Seeing Inside: What is Diagnostic Imaging?

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About Me

High School- 2000
- Vocational
- Studied Nursing

College -
- Del tech 2010
- Wilmington Univ 2024

Currently
- Radiologic Technologist
- Clinical Preceptor

X-Ray School

What to expect to learn in Xray school:

- The physics of radiation and how it works
- How to position the patient correctly, so the images come out clear
- How to identify anatomy on images
- How to operate the equipment safely
- How to recognize pathology
- How to communicate and provide safe patient care
- How to protect yourself and others from unnecessary radiation
- You will get hands on clinical experience rotating at different hospitals.

- *** You will also learn Time Management. The radiology program can be demanding but very rewarding at the end!

Is radiation safe?!

YES!!!!!!

Here's where you are already getting radiation from:

- The sun (just walking outside)
- Taking an airplane ride
- Living at high altitudes

When getting an Xray you are just getting a little more of something you already get everyday.

Technologist receive training in radiation protection:

- ALARA
- Lead aprons

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What is Diagnostic Imaging?

Definition: Diagnostic imaging refers to the techniques and processes used to create images of the human body for clinical purposes or medical science.

Purpose: Helps in diagnosing diseases, guiding treatments, and monitoring conditions.

Types of Diagnostic Imaging

Xray | CAT Scan | MRI | Ultrasound | Nuclear Medicine

What is X-Ray?

X-Rays are forms of electromagnetic radiation. They travel at a high energy that passes through the body creating images on special detectors.

This ability to "see" inside the body is why X-rays are so important in medicine—they allow doctors to diagnose broken bones, infections, and other internal conditions without surgery.

X-Ray

Patients:

- Outpatients
- Inpatients
- Emergency room patients
- Adults, children, babies

Xray Room

- Table
- Control Area
- Tube

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X-Ray

Xray is used in the operating room using a C- arm.

Common procedures Include:

- Fractures
- Kidney stone removal
- Spine surgeries/repairs
- Joint replacements
- Cardiovasucular procedures

X-Ray…

Some Xrays can be done portably also.

Reasons why xray would need to be done with a portable:

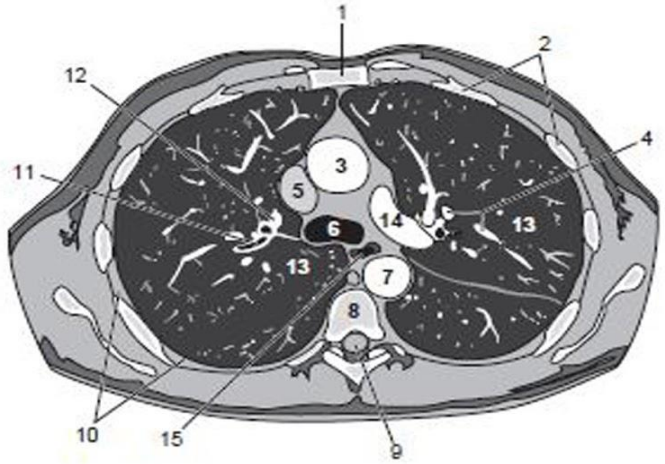
- When patients are too sick to come to the department.
- If the patient is on an isolation precaution
- Emergent situations

CAT SCAN

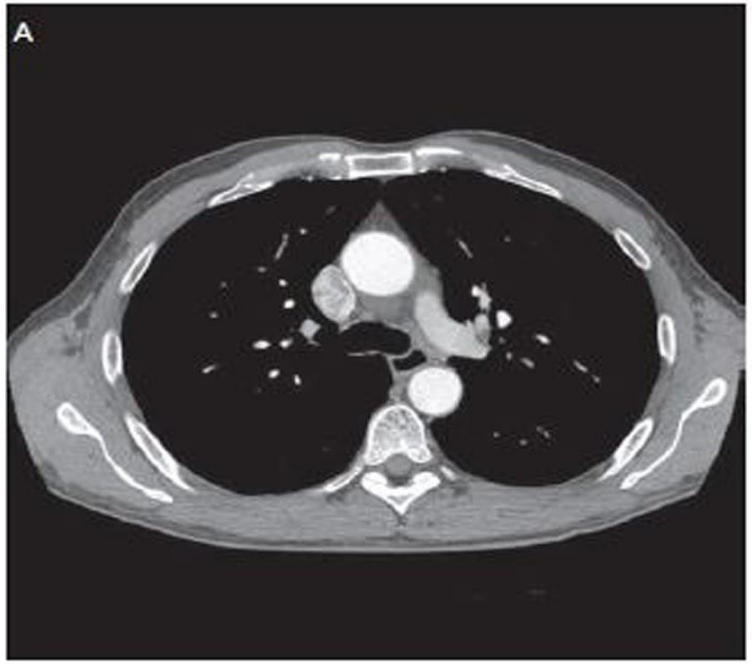
CAT San or Computed Axial Tomography Scan also uses radiation to produce images of the human body, however they are more detailed cross-sectional images.

