Pleura
7. Chest wall



How to use the algorithm

If you **FIND AN ABNORMALITY**,
GO TO THE APPROPRIATE STEP.
Then evaluate the remaining steps.

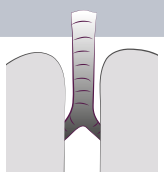
2. Trachea & bronchi
3. Heart
4. Mediastinum
5. Hila
1. Lungs ←
6. Pleura
7. Chest wall

If you **DON'T FIND** an abnormality,
EVALUATE THE STEPS IN
CONSECUTIVE ORDER.

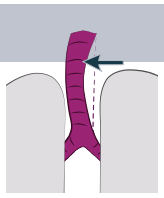
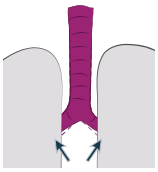
1. Trachea & bronchi
2. Heart
3. Mediastinum
4. Hila
5. Lungs
6. Pleura
7. Chest wall

1. TRACHEA & BRONCHI

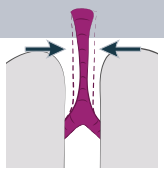
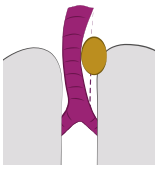
GRAYSCALE

1	Is the grayscale of the trachea altered?		If **YES**, then describe. Too white/too black.

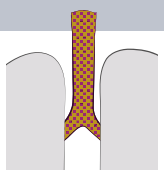
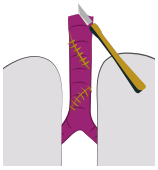
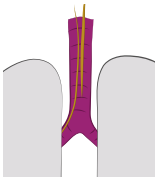
POSITION

2	Is the trachea deviated?		If **YES**, then describe. Right/left. Anterior/posterior.
3	Is the carina angle greater than 90 degrees?		If **YES**, then describe. Give angle measurement.

SHAPE

4	Is the shape of the trachea narrowed?		If **YES**, then describe. Focal/diffuse.
5	Is there a visible mass deviating/ narrowing the trachea?		If **YES**, then describe. Size/position.

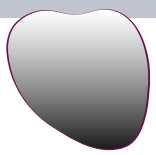
OTHER

6	Are there any radiological signs related to the trachea?		If **YES**, then describe. Air bronchogram. Tram line.
7	Is there any evidence of previous surgery to the trachea and/or bronchi?		If **YES**, then describe. Type of surgery and location. Compare to previous CXR.
8	Are there any lines or tubes in the trachea?		If **YES**, then describe. Give location of each relative to the carina.

2. HEART

GRAYSCALE

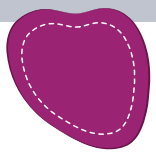
1 Is the grayscale of the cardiopericardial silhouette altered?



If **YES**, then describe.
Too white/too black.

SIZE

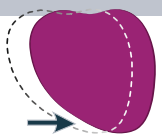
2 Is the size of the cardiopericardial silhouette altered?



If **YES**, then describe.
Too big/too small.
Pathological/magnification effect/pectus excavatum.

POSITION

3 Is the position of the cardiopericardial silhouette shifted?



If **YES**, then describe.
Up/down.
Right/left.
Anterior/posterior.

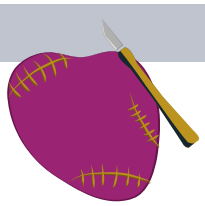
SHAPE

4 Is the shape of the cardiopericardial silhouette distorted?

If **YES**, then describe.
Name specific contour.
Pathological/normal variant.

OTHER

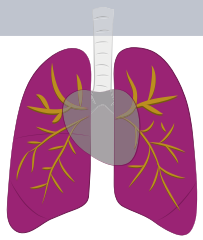
5 Is there any evidence of previous surgery to the heart or pericardium?



If **YES**, then describe.
Type of surgery and location.
Compare to previous CXR.

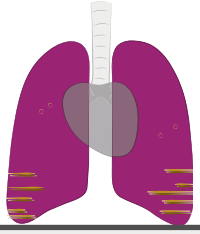
CONGESTIVE HEART FAILURE

6 Are there signs of vascular redistribution?



If **YES**, then describe.
Pulmonary venous hypertension/ pulmonary arterial hypertension / shunt vascularity.

7 Are there signs of edema?



If **YES**, then describe.
Interstitial/alveolar.
Kerley A/Kerley B/cuffing.

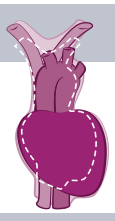
3. MEDIASTINUM

GRAYSCALE

1 Is the grayscale of the mediastinum altered?

If **YES**, then describe.
Too white/too black.
Pathology/lipomatosis.

