



Clinical Radiology

Section I: Radiology as a *Career*

Section II: *Kuwait Board of Radiology (KBR)*

Section I: Radiology as a *Career*

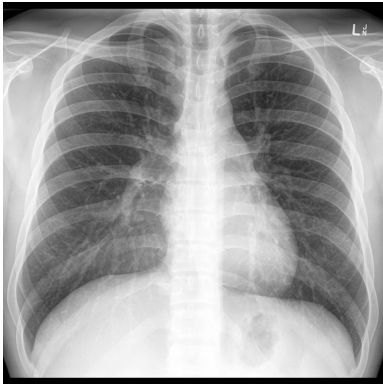


- Radiology is a **dynamic** and **intellectually-stimulating** medical specialty focussing mainly on diagnosing diseases and “seeing” the inside of patients using medical imaging techniques including:
 - **Ionizing** radiation imaging:
 - Radiography (aka X-Rays) & Mammography.
 - Fluoroscopy (can be used in diagnostic radiology and in IR).
 - Computed Tomography (CT).
 - **Non-ionizing** radiation imaging:
 - Ultrasound (US).
 - Magnetic Resonance Imaging (MRI).
- It plays a crucial role in a healthcare centre as it is essential for diagnosis, staging, follow-up and treatment guidance.
- Therapeutic procedures typically done with Interventional Radiology (IR). (*Please see next slides for more info*)
- Radiology requires:
 - An in-depth knowledge of human anatomy in order to spot abnormalities.
 - Imaging features of surgical and medical pathologies.
- High responsibility; errors can affect clinical decisions.

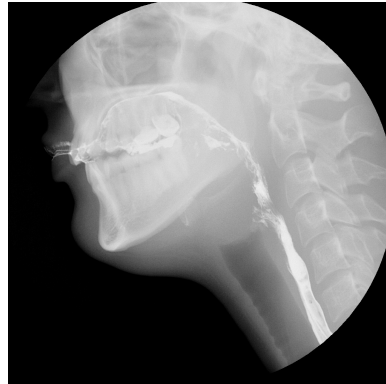
Examples of Radiological Imaging



Ionizing Radiation Imaging



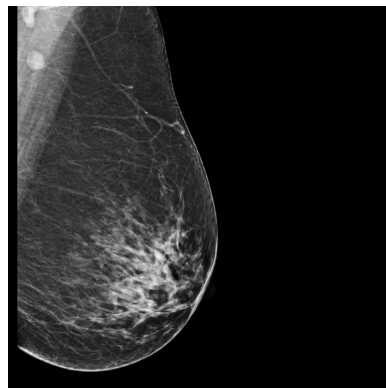
Adult male chest radiograph.
Case courtesy of Frank Gaillard, Radiopaedia.org,
rID: 8090



Normal barium swallow fluoroscopic study
Case courtesy of Matt A. Morgan, Radiopaedia.org,
rID: 38486



Contrast-enhanced axial CT of the abdomen.
Case courtesy of Michael P. Hartung,
Radiopaedia.org, rID: 66174

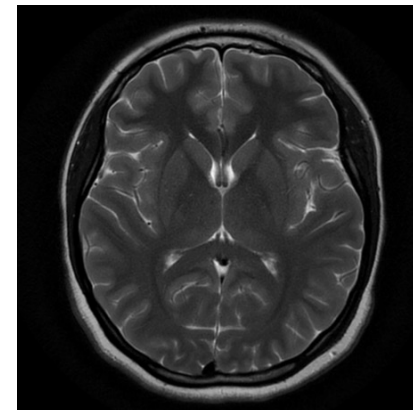


Normal mammogram.
Case courtesy of Ian Bickle, Radiopaedia.org, rID:
77168

Non-ionizing Radiation Imaging



GB US image showing two hyperechoic gallstones.
Case courtesy of Andrew Dixon, Radiopaedia.org,
rID: 9558



Axial T2 of the brain at the level of basal ganglia.
Case courtesy of Frank Gaillard, Radiopaedia.org,
rID: 37605

Clearing some *potential* misconceptions



- It should be noted that
 - **Radiologists** are **medical specialists** requiring an MD degree with extensive education and training.
 - **Radiology technician** (also known as technologists or radiographers) who operates the imaging equipment and assists with patient care during imaging procedures typically need an associate's degree or certification without the need of an MD degree.
- In Kuwait, Nuclear Medicine (NM) is considered as a *separate* functional imaging specialty, while in other countries, Radiology and NM are one specialty. However, NM fundamental knowledge is still required to complete Kuwait Board of Radiology.
- It has, as with most of the other medical specialties, oncalls which deals mostly with urgent imaging.

