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and the Postgraduate Institute of Medicine,  
University of Colombo, Sri Lanka

UNIVERSITY OF COLOMBO



**POSTGRADUATE INSTITUTE  
OF MEDICINE OF SRI LANKA**

**Regulations and Guidelines  
for**

**MD Radiology**

**2008**

**18**

In accordance with the decision of the Board of Study in Radiology, and the approval of the Board of Management of the PGIM, this Prospectus, curriculum and training programme in Radiology became effective from 2008.

**PART 1**

**REGULATIONS AND GUIDELINES PERTAINING TO THE**

**MD IN RADIOLOGY AND BOARD CERTIFICATION IN RADIOLOGY**

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## VISION

*To produce competent Radiologists capable of functioning as specialists in the field.*

## OBJECTIVES OF THE TRAINING PROGRAMME

1. Train Radiologists with knowledge and skills required to serve in all categories of health care institutions of the country, both in major cities and in less popular areas.
2. Develop proper attitudes towards delivering of radiological services to patients
3. Develop the ability of decision making as a Radiologist which is required to manage a department of radiology.
4. Prepare Radiologists to provide good radiological care where ideal facilities may not be available.
5. Create an interest in research in order to improve the speciality of Radiology and patient care.

## 2. OUTLINE OF THE TRAINING PROGRAMME

### 2.1 Components of the training programme

The structured training programme leading to Board Certification in General Radiology shall consist of,

- a) Orientation programme of 3 months duration
- b) Pre MD training programme of 3 years duration
- c) Post MD training programme of 2 years duration; one year in Sri Lanka and one year overseas.

### 2.2 MD (Radiology) Examinations

- 2.2.1 The MD (Radiology) examination shall be in two Parts. The Part I examination shall be after a minimum period of one year from commencement of training. The Part II examination shall be after a minimum period of three years from the commencement of training.

2.2.2 A trainee is allowed to sit **only** the first two attempts of MD Radiology Part I & Part II examinations from their pre MD training center. The applications for MD part I and Part II examinations submitted from the pre MD training centre exceeding the above mentioned number of attempts, will not be accepted.

2.2.3 Limitations of the number of attempts at the MD Radiology examinations are as follows :-

Part I - 4 attempts are permitted within a period of 5 years from the commencement of training

Part II - 5 attempts are permitted within a period of 8 years from the date of passing the Part I examination.

### 2.3 Post-MD training

Following successful completion of the MD Radiology part II examination, a trainee shall undergo a minimum of one years post MD local training and a minimum of one years overseas training in centers approved by the Board of Study.

### 2.4 Board Certification

After satisfactory completion of the MD (Radiology) part II examination, and post MD local and overseas training, a trainee shall be recommended for Board Certification as a specialist in General Radiology by the Board of Study in Radiology. This will have to be approved by the Board of Management of the Postgraduate Institute of Medicine and the Senate of the University of Colombo.

### 2.5 System of evaluation

The trainee shall be evaluated by a structured system of evaluation during the training programme. The Board of Study has the option of disqualifying a trainee from sitting the MD examinations if requirements and objectives have not been met. Such measures or

discontinuation from the training programme will be resorted to with the concurrence of the Board of Management and the Senate of the University of Colombo.

## 3. SELECTION OF TRAINEES

### 3.1 Eligibility Criteria

Prospective applicants must satisfy the following requirements.

- (a) A medical/dental degree registered \* with the Sri Lanka Medical Council.
- (b) Satisfactory completion of internship acceptable to the Sri Lanka Medical Council.
- (c) Satisfactory completion of one year of post internship in Medical/Clinical practice in a university/public/private sector institution in Sri Lanka acceptable to the PGIM.
- (d) Satisfactory completion of one year of medical/clinical practice from the date of appointment as a grade Medical Officer.
- (e) The criteria prescribed in paragraphs (a) to (d) must have been satisfied by the applicants as at the date of closure of applications,  
provided that where a short-fall has occurred due to any reasons including Sick, Maternity or Other leave, the doctor concerned should complete such shortfall in order to become eligible to apply for the Selection examination.
- (f) Any other requirement/s stipulated by the Board of Study relevant to a particular field of study concerned that has/have been approved by the Board of Management.

\*foreign nationals who seek to apply to register for selection examinations should possess a medical degree registrable with the Sri Lanka Medical Council. The decision of the Board of Management will be final in all such applications.

Dental surgeons should possess one year of dental practice acceptable to the Board of Study in Dental Surgery after graduation.

A quota for the private sector is presently available for most courses.

### **3.2 The number of trainees**

The number of trainees to be admitted each year shall be determined by the Board of Study in Radiology and is subjected to review periodically.

### **3.3 Selection procedure**

Selection will be by a competitive entrance examination conducted by the Postgraduate Institute of Medicine. If there are candidates outside the Ministry of Health who are within the selected number of candidates to enter the training program only one such candidate will be included among the number that the Board of study decides to train each year.

## **4. Placement for pre MD training**

**4.1** The successful candidates (herein after referred to as trainees) will be placed in a main training centre for pre MD training. Allocation of the trainees to pre MD training center will be made at the meeting with the Allocation Committee appointed by the Board of Study. The trainee will have a choice in selecting the training centre, according to the order of merit at the selection test.