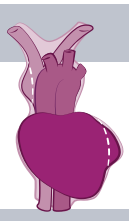
SIZE



2 Is the size of the mediastinum altered?

If **YES**, then describe.
Too big.
Right/left.
Anterior/middle/posterior compartment.

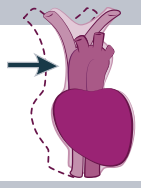
SHAPE



3 Are the mediastinal contours abnormal?

If **YES**, then describe.
Right/left.
Distorted/missing/additional.

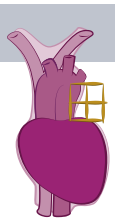
POSITION



4 Is the position of the mediastinum shifted?

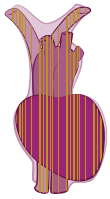
If **YES**, then describe.
Right/left.
Anterior/posterior.

OTHER



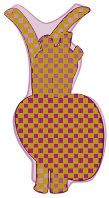
5 Is the AP window normal?

If **NO**, then describe.
Blurred, obscured.
Too big/too small.



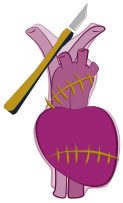
6 Are the lines and stripes normal?

If **NO**, then describe.
Too wide/irregular/missing.



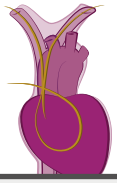
7 Are there any radiological signs related to the mediastinum?

If **YES**, then describe.
123.
hilar overlay.
Iceberg.
Silhouette.



8 Is there any evidence of previous surgery to the mediastinum?

If **YES**, then describe.
Type of surgery and location.
Compare to previous CXR.



9 Are there any lines or tubes in the mediastinum?

If **YES**, then describe.
Give location of each relative to the carina and SVC.

4. HILA

GRAYSCALE

1 Is the grayscale of the hilum altered?

If **YES**, then describe.
Too white (too dense)
Right/left/bilateral.

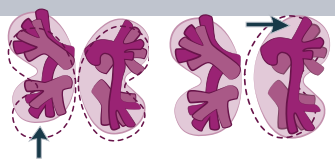
SIZE

2 Is the size of the hilum altered?

If **YES**, then describe.
Too big/too small.
Right/left/bilateral.

POSITION

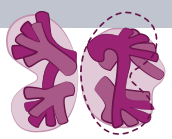
3 Is the position of the hilum shifted?



If **YES**, then describe.
Elevated/depressed.
Medial/lateral.
Anterior/posterior.
Right/left/bilateral.

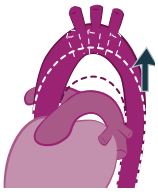
SHAPE

4 Is the H-shape of the hila distorted on the PA x-ray?



If **YES**, then describe.
Lobulated/irregular.
Right/left/bilateral.

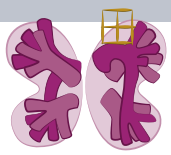
5 Are one or both of the arches distorted on the lateral x-ray?



If **YES**, then describe.
Aorta narrowed/distended.
LPA narrowed/distended.

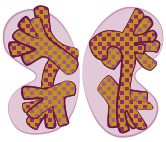
OTHER

6 Is the AP window normal?



If **NO**, then describe.
Blurred/obscured.
Too big/too small.

7 Are there any radiological signs related to the hilum?



If **YES**, then describe.
Hilar convergence.
Hilar overlay.
H-sign.

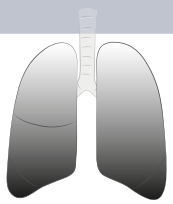
8 Is there any evidence of previous surgery to the hilum?

If **YES**, then describe.
Type of surgery and location.
Compare to previous CXR.

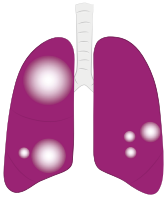
5. LUNGS

GRAYSCALE

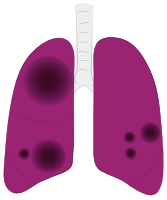
1 Is the grayscale of the lungs altered?



If **YES**, then describe.
Too white/too black/too white AND too black.
Right/left/bilateral.

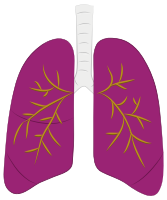


If **TOO WHITE**, then describe opacity.
Focal/diffuse.
Multiple/solitary.
Homogeneous/inhomogeneous.



If **TOO BLACK**, then describe hyperlucency.
Focal/diffuse.
Multiple/solitary.
Pathological/mastectomy/surgery.
Homogeneous/inhomogeneous.

