SLIMS,PONDICHERRY

Date: 22/02/2022

From

DR.R.CHIDHAMBARAM ,
Professor and Head,
Dept.of radio-diagnosis and Imaging Sciences ,
SLIMS,PONDICHERRY
Bharath Institute of Higher Education and Research,
Chennai.

To

The Dean,
SLIMS
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Permission to conduct value-added course:

BASIC CHEST X-RAY INTERPRETATION

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled:**BASIC CHEST X-RAY INTERPRETATION** 01-03-2022. We solicit your kind permission for the same.

Kind Regards

R. Chidhambaram

DR.R.CHIDHAMBARAM

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean:

The HOD:

The Expert:

The committee has discussed about the course and is approved.

Dean (Sign & Seal)

Subject Expert (Sign & Seal)

HOD (Sign & Seal

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

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Course Proposal

Course Title: BASIC CHEST X-RAY INTERPRETATION
CourseObjective: TO DEMONSTRATE BASIC CHEST X-RAY INTERPRETATION
CourseOutcome: BETTER UNDERSTANDING OF BASIC CHEST X-RAY INTERPRETATION.

Course Audience: ANY MEDICAL STUDENT
Course Coordinator: PROF.DR.R.CHIDHAMBARAM
Course Faculties with Qualification and Designation:

1. DR.G.R.CHIDHAMBARAM,MBBS,MDRD.PROF. AND HOD
2. DR.MOHAMAD HASSAN,MBBS,MDRD,ASST. PROFESSOR
3. DR.JOTHIBASU ,MBBS,DNB,SENIOR RESIDENT

Course Curriculum/Topics with schedule (Min of 30 hours)-ENCLOSED

SlNo	Date	Topic	Time	Hours
1	01-03-2022	INTRO	2:00 PM	2 hours
2	02-03-2022	INDICATIONS	2:00 PM	2 hours
3	03-03-2022	TECHNIQUE	2:00 PM	2 hours
4	04-03-2022	POSITIONING	2:00 PM	2 hours
5	05-03-2022	VIEWS	2:00 PM	2 hours
6	06-03-2022	QUALITY CHECK	2:00 PM	2 hours
7	07-03-2022	STANDARD VIEW	2:00 PM	2 hours
8	08-03-2022	RADIOGRAPHIC ANATOMY-1	2:00 PM	2 hours
9	09-03-2022	RADIOGRAPHIC ANATOMY-2	2:00 PM	2 hours
10	10-03-2022	RADIOGRAPHIC ANATOMY-3	2:00 PM	2 hours
11	11-03-2022	Rad.densities	2:00 PM	2 hours
12	12-03-2022	Basic Interpretation-1	2:00 PM	2 hours
13	13-03-2022	Basic Interpretation-2	2:00 PM	2 hours
14	14-03-2022	Basic Interpretation-3	2:00 PM	2 hours
15	15-03-2022	QUIZ	2:00 PM	2 hours
			Total Hours	30

REFERENCE BOOKS: (Minimum 2)
1.GRIENGER AND HALLISON.
2.SUTTON

OFFICE OF THE DEAN

Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,
PUDUCHERRY - 605 502.
[Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME (P -II) dt. 11/07/2011]
[Affliated to Bharath University, Chennai - TN]

Circular

25.02.2022

Sub: Organising Value-added Course:

BASIC CHEST X-RAY INTERPRETATION . reg

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **"BASIC CHEST X-RAY INTERPRETATION "**. The course content and registration form is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before May to June 2022. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

DEAN
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
OSUDU, AGARAM VILLAGE,
KOODAPAKKAM POST,
PUDUCHERRY - 605 502

Encl: Copy of Course content

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VALUE ADDED COURSE

1. Name of the programme & Code :
Basics of chest xray interpretation RAD 05
2. Duration & Period
30 hrs & September 2021– January 2022 & February 2022 – August 2022
3. Information Brochure and Course Content of Value Added Courses
Enclosed as Annexure- I
4. List of students enrolled
Enclosed as Annexure- II
5. Assessment procedures:
Multiple choice questions- *Enclosed as Annexure- III*
6. Certificate model
21 *Enclosed as Annexure- IV*
7. No. of times offered during the same year:
September 2021– January 2022 & February 2022 – August 2022
8. Year of discontinuation: 2018

9. Summary report of each program year-wise

Value Added Course- September 2021- August 2022					
Sl. No	**Course Code**	**Course Name**	**Resource Persons**	**Target Students**	**Strength & Year**
1	**RAD 05-1**	**Basics of chest xray interpretation**	Dr. Jothibasu	MBBS	20 (Sep 21– Jan 22)
2	**RAD 05-2**	**Basics of chest xray interpretation**	Dr. Srinivasan	MBBS	20 (Feb21 Aug-22)

10. Course Feed Back

Enclosed as Annexure- V

RESOURCE PERSON

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

COORDINATOR

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

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Affiliated to Bharath Institute of Higher Education & Research
(Deemed to be University under section 3 of the UGC Act 1956)

CERTIFICATE OF MERIT

This is to certify that **M.KAVITHA** has actively participated in the Value Added Course on **BASICS OF CHEST XRAY INTERPRETATION** held during **September 2021– January 2022** Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. T.Jothibasu
RESOURCE PERSON

Dr.R. Chidhambaram
CO-ORDINATOR

Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research
(Deemed to be University under section 3 of the UGC Act 1956)

CERTIFICATE OF MERIT

This is to certify that **B.MOUNIKA** has actively participated in the Value Added Course on **BASICS OF CHEST XRAY INTERPRETATION** held during **February 2022 – August 2022** Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr.S.Shrnivasan
RESOURCE PERSON

Dr. R.Chidhambaram
CO-ORDINATOR

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VALUE ADDED COURSE

TOPIC:- Basics of chest X ray interpretation

List of Students Enrolled:

IST YEAR MBBS STUDENTS			
Sl.NO.	NAME OF THE STUDENT	UNIVERSITY REG. NO.	signature
1	KAVITHA .M	U16MB311	
2	KAVIYA .K	U16MB312	
3	KEERTHANA .K	U16MB313	
4	KEERTHI K DAS	U16MB314	
5	KUNCHAL BALA VENKATA RAMANA RED	U16MB315	
6	LAKSHMIPURAM VEDA SREEVIDYA	U16MB316	
7	LOGESH BABU J.S	U16MB317	
8	LOKESHWARAN .M	U16MB318	
9	MADHUMITHA .R	U16MB319	
10	MADHUMITHA .S	U16MB320	
11	MANIMAARANE .R	U16MB321	
12	MATHIVAANANE .R	U16MB322	
13	MATHIVANAN .J	U16MB323	
14	MD ALTAF KHAN	U16MB324	
15	MEKALA CHARAN CHOWDARY	U16MB325	
16	MERLIN.S	U16MB326	
17	MERLINE SHEEBA .B	U16MB327	
18	MOHAN .B	U16MB328	
19	MOHIT BHARDWAJ	U16MB329	
20	MONISH PALEI PATRA	U16MB330	
21	MONISHA . S	U16MB331	
22	MONISHA .M	U16MB332	
23	MONISHDEVI .N	U16MB333	
24	MOUNIKA .A	U16MB334	
25	MOUNIKA.B	U16MB335	
26	MUHAMMAD SHEBIN	U16MB336	
27	MUSKAAN SHAMIM	U16MB337	
28	MUSULURI SHYAM SINDHU	U16MB338	
29	NAMITA YADAV	U16MB339	
30	NAMRATA GHORAI	U16MB340	