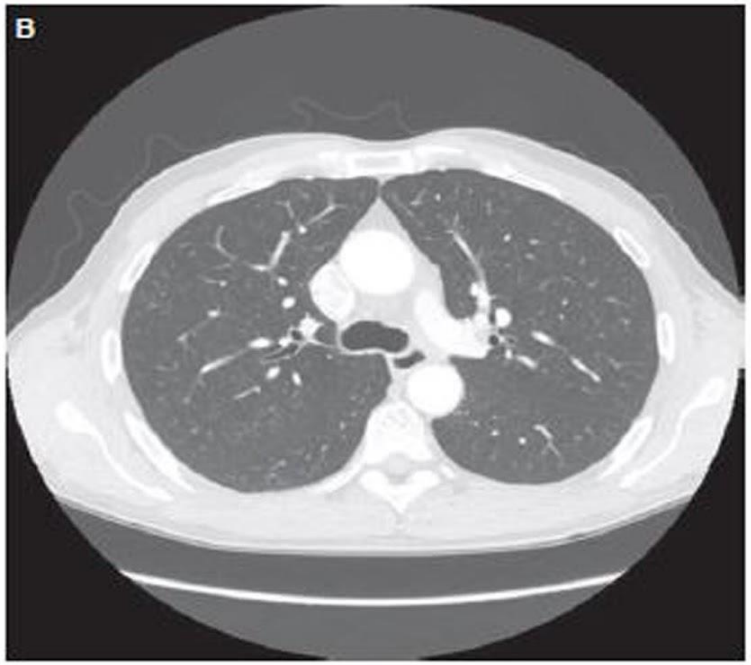
Common uses for CAT Scan:

- Brain scans to check for strokes, bleeding or head injuries.
- Traumas- to look for internal bleeding after accidents
- Chest and abdomen scans to check for infections, clots or cancer



1. Sternum
2. Rib
3. Ascending aorta
4. Pulmonary vessels
5. Superior vena cava
6. Trachea bifurcation (carina)
7. Descending aorta
8. Vertebra
9. Thecal sac with spinal cord
10. Intercostal m.
11. Right upper lobe segmental bronchus
12. Right superior pulmonary v.
13. Lung
14. Left pulmonary a.
15. Esophagus





