



University of Al-Mustaqbal
College of Science
Department of Medical
Physics



Name of subject : Medical physics 3

Number stage : fourth

Lecture name : Medical imaging physics

Lecture number : 2

Name of lecturer : M.Sc Murtadha Kadhim Salman

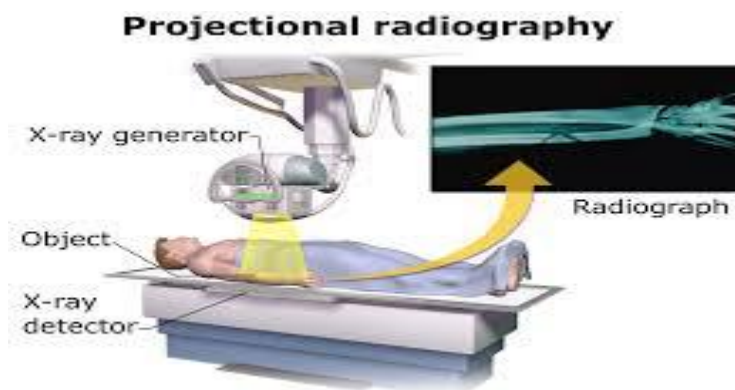
Medical imaging physics.

Medical imaging physics is also known as diagnostic and interventional radiology physics.

✚ Clinical physicists typically deal with diagnostic radiology physics areas such as

a- Radiographic X-rays.

An X-ray gives only qualitative information about the inside of the body; a repeat X-ray taken with a different machine may look quite different to the ordinary observer.



b- Fluoroscopy.



c- Mammography.



d- angiography.



e- computed tomography.

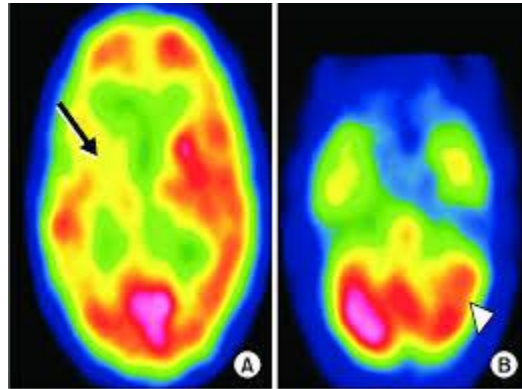


f- non-ionizing radiation modalities such as ultrasound, and MRI.

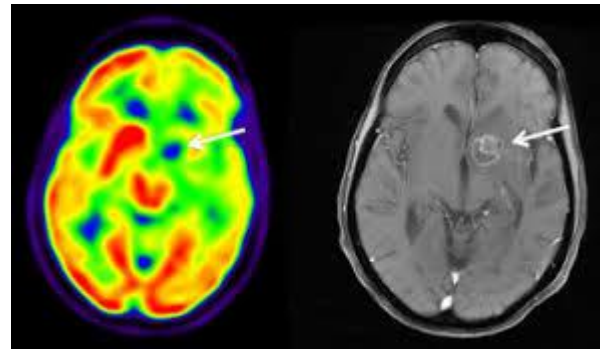


✚ In addition, many imaging physicists are often also involved with nuclear medicine systems, including

a- single photon emission computed tomography (SPECT).



b- positron emission tomography (PET).



Radiation therapeutic physics

Radiation therapeutic physics is also known as radiotherapy physics or radiation oncologist physics. A radiation therapy physicist typically deals with

a- linear accelerator (Linac) systems

b- kilovoltage x-ray treatment units on a daily basis.

c- as well as other modalities such as TomoTherapy, gamma knife, proton therapy, and brachytherapy.

The academic and research side of therapeutic physics may encompass fields such:

1-high-intensity focused ultrasound (including lithotripsy).



- 2- Optical radiation Lasers .
- 3-Ultraviolet including photodynamic therapy.
- 4- Nuclear medicine including unsealed source radiotherapy.
- 5- Photomedicine, which is the use of light to treat and diagnose disease.

Nuclear medicine physics

Nuclear medicine is a branch of medicine that uses radiation to provide information about the functioning of a person's specific organs or to treat disease. The thyroid, bones, heart, liver and many other organs can be easily imaged, and disorders in their function revealed. In some cases radiation sources can be used to treat diseased organs, or tumors. The most common radioisotope used in diagnosis is technetium-99m, with some 30 million procedures per year, accounting for 80% of all nuclear medicine procedures worldwide.

Health physics

Health physics is also known as radiation safety or radiation protection. Health physics is the applied physics of radiation protection for health and health care purposes. It is the science concerned with the recognition, evaluation, and control of health hazards to permit the safe use and application of ionizing radiation.