

# Radiology Postgraduate Training in Malaysia



GUIDE FOR APPLICANTS

VERSION 1, 2020

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# Preface

## What is this document?

This document is a guide for those applying to enter postgraduate training in Radiology. It informs potential applicants of what will be required through a series of extracts from the New Postgraduate Curriculum in Radiology.

At present the new curriculum is still in development. It is hoped that it will be approved by the Malaysian Medical Council in early 2020 and its implementation is entirely dependent on that approval.

## The National Postgraduate Medical Curriculum

The Radiology curriculum is a part of the National Postgraduate Medical Curriculum. Following its approval there will only be one curriculum for the whole of Malaysian Postgraduate Medical Training. This curriculum comprises a Core Curriculum of generic components and also Specialty Specific curricula which articulate specific aspects relating to the specialist discipline concerned. The trainees are free to choose the summative examination at the beginning of the training, which will be the Master in Radiology or other equivalent examination, such as the UK based Fellowship of the Royal College of Radiologists. In some cases, trainees may choose to submit to both examinations.

## The writers

The material for the National Radiology Curriculum on which this document is based has been compiled through invaluable contributions by representatives from all stakeholder groups. These contributors are listed in the Appendix I. However, the writing committee of the complete Radiology curriculum consists of the following Malaysian Radiologists:

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# Introduction

## The Purpose of the Guide

The purpose of this guide is to inform potential applicants as to what Radiology is and what postgraduate training in the discipline involves. It is intended to encourage them to apply for postgraduate training and guide them as to how to proceed with their application.

## What Is Radiology?

Radiology is the branch of Medicine that uses images as a basis for investigation and treatment of patients. Imaging modalities include plain radiographs, ultrasound, computed tomography, mammography, magnetic resonance imaging, fluoroscopy, angiography and nuclear medicine studies. To qualify as a Radiologist, trainees are required to obtain either a Master of Radiology from a local University or any other overseas equivalent qualification recognized by the Malaysian Medical Council.

## Size of the Specialty

In Malaysia there are at present 675 consultants registered in the National Specialist Registry of which 270 are in the private sector (as of February 2020). There are 296 trainees, of which 235 are enrolled in the Master programme, while 61 are following the MOH training pathway in Radiology. All these trainees are currently spread across 14 clinical accredited training centres throughout the country. In recent years, efforts have been made to increase the number of trainees and the number of accredited training centres. This is to fulfil the need of radiologists in the country as per data from Ministry of Health.

## Unique Features of Radiology

### Consultancy, coordination and key problem solving

Radiologists are consultants, working with patients in technologically complex clinical settings. They act as part of a multidisciplinary team to select the optimal

radiological investigations and interventions appropriate to a specific patient. Radiologists are responsible for the safety of patients as they manage investigations using ionising and non-ionising radiation equipment. They provide detailed reports that directly inform the team and underpin management decisions. In addition, they monitor the progress of management decisions with follow up imaging and complex decision making. This requires not only a thorough understanding of imaging technologies but also a high level of understanding of the patient's condition and possible treatment options.

Radiology is central to the problem-solving process which identifies the patient's condition and devises a treatment plan. We not only provide coordination but also take the initiative as the key driver in multi-disciplinary team (MDT) meetings. The radiology team is routinely required to go beyond the initial problem identified by the clinician to investigate further and formulate viable solutions for patient care. Radiology is the glue that holds the problem-solving team together.

## Involvement at multiple levels of healthcare delivery

Radiologists play a role at multiple levels of healthcare delivery. We work to diagnose, manage and prevent disease via minimally invasive procedures. In doing this we utilise technologies ranging from whole body imaging to organ specific, tissue specific and functional imaging.

## Technology based

Radiologists deal with computers and imaging technology to a greater extent and higher level than any other specialty. It is a specialty that is moving forward rapidly in tandem with global technological advances. We have expanded from basic radiography to structural 3D/4D imaging, molecular and functional imaging. Tele-radiology allows exchange of images

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across borders for sharing of knowledge and optimization of patient care. The rapidly changing technological landscape offers unique challenges and opportunities.

### **Why Choose Radiology as a Career**

Radiology in the 21st century drives modern medicine. Radiologists play the role of key clinical problem solver in bringing together different strands of information and utilising cutting edge technology in the diagnosis of disease and management of patients. The increasing need for image guided procedures to reduce complications has extended the role of the Radiologist in many areas of patient management.