**4.2** The trainee shall report to the training centre allocated within one month after receiving the letter of appointment.

**4.3** During the pre MD training, a trainee is assigned to a supervisor from the same training center, who shall be responsible for trainee's attendance, punctuality, attitudes, good conduct of work and academic progress.

**4.4** Pre MD trainees shall not be allowed to change the training centre to which he /she was allocated at the commencement of training, until they complete the pre MD training.

**4.5** A trainee will be permitted a maximum of two attempts from the pre MD training centre at the MD (Radiology) Part I examination or MD (Radiology) Part II examination as the case may be; but subject to a total stay of not more than four years at the pre MD training centre.

## **5 Training centres**

### **5.1 Pre MD Training Centres**

Pre MD training shall be at a main training centre recognized by the Board of Study in Radiology. A main training centre is a department of Radiology at a teaching hospital.

### **5.2 Post MD Training Centres**

Post MD training shall be at both main training centres and non main training centres recognized by the Board of Study in Radiology. A Non main training centre is a department of Radiology at a provincial or general hospital

**5.3** The recognition of new centres for MD (Radiology) Part I and Part II training shall be considered by the Board of Study from time to time and will be guided by facilities for training and availability of trainers at these centres.

## **6 Training programme leading to MD Radiology**

**6.1** An appraisal based training programme will be conducted at the training centres recognized by the Board of Study in Radiology.

It shall comprise of

- (a) in service training in radiology
- (b) lectures / film viewing sessions and tutorials

- (c) documentation in log books, case books and portfolios
- (d) participation at clinico radiological meetings and journal club meetings
- (e) periodic assessments and appraisals

The details of the curriculum are available in part 2

**6.2** Trainers and supervisors in Radiology shall be Board Certified Radiologists with a minimum of 3 years of service after Board Certification.

## 7 Appraisal based training

**7.1** Appraisal is designed as a positive process to give trainees a feed back on their performance to monitor their continuing progress and to identify the needs of trainees.

**7.2** The plan for periodical appraisals during pre MD training is as follows.

01 month, 09 months, 24 months and 36 months from the commencement of training.

**7.3** Appraisal during post MD local training will be carried out at 6 months after commencement of post MD training.

**7.4** Appraisals will be confidential between the trainee and the appraiser (designated supervisor) with designated Board members and the Director PGIM having access to the records. The designated supervisor shall submit the relevant records to the PGIM.

### 7.5 The possible outcome of the appraisals

- **Progress** into the next year of training
- **Conditional progress** into the next year of training. At the assessment a specific action plan will be formulated to address deficiencies in the performance of the trainee. Progress will be re-assessed as appropriate within the respective year of training.
- **Fail** - if the trainee falls short of the objectives of the respective year of the training programme, he/she will be prevented from

continuing through the training programme. Repetition of the respective year shall only be recommended for well founded reasons.

This situation will arise in exceptional circumstances, and only after consultation between the supervisor and the external assessor appointed by the Board of Study in Radiology.

A precise course of action will be formulated by this group depending on the individual situation. The trainee may repeat the training in the areas judged to be deficient or may be removed from the training programme

## 8 MD Radiology examinations

The PGIM reserves the right to change the format of examinations with 12 months notice.

### 8.1 MD Radiology Part I examina

#### 8.1.1 Prerequisites to sit the MD (Radiology) Part I examination

- (a) Satisfactory completion of the MD (Radiology) Part I training programme
- (b) Attendance of not less than 80% at each of the following
  - practical components of work - an attendance register will have to be maintained by the supervisor or trainer
  - lectures/film viewing sessions/tutorials
  - clinico-radiological meetings
  - journal club meetings
- (c) Submission of the following

#### (i) Log book

Trainee should submit the log book to the PGIM for assessment by two supervisors (one shall be an external assessor from another local training center) at the end of nine months of training; 3 months before the scheduled date of MD part I examination.

- (ii) Recommendations made by the Supervisor/s, on the appraisal form for postgraduate trainees
  - (iii) Portfolio maintained by the trainee.
- (d) Certificate of recommendation issued by the committee appointed by the Board of Study in Radiology after assessing above.

#### 8.1.2 Format of the MD (Radiology) Part I examination

The examination will be based on the syllabus and shall consist of

- (a) Theory papers – consisting of multiple choice questions/ essay papers or both.
- (b) Film viewing session
- (c) Oral examination

### 8.2 MD (Radiology) Part II examination

#### 8.2.1 Prerequisites to sit the MD (Radiology) Part II Examination

- (a) Successful completion of or exemption from MD (Radiology) Part I examination.
- (b) Satisfactory completion of the Pre-MD training programme
- (c) Attendance of not less than 80% at each of the following
  - practical components of work - an attendance register will have to be maintained by the supervisor or trainer
  - lectures/film viewing sessions/tutorials
  - clinico-radiological meetings
  - journal club meetings
- (d) The submission of the following
  - (i) Case record file  
This has to be submitted to PGIM for assessment by two supervisors, (one of them shall be an external assessor from a local training centre) 3 months before the scheduled date of MD part II examination

- (ii) An audit or a research paper done under the supervision of a designated supervisor
  - (iii) Portfolio maintained by the trainee
  - (iv) Recommendations made by the supervisor/s on the appraisal form for postgraduates
- (e) Certificate of recommendation issued by the committee appointed by the Board of Study in Radiology after assessing above.