RESOURCE PERSON

COORDINATOR

Annexure- II

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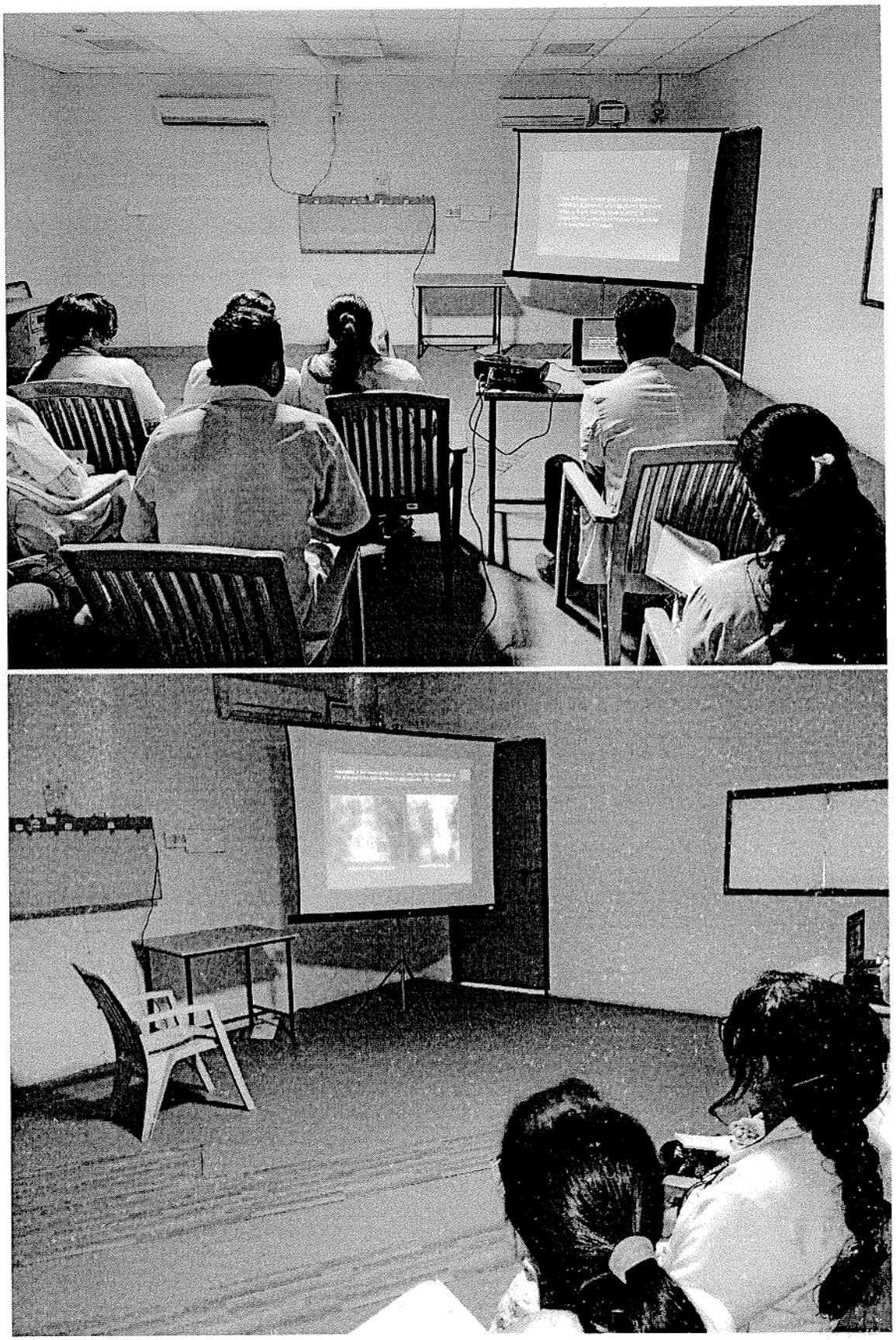

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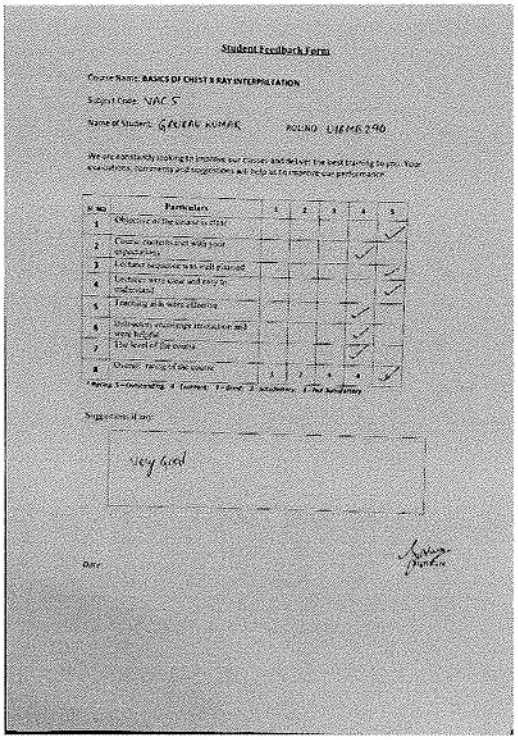

Student Feedback Form

Course Name: BASICS OF CHEST X RAY INTERPRETATION

Subject Code: VAC 5

Name of Student: GAUTAM KUMAR ROLLNO: UHMS290

We are constantly looking to improve our Courses and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance.

Sl. No	Particulars	1	2	3	4	5
1	Objectives of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lectures sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective				✓	
6	University knowledge resources and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course				✓	

*Rating: 5—Outstanding, 4—Excellent, 3—Very Good, 2—Satisfactory, 1—Not Satisfactory

Suggestions if any:

very good

Date:

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Student Feedback Form

Course Name: **BASICS OF CHEST X RAY INTERPRETATION**

Subject Code: VAC 5

Name of Student: GOLLA SRUTHI ROLLNO : 216MB292

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course					✓
		1	2	3	4	5

** Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2 - Satisfactory; 1 - Not Satisfactory*

Suggestions if any:

Excellent

Date:

Signature

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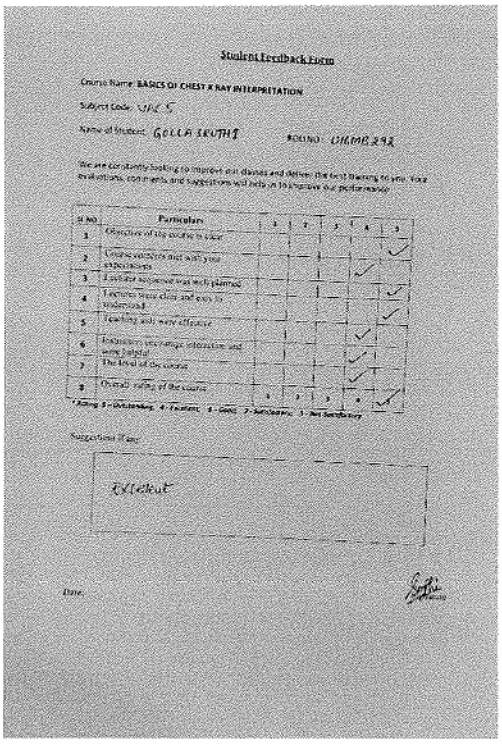

Student Feedback Form

Course Name: BASICS OF CHEST X RAY INTERPRETATION

Subject Code: CME 5

Name of Student: GOLLA SRUTHI ROLLNO: CMMB292

We are constantly looking to improve our classes and deliver the best learning to you. Your evaluations, comments and suggestions will help us to improve our performance.

