

Diagnostic Radiology

WHAT IS RADIOLOGY...

- **Radiology** is a medical specialty that employs the use of imaging to both diagnose and treat disease visualized within the human body.
- Radiologists use an array of imaging technologies.
- It may use x-ray machines or other such radiation devices.
- Or It also uses techniques that do not involve radiation, such as MRI and ultrasound.



TYPES...

- Radiology can refer to two sub-fields, diagnostic radiology and therapeutic radiology.
- Diagnostic radiology is concerned with the use of various imaging modalities to aid in the diagnosis of disease.
- Therapeutic radiology—or, as it is now called, radiation oncology uses radiation to treat diseases such as cancer using a form of treatment called radiation therapy.



- Commonly used techniques for diagnostic radiology includes

- X-rays

- Computed tomography (CT)

- Magnetic resonance imaging (MRI)

- Ultrasound

- Nuclear imaging techniques

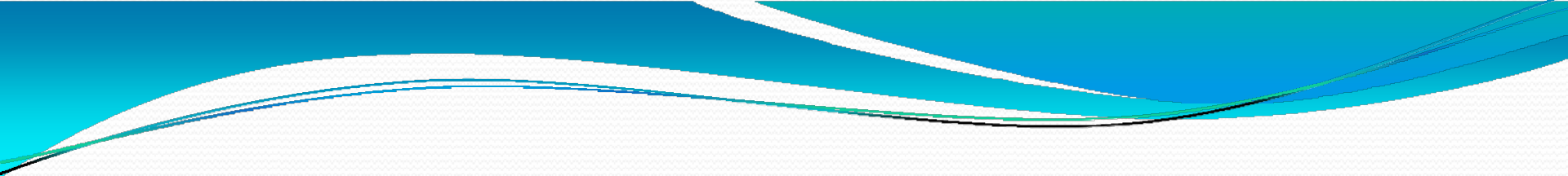


X-RAYS

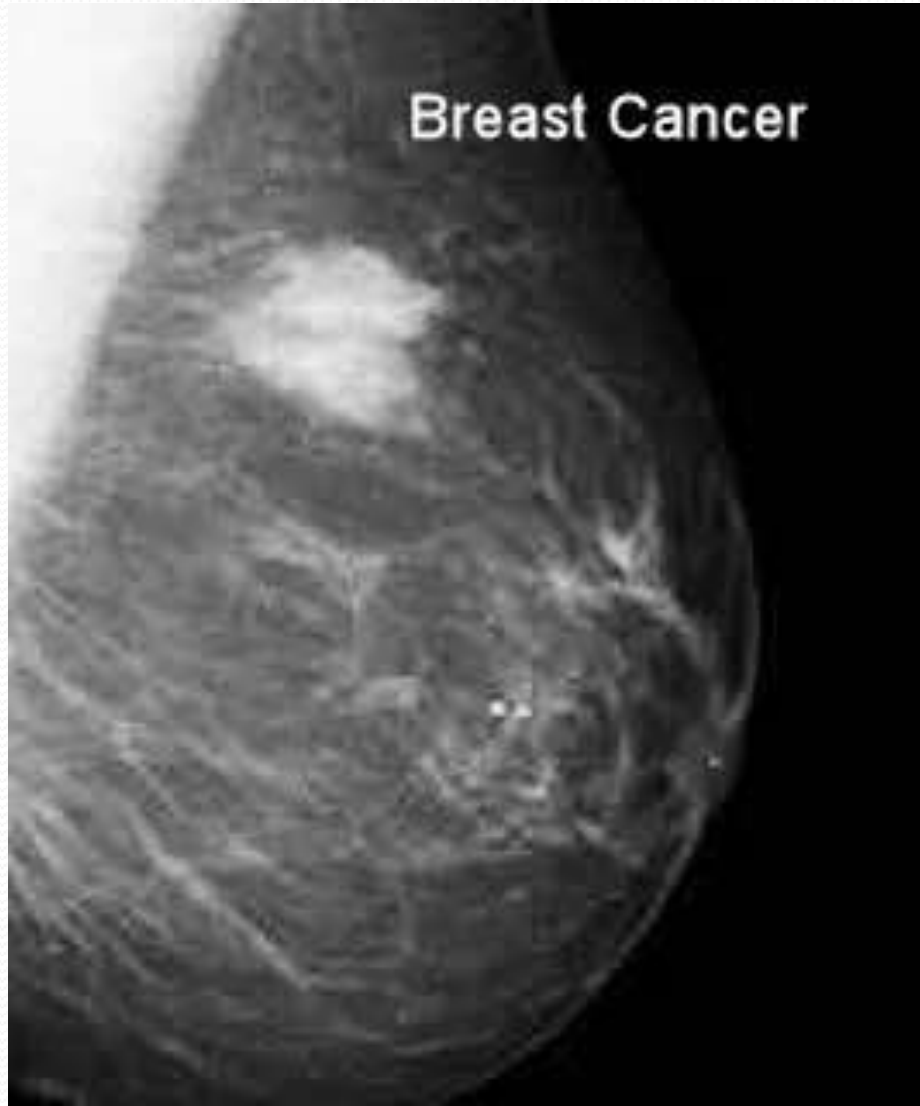
X-RAYS

- X-rays are basically electromagnetic radiations which are used to create images of inside your body.
- The images show the parts of your body in different shades of black and white due to different level of absorption of x-rays by different tissues
- Calcium in bones absorbs x-rays the most, so bones look white. Fat and other soft tissues absorb less, and look gray.
- Air absorbs the least, so lungs look black.