#### 8.2.2 Format of the MD (Radiology) Part II Examination

Examination will be based on the syllabus and shall consist of

- (a) Written papers (MCQ)
- (b) Film interpretation / reporting
- (c) Clinico-radiological oral examination

### 9. Post MD Training

The fourth and the fifth years

#### 9.1 Overview

- 9.1.1 The trainee who has obtained the degree of MD (Radiology) shall undergo further training in Radiology for a minimum of two years.
- 9.1.2 One year of post MD training shall be in a centre / centres in Sri Lanka (local) and a further year shall be in a centre overseas.
- 9.1.3 Centres for training both locally and abroad, shall be those approved by the Board of Study in Radiology. Such centers shall provide evidence of sufficient workload to enable the trainee to gain adequate experience
- 9.1.4 During the period of local and overseas training the trainee shall be under a designated supervisor/ supervisors who will be Board Certified Radiologists.

## 9.2 Post MD local Training

- 9.2.1 Training programme and appointments to a centre/ centres for local training shall be according to the rules and regulations formulated by the Board of Study in Radiology and the Board of Management. Allocations will be done by a committee appointed by the Board of Study in Radiology.
- 9.2.2 The trainee shall report to the training centre allocated within seven days after receiving the letter of allocation.
- 9.2.3 For training purposes, the Board of Study defines future specialist radiologists as general radiologists i.e. those working across several subspecialties. Therefore one year of local training shall be towards a mixture of all forms of radiological practice including exposure to administrative procedures which are normally encountered in most Teaching, General, Base and District hospitals in Sri Lanka.
- 9.2.4 The appraisal of the trainee during training shall be by a designated supervisor / supervisors appointed by the Board of study in Radiology. The supervisor shall forward the relevant documents to the Board of Study in Radiology.
- 9.2.5 Record book - Trainees shall maintain a record book obtained from the PGIM.

## 9.3 Post MD overseas training

- 9.3.1 During the one year of overseas training, the trainee shall gain the following:

- Further experience in working in a well equipped and organized Department of Radiology in a centre of excellence, in a different setting.
- Update knowledge and practical skills in general radiology.
- Further exposure to advanced techniques in radiology, some of which are not readily available in Sri Lanka.

- 9.3.2 The assessment of the trainee during overseas training shall be by the designated overseas supervisor.
- 9.3.3 The overseas supervisor shall forward the relevant documents of assessment of the trainee periodically, i.e at 3 months and at 9 months and also at the end of the training period, to the Director of the Postgraduate Institute of Medicine.
- 9.3.4 On completion of the overseas training and returning to Sri Lanka the trainee shall report to the Director PGIM within three working days.
- 9.3.5 **Failure to comply with satisfactory post MD training**  
With regard to a trainee who does not satisfactorily complete the local and or overseas training, a precise course of action will be recommended by the Board of Study in Radiology to the Board of Management.

## 10. BOARD CERTIFICATION

- 10.1** After completion of the MD Radiology examinations and satisfactory completion of a minimum of two years of post MD training, the trainee shall be entitled to Board Certification as a specialist in General Radiology
- 10.2** It is the responsibility of the trainee to apply for Board Certification following the satisfactory completion of all stages of the training programme.

**10.3** The date of Board Certification will be the date of completion of the post MD training unless in an event the post MD training is delayed due to reasons acceptable to the Board.

**10.4** Concessions and exemptions for those holding foreign degrees will be considered if they fulfill the requirements under one of the following categories:

10.4.1 Obtained a foreign qualification equivalent to MD Radiology (Colombo) prior to 01.01.1980 and practiced General Radiology for a minimum period of 7 years.

10.4.2 Obtained a foreign qualification after 01.01.1980 considered by the Board of Study to be equivalent to MD Radiology (Colombo), and subsequently successfully completed the MD Radiology (Colombo) Part II examination and post MD training (Local & Overseas).

Such doctors will be exempted from the post MD overseas training if they have served for 01 year in radiology after qualification, in a centre overseas acceptable to the Board of Study in Radiology.

Post MD training is at the expense of these doctors. In all categories recommendation of the Board of Study in Radiology is required for Board Certification as a specialist in General Radiology.

## **11. SUB SPECIALITY TRAINING**

Board of Study in Radiology recognizes the importance of introduction of subspecialties in the field of Radiology in Sri Lanka.

### **11.1 Subspecialities recommended by the board of study.**

Interventional Radiology  
Nuclear Imaging

Paediatric Radiology  
Neuroradiology  
Trauma and Musculoskeletal Radiology  
Uroradiology  
Oncoradiology  
Chest Radiology

This list is subjected to change, according to the requirements of the country.

### **11.2 Selection of candidates**

11.2.1 Selection of candidates may depend on the availability of the posts.

11.2.2 The candidates who entered the radiology training programme up to October 2007 are eligible to select a subspeciality of their choice after Board Certification as General Radiologists.