Sl No	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Faculties sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective				✓	
6	Faculties encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course					✓

Rating: 5 – Outstanding, 4 – Excellent, 3 – Good, 2 – Satisfactory, 1 – Not Satisfactory

Suggestions if any:

Excellent

Date:

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MCQ'S OF BASICS OF CHEST XRAY INTERPRETATION

SNEHA U16MB379

1)Regarding the airways:

(a) In adults the right main-stem bronchus is steeper than the left.
(b) The left main bronchus is about twice as long as the right.
(c) The bronchioles contain cartilage.
(d) Gas exchange takes place in the terminal bronchioles and acini.
(e) The bronchopulmonary segments are based on the pulmonary arterial system.

2)Regarding blood supply of the lung:

(a) The left bronchial artery arises from the right bronchial artery.
(b) The deep bronchial veins may end in the left atrium.
(c) The right and left pulmonary arteries are at the same height in the chest.
(d) The right upper lobe pulmonary artery is anterior to the right upper lobe bronchus.
(e) The veins of the upper lobe are posterior to the arteries and bronchi.

3)In a chest radiograph:

(a) The anterior junctional line is usually straight and extends to the right ventricle.
(b) The posterior junctional line is anterior to the oesophagus.
(c) The azygo-oesophageal line is below the aortic arch.
(d) The right paravertebral stripe is thicker than that on the left due to the azygos vein.
(e) On a PA projection, the left superior intercostal vein may project lateral to the aortic arch as a small 'nipple'.

4)Regarding the blood supply to the chest wall:

(a) The posterior intercostal arteries supply the 11 intercostal spaces.
(b) The internal thoracic artery arises from the subclavian artery and supplies the upper six intercostal spaces.
(c) The neurovascular bundle passes around the chest wall in thesubcostal groove deep to the internal intercostal muscle.

5)

In PA chest X-ray, the aortic nipple formed by the _____ **is seen**

A) lateral to the descending aorta.
B) lateral to the aortic arch.
C) Medial to the descending aorta
D) Adjacent to the pulmonary artery
E) in the aortopulmonary window

6)By convention, the routine frontal view is taken with the patient upright and in full inspiration. The x-ray beam is horizontal, and the x-ray tube is 6 feet from the film or detector. This is what you get when you order a _____ view

A. front
B. back
C. PA
D. AP

7)The other routine view is the lateral (Fig. 1.2). By convention, the left side of the chest is held against the x-ray receptor. This is called a(n) _____ view

A. side
B. erect
C. 2nd
D. lateral

8)**In the erect patient**, intrapleural fluid falls with gravity. Intrapleural air _____

A. also falls
B. rises
C. stays put

9)The normal chest image is always done on _____.

A. inspiration

B. expiration

C.none of the above

10)Portable x-ray units are less powerful and bedside space is tight. Therefore, AP portable views use a shorter tube-to-detector distance. Compared with the PA radiograph, the AP radiograph has more magnification, and the anatomy appears _____.

A. sharper

B. less sharp

C. equally sharp

D. not significant

From

06/05/2022

Dr.R.Chidhambaram
Professor and Head,
Department of Radiology and imaging sciences,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Through Proper channel

To

The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Completion of value-added course: **BASIC CHEST X-RAY INTERPRETATION**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: : **BASIC CHEST X-RAY INTERPRETATION :** for 20 medical students (batch 2) .

We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr.R.Chidhambaram.

Encl: Certificates

Photographs

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

DEPARTMENT OF RADIOLOGY AND IMAGING SCIENCES

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BASICS OF CHEST XRAY INTERPRETATION

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COURSE CONTENTS-

- Basic views
- Assessing the quality of the film
- Identifying normal structures

VENUE:

LECTURE HALL:II

TIME : SAT 2 TO 4 PM.

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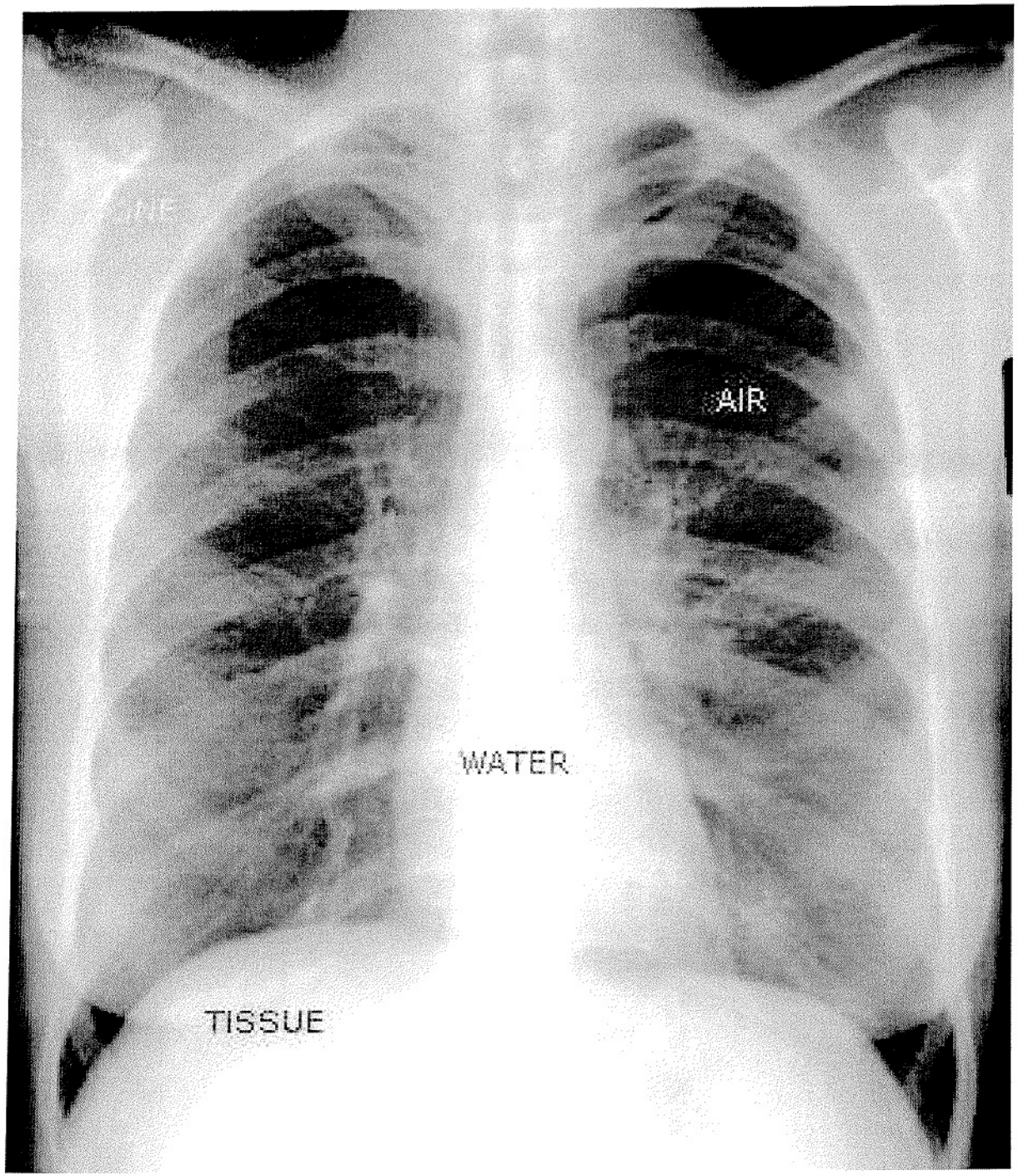
Why Chest Xray is needed?