Clearing some *potential* misconceptions



- In most of the daily work in diagnostic radiology, **radiation exposure** can be **negligible** as most of the modern radiation imaging techniques are done in a **separate** and **lead-isolated rooms**. However, radiation protection equipments are required to be worn in fluoroscopic procedures (in IR and diagnostic fluoroscopy).
- Residents typically write and do procedures *under the supervision* of senior radiologists who approve reports.
- AI replacing Radiology?
 - AI is being **integrated** in radiology and it is considered as a **powerful assisting tool** that help radiologist with image analysis, however, radiologist **human input is still crucial** in patient's care.
- No patient contact in Radiology?
 - Patient contact can be achieved with US examinations, IR procedures, MSK specialist clinics ... etc.

Section I: Radiology as a *Career*



- **Fellowships** after the postgraduate degree can be pursued from the following, which typically take 1-2 years:
 - **Diagnostic Radiology:**
 - Abdominal/Body Imaging.
 - Cardiothoracic Imaging.
 - Breast Imaging.
 - Pediatric Imaging.
 - Musculoskeletal Imaging.
 - Neuroradiology.
 - Nuclear Medicine.
 - **Interventional Radiology (IR):**
 - Vascular Interventional Radiology.
 - Interventional Neuroradiology.
 - Interventional MSK radiology.

Interventional Radiology (IR)

Overview



- Occurs in the “*Operational Theatre*” of radiologists, replacing scalpels with needles and catheters.
- Uses imaging guidance to perform **minimally invasive** and **targetted procedures**.
 - Instead of large surgical incisions, IR relies on small punctures, wires, and catheters to diagnose or treat disease which are often carried out with local anaesthesia.
- **Core Procedures**
 - **Vascular interventions**
 - Angioplasty, stenting, embolization, thrombolysis, TIPS (trans-jugular intrahepatic portosystemic shunt)
 - Emergency embolization for stopping internal bleeding from trauma, GI bleeds or postpartum hemorrhage.
 - **Oncology**
 - Tumor ablation, chemoembolization, radioembolization
 - **Non-vascular interventions**
 - Drainages (abscess, pleural, biliary, urinary), biopsies, nephrostomy, gastrostomy

Section II: Kuwait Board of Radiology (KBR)



- It is a 5-year programme, as with most of other medical specialties at KIMS.
- As of now, the **final exam (Part II)** is **accredited** by the Royal College of Physicians and Surgeons of Canada. The programme is being reviewed for full accreditation.
- The programmed has **transitioned** from a year-based system to a **CBD** (Competency By Design) system which is implemented **worldwide**.
- **Board Examinations:**
 - Pre-residency exam.
 - Exam at PGY-1.
 - Part I exam at PGY-2.
 - Part II exam at PGY-5.
- Continuous **teaching sessions** through dedicated on-site tutors and academic days.
- There will be **research opportunities** for interested residents as research committee is being more involved with residents.
- There are **international certifying exams** for which residents can apply in order to improve their CV for fellowship applications, namely FRCR (UK).

Application Interview?



- **Formal attire** is highly recommended.
- **Professional** and **confident** behaviour.
- Responding to the usual interview questions, for example:
 - Why did you choose Radiology?
 - Any previous expertise in this field?
 - If so, mention them.
 - ... Among other questions.
- It is **highly recommended** to have at least 1 month of Radiology elective.
- Usually **short** interview, not exceeding 10 minutes.

What is expected for PGY-1?