11.2.3 The candidates who enter the radiology training programme after October 2007 may select a subspeciality upon successful completion of MD Radiology Part II examination if they so desire, prior to Board Certification. Selection for subspeciality training in these candidates shall be based on the order of merit designed according to PGIM guidelines and also on the availability as decided by the Board at that time.

11.2.4 Age of the candidate shall not be more than 50 yrs.

11.2.5 Once a sub speciality is selected, the selected field cannot be changed unless for medical reasons.

### **11.3 Syllabus**

Syllabus shall be formulated by the trainers and the Board of Study in Radiology

#### 11.4 Training.

- 11.4.1 A candidate of category 11.2.2 shall undergo and successfully complete 12 months of training in a subspecialty, at a centre/s approved by the Board of Study in Radiology, to be recognized to practice a subspecialty.
- 11.4.2 Candidates of category in 11.2.3 shall undergo 12 months of post MD training in General Radiology in Sri Lanka, 12 months of post MD training in General Radiology overseas and 12 months of subspecialty training locally or overseas in a centre/s approved by the Board of Study in Radiology.
- 11.4.3 Minimum of 6 months of training in a centre abroad is required for both categories.
- 11.4.4 Additional 6 months of local training in the sub speciality is required prior to overseas training.

#### 11.5 Board Certification

Board certification of a candidate shall be as a **General Radiologist with a special interest in the particular sub speciality.**

After board certification is granted as a ‘General Radiologist with a special interest in the particular sub speciality’, decision to revert back to the position of ‘General Radiologist’ is only subjected to the approval by the Board of Study in Radiology and Board of Management, PGIM, who will entertain such requests only on medical grounds.

There should not be any difference in salaries, allowances, or promotional scheme for sub speciality radiologists as compared to the General Radiologists.

#### 12. INTERPRETATION AND AMENDMENTS

These regulations may be changed from time to time at the discretion of the Board of Study in Radiology.

The Board of Management of the PGIM on the recommendations of the Board of Study in Radiology reserves the right to modify, alter or totally change any of the rules and regulations. In the event such modifications alterations or total changes are made, the new rules and regulations will apply.

In the interpretation of the rules and regulations embodied in this prospectus, the Board of Management of the Postgraduate Institute of Medicine reserves the right to be the final authority to give rulings on the interpretation of any rule or regulation or any other matter contained in this prospectus and such rulings of the Board of Management would be considered as final.

#### 13. GENERAL REGULATIONS OF THE PGIM

General Regulations of the PGIM which are applicable to the postgraduate trainees on all courses conducted by the PGIM are in a separate booklet. All trainees are expected to buy a copy and make themselves familiar with the General Regulations in addition to the specific regulations in this booklet.

**PART 2**  
**Curriculum for MD in Radiology**

**1. Overview**

- 1.1 A major component of training in radiology is achieved by the apprenticeship system, with the trainee undertaking an increasing number of radiological tasks. Each component of the training scheme will have a clearly defined structure with supervision of the trainee by a designated trainer.
- 1.2 Most of the topics which will consist of each year of training are given under each subject area.
  - 1.2.1 The syllabus with the subject areas and sub topics will be reviewed from time to time as practice changes and newer techniques are introduced.
  - 1.2.2 The number of hours required for each topic or subject area will be decided by the Board of study or the committee appointed by the Board of study for the purpose.
  - 1.2.3 All the training centres will offer training according to the syllabus.
  - 1.2.4 If any of the training components are not available at the training centre, the course coordinator of the training centre will arrange a schedule of rotation to a recognized training center where such facilities are available.
  - 1.2.5 If they are not available in Sri Lanka, an attempt should be made to learn them during the year of training overseas.
  - 1.2.6 Theoretical knowledge of all the components of the syllabus should be acquired before sitting the MD (Radiology) Part I and Part II examinations.
- 1.3 The trainee should at all times be aware of his / her responsibility to the patient.

- 1.4 The trainee shall be required to develop basic skills in research methodology necessary to evaluate critically and to perform research under appropriate guidance. An appreciation of the effective application of research findings in everyday practice will also be required.
- 1.5 Log books case record files or portfolios will be instituted and used for documenting the degree of experience and skill attained. Guidelines for preparation of the log-book or case record file will be given below.
- 1.6 Individual progress will be appraised periodically on the form for appraisal of postgraduate trainees drafted by the Board of Study in Radiology.
- 1.6.1 The **appraisal** form shall be made available to all trainees and trainers of training centres at the commencement of the course.
- 1.6.2 The Board recommends that the designated supervisor and an external assessor such as a trainer from another training centre be involved in the appraisal of trainees.
- 1.6.3 The supervisors shall forward the said forms of trainees to the Board of Study in Radiology at the end of each appraisal.

### 1.5.1 Log Book / case record file

- (a) The Board of Study in Radiology has decided that log books should be maintained by the first year trainees in Radiology to record the procedures they have performed.
- (b) The second and third year trainees shall maintain case record files.
- (c) The Radiological investigations performed by the trainees, should be entered in the book/ file maintained by the trainee.