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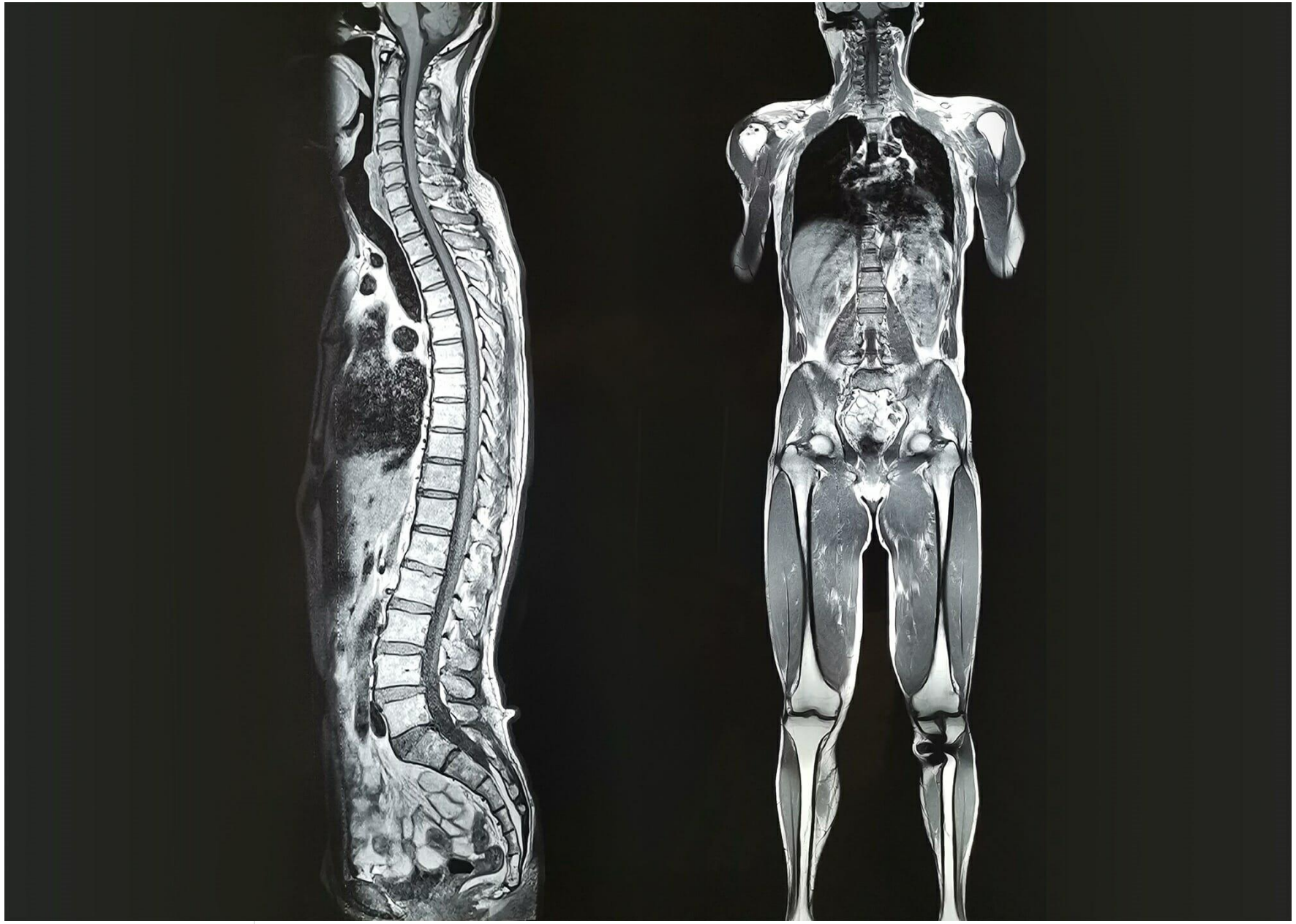
MRI

Magnetic Resonance Imaging

Creates clear images of the structures of the body using a large magnet. There is no radiation used with an MRI.

MRI is typically used to look at the non bony parts of the body.



Ultrasound

Ultra sound uses high frequency sound waves to create real time pictures and videos.

Ultrasound can let providers “see” details of soft tissues and vessels inside the body.

Ultrasound does not use any radiation.

What can ultrasound see?

