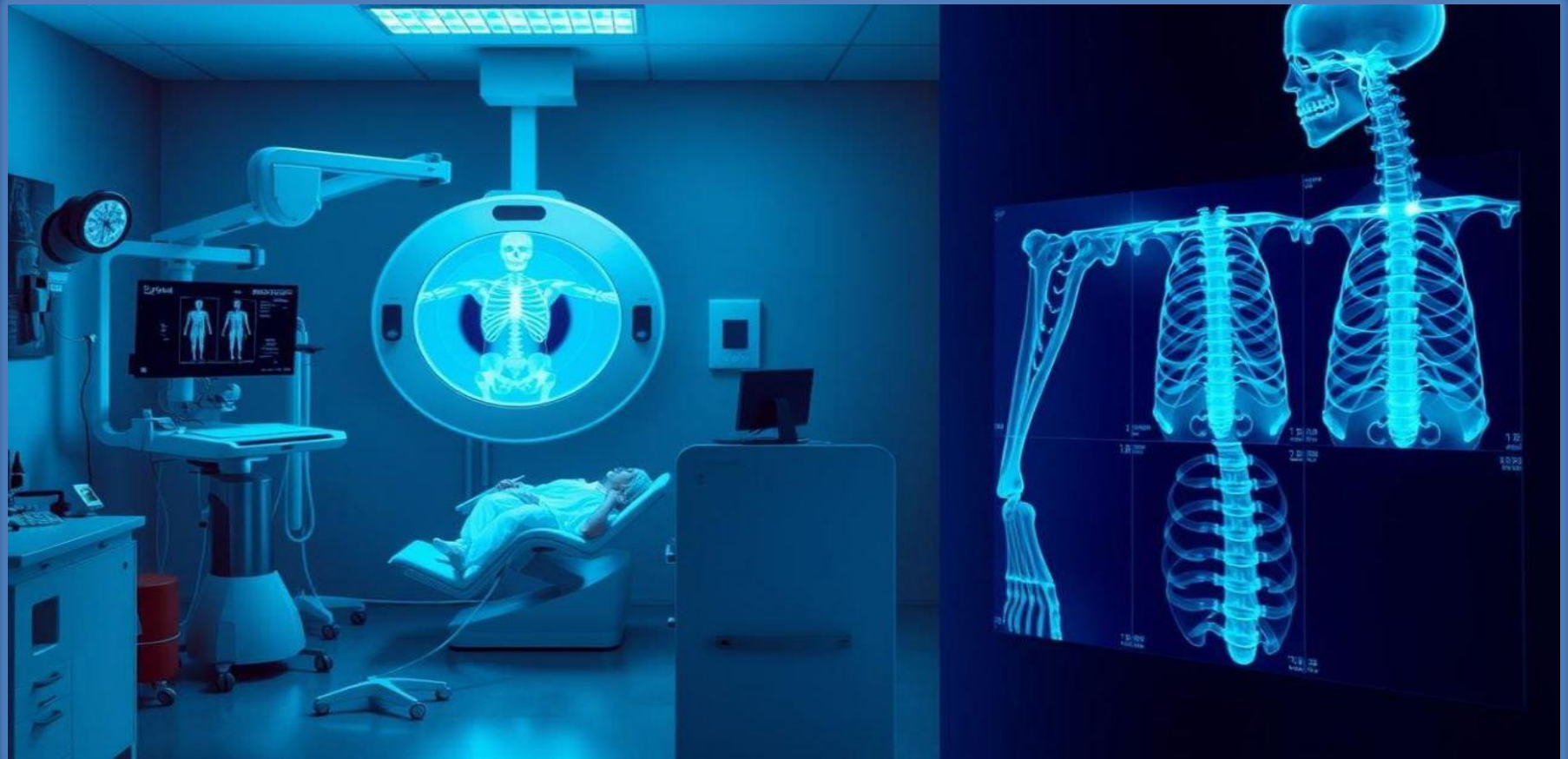# Diagnostic Radiology Laboratory
Medical Imaging by X-Ray
Lecture: 1

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What is Medical Imaging?