- (d) All the investigations should be legibly entered in the book/ file (with the details given below) and the entries should be certified by trainers with their comments, grading and signature.
- (e) It is in the best interest of the trainee to keep the log book or case record file well compiled, since it may be called for by the Board of Study in Radiology to evaluate the adequacy of the practical training in radiology the trainees receive.
- (f) It should be available for the appraisal evaluation committee for perusal in order to form the basis for allowing the trainee to proceed to the next year or sit for the MD Radiology Part I or Part II examination.
- (g) Trainees are required to procure a “Box file” and obtain the necessary A4 paper for their log books or case records files.

Please insert “dividers” in the box file to separate the investigations into various body systems. Within a particular body system, all examinations of the same type should be filed consecutively. An index should be maintained for each type of investigation. Trainers are also expected to initial the investigations they have assessed on this page. A column should be provided for this purpose.

### 1.5.2 Log book

- (a) Format to be followed
- The following particulars should be entered for each investigation.
1. Institution.
  2. Date of examination
  3. Done alone/assisted Name of Assistant (if applicable)
  4. Patient details
    - i. Name
    - ii. Age
    - iii. Sex
    - iv. BHT/Clinic No

- v. Ward/Clinic
  - vi. Consultant
  - vii. Address of patient.
5. Relevant clinical history
  6. Indication for the investigation
  7. Consent of the patient or guardian
  8. Salient Procedural details including
    - equipment
    - premedication
    - Analgesia / Anaesthesia
    - Consumables
    - Contrast media
    - Images obtained
  9. Complications, if any and treatment given
  10. How could the examinations have been improved (if applicable).
  11. Lessons learnt
  12. Report
  13. Supervisor's / trainer's Name-
  14. Supervisor's comments
    - grading
    - signature
    - date
  15. Follow up and feed back
- (b) An attempt will be made by supervisors to grade the procedure performed on the following basis.
- A - Excellent (Nothing found wanting)
  - B - Good (There is some room for improvement)
  - C - Satisfactory (There is more room for improvement)
  - D - Fair (There is a lot of room for improvement)
  - E - Poor (Needs considerable improvement)
  - F - Bad (All aspects found wanting)

The purpose of this grading is to assess whether the skills of the trainees in conducting the radiological procedures show an improvement with time.

### 1.5.3 Case record file

- (a) The second and third year trainees shall maintain a case record file.
- (b) The format to be followed
  - i. Patient's details  
Name, age, sex, Ward/Clinic, BHT /Clinic- No
  - ii. Indication for the investigation
  - iii. Relevant clinical details and clinical diagnosis
  - iv. Radiological report
  - v. Radiological diagnosis
  - vi. Follow up or feed back
  - vii. Histology / final diagnosis
  - viii. Discussion
- (c) The Radiological report written by the trainee should be reviewed and a grading should be given by the trainer as in the case of log book
- (d) The cases performed by the trainee should be filed and kept for submissions at the appraisals conducted by the PGIM periodically.

### 1.5.4 Portfolio

Trainees should maintain a portfolio to show evidence for the following.

- CPD programmes (lectures, seminars, radiological clinic, meetings academic sessions) attended. Details of venue, date, time, speaker, organising body and a short account of what the trainee learnt should be recorded
- Abstracts of papers presented or copies of publications
- Copies of reports written certified by the supervisor - not necessary
- Copies of letters of reference certified by the supervisor
- Evidence of having followed extra training programmes

## 2 The first year of training

The first year of training provides the trainees with their first opportunity to learn radiological skills.

## 2.1 Objectives

At the end of the first year, the trainee should:

- (a) feel confident in his / her choice of radiology as a career
- (b) have mastered the basic sciences of Radiology to the level of the MD Radiology Part I
- (c) be familiar with the concepts and terminology of diagnostic and interventional Radiology
- (d) understand the role and usefulness of the various diagnostic and interventional techniques and have learnt and performed radiological procedures.
- (e) understand the responsibilities of a Radiologist to the patient
- (f) be familiar with the various contrast media and drugs including sedation and monitoring used by Radiologists in day to day practice, and be aware of indications, contraindications for investigations, dosages of drugs and the management of reactions and complications
- (g) be fully competent in cardio-pulmonary resuscitation and should have attended a CPR programme.
- (h) should acquire interpreting, reporting and communication skills
- (i) understand the principles of radiation protection and be familiar with the legal requirements for protection against ionising radiation. The trainee should also demonstrate that he / she is capable of safe radiological practice.
- (j) be familiar with safety requirements for imaging with non-ionising radiation

## 3 Syllabus for MD Radiology Part I

Basic sciences relevant to radiology are Radiation Physics, Radiological Anatomy, Radiological techniques, Radiography, Contrast media, Radiopharmaceuticals and Drugs.

An orientation programme on basic sciences relevant to Radiology will be conducted during the first 3 months of the course.

The knowledge required in basic sciences to pass the MD Radiology Part I examination has been defined by the Board of Study in Radiology, Post Graduate Institute of Medicine

### 3.1 Physics

The Board of Study in Radiology recommends formal lectures in physics prior to attempting the Radiology (Part I) examination. The teaching will be primarily by medical physicists and lecturers in physics, supplemented by Board certified Radiologists assigned for the purpose.

Candidates for Radiology (Part I) Examination will be expected to supplement these lectures with a substantial amount of self directed learning.