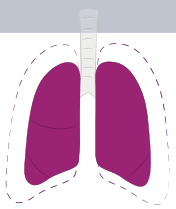
2 Is the normal branching of blood vessels obscured?



If **YES**, then describe.
Right/left/bilateral.

SIZE

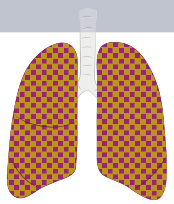
3 Is the size of the lungs altered? (Does the blackness of the lungs extend all the way to the ribs?)



If **NO**, then describe.
Right/left/bilateral.
Increased/decreased.

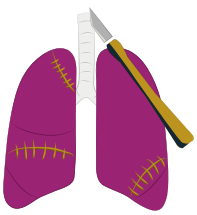
OTHER

4 Are there any radiological signs related to the lungs?



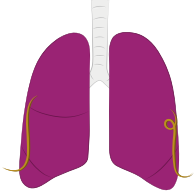
If **YES**, then describe.
Air bronchogram.
Silhouette.
Spine.

5 Is there any evidence of previous surgery to the lungs?



If **YES**, then describe.
Type of surgery and location.
Compare to previous CXR.

6 Are there any lines or tubes in the lungs?



If **YES**, then describe.
Give location of each relative to the carina, SVC and/or diaphragms.

6. PLEURA

GRAYSCALE

1 Do the lungs extend all the way to the ribs?

If **NO**, is the grayscale of the pleura altered?

If **YES**, then describe.
Too white/too black/too white AND too black.
Right/left/bilateral.

SIZE

2 Is the size of the pleural space altered?

If **YES**, then describe.
Right/left/bilateral.
Give size of pneumothorax or pleural effusion.

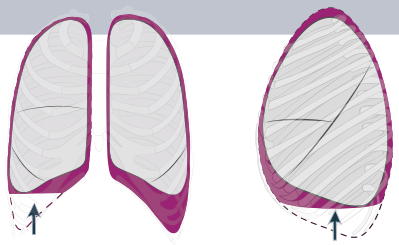
POSITION

3 Are the fissures shifted?

If **YES**, then describe.
Elevated/depressed.
Medial/lateral.

SHAPE

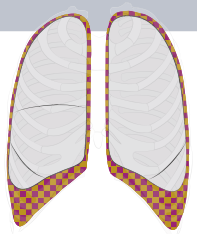
4 Is the shape of the lateral or posterior costophrenic angles altered?



If **YES**, then describe.
Right/left/bilateral.
Blunted.

OTHER

5 Are there any radiological signs related to the pleura?



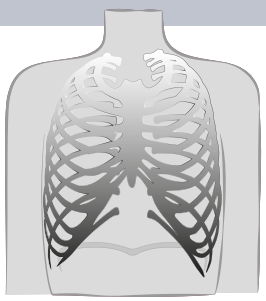
If **YES**, then describe.
Pseudotumor.
Deep sulcus.

7. CHEST WALL

BONY THORAX (Spine, ribs, clavicles, scapulae, sternum)

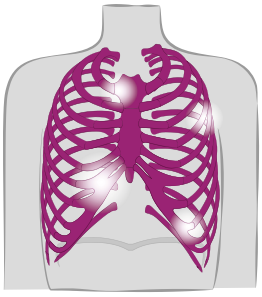
GRAYSCALE

1 Is the grayscale of the bones altered?



If **YES**, then describe.
Too white/too black.
Bone density.
Cortical outline.
Fractures/bone destruction.

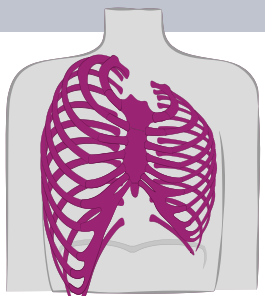
2 Are any abnormal opacities present?



If **YES**, then describe.
Give number and location.
Focal/diffuse.

POSITION

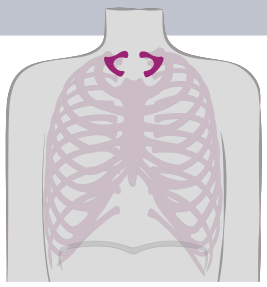
3 Is the position of the bony thorax (ribs, spine, clavicles, sternum, scapulae) altered?



If **YES**, then describe.
Right/left.
Anterior/posterior.
Elevated/depressed.

OTHER

4 Are there any accessory ribs?



If **YES**, then describe.
Cervical/lumbar
Give number and position.