- Babies in the womb!
- Heart function
- Organs- kidneys, bladder, gallbladder
- Blood flow in vessels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20 fps
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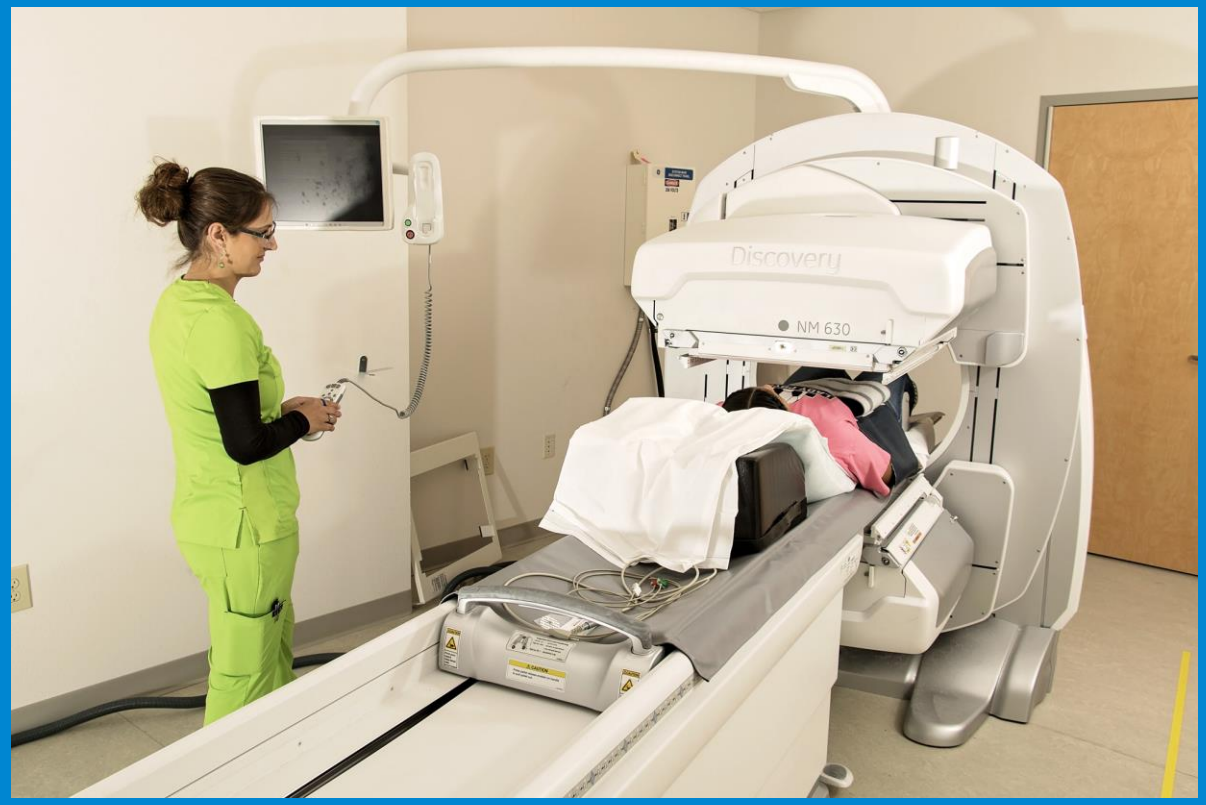
Nuclear Medicine

Nuc med does use a form of radiation called radiotracers.

The radiotracers are injected, swallowed or inhaled into the body.

Nuc med shows how the organs or tissues are working.