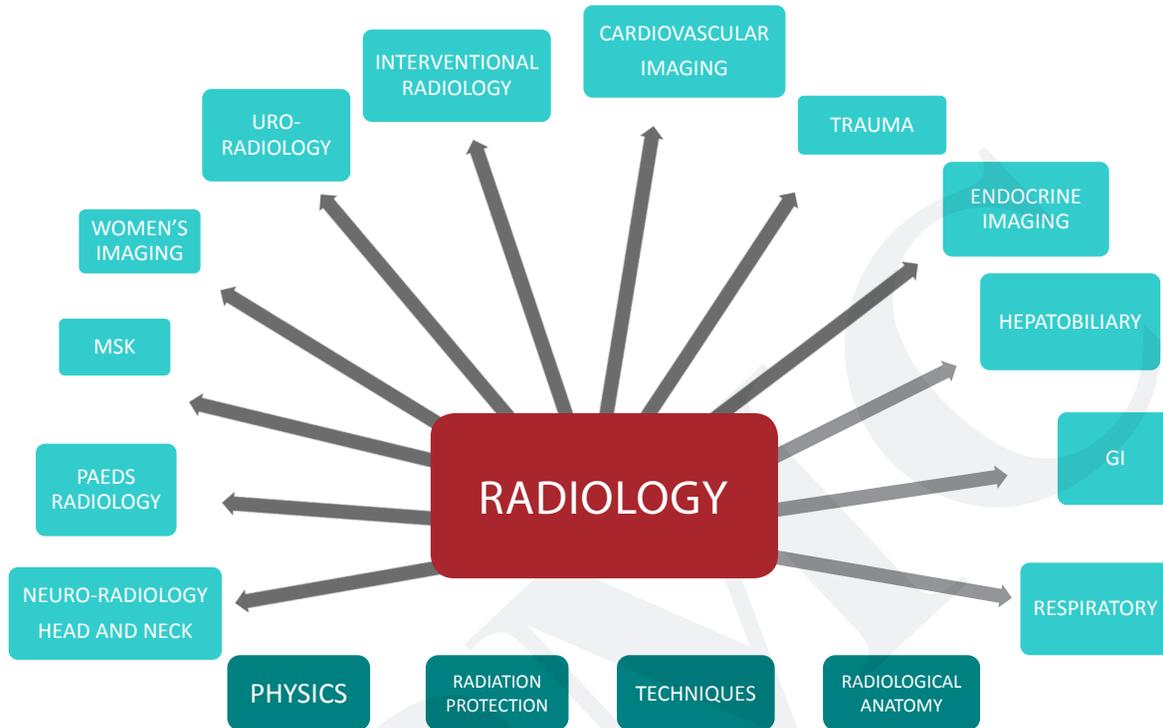
The growing subspecialty of Interventional Radiology allows the Radiologist to not only support diagnosis but also offer treatment through image guided minimally invasive procedures, reducing the need for lengthy surgery under general anaesthesia.

Radiologists are scientists collaborating with colleagues in other specialities to ensure effective patient care using leading-edge technologies.

Radiology is an attractive speciality for trainees who would like to play the role of key clinical problem solver, working with multiple disciplines utilising the latest technology in diagnostic and therapeutic management of patients.

# 1. The Radiology Programme

The Radiology Specialty Training is a three-phase programme spread over 4 years.



## Three Phases of Training

**Phase 1** runs for one year following entry to the programme. The focus is on the development of a solid foundation of knowledge and skills in the basic sciences in Radiology alongside closely supervised clinical experience in a radiology department. The core topics in this year are Physics, Radiation Protection, Techniques and Radiological Anatomy

**Phase 2** runs for 2 years upon completion of Phase 1. In this phase, the trainees will start to learn about different pathologies, clinico-pathological correlation and imaging features of different imaging modalities. They will have to be able to diagnose conditions based on imaging patterns.

**Phase 3** is the final year of training. In this year trainees work on the consolidation of the previous phases of training in readiness for consultant practice.

In order to progress between phases trainees must demonstrate the required knowledge and skill levels which define the minimum level of competence for the particular phase.

Trainees are encouraged to develop independence in their practice and thinking throughout the phases of training. They are under the supervision of experienced radiologists throughout their training.

## 2. Entry Requirements

A unique aspect of Postgraduate training in radiology is the degree to which all aspects of both Ministry of Health (MOH) and University training experiences are already unified. Therefore, entry into postgraduate training is the same for all applicants. To enter Radiology training, a trainee must demonstrate that their academic qualifications, clinical experiences and interests are appropriate. A formal selection and recruitment process is required to ensure that the potential trainees have the capability to successfully undertake the training and that their interest in the specialty is genuine based upon relevant prior activities. This process forms an open and transparent system in which all potential trainees must provide a defined range of evidence which is examined and evaluated in a trustworthy manner proving that selection is both robust and fair.

Trainees wishing to enter postgraduate training, are required to provide evidence that they have the appropriate qualities, qualifications and experience in three areas:

**Academic** – relating to their ability to study, learn and communicate in the relevant clinical and scientific areas.

**Professional** – relating to their awareness of the demands of the clinical environment in Radiology and the basic skills to meet those demands

**Personal** – relating to the attitudes, values and personal qualities required to pursue a career in Radiology

These requirements are outlined in more detail below.