- Most of the PGY-1 (year 1) involves doing **clinical rotations** which are distributed throughout the year including:
 - Internal Medicine
 - General Surgery
 - Emergency Department
 - Two diagnostic radiology months mostly at the end of the year (August and September).
- Residents are expected to do the usual **oncalls** during their clinical rotations
- The purpose of the clinical rotations is to **improve** the clinical expertise before solely focusing on radiological rotations.

How Residents are Evaluated?



- Regular resident evaluations is required in order to **pass each rotation** and hence the academic year through:
 - **Resident evaluations** filled and authorized by an assigned on-site clinical tutors
 - **EPAs** (Entrustable Professional Activities).
 - **Annual ITER** (In-Training Evaluation Report) + **F-ITER** (Final for R5 residents).
- **40 CME points** need to be gathered each year which is divided into
 - At least 30 CME points from activities requiring physical attendance and 10 CME points which can be collected by online activities or physical attendance.
- Individualized **annual resident assessment meetings** done by Board members usually towards the end of the year to discuss the progression of the resident.

Radiology Teaching in KBR and Conferences



- **Extensive** teaching sessions are usually brought during:
 - **Academic Days**
 - On Tuesdays every other week (about twice a month) for all residents.
 - Given by Senior Specialist/Consultant Radiologists from Kuwaiti Hospitals
 - Usually take place in KIMS from 8 am to around 4 pm.
 - **Physics Sessions**
 - For Part I residents (PGY-1 + PGY-2).
 - Every Monday till the completion of the curriculum (in summer).
 - Given by Physicist doctors.
 - Usually take place in KIMS from 2 pm to around 4 pm.
- Please note that attendance to these sessions are **mandatory**.

Radiology Teaching in KBR and Conferences



- There are **monthly** Radiology Night sessions, mostly on the last Monday of each month (except in summer), which are held by **Radiology Department of different hospitals**. All radiologists are welcomed including residents.
- A large-scale radiology conference is usually held in February each year for all radiologists including residents. *(important for the required annual CME points)*
- Also, workshops usually done towards November each year.

KBR Examinations

Pre-residency & PGY-1 Exam



- **Pre-residency** (entrance) exam:
 - Usually done in **late October** and **early November** each year.
 - **Contents:**
 - Medical school **graduate-level knowledge** (medical and surgical).
 - Common medical and surgical **emergencies** along with their best imaging modalities.
 - **Basic radiation protection** and doses of common imaging/procedures
 - Radiology-related **ethics**.
- As for **PGY-1** exam:
 - Usually done in **June** each year.
 - Mostly similar to the pre-residency exam with more **in-depth knowledge** given that residents have attended academic days.
 - **No physics questions** in R1 exam.

KBR Examinations

Part I Exam at PGY-2



- Usually done in **late August / early September** each year.
- Required to be passed in order to be **promoted** to Registrar.
- Exam **contents**:
 - **Film-viewing session** (naming anatomical structures from radiological and NM imaging).
 - **MCQs** involving:
 - Radiological anatomy.
 - Technique of common radiological imaging and procedures.
 - Concepts of radiological physics.
 - Medical and surgical emergencies along with their imaging features.
 - Radiology-related ethics.

KBR Examinations

Part II Exam at PGY-5



- Usually done in **two separate parts** in **September** and **October** each year.
- Required to be passed for **board completion** and to be **promoted** to Senior Registrar.
- Exam **contents**:
 - **MCQs** and **SAQs** in late September.
 - **VIVA** (aka OSCE) in October.
- Sufficient knowledge of **most of medical and surgical pathologies** is required in order to pass the exam which is gathered through daily work and Academic days including the following **domains**:
 - Cardiovascular, vascular, gastrointestinal, genitourinary, musculoskeletal, neuroradiology, pediatric imaging, thoracic, breast and interventional radiology
 - As mentioned before, NM fundamental knowledge is required along with non-interpretive skills (NIS) which deals with radiology-related ethics and professionalism.



Thank you ... and best wishes

If you have further queries, you can contact us using the following email:

Radiology@kims.org.kw

Or by contacting the current Chief Resident through DM WhatsApp:

[Dr. Saud Alghunaiman: 97870790](https://www.whatsapp.com/channel/00299100000000000000)