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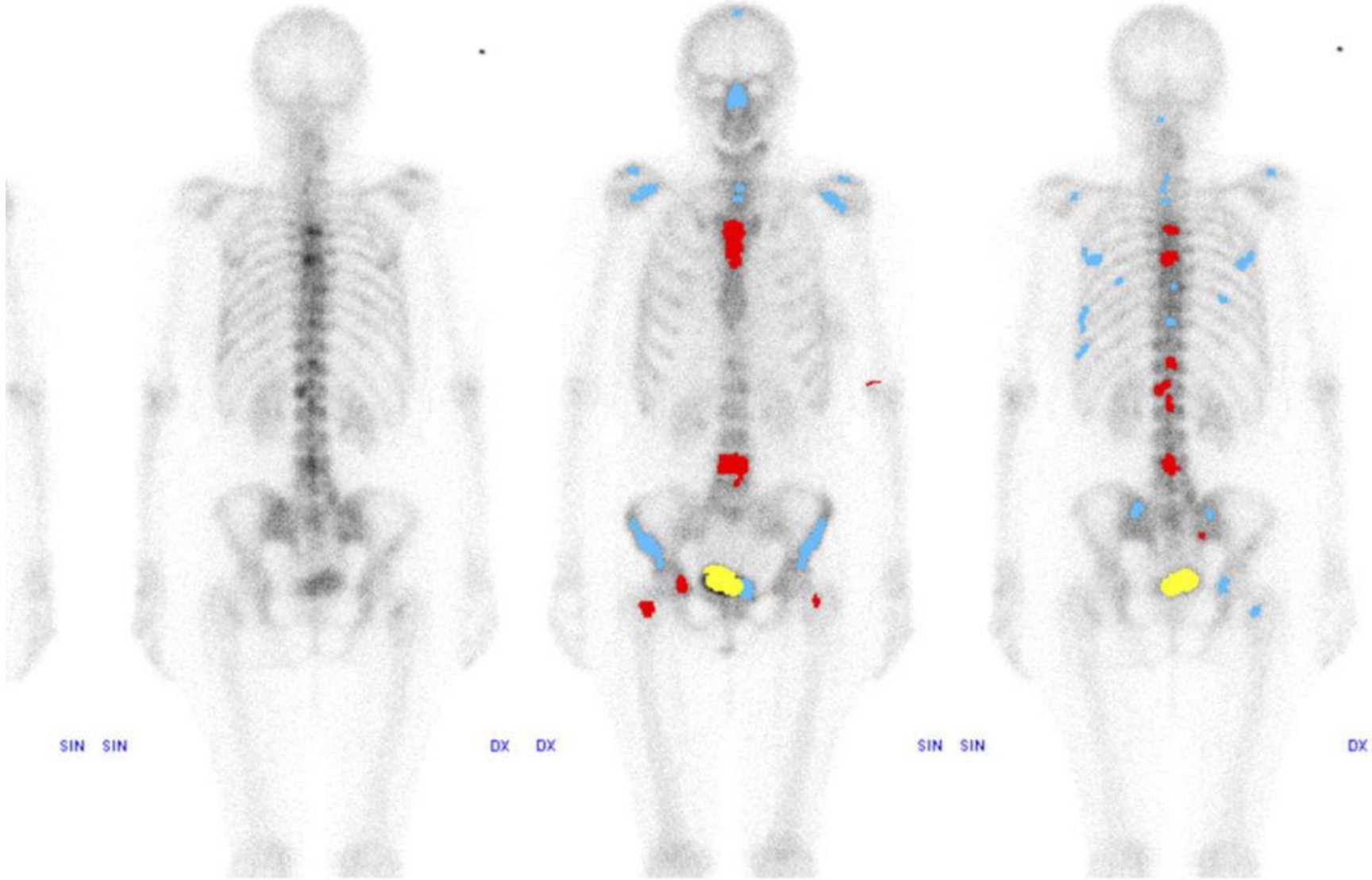
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What