Component	Entry requirement	Evidence
MBBS or other medical qualification recognised by MMC	Mandatory	Original Certificate
Full registration with MMC	Mandatory	Current Certificate of Registration
Clinical experience	Mandatory: 12 months as a MO  Desirable: Some experience in a radiology department	Application form and service book  2 letters of reference from supervisors / Head of Department (Experience in general and Essential Learning Activities in particular)
Clinical knowledge & Skills	Mandatory: Able to perform tasks outlined in Entry ELA	demonstrate relevant skills and answer questions during interview  Information from letters of reference
Other qualifications	Passed the Medical Specialist pre-entrance examination (MedEx) for Radiology, mandatory for all Malaysians	Valid certificate from Malaysian Examination Board (MPM)

<b>Other requirements</b>		
Commitment to and understanding of Radiology as a specialty	Desirable: Attendance at courses, workshops and conferences relevant to Radiology  Presentations / posters/ publications in relevant topics	Certificates of attendance;  Meeting abstracts; Publication front page and including doi number.
Clinical audit experience	Mandatory?	Full audit report
<b>Additional requirements for International applicants:</b>		
Performing competently at Medical Officer level  Proficient in both written and spoken English.	Mandatory: An international candidate will be required to fulfil all the criteria as outlined above except for the MedEx, as well as these additional requirements.	Letter of good standing from home country medical council  English language qualification (IELTS minimum 7 in all categories )

**Important:**

Any falsification of documents will result in the application being rejected and the doctor being reported to the MMC.

Any adverse reports such as an investigation by MMC must be presented to the Selection Committee.

Any canvassing by or on behalf of an applicant may result in their application being rejected.

**Professional Experience**

A posting of one year or more as a medical officer or its equivalent in a Radiology department is desirable but it is not an essential prerequisite to enter the programme. In its absence, applicants to the programme should be prepared to show other evidence of their professional commitment to radiology at the interview stage.

Adequate clinical exposure, of whatever length, to Radiology should be evidenced by the candidate being able to competently perform

the Essential Learning Activities (ELA) as listed below. Candidates will be required to declare on the application form that they are proficient in these activities and will be assessed on the ELAs during the interview process. All trainees entering Radiology are expected to perform these activities in a trustworthy manner on the first day of postgraduate training. The inability to do so may result in being asked to leave the programme.

**Essential Learning Activities**

It is essential that that trainees wishing to enter Radiology training have had the professional experience listed in the table below. The evidence that such experience has resulted in appropriate learning should be demonstrated by the ability to perform certain tasks at the beginning of specialty training.

Listed below are a number of Essential Learning Activities (ELA) which a trainee must be able to perform competently, in a trustworthy manner on the first day of the specialty training programme in Radiology.

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*“An ELA is the identification and description of a clinical task in such a way that the trainee is fully aware of the Knowledge, Skills and Attitudes needed to complete the task and the trainer is fully aware of what needs to be observed to deem the task completed to a professional level”*

*- David Pitts & Prof. Simon Frostick*

It is essential that trainees can perform all the tasks listed in the ELAs below before application for specialty training. They may form the basis for interview questions or other assessments used in the selection process.

These essential activities are basic clinical skills that form part of house officer and

medical officer's daily practice. They provide a broad introduction to training in radiology and emphasize the knowledge, skills and attitudes required to successfully undertake early phase of the specialist training in this area.

1. Reporting of an extremity fracture
2. Reporting of a chest radiograph
3. Reporting of abdominal radiograph/ KUB
4. Take consent for contrast media/simple procedures
5. Perform peripheral venous access

Listed below is the criteria required for reporting an extremity fracture as an example.

### ELA: Reporting of simple extremity fractures

All items on the table below are examples, they do not constitute an exhaustive list in any aspect

<b>Knowledge</b> <u>Know</u> , Facts, Information	<b>Skill</b> <u>Do</u> , Practical, Psychomotor, Techniques	<b>Attitudes + Values</b> <u>Feel</u> , behaviours displaying underlying values or emotions
Basic image evaluation including proper exposure and positioning.  Normal radiological anatomy of the extremities  Difference between acute fracture and healing fracture	Decision making: To decide if radiograph is acceptable for reporting  Observation: To detect the abnormality  Communication: To write a complete report with good language skills	Humility and personal insight: To recognize limits of knowledge and ask for assistance when necessary  Responsibility/Proactivity: To inform clinicians of pertinent findings  Responsibility and diligence: Paying attention to detail while reporting
<b>Example Behaviours</b>		
<b>Positive</b>	<b>Negative</b>	<b>Negative Passive (Omitted)</b>
Things that should be done, correct techniques or practices, things a trainee might do right	Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do
Systematic approach to radiograph  Efficient reporting  Zero errors – no mistakes  Seeking help appropriately  Legible and complete report	Misinterpretation of radiograph  Non-systematic approach: focuses on single abnormality and ignores the rest of the radiograph  Illegible incomplete report	Left out key points in reporting ie joints, soft tissue  Doesn't inform clinician of pertinent findings

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## Personal Qualities

The following personal qualities are essential in applicants who wish to become a Radiology trainee and eventually a Radiologist. These qualities will be assessed during the interview process.

