



Islamic University / Najaf
College of Medical Technology
Department of Radiology Techniques



Radiation Protection 1

Stage 2

Lecture 5

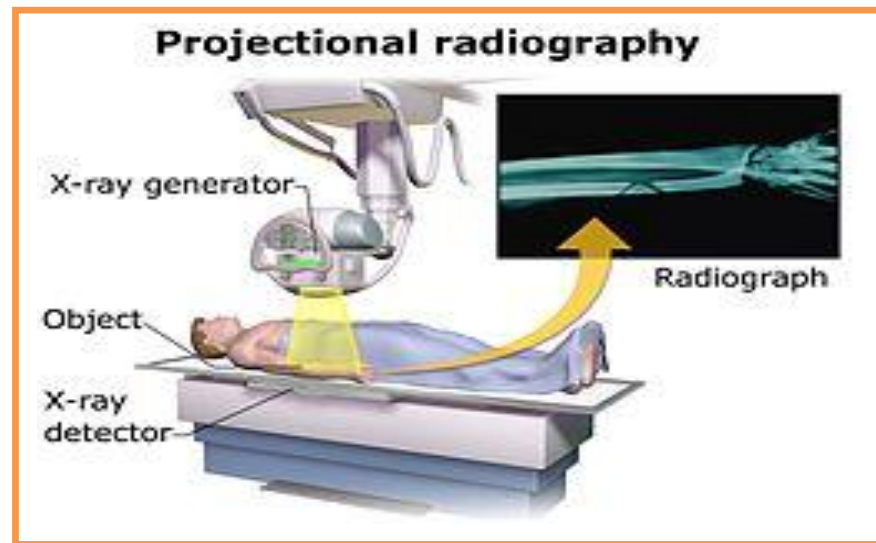
By

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Projection X-ray imaging consists of three closely related technologies: radiography, mammography, and fluoroscopy. Radiography pertains to the acquisition of static two-dimensional images of nearly all body parts.

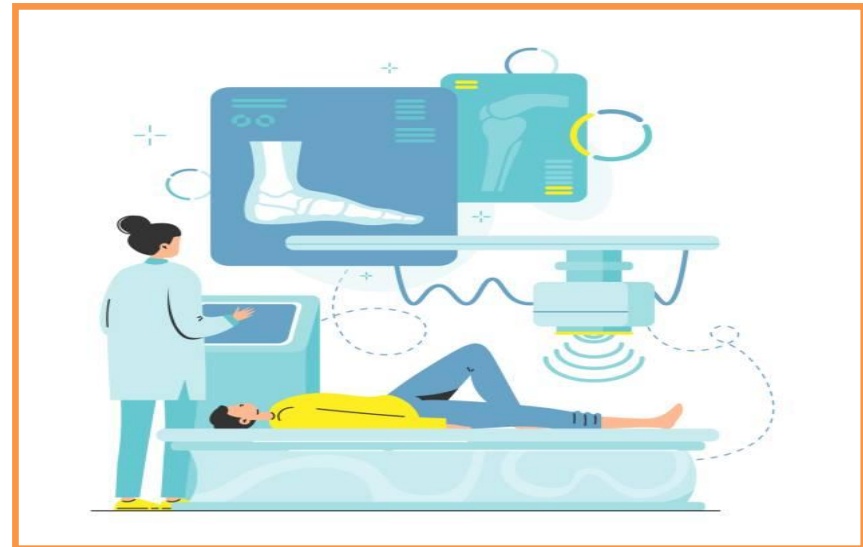
1) Radiography

It uses X-rays, gamma rays, or ionizing radiation to see parts that are not visible or difficult to image. It is an examination in which electromagnetic rays emitted by a special radioactive device penetrate the tissues of the body and hit a plate that is usually placed behind the body. On this plate (or through a computer in cases of CT imaging) an image is formed showing the internal organs of the body penetrated by the rays.



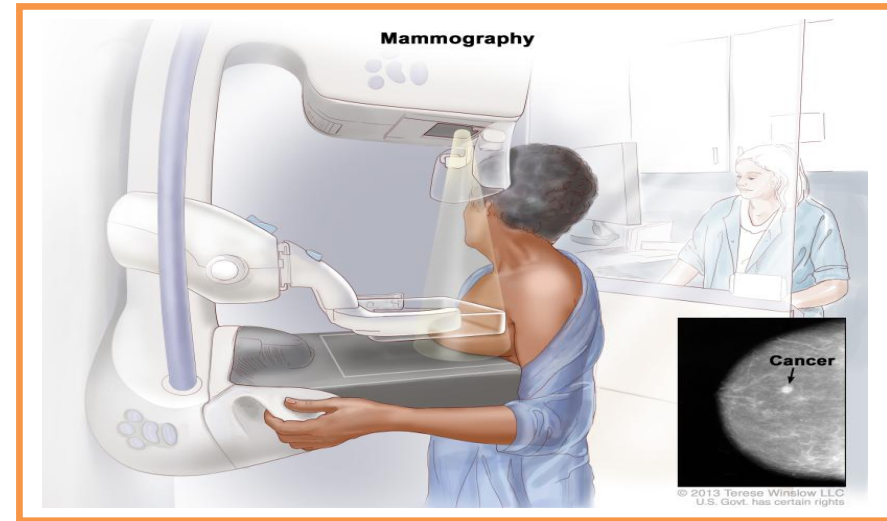
2) Fluoroscopy

Fluoroscopy is a medical procedure that makes a real-time video of the movements inside A part of the body by passing x-rays through the body over a period of time. Fluoroscopy can be used for diagnosing (finding out the cause of) a health problem such as heart or intestinal disease. It also can be used to guide treatments such as implants or injections, or in orthopedic surgery. Although we all are exposed to ionizing radiation every day from the natural environment, added exposures like those from fluoroscopy procedures can slightly increase the risk of developing cancer later in life.



3) Mammography

It is a medical application focusing on two factors, patient dose management and risk reduction. This is because breast tissue has a relatively high sensitivity to some adverse effects of radiation, and also, mammography requires a higher exposure than other radiographic procedures to produce the required image quality. The higher exposure, compared to other radiographic procedures, is because the breast is composed of soft tissue (no bones or air) and has very low contrast. More radiation is required to produce visible images of both normal breast anatomy and signs of disease. In mammography, the objective is to produce images that provide maximum visualization of breast anatomy and the signs of disease without subjecting the patient to unnecessary radiation.



Nuclear Medicine

In diagnostic nuclear medicine, the patient receives a drug containing a gamma-emitting radionuclide. The drug chosen is one that is taken up by a particular organ or tissue whose functioning is to be assessed. A gamma camera is then used to follow the distribution of the drug in the patient. Sometimes the radioactive drug can be used in the treatment itself: an example is the treatment of thyroid.