can Diagnostic Imaging “See” ?

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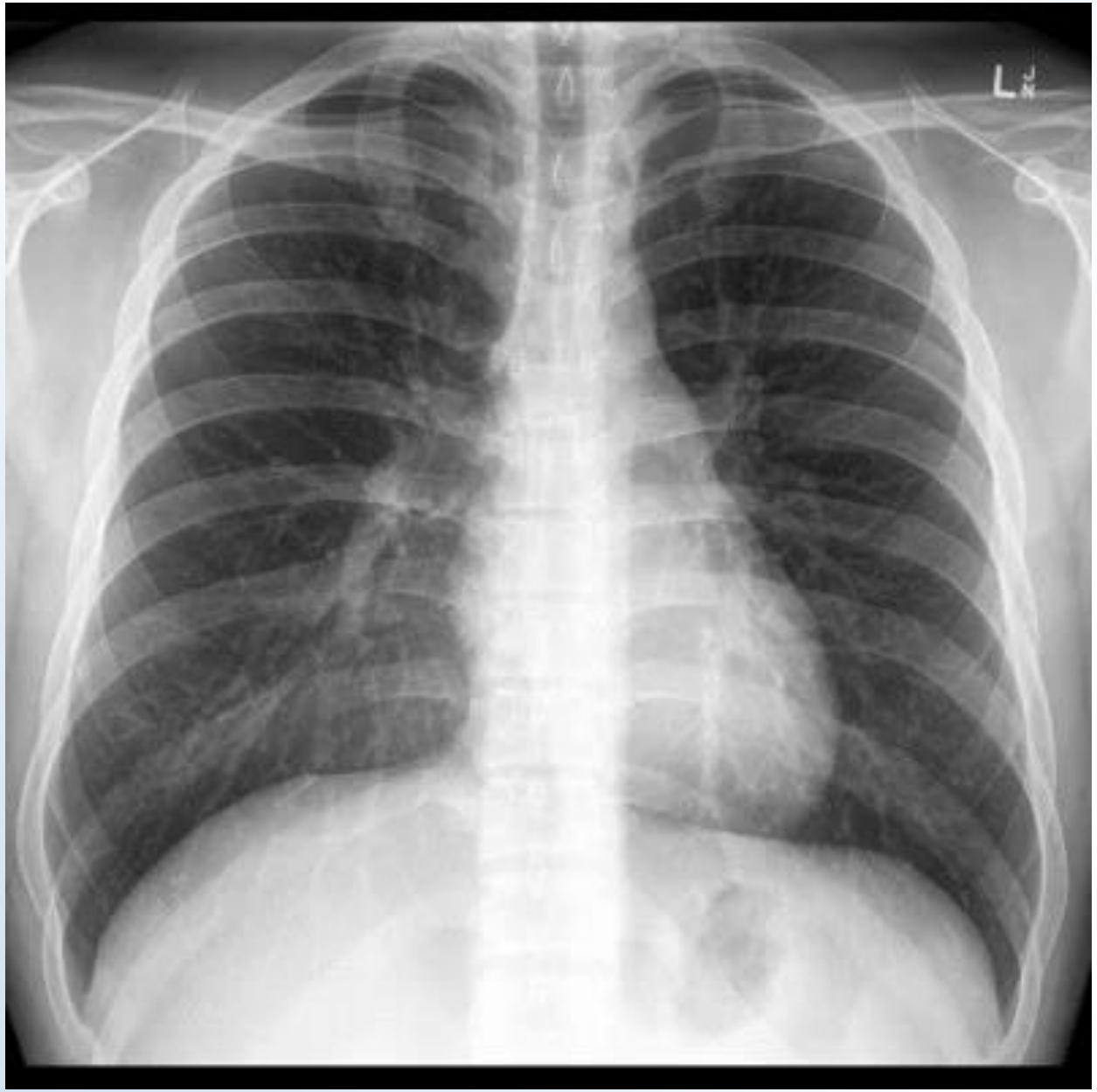