In addition, the candidate is expected to be familiar with the basic practical aspects of radiation physics and radiation safety, acquired through practical work.

#### 3.1.1 Objectives

- (a) Physical basis of radiology is required to understand the technology, techniques, hazards and for a comparative study of different imaging modalities available to the radiology profession.
- (b) A mathematical approach is not expected. However a knowledge of numerical quantities used in different areas is required.
- (c) Basic knowledge of physics of electricity, magnetism, sound and optics is assumed. Very elementary knowledge in the mathematics of exponential, logarithmic and trigonometric functions are needed.

#### 3.1.2 Contents

- a) Ionising radiation:  
Electromagnetic spectrum, general properties of x and gamma rays, wave length, energy, inverse square law. Interaction of x and

gamma rays with matter, coherent, Compton and photoelectric interactions, attenuation, absorption and scatter.

Radioactivity, Radioisotopes, alpha, beta and gamma radiation. Exponential law of radioactivity. Units of activity.

**(b) Production of x-rays:**

Principles of the x-ray tube. (Kv, mA, focal spot, tube rating, filtration.)

**(c) The x-ray image:**

- i. Geometric factors, magnification, effect of focal spot size, geometric unsharpness. Conventional film/screen systems, basic structure, characteristic curve, latitude, density, speed, contrast and how to influence and manipulate it.
- ii. Basic principles and effects of film processing. Basic principles of image intensification. Operator controlled variables. Quality control in Radiology.
- iii. Principles of mammography with emphasis on optimum kilovoltage and tube design, anode tubes used, film screen combinations, patient doses and contrast improvement.
- iv. Principles of Computerized Tomography, particularly CT with emphasis on operator controlled variables, eg. slice thickness, partial volume effect, field size and effect on resolution, data storage and display, pixel, voxel, window width and level, and grey scale.
- v. Basic principles of digital imaging and picture archiving and communication systems (PACS)

**(d) Principles of diagnostic ultrasound**

- i. The basic components of an ultrasound system.
- ii. Types of transducers and the production of ultrasound with emphasis on operator controlled variables.

- iii. The frequencies of medical ultrasound.
- iv. The interaction of ultrasound with tissue, including biological effects.
- v. The basic principles of pulsed, continuous wave and colour doppler ultrasound.
- vi. Recognition and explanation of common artefacts.

**(e) Magnetic resonance imaging**

- i. Basic principles and origin of the signal.
- ii. Principles of basic sequences in clinical use. Concept of T1, T2, proton density and effect of motion on signal
- iii. Biological hazards to patients, staff and public.

**(f) Radionuclide imaging**

- i. Gamma camera, radiopharmaceuticals, static and dynamic imaging
- ii. Handling of radionuclides
- iii. Introduction to SPECT and PET.

**(g) Radiation protection:**

- i. Regulations for the use of ionising radiation, protection of users, patients and general public. ICRP (International Code of Radiation Protection)
- ii. Genetic and somatic effects of ionising radiation. Risks and benefits of radiation.
- iii. Principles of radiation dose assessment and limitation.

## 3.2 RADIOLOGICAL ANATOMY

- 3.2.1 The Board of Study in Radiology recommends formal lectures in radiological anatomy prior to attempting the Radiology Part I examination. The teaching will be by board certified radiologists assigned for the purpose.
- 3.2.2 Candidates for the Radiology (Part I) examination will be expected to supplement these lectures with a substantial amount of self directed learning.
- 3.2.3 The knowledge of anatomy should be enhanced by supervised reporting of all the imaging techniques.
- 3.2.4 The trainee should be familiar with the basic anatomy relevant to all the common radiological examinations in the modalities currently available for imaging, including the cross-sectional anatomy.
- 3.2.5 A knowledge of normal anatomical variations will be expected.
- 3.2.6 Trainees should know the normal appearances in the growing child including epiphyseal ossification, *but need not memorise the dates of appearance of the ossification centres.*
- 3.2.7 Syllabus for Radiological anatomy For part 1 examination

The following systems / subjects are included

- (a) The skull including the facial bones, mandible, teeth, lacrimal apparatus, eye and ear.
- (b) The remainder of the skeletal system.
- (c) The respiratory system.

- (d) The gastro-intestinal tract and biliary system.
- (e) The urinary tract
- (f) The cardiovascular system
- (g) The lymphatic system
- (h) The female pelvic organs, including the pregnant uterus
- (i) The anatomy and ultrasound dating of the normal foetus.
- (j) The female breast
- (k) The male genital tract
- (l) The nervous system.
- (m) The endocrine system

## 3.3 Radiological techniques and procedures

- 3.3.1 The Board of Study in Radiology recommends formal lectures in radiological techniques prior to attempting the Radiology (Part I) examination.
- 3.3.2 The teaching will be by board certified Radiologists assigned for the purpose.
- 3.3.3 In the first year of training, the trainee must begin to acquire practical skills that will eventually be required of a board certified radiologist.
- 3.3.4 In the subsequent years, most of the techniques and procedures listed will have been performed by the trainee under the supervision of a trainer. The trainees are encouraged to carry out as many procedures as possible initially under supervision and later on by themselves, once they are competent.
- 3.3.5 In the case of plain radiography, trainees should be familiar with the technique even if they do not perform the procedure personally.