- 1. Good communicator – oral and written**  
Able to express opinion orally and written effectively. Valuing opinion of others. Confident and clear presenter. This will be assessed during the interview using case studies.
- 2. Integrity and Sense of responsibility**  
Able to carry out daily work ethically with honesty and transparency. Able to prioritise clinical care of the patient and act as a patient advocate. This will be assessed during the interview using case studies.
- 3. Commitment to continuous learning and ability to embrace new technologies**  
The trainee shows dedication and proactive behaviour in continuous education. Ability to understand evolving technologies and adapt to technological innovation. This will be assessed by certificates of participation in relevant activities and during the interview using case studies.

## 3. Entry Process

Before applying to enter specialist training, all trainees should ensure that they meet all the entry requirements described above and can provide the appropriate evidence.

### Introduction / overview of the entry process

Applicants for Postgraduate training in Radiology fall into three broad categories:

- a. MOH candidates (individuals currently working as an MO in an MOH hospital).
- b. Malaysian private candidates who are providing their own sponsorship.
- c. International private candidates, also providing their own sponsorship, who wish to apply for the universities' pathway.

The entry process for Radiology consists of six stages

1. Evidence gathering;
2. Application;
3. Screening;
4. Entrance Assessment;
5. Communication of outcome;
6. Induction Programme.

The following Table summarises the timetable for the entry process:

Event	Content / Timing
1. <b>Evidence gathering</b>	During the Medical Officer period applicants should begin to accumulate the required experience, skills and evidence listed in the tables above.
2. <b>Application</b>	Applicants complete online application form at <a href="http://ehlp.moh.gov.my">ehlp.moh.gov.my</a> .
Application for MoH applicants	<ol style="list-style-type: none"> <li>1. Applications for specialty training are made online by July of each year at: <a href="http://ehlp.moh.gov.my">ehlp.moh.gov.my</a></li> <li>2. Applications for pre-entrance examination are made from July to August of each year at: <a href="http://apps.mpm.edu.my/medex/public/register">http://apps.mpm.edu.my/medex/public/register</a></li> </ol>
Overseas and Private applicants	Online application via the appropriate web link for postgraduate studies at each University
3. <b>Screening</b>	The selection committee of the Radiology Specialty Board reviews all applications, identifies those who are eligible to proceed and invites them to attend the Entrance Assessment
	Completed by end of December (Eligibility; completion of mandatory requirements; evaluation of other documents).

Event	Content / Timing
4. <b>Entrance Assessment</b>	The entrance assessment consists of two parts. A radiograph interpretation and report followed by an interview.
	A radiograph interpretation and reports followed by an interview which will be held in January end year
5. <b>Communication of outcome</b>	Specialty Board communicates success or otherwise to applicants, usually by letter.
	The list of successful candidates will be known by the end of February, however, MOH candidates will be informed by the Training Division of MOH
6. <b>Induction programme</b>	An event held in the training centre as a prelude to joining the programme
	May each year for MOH candidates. Successful candidates report to the University / Training Division of MOH in June each year

### Important:

1. All applications must be complete, and all supporting documentation submitted in the appropriate format by the date indicated.
2. Only the documents listed will be submitted.
3. Late applications will not be accepted.
4. If supporting documents are not submitted as required the application will be rejected.
5. Unsolicited letters, telephone calls, emails etc. supporting an applicant will result in the application being rejected.
6. Falsification of documents will result in rejection of the application and a report being sent to MMC.

## Application process

### Overview

Eligible candidates will apply online either to the university of their choice (Private/overseas candidates) or through Ministry of Health (MOH) (government sponsored candidates). Successfully shortlisted candidates will be called for the entrance exam followed by an interview.

### Ministry of Health (MOH) candidates

Places on the programmes are advertised in mainstream newspapers in May-June of each year. Online applications should be made to Bahagian Pengurusan Latihan (Training division) MOH within one month of the advertisement being posted.

The availability of training posts in the different hospitals will be advertised by the MOH. Candidates will access the application form online and submit to the MOH either electronically or via hard copy.

### Private / overseas candidates:

Application should be made directly to individual universities through the university's website at any time throughout the year. Candidates may apply to any of the universities offering the training programme.

### Entrance Assessment

For entry into Radiology specialty training the applicants will be required to undergo an entrance assessment which consists of imaging assessment and interview. The entrance

assessment will be organized by the National Conjoint Radiology Board, usually in January of each year.

### Imaging assessment

In the imaging assessment, applicants will be assessed on basic radiological anatomy and simple plain radiography reporting. Successful candidates will be invited to attend the interview which will be held within a month.

### Interview

Applicants will be interviewed by National Conjoint Radiology Board. The interview process will assess candidate's overall presentation and communication skills. Candidates are expected to dress appropriately. The candidates will then be assessed based on a set of standard questions that will be given 10 minutes before the interview.