- 
- The most familiar use of x-rays is checking for broken bones
 - However, x-rays are also used in other ways.
 - For example, chest x-rays can spot pneumonia.
 - Mammograms use x-rays to look for breast cancer.

Breast Cancer





CT-SCAN

CT SCAN

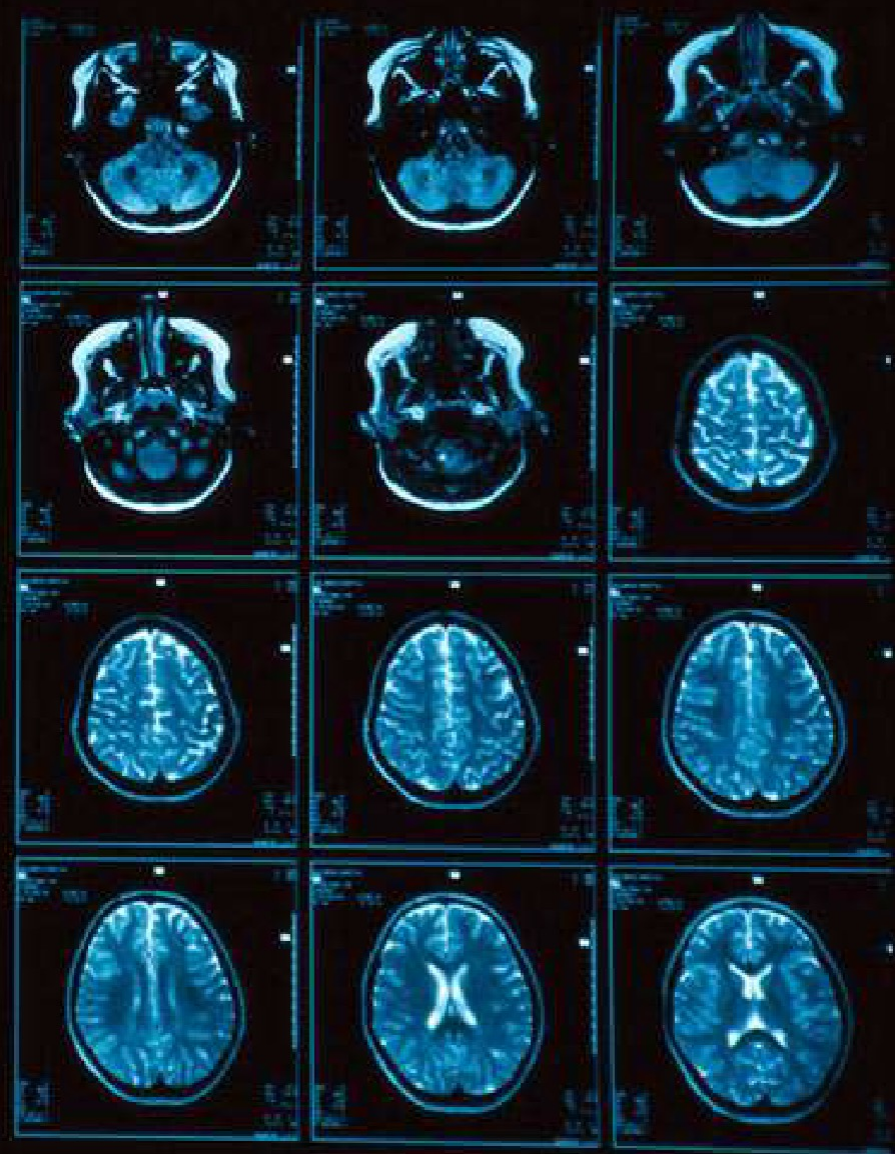
- Computed tomography (CT) is a type of imaging. It uses special x-ray equipment to make cross-sectional pictures of your body.
- Doctors use CT scans to look for
 - Broken bones
 - Cancers
 - Blood clots
 - Signs of heart disease
 - Internal bleeding

MRI



MRI scans

- Magnetic resonance imaging (MRI) uses a large magnet and radio waves to look at organs and structures inside your body.
- Health care professionals use MRI scans to diagnose a variety of conditions, from torn ligaments to tumors.
- MRIs are very useful for examining the brain and spinal cord.



MRI Images of a human brain
Photograph by Ken Glaser/Corbis

Nuclear medicine

- Nuclear scans use radioactive substances to see structures and functions inside your body.
- They use a special camera that detects radioactivity.
- Nuclear scans can help doctors diagnose many conditions, including cancers, injuries, and infections.
- They can also show how organs like your heart and lungs are working.
- The heart, lungs, thyroid, liver, gallbladder, and bones are commonly evaluated for particular conditions using these techniques.



Ultrasound

- Ultrasound is a type of imaging. It uses high-frequency sound waves to look at organs and structures inside the body.
- Health care professionals use it to view the heart, blood vessels, kidneys, liver, and other organs.
- During pregnancy, doctors use ultrasound to view the fetus. Unlike x-rays, ultrasound does not expose you to radiation.

THANK
YOU!