- This is performed on the majority of patients suspected of having chest disease. A **postero-anterior (PA) film** provides information on the lung fields, heart, mediastinum, vascular structures and the thoracic cage .
- Additional information may be obtained from a lateral film, particularly if pathology is suspected behind the heart shadow or deep in the diaphragmatic sulci.

Relative densities

- The images seen on a chest radiograph result from the differences in densities of the materials in the body
- The densities range from least dense(black) to most dense(white)
- Gas(air in the lungs)
- Fat(fat layer in soft tissue)
- Water(same density as heart and blood)
- Bone (the most dense of the tissues)
- Metal (foreign bodies)


AIR
WATER
TISSUE

An approach to interpreting the chest X-ray

- Patient identification details
- X Ray view: PA or AP
- X ray penetration: under or overpenetrated
- DEPTH OF RESPIRATION: Inspiration or expiration
- Rotation

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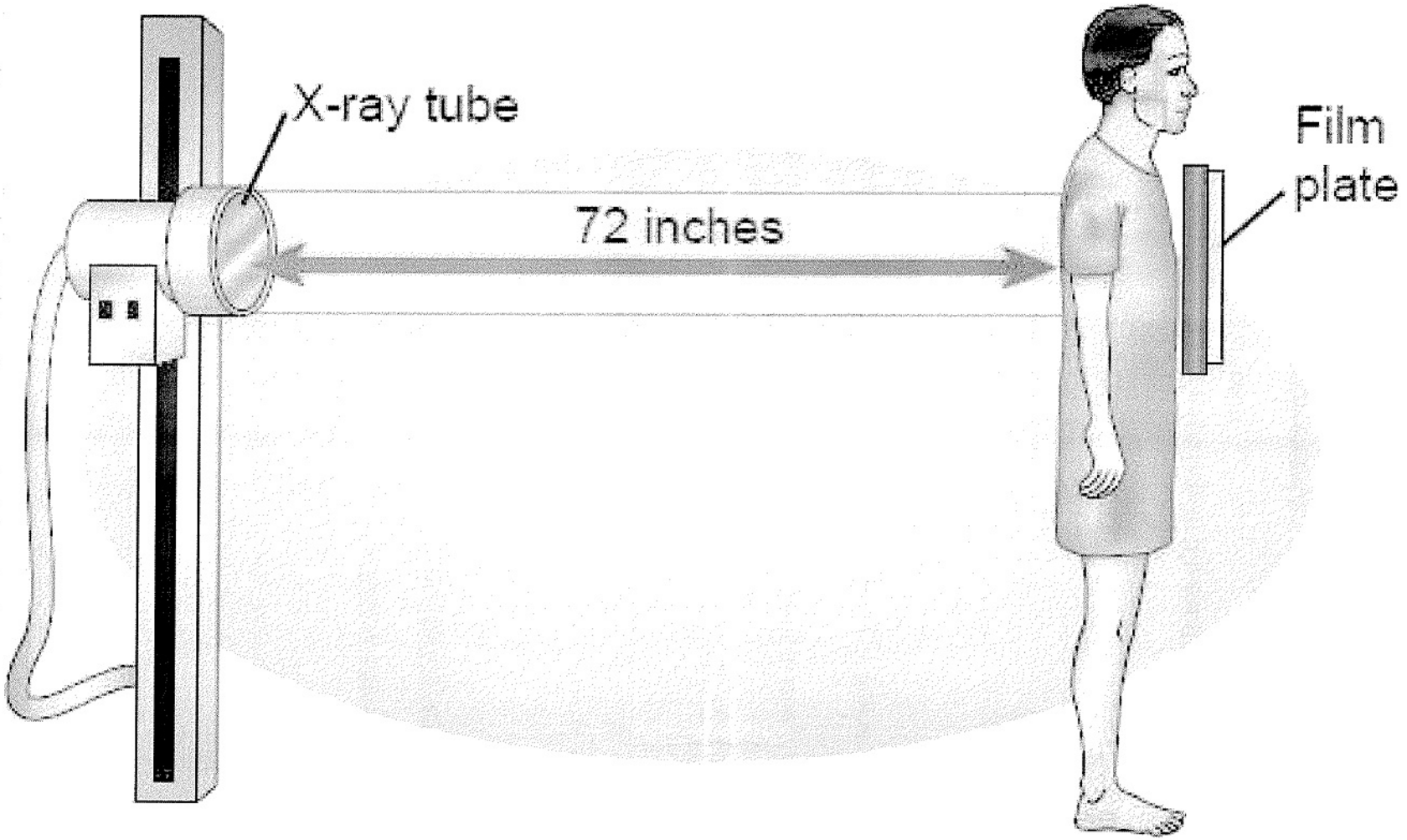
Major views of chest radiograph

- PA(Postero-anterior)
- AP(Antero-posterior)
- LATERAL
- LATRAL DECUBITUS

POSTERO-ANTERIOR POSITION

- The standard position for obtaining a routine adult chest radiograph
- Patient stands upright with the anterior wall of chest placed against the front of the film
- The shoulders are rotated forward enough to touch the film, ensuring that the scapulae do not obscure a portion of the lung fields
- Usually taken with the patient in full inspiration
- The PA film is viewed as if the patient is standing in front of you

Posterior–Anterior (PA)



ANTERO-POSTERIOR POSITION

- Used when the patient is debilitated, immobilized, or unable to cooperate with the PA procedure
- Film is placed behind the patient's back with the patient in a supine position
- Heart is at a greater distance from the film hence appear more magnified than in a PA
- The scapulae are usually visible in the lung fields because they are not rotated out of the view as they are in a PA

4
3
2
1

PARAMETER	PA (POSTERO-ANTERIOR) VIEW	AP (ANTERO-POSTERIOR) VIEW
1.patient posture	Erect (standing)	Supine (lying on back)
2.scapulae	Away from lung fields	Over lie lung fields
3.clavicle	project over lung zones	Project above lung apices
4. Distinct ribs end	Posterior end	Anterior end
3. Patients Hands /arm	Placed on hips	On the sides of thorax.
4.Heart magnification	Minimal, negligible	Moderate, significant ; mediastinal structures are Magnified
5.Caedio-thoracic ratio	Normal 1:2	Spuriously Increased
6.Diaphragm	Lowest level	Highest level
7.Gastric air /fluid level	Seen	Not seen, only gas seen
8. Respiratory phase	Deep inspiration	Mid inspiration or expiration.
9.Lung expansion	Maximal	Restricted.
10.lung markings	Normal, Only Lower zone vessels prominent due to gravity	Crowded, Upper zone vessels unduly prominent.
11.Lung volume	Normal	Apparently reduced