### Communication of outcomes

The final selection process for entry to the programme will be undertaken by the National Conjoint Radiology Board. MOH and private/overseas candidates that have passed the entrance assessment will be informed by both the MOH and by the university where appropriate.

### Induction Process

All trainees will attend an induction programme. The induction programme will be conducted by the National Conjoint Radiology Board and held within the first two weeks of the trainee's appointment. Attendance at the induction programme is compulsory.

The induction process is in place to ensure that trainees are familiar with the following:

- Learning opportunities to be expected.
  - Information about assessments.
  - The processes for supporting a trainee in difficulty.
  - To introduce the trainee to the healthcare facility (ies) in which the training will take place.
  - Rotas and the duties of a trainee (and how they differ from the duties of a Medical Officer).
  - Established guidelines and protocols in the workplace.
  - Support provided in the workplace and the role of trainers.
  - CPD requirements and attendance at teaching sessions.
  - Disciplinary processes and the processes to report concerns about training.
- The curriculum
  - The programme of study that they will be following.
  - The requirement for registration into the programme.
  - The payment of fees.

## 4. Syllabus

### Overview

The aim of the Malaysian postgraduate training programme in Radiology is two-fold; Firstly, to produce a radiologist who is able to provide safe and effective diagnostic support in the generality of the discipline on day 1 of their consultant practice and secondarily to enthusiastically and urgently pursue the ongoing development of their knowledge and skills in subspecialty disciplines.

The four-year programme is divided into three phases of training covering medical physics and 12 subspecialty disciplines. These subspecialties are further divided into topics as shown by the diagram below:

The radiology syllabus defines what will be taught or learned through the three phases of training. Although the radiology training programme involves a series of medical physics and 12

subspecialty modules, the trainees revisit each of the subspecialties in some way throughout each placement as patients present for diagnostic procedures in the normal course of radiology practice.

This syllabus outlines the content of foundational training in radiology, the subspecialty modules and the expected levels of knowledge and skill at key stages in the trainee's progress.

The syllabus for the programme is described in detail in the Radiology curriculum

### Level descriptors

For each core subject, knowledge and skills are divided into different levels appropriate for each phase of training. By the end of each phase of training, the generally expected level of knowledge and skills are as outlined in the table below:

Phase 1		Phase 2		Phase 3	
Knowledge	Skills	Knowledge	Skills	Knowledge	Skills
Applied anatomy	observed/ assisted and can describe the components of the radiological technique	able to interpret data in all imaging modalities for pathology in specific categories (e.g. specific tumours)	complete the entire core radiological procedure and generate the report under supervision	able to use knowledge to compare, evaluate, discuss and justify decisions on imaging and treatment strategies in all imaging modalities for specific pathology.	Able to perform core procedure and report independently with minimal supervision
Radiological techniques		knowledge of radiological (image guided procedures) and non-radiological treatment options		Actively involved and taking initiative in clinical decision making.	
Physics and radiation safety of all imaging modalities in use in specific context					

## 5. Assessment Tools

The assessment strategy for the programme is described in detail in the Radiology curriculum.

Assessment is an essential part of the Radiology training programme with the following purposes:

- To encourage and monitor learning (through formative tools);
- To evaluate whether the trainee is ready to progress through the programme (through summative tools).
- To generate and evaluate evidence that the trainee can care for patients in a safe and effective way as a specialist
- To establish a judgement that the trainee has proved their ability to learn and will continue to do so when the programme is complete
- To verify that learning outcomes defined in the syllabus have been achieved

Summative assessments are carried out at entry and at the end of every phase to determine whether the trainee is ready progress to the next stage of training. Formative workplace-based assessments are carried out throughout all phases of the programme to provide feedback the trainee and trainers as to how the trainee needs to improve their performance (help them to learn). The assessment tools are described briefly below, and in more detail in the Radiology curriculum.

### Learning Agreements

The learning agreement sets out what is expected from the trainee and from the programme, i.e. it is a contract which both sides must fulfil. For each placement, it is an opportunity for the trainer to set out what they are offering from the placement and for the trainee to understand the direction that their learning will take for the that period of training. Furthermore, the learning agreements also

establish a relationship between trainer and trainee. At the commencement of training the agreement will also establish what happens if the trainee is having problems.

### E-portfolio

Evidence of successfully having completed all curriculum requirements, including assessments must be included in the trainee e-portfolio.

The e-portfolio is a web-based system that can be accessed by the trainee anytime. Supervisor and programme coordinator are eligible to assess trainee with given password for accessibility to verify the information uploaded by trainee.