7. CHEST WALL

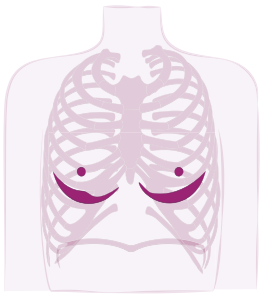
SOFT TISSUES

GRAYSCALE

5 Is the grayscale of the soft tissues altered?

If **YES**, then describe.
Too white/too black.

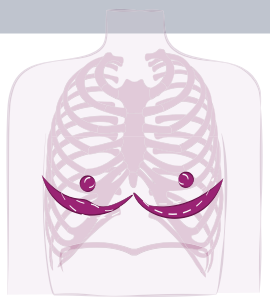
6 Are breast, pectoral folds and/or nipple shadows present?



If **YES**, then describe.
Right/left/bilateral.
If not sure, repeat CXR with nipple markers.

SIZE

7 Is the size of the breasts altered?

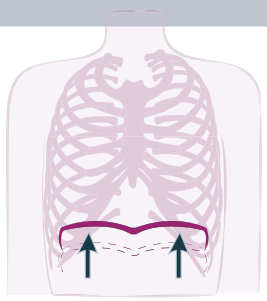


If **YES**, then describe.
Right/left/bilateral
Increased/decreased.

DIAPHRAGMS

POSITION

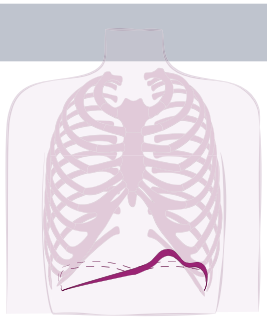
8 Is the position of the diaphragm(s) altered?



If **YES**, then describe.
Right/left/bilateral.
Elevated/depressed.

SHAPE

9 Is the shape of the diaphragm(s) altered?

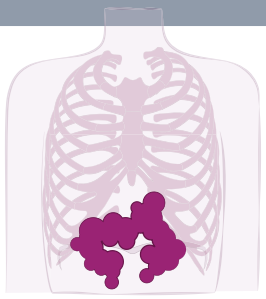


If **YES**, then describe.
Right/left/bilateral.
Describe shape.

7. CHEST WALL

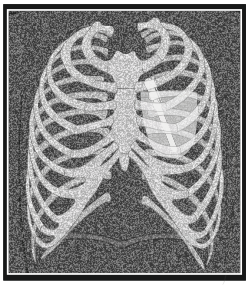
OTHER

10 Is there a presence of bowel loops or stomach in the thoracic cavity?



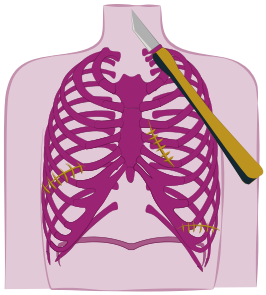
If **YES**, then describe.
Right/left.
Anterior/posterior.

11 Are there any external objects that are not part of the normal chest wall?



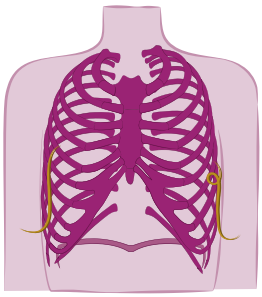
If **YES**, then describe.
ECG leads/buttons and clips on clothing/ hair bands and clips/jewellery/coins and currency in pockets.

12 Is there any evidence of previous surgery to the chest wall or diaphragms?

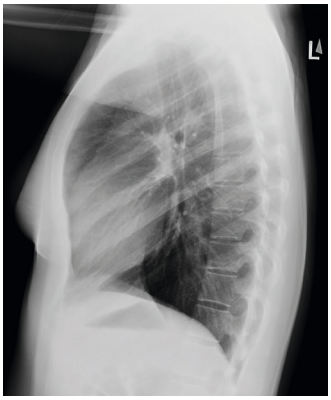


If **YES**, then describe.
Type of surgery and location.
Compare to previous CXR.

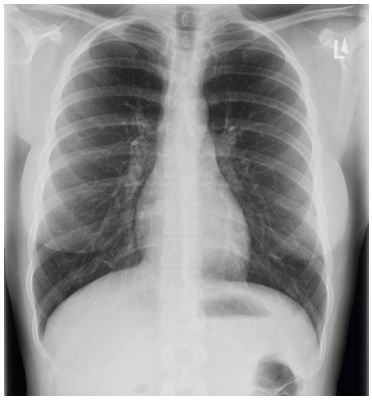
13 Are there any lines or tubes in the chest wall?



If **YES**, then describe.
Give location of each relative to the carina, SVC and/or diaphragms.



LATERAL



PA

These normal images are provided for your use as reference images so you can familiarize yourself with what the normal looks like.