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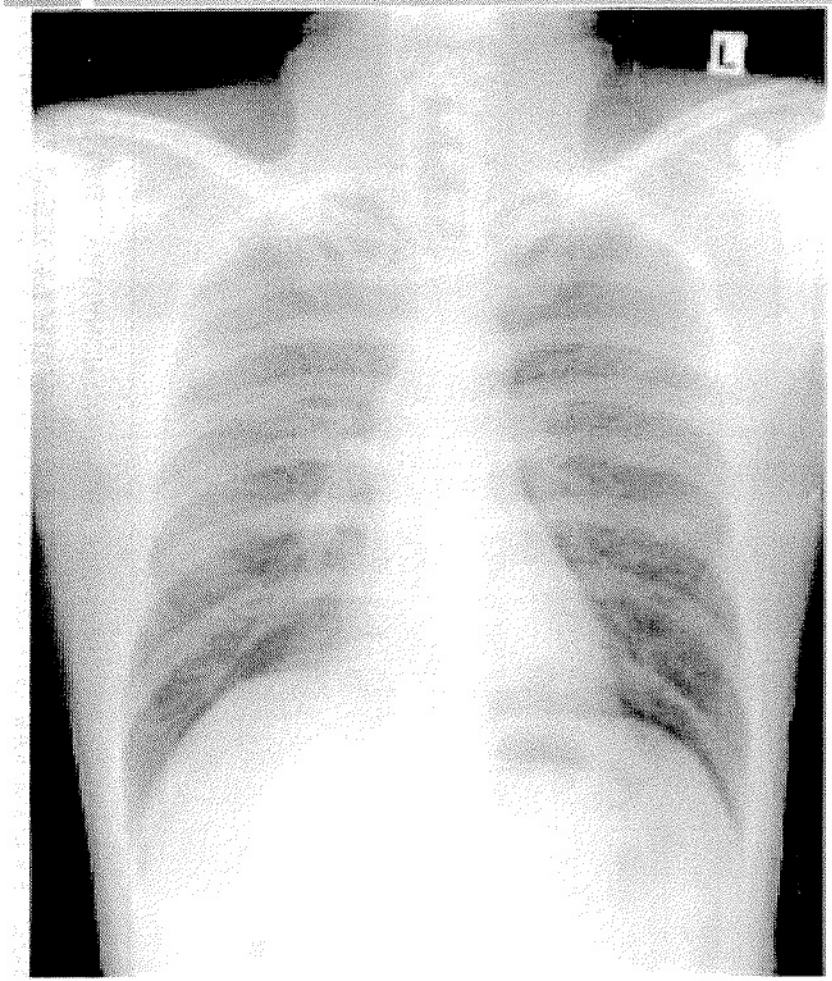
PA VS AP



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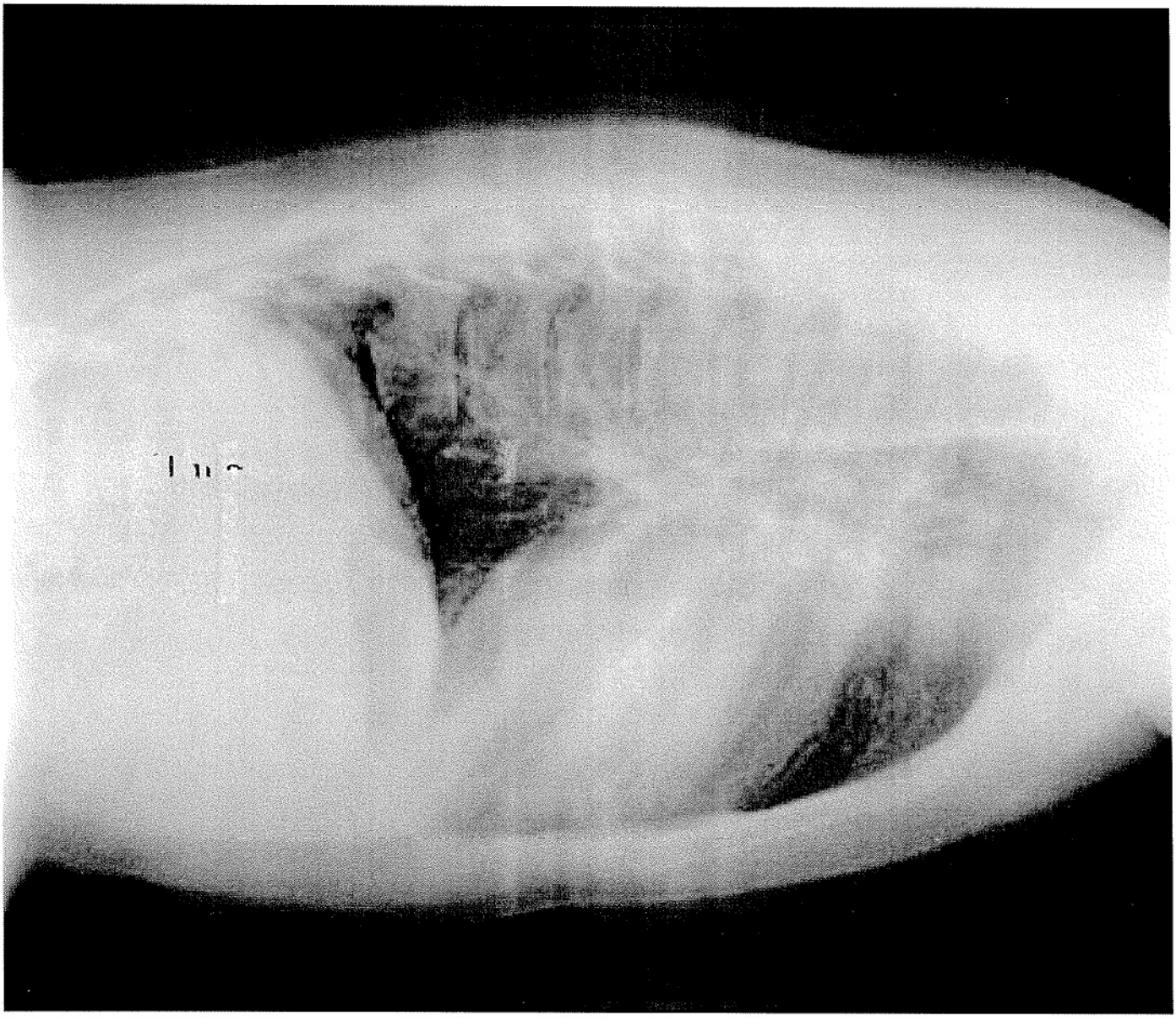
LATERAL POSITION

- Patient stands upright with the left side of the chest against the film and the arms raised over the head
- Allows the viewer to see behind the heart and diaphragmatic dome
- Typically used in conjunction with a PA view of the same side of chest to help determine the three dimensional position of organs or abnormal densities