### Formative Workplace-based assessment Tools

Formative assessment to support the trainee in their learning using the following tools:

- a. Radiology- Imaging based Assessment (R-IBA)

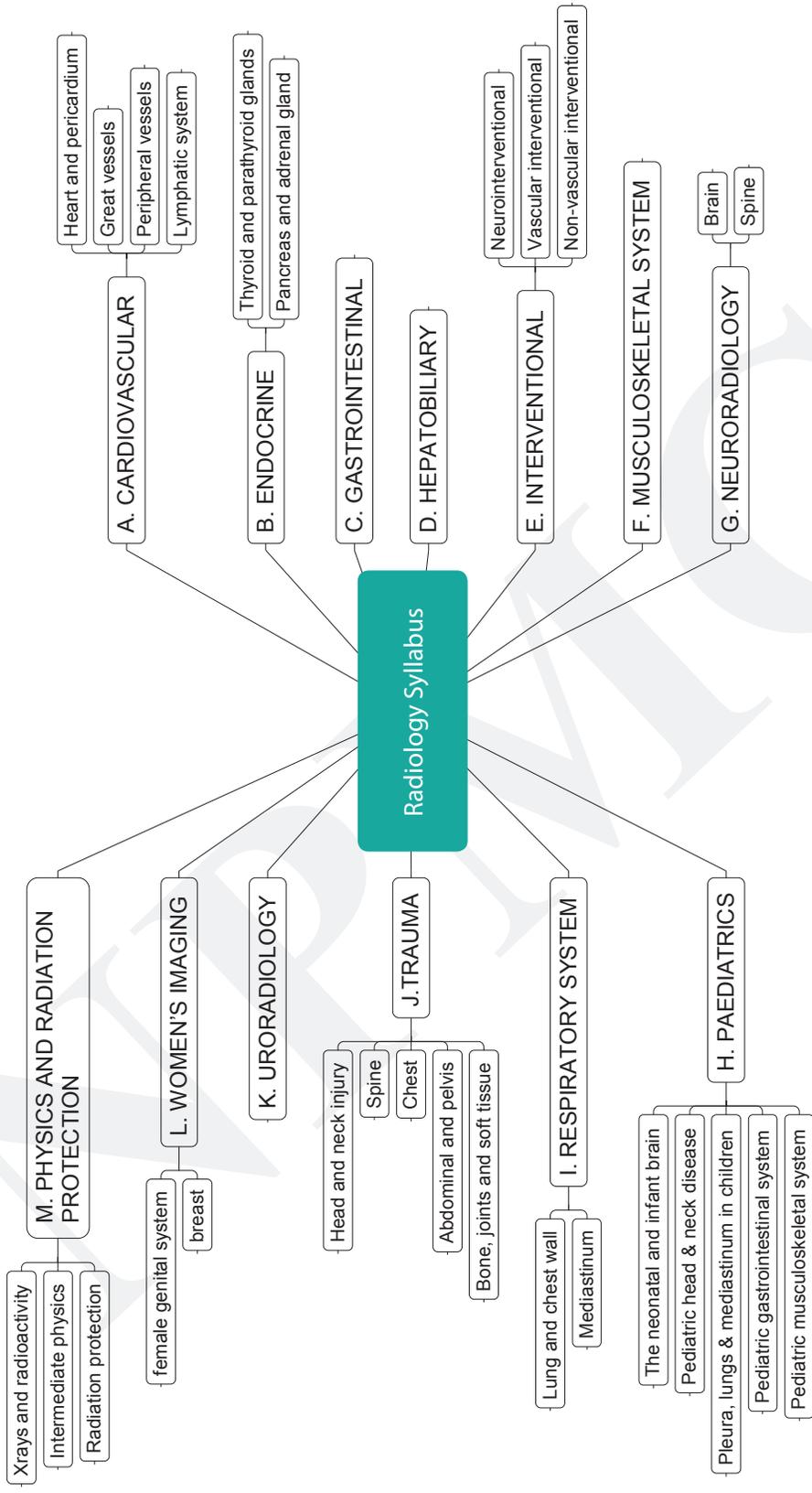
Assesses trainee's skill in interpreting medical images

- b. Radiology Procedure based Assessment (R-PBA)

Assesses performance/ competence in various radiology procedure-related tasks especially the core procedures.

- c. Multi-Disciplinary teamwork assessment (MDT),

An MDT meeting is a regular meeting involving clinicians from multiple specialties with the radiologist discussing clinical problems to achieve management decision. Trainees are expected to present cases during this meeting. They will be assessed on professionalism, presentation and verbal skills, knowledge, communication skills, analytical thinking, leadership and teamwork.



- d. Multi-Source Feedback (MSF),  
Anonymous peer to peer assessment and will be carried out by peers in the same/ different phase of training.
- e. Logbook  
A systematic record of cases reported and procedures observed/ assisted/ performed. The trainer in charge of the posting will sign the logbook to verify the trainee's participation in the procedure.
- f. Supervisor's (SV) report  
A 6 monthly supervisor's report from the trainer providing a wholistic assessment of the trainee's knowledge and professionalism.