### 3.3.6 In all the investigations, the trainee should know the following:

- The principle indications and contra-indications
- Patient preparation.
- Radiographic apparatus used
- Contrast media used
- Outline of technique with main variations
- Principle complications and their treatment.

### 3.3.7 The syllabus for the Radiological techniques

#### (a) Respiratory system

- plain radiography
- computed tomography
- ultrasound
- radionuclide imaging
- magnetic resonance imaging
- interventional procedures or biopsies
- angiography

#### (b) Gastro-intestinal and Hepatobiliary System

- plain radiography
- transabdominal ultrasound
- computed tomography
- contrast studies
- magnetic resonance imaging
- angiography
- radionuclide imaging
- endoscopic ultrasound
- interventional procedures or biopsies

#### (c) Urinary system

- plain radiography
- transabdominal ultrasound
- contrast studies
- computed tomography
- radionuclide imaging
- angiography
- magnetic resonance imaging

- endoluminal ultrasound
- interventional procedures or biopsies

#### (d) Nervous system

- plain radiography
- computed tomography
- magnetic resonance imaging (brain & spine)
- radionuclide imaging
- ultrasound including carotid Doppler
- angiography (conventional), CT angiography and magnetic resonance angiography
- Contrast studies

#### (e) Musculoskeletal system

- plain radiography
- Ultrasonography
- Radionuclide imaging
- computed tomography
- magnetic resonance imaging
- contrast studies
- angiography

#### (f) Cardiovascular system

##### i. Vascular & lymphatic system

- Percutaneous Diagnostic arteriography / venography / lymphography
- Vascular ultrasound
- CT /MR angiography,
- interventional procedures
- radionuclide imaging.

##### ii. Cardiac

- plain radiography
- radionuclide imaging
- computed tomography

- magnetic resonance imaging
- angiography
- interventional procedures

**(g) Reproductive system**

**i. Female**

- transabdominal ultrasound (including obstetric)
- transvaginal ultrasound
- computed tomography
- magnetic resonance imaging
- hysteroscopy

**ii. Male**

- scrotal ultrasound
- computed tomography
- magnetic resonance imaging
- contrast studies

**(h) Paediatrics**

- plain radiography
- ultrasound
- contrast examinations
- radionuclide imaging
- computed tomography magnetic resonance imaging with special reference to technique, sedation and anaesthesia.

**(i) E.N.T. / Eye / Teeth and oral cavity / Neck**

- plain radiography
- ultrasonography
- contrast studies
- computed tomography
- magnetic resonance imaging
- angiography

**(j) Breast**

- mammography
- ultrasound
- interventional Procedures
- Computed Tomography
- Magnetic Resonance Imaging
- Isotope studies

**3.4 Radiography**

3.4.1 Board of study recommends lectures in radiography prior to attempting the MD radiology part I examination

3.4.2 The lectures will be conducted by the radiographers assigned by the Board of study for the purpose.

3.4.3 Candidates for the Radiology (Part I) examination will be expected to supplement these lectures with a substantial amount of self directed learning and watching and supervising the radiographs being performed by the radiographers at work.

3.4.4 In addition, the candidate is expected to be familiar with the practical aspects of the radiographic procedures, acquired through a formal training programme supervised by trainers

3.4.5 trainees should acquire knowledge on commonly performed radiographs with relevance to indications, positioning, centering points and x-ray beam direction.

3.4.6 Trainees should develop an awareness on less commonly performed but clinically important radiographs with relevance to above mentioned details.

**3.5 Contrast media, Radiopharmaceuticals and Drugs**

**3.5.1 Contrast media**

- (a) Knowledge of contrast media used in all the imaging modalities
- (b) Contrast media should be studied under the following topics
  - i. Basic chemical composition of contrast media
  - ii. iodinated contrast media (Ionic/Non Ionic)
  - iii. Baso<sub>4</sub> as a contrast medium
  - iv. Hyperosmolar vs low osmolar contrast media
  - v. Selection of contrast media for all radiological investigations
  - vi. Adverse reactions to contrast media and treatment
  - vii. MRI contrast media
  - viii. Ultrasound contrast media

### 3.5.2 Radiopharmaceuticals

Knowledge on following areas is required

- (a) Physical properties of commonly used agents
- (b) Knowledge of commonly used radiopharmaceuticals and their applications
- (c) Application of other less commonly used radiopharmaceuticals

### 3.5.3 Drugs

Knowledge of commonly used drugs in Radiological practice is required with reference to the dosage, indications, contraindications their complications and treatment

## 3.6. Interpretative / report writing and communication skills

In the first year of training, the trainee must begin to acquire some of the interpretative, reporting and communication skills that will eventually be required of a Consultant Radiologist.

### 3.6.1 Interpretative and report writing skills

The trainee should endeavour to have interpreted and formally reported the following under the supervision of a trainer.