•   is the technique of creating visual representations of the interior of a body for clinical analysis and medical
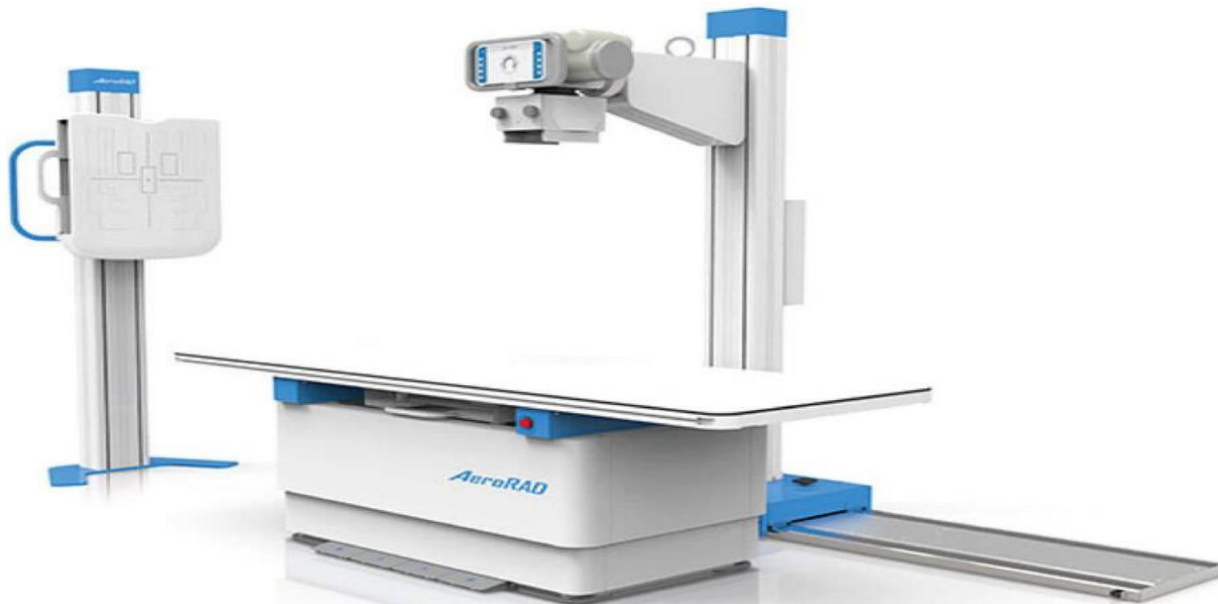
Types of Medical Imaging

- 1. X-Ray
- 2. MRI (Magnetic Resonance Imaging)
- 3. CT Scan (Computed Tomography)
- 4. Ultrasound
- 5. PET Scan (Positron Emission Tomography)

What is X-Ray?

- *X-rays were discovered by Wilhelm Roentgen in 1895.*

- *They use ionizing radiation to capture images of bones and organs.*

Types of X-Ray Machines

1. Standard X-ray system.
2. Portable X-ray system .
3. Mammography system.
4. dental X-ray tube.

Advantages of X-Rays

- Quick and painless diagnosis.
- Non-invasive.
- Helps detect fractures, infections, and tumors.
- Cost-low.

Risks of X-Rays

- Exposure to ionizing radiation.
- Potential harm to DNA and cells.
- Increased risk for pregnant women and children.

X-ray protection

- **1- Time: Reducing the exposure time reduces the dose taken, and the rate of reduction is directly proportional to time.**

- **2- Distance: The further away the person is from the radiation source, the less the amount taken.**

- **3- Barrier: Use lead barriers because X-rays cannot penetrate lead.**

Steps to turn on the X-ray device

◆ **Turn on the power:**

Press the Main Power button.

◆ **Imaging settings:**

Choose the type of examination (eg: chest imaging, bones).

1- Set the basic values:

Electrical voltage (kVp): Determines the energy of the rays.

Current (mA): Controls the amount of rays.

Exposure time (ms): Determines the duration of the imaging.

2- Place the patient in the appropriate position according to the type of examination.

3- Press the Exposure Button to emit the rays.

4- Check the quality of the image on the screen.

5- Edit the image.

6- Print the image.

7- Turn off the device when finished.