## Summative Assessment Tools

### Portfolio review

A portfolio review will be conducted by the Programme Director for every trainee at the end of every phase of training, in addition to the Annual Portfolio Review, to determine the

trainee's eligibility to appear for the summative assessment.

### Examinations

All trainees must pass an examination at the end of every phase of training following satisfactory portfolio evaluation by the programme director.

### Research project (RP)/Clinical Audit

A research project could focus on either of the following areas:

- Clinical audit
- Fundamental and applied research
- Clinical trials

All practices and methods in the project must comply with Good Clinical Practice and with all regulations on ethical approval and scientific writing.

## Summary of assessment during training

	PHASE		
	I	II	III
Summative assessment	Portfolio review	Portfolio review	Portfolio review
	Phase I exam or Part 1 FRCR	Phase II exam or Part 2A FRCR	Phase III exam or Part 2B FRCR
		Research project (RP) / Clinical Audit	
Formative assessment	Portfolio review	Portfolio review	Portfolio review
	R-IBA R-PBA MSF SV report Logbook	R-IBA R-PBA MDT MSF SV report Logbook	R-IBA R-PBA MDT MSF SV report Logbook

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# Appendices

## 1. List of Contributors

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## 2. Essential Learning Activities

As mentioned earlier in this document all candidates for Radiology training must be able to perform the following Essential Learning Activities on day 1 of postgraduate training:

1. Reporting of an extremity fracture
2. Reporting of a chest radiograph
3. Reporting of abdominal radiograph/ KUB
4. Take consent for contrast media/simple procedures
5. Perform peripheral venous access

**ELA 1 has already been illustrated earlier in the document. ELA 2-5 are outlined below:**

**ELA 2 : Reporting of simple chest radiographs**

<b>Knowledge</b> <u>Know</u> , Facts, Information	<b>Skill</b> <u>Do</u> , Practical, Psychomotor, Techniques	<b>Attitudes + Values</b> <u>Feel</u> , behaviours displaying underlying values or emotions
<p>Basic image evaluation including proper exposure and positioning.</p> <p>Normal anatomy of the lung, mediastinum, heart and ribs</p> <p>Able to diagnose pneumonia, pleural effusion, pneumothorax, cardiomegaly.</p>	<p>Decision making: To decide if image is acceptable for reporting</p> <p>Observation: To detect the abnormality</p> <p>Communication skills: To write a complete report with good language skills</p>	<p>Humility and personal insight: To recognise limits of knowledge and ask for assistance when necessary</p> <p>Responsibility/Proactivity: To inform clinicians of pertinent findings</p> <p>Responsibility and diligence: Paying attention to detail while reporting</p>
<b>Example Behaviours</b>		
<b>Positive</b>	<b>Negative</b>	<b>Negative Passive (Omitted)</b>
<p>Things that should be done, correct techniques or practices, things a trainee might do right</p>	<p>Things that should not be done, incorrect techniques or practices, things a trainee might do wrong</p>	<p>Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do</p>
<p>Systematic approach to radiograph</p> <p>Efficient and speedy reporting</p> <p>Few mistakes</p> <p>Legible and complete report</p>	<p>Numerous mistakes</p> <p>Non-systematic approach: focuses on single abnormality and ignores the rest of the radiograph</p> <p>Illegible incomplete report</p>	<p>Left out key points in reporting ie pleural effusion, pneumothorax.</p> <p>Doesn't inform clinician of pertinent findings</p>

### ELA 3: Reporting an abdominal radiograph/KUB

Knowledge <u>Know</u> , Facts, Information	Skill <u>Do</u> , Practical, Psychomotor, Techniques	Attitudes + Values <u>Feel</u> , behaviours displaying underlying values or emotions.
<p>Basic knowledge of various contrast media and their complications/side effects, different allergic reactions and allergens</p> <p>Indication and contraindications for contrast media/procedure</p> <p>Pre procedure preparation and post procedure care</p>	<p>Communication skills</p> <ul style="list-style-type: none"> <li>using appropriate language</li> <li>clear explanation of technical aspects</li> <li>eye contact, gestures, body language to help patient relax</li> </ul> <p>Organisational skills: Time management, completing consent in timely manner</p> <p>Observation: Determine severity and type of contrast media reaction or previous allergy reaction ie to drugs and seafood</p>	<p>Patience, empathy, establishing good rapport and addressing patients with appropriately respectful salutations in a polite manner</p> <p>Check patient's understanding</p>
<b>Example Behaviours</b>		
Positive	Negative	Negative Passive (Omitted)
<p>Things that should be done, correct techniques or practices, things a trainee might do right</p>	<p>Things that should not be done, incorrect techniques or practices, things a trainee might do wrong</p>	<p>Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do</p>
<p>Systematic approach to thorough history taking</p> <p>Explains side effects and procedure in detail.</p> <p>Uses patient-friendly language (no medical jargon)</p> <p>Takes time to allow patient to answer</p>	<p>Gives incorrect facts about the side effects and complications of contrast media or of the procedure.</p> <p>Uses medical jargon</p> <p>Impatient</p> <p>Does not answer patient's questions</p> <p>Very superficial history</p> <p>Rushing through to finish fast</p>	<p>Failure to explain the various side effects/complications</p> <p>Failure to recognise previous allergy/reactions</p> <p>Doesn't address patient's concerns</p>