MS

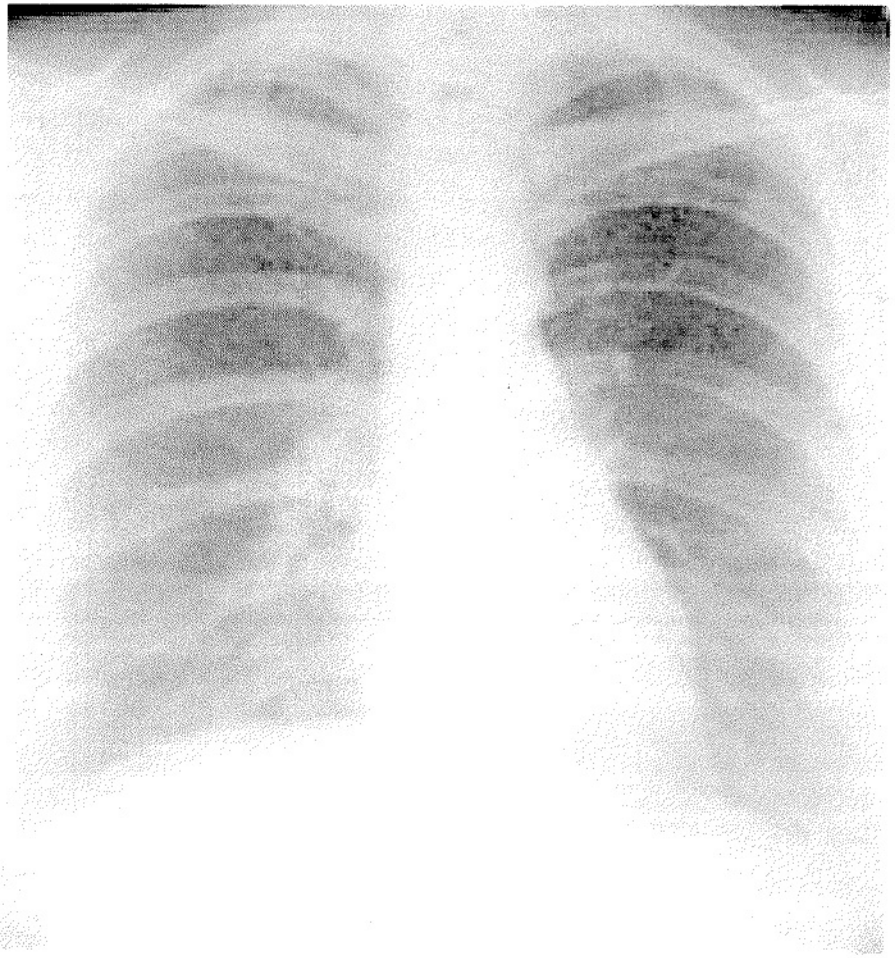


Technical quality of Radiograph

- Inspiration
- Penetration
- Rotation

Inspiration

- The chest radiograph should be obtained with the patient in full inspiration to help assess intrapulmonary abnormalities
- At full inspiration, the diaphragm should be observed at about the level of the 8^{th} to 10^{th} rib posteriorly, or the 5^{th} to 6^{th} rib anteriorly



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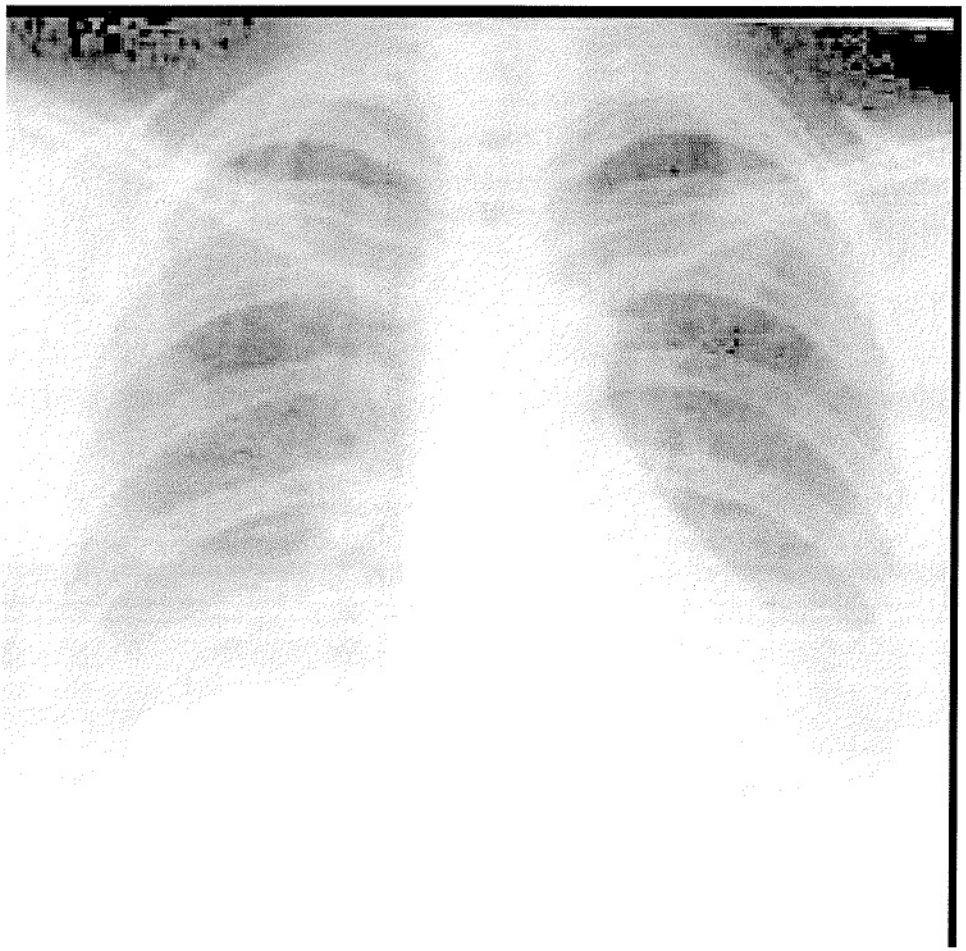

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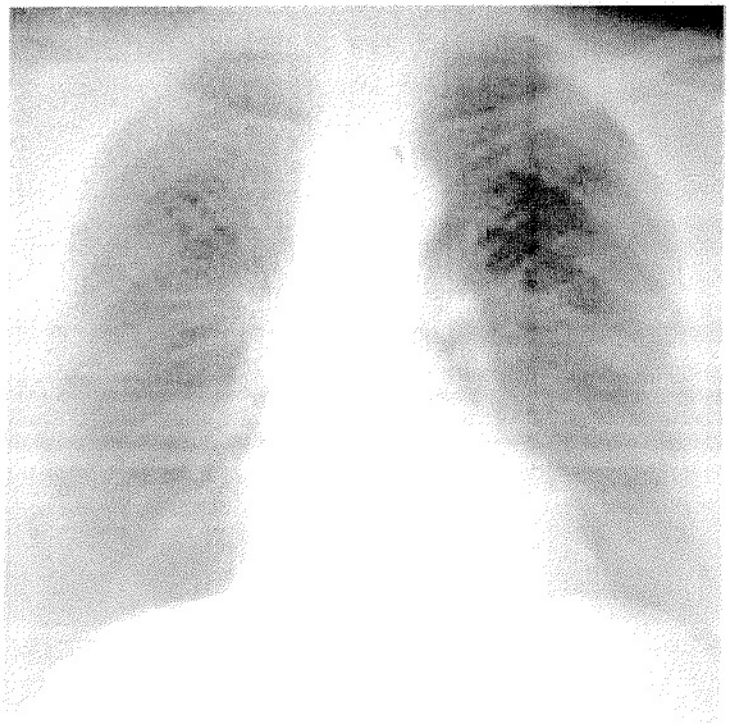
Penetration

- On a properly exposed chest radiograph
- The lower thoracic vertebrae should be visible through the heart
- The bronchovascular structures behind the heart (trachea, aortic arch, pulmonary arteries, etc.) should be seen

Underexposure

In an underexposed chest radiograph, the cardiac shadow is opaque, with little or no visibility of the thoracic vertebrae.