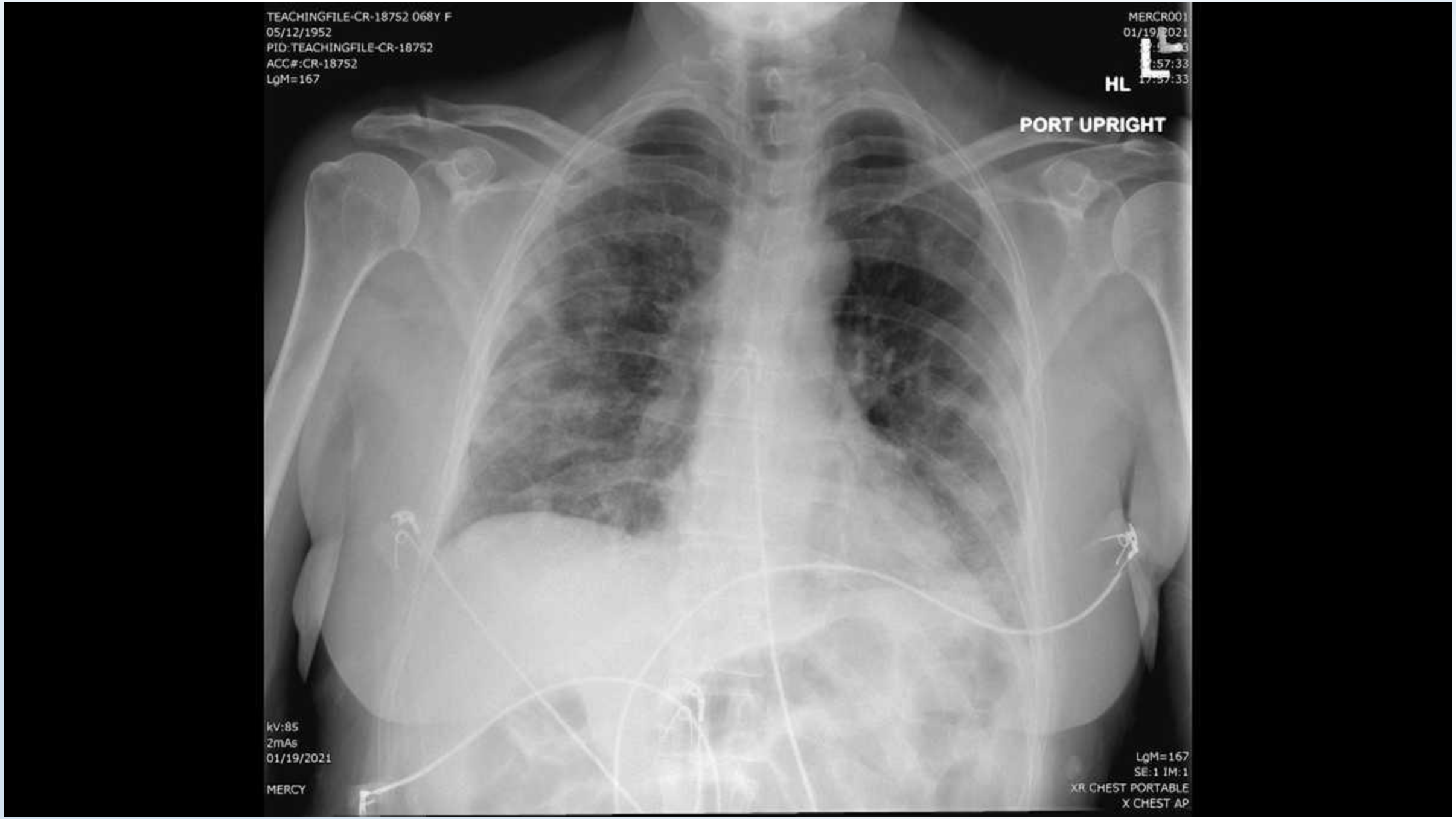
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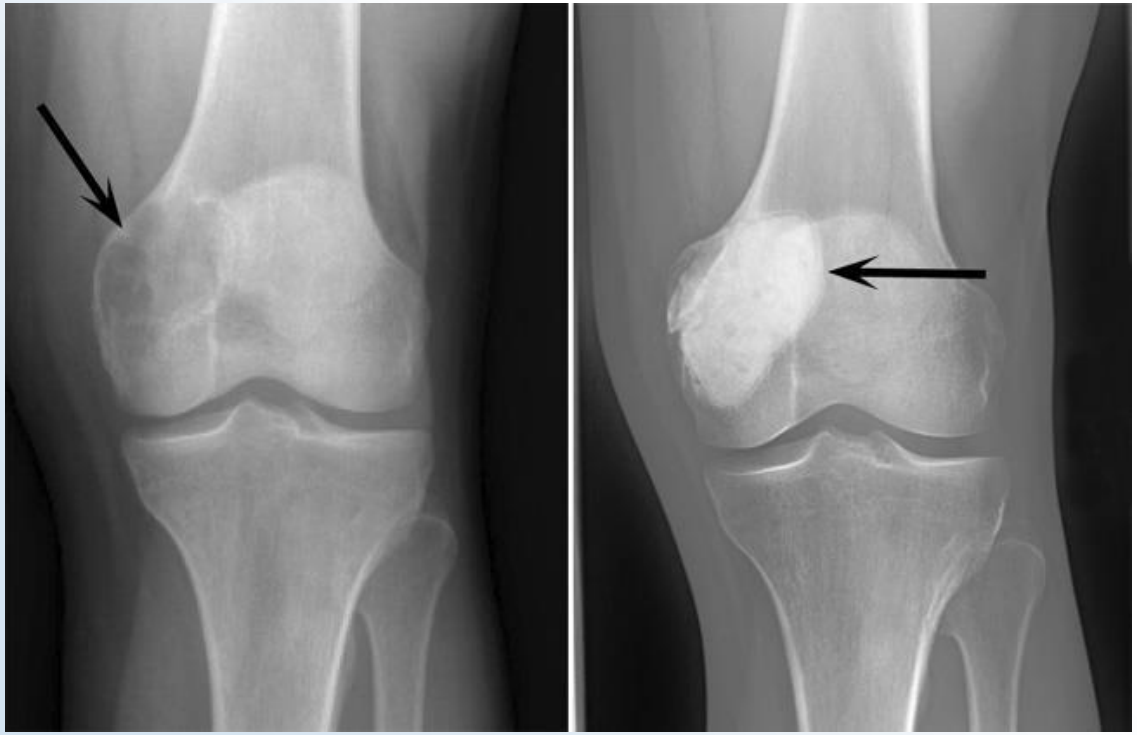

