

# Medical Imaging and Digital Imaging

By

H/Dr. Muhammad Atif

BHMS, M.Phil

# Medical Imaging

- **Medical imaging** is the technique and process of creating visual representations of the interior of a body for clinical analysis and medical intervention, as well as visual representation of the function of some organs or tissues (physiology).
- Medical imaging seeks to reveal internal structures hidden by the skin and bones, as well as to diagnose and treat disease.
- Medical imaging also establishes a database of normal anatomy and physiology to make it possible to identify abnormalities.
- Although imaging of removed organs and tissues can be performed for medical reasons, such procedures are usually considered part of pathology instead of medical imaging.

# Medical Imaging

As a discipline and in its widest sense, it is part of biological imaging and incorporates radiology, which uses the imaging technologies of:

- X-ray radiography
- Magnetic resonance imaging
- Ultrasound
- Endoscopy
- Elastography
- Tactile imaging
- Thermography
- Medical photography
- Nuclear medicine functional imaging techniques as positron emission tomography (PET) and single-photon emission computed tomography (SPECT).

"A picture is worth a thousand words"

"Knowledge is valuable"

"Don't waste it"

## Digital Imaging

# ADVANTAGES

- Superior gray scale resolution
- Easy reproducibility
- Reduced exposure to radiation
- Detection of defects & 3D visualization of dental structures
- Effective patient education tool
- No loss of quality due to chemical processing
- Lower equipment & film cost
- Enhancement of diagnostic image



- 
- 
- No Darkroom
  - Transmission of Images for Consultation
  - Instant Viewing of Images

# DICOM

- The **D**igital **I**maging and **C**ommunications in **M**edicine (DICOM) Standard is a detailed specification that describes semantics and syntax for exchanging images and associated information. The standard applies to the operation of the interface which is used to transfer data in and out of an imaging device.

# DICOM Workflow