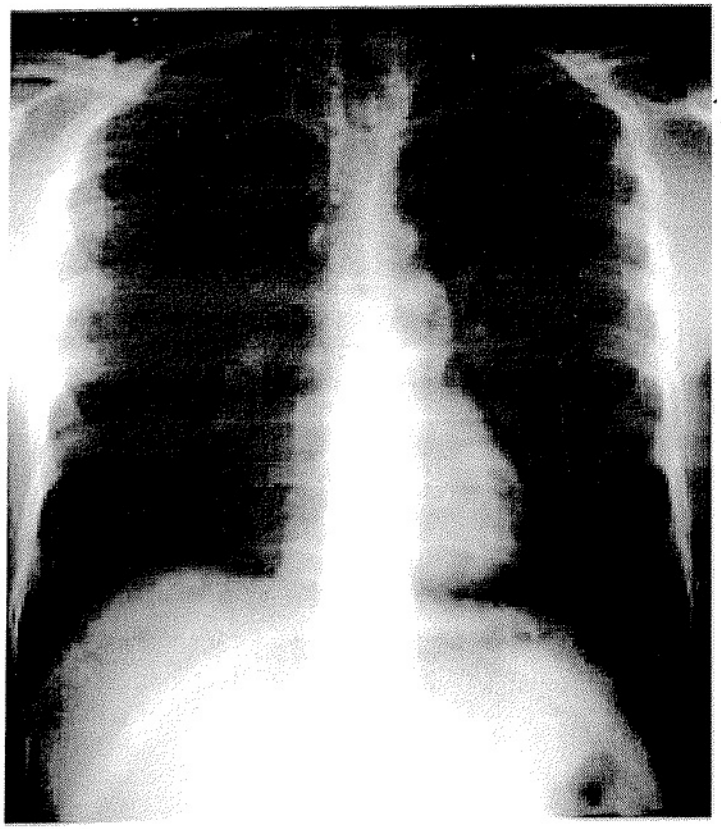
The lungs may appear much denser and whiter, gives appearance of infiltrates.



Overexposure

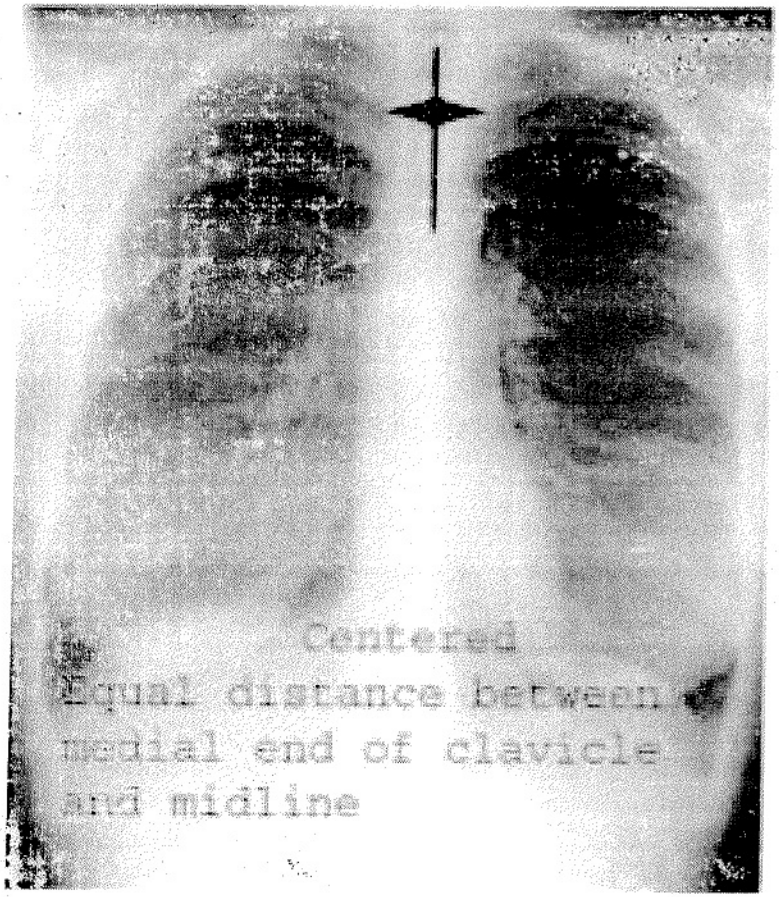
With greater exposure of the chest radiograph, the heart becomes more radiolucent and the lungs become proportionately darker.

Often gives the appearance of lacking lung tissue, as would be seen in a condition such as emphysema.



Rotation

- Patient rotation can be assessed by observing the clavicular heads and determining whether they are equal distance from the spinous processes of the thoracic vertebral bodies


Centered
Equal distance between
medial end of clavicle
and midline

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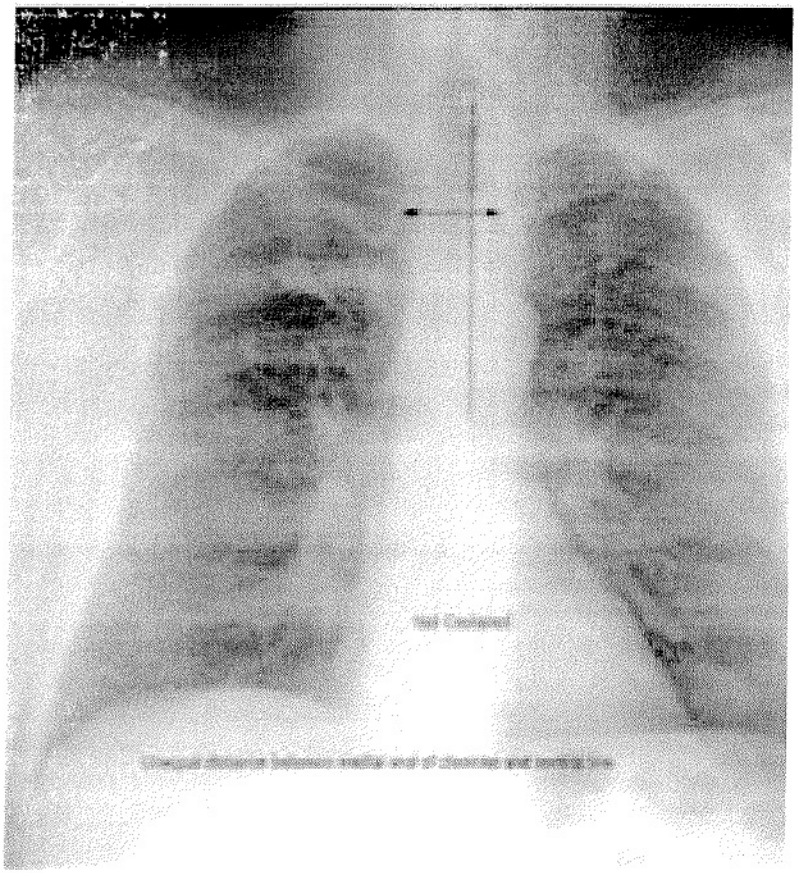