#### ELA 4: Reporting of simple chest radiographs

<b>Knowledge</b> <u>Know</u> , Facts, Information	<b>Skill</b> <u>Do</u> , Practical, Psychomotor, Techniques	<b>Attitudes + Values</b> <u>Feel</u> , behaviours displaying underlying values or emotions
<p>Basic image evaluation including proper exposure and positioning.</p> <p>Normal anatomy of the lung, mediastinum, heart and ribs</p> <p>Able to diagnose pneumonia, pleural effusion, pneumothorax, cardiomegaly.</p>	<p>Decision making: To decide if image is acceptable for reporting</p> <p>Observation: To detect the abnormality</p> <p>Communication skills: To write a complete report with good language skills</p>	<p>Humility and personal insight: To recognise limits of knowledge and ask for assistance when necessary</p> <p>Responsibility/Proactivity: To inform clinicians of pertinent findings</p> <p>Responsibility and diligence: Paying attention to detail while reporting</p>
<b>Example Behaviours</b>		
<b>Positive</b>	<b>Negative</b>	<b>Negative Passive (Omitted)</b>
<p>Things that should be done, correct techniques or practices, things a trainee might do right</p>	<p>Things that should not be done, incorrect techniques or practices, things a trainee might do wrong</p>	<p>Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do</p>
<p>Systematic approach to radiograph</p> <p>Efficient and speedy reporting</p> <p>Few mistakes</p> <p>Legible and complete report</p>	<p>Numerous mistakes</p> <p>Non-systematic approach: focuses on single abnormality and ignores the rest of the radiograph</p> <p>Illegible incomplete report</p>	<p>Left out key points in reporting ie pleural effusion, pneumothorax.</p> <p>Doesn't inform clinician of pertinent findings</p>

### ELA 5: Perform peripheral venous access

<b>Knowledge</b> <u>Know</u> , Facts, Information	<b>Skill</b> <u>Do</u> , Practical, Psychomotor, Techniques	<b>Attitudes + Values</b> <u>Feel</u> , behaviours displaying underlying values or emotions
<p>Basic anatomy of peripheral veins</p> <p>The various size of venous access device related to the procedure</p> <p>Complications of venepuncture</p>	<p>Decision making:</p> <p>Appropriateness of venepuncture site and size of the device.</p> <p>Meticulous practice:</p> <p>Maintaining hygiene</p> <p>Technical skill:</p> <p>Proper technique for insertion of venous access device</p> <p>Flushing and checking of venous access</p> <p>Observation: Recognising complication like extravasation, haematoma</p>	<p>Humility and personal insight: To recognise limits of knowledge and ask for assistance when necessary</p> <p>Patience</p> <p>Empathy</p> <p>Respectful behaviour towards patient</p>
<b>Example Behaviours</b>		
<b>Positive</b>	<b>Negative</b>	<b>Negative Passive (Omitted)</b>
<p>Things that should be done, correct techniques or practices, things a trainee might do right</p>	<p>Things that should not be done, incorrect techniques or practices, things a trainee might do wrong</p>	<p>Things that may be forgotten or omitted that constitute incorrect or substandard patient care, things a trainee might forget to do</p>
<p>Systematic approach to performing venepuncture</p> <p>Seeking help appropriately</p> <p>Explains procedure to patient</p> <p>Maintains hygiene</p>	<p>Establish access into wrong vessel ie arterial puncture</p> <p>Incorrect size of venous access device for procedure</p>	<p>Fails to maintain hygiene (wear gloves)</p> <p>Does not address patient's concerns (pain on flushing)</p>

### 3. References

1. Malaysian Medical Council website. <https://mmc.gov.my/>. Last accessed on 21st November 2019
2. National Specialist Registry website. <http://www.nsr.org.my/files/ClinicalRadiology%20260314.pdf>. Last accessed on 21st November 2019
3. Royal College of Radiologists website. <https://www.rcr.ac.uk/>. Last accessed on 21st November 2019
4. Bahagian Perkembangan Latihan, Ministry of Health Malaysia. <http://ehlp.moh.gov.my/#home-section>. Last accessed on 21st November 2019
5. Frostick SPF, Pitts D. Essential Learning Activities (ELA). Residential Curriculum Workshop 2017.

### 4. Resources and Further Reading

1. How to design and develop a curriculum: A Practical Introduction. Second edition. David Pitts. 2015.
2. The Royal Australian and New Zealand College of Radiologists. <https://www.ranzcr.com/join-our-professions/clinical-radiology/training-programs>. Last accessed on 21st November 2019

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