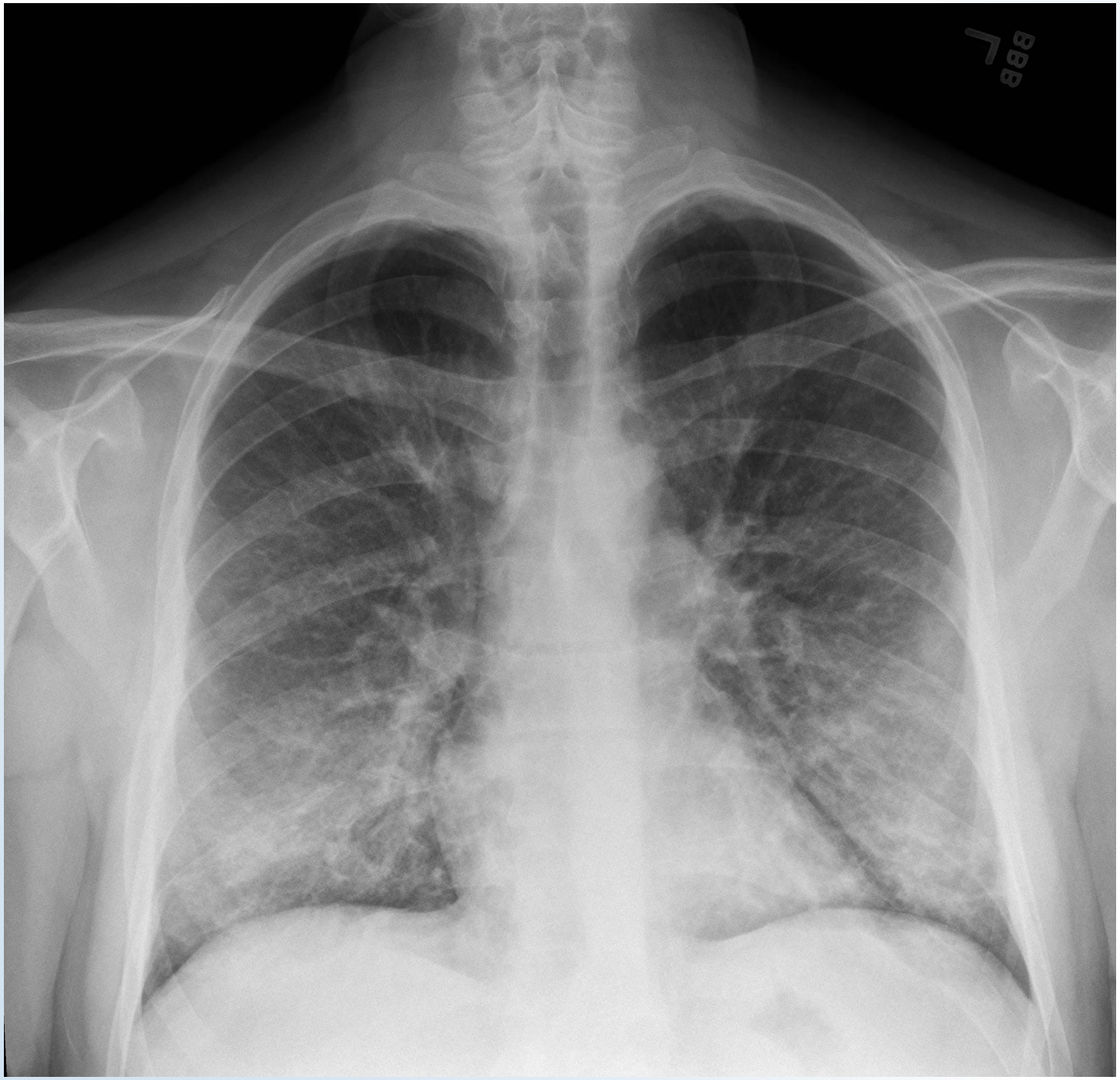


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Conclusion

Seeing inside can mean so many things to Diagnostic Imaging, however we have one goal. To help treat and diagnose patients.

Our commitment is to our patients and our community.

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