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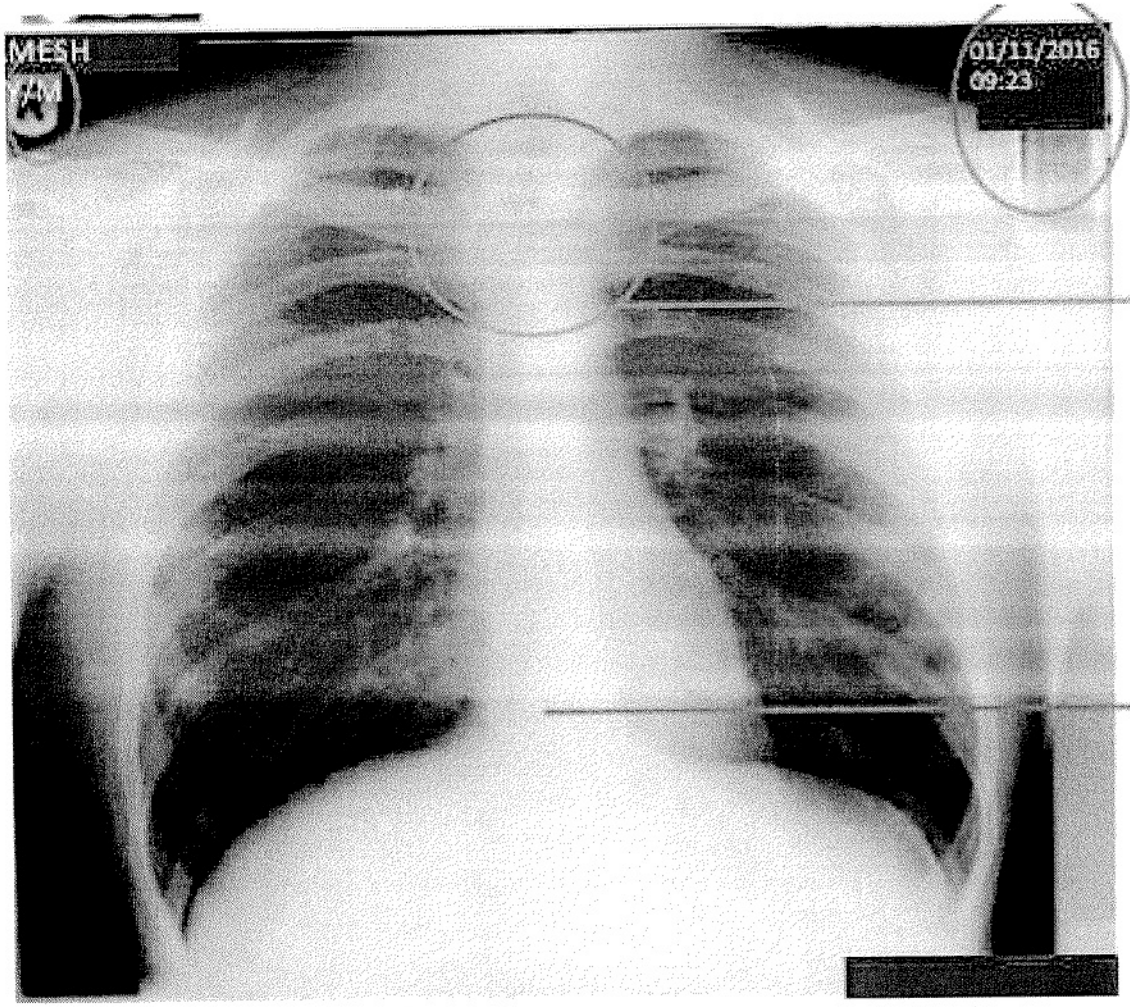
Review of Basics



- Name/Date..
- Marker
- Inspiration/
- Rotation/
- Penetration

clavicles equidistant from spinous processes of thoracic spine

can just see lower thoracic spine

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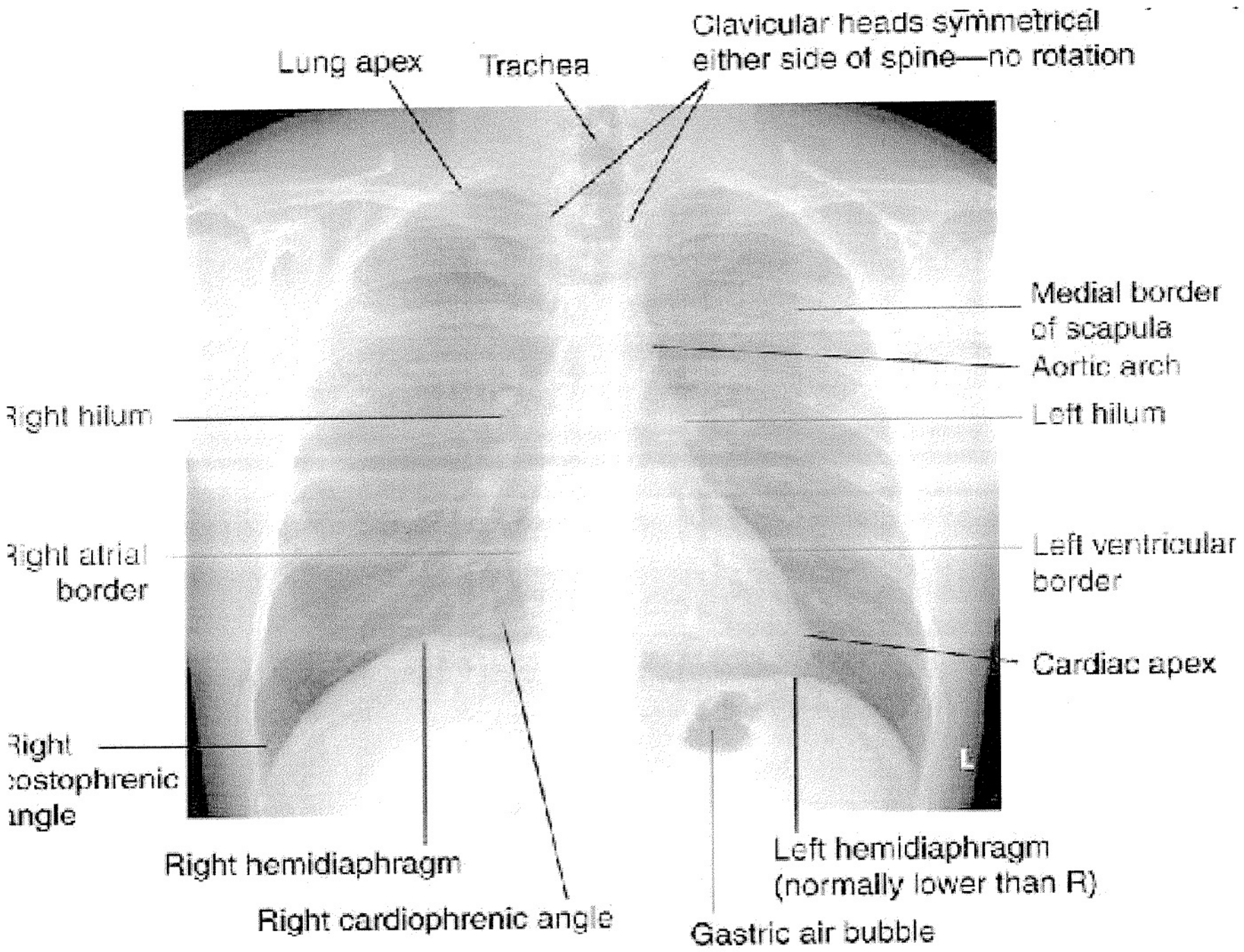
Interpretation of chest Xray

- **ABCDEFGHI** can be used to guide a systematic interpretation of chest x-rays.
- **A-Airways**
- **B-Bones**
- **Blood vessels- Arteries-PA,AORTA,' bronchial ;Veins-PV,sva,ivc.**
- **C-cardiac silhouette-**
- **D-diaphragm.**
- **E –extrathoracic structures..supraclvicular ,sub diaphragmatic ,axillae,chest wall,breasts.**
- **F-fissures –oblique,horizontal.**
- **G-gastric air bubble.**
- **H-Hila -**


Lung apex
Trachea
Clavicular heads symmetrical either side of spine—no rotation
Medial border of scapula
Aortic arch
Right hilum
Left hilum
Right atrial border
Left ventricular border
Cardiac apex
Right costophrenic angle
Right hemidiaphragm
Right cardiophrenic angle
Left hemidiaphragm (normally lower than R)
Gastric air bubble

THANK YOU

BIHER

SLIMS