- (a) all procedures and techniques performed by the trainee.
- (b) radiographs taken for trauma
- (c) urgent in-patient and outpatient radiographs
- (d) reporting of a range of non-urgent radiographs
- (e) reporting of procedures not performed by the trainee

### 3.6.2 Communication skills

- (a) presentation at journal club meetings
- (b) presentation or participation at clinico radiological meetings

## 4. MD Radiology Part I examination

### Objectives

On completion of MD Part I training, the trainee should:

- (a) Have a detailed knowledge of anatomy and normal variants relevant to radiological examinations.
- (b) Have a knowledge of radiation protection sufficient to:
  - (i) understand current official radiation protection guidelines and regulations, and to be able to explain those guidelines and regulations to medical and radiographic staff as well as to patients.
  - (ii) comprehend those practical measures which should be in practice in a department of Radiology.
  - (iii) understand the relative risks of radiation.
- (c) Have sufficient knowledge of x-radiation and diagnostic x-ray equipment to be able to understand the interaction of x-rays on tissues and the factors that affect image quality, in order to be able to discuss these subjects with radiographers and clinicians, to recognize artifacts and be able to use equipment correctly.

- (d) Have sufficient knowledge of the basic principles of ultrasound, mammography, CT, MRI and radionuclide imaging, to be able to understand the nature of the radiation/sound waves etc., used in these techniques and to comprehend the basis on which various equipment work.
- (e) Know sufficient basic radiography to demonstrate an understanding of the standard radiographic projections relating to the regions outlined in the radiological anatomy syllabus, and to be able to give practical advice on improving the quality of the images obtained.
- (f) Have a knowledge of the techniques, including contrast media, drugs, equipment and consumables used in those techniques which a candidate is expected to have carried out personally on his/her own or observed by the trainee during the first year of training in radiology.
- (g) Have a basic knowledge of and have observed the interventional radiological procedures.

( Other details of the MD Radiology examination appear on the part I of this prospectus)

## 5.0 Second and Third years of Training

During the second and third years of training trainee should receive structured training in all the constituent specialties of Radiology. At the end of third year, a trainee will usually have had the opportunity to have sat and passed the MD Radiology part II, an examination that provides evidence of competence as a result of broad basic training in Radiology.

Each component of the training programme should have a clearly defined structure.

There shall be a designated supervisor who shall assume overall responsibility for the training given during that period including the techniques performed, reports issued by the trainee and guidance on development of attitudes, punctuality and attendance.

## 5.1 Objectives

### 5.1.1 Knowledge

The trainee will attain an appropriate level of knowledge in:

- clinical conditions in which Radiology has a role in the diagnosis and / or treatment
- applied physiology and pathology where it contributes to a better understanding of utilization of radiological investigations and interpretation of radiological signs.
- those aspects of clinical medicine and pathology which are essential to the safe and effective conduct of interventional procedures.
- current trends and recent advances in Radiology

### 5.1.2 Skills

The trainee will develop skills, as part of his/ her general professional development, in:

1. clinical standards
2. quality control standards
3. communication with patients and colleagues.
4. team work
5. management of patients
6. medical ethics
7. teaching
8. clinical audit and research
9. Attitudes

### 5.1.3 Communication and presentation skills

These aspects of training will require attendance at in house and / or external meetings and courses

### 5.3 Syllabus for MD Radiology part II

The programme for the second and third year period will consist of practical training which should give appropriate experience in all the imaging modalities.

General radiology forms the largest part of the syllabus. A knowledge of general radiology is expected, without a highly specialized knowledge of any particular field.

5.4.1 General Radiology comprises a mixture of all forms of radiological practice which are normally encountered in most Teaching, General, Base and District Hospitals.

#### 5.4.2 System based specialities

Vascular	Musculoskeletal
Cardiac	Gastro-intestinal
Chest	Uroradiology
ENT/Dental/Eye	Obstetrics & Gynaecology
Breast	Neuroradiology

#### 5.4.3 Technique based specialities

Ultrasonography  
Magnetic Resonance Imaging  
Computed Tomography  
Interventional Radiology  
Nuclear Imaging

#### 5.4.4 Disease based specialities

Oncology  
Trauma

#### 5.4.5 Age based specialities

Paediatrics  
Geriatrics

5.4.6 In many training centres it will be possible for trainees to receive training in more than one speciality at the same time and there may also be opportunities to link certain specialities (e.g. CT and

Neuroradiology). Such arrangements will usually be necessary so as to allow all specialties to be covered within the second and third years of training. Because of the complexities of such rotations and the inherent differences between different training schemes, the Board empowers individual training centres to determine the order of rotations and their duration. The course coordinator shall arrange such necessary rotations, with the approval of the Board of Study.

5.4.7 The trainee will participate in an appropriate on-call roster in which he/she will be responsible to a designated trainer/ on call trainer.

### 5.5 Syllabus in detail for MD Radiology part II

The following sections will delineate the knowledge that will be acquired during the second and third year of training.

#### 5.6 General Radiology

##### 5.6.1 Objectives in General Radiology

- participate in reporting plain radiographs which are done during the general throughput of the normal working day of a Radiology Department.
- Perform any routine radiological procedures that might be booked during a normal working day.
- Have a knowledge of the current legislation regarding radiation protection

##### 5.6.2 Chest

- consolidation of knowledge of respiratory anatomy and clinical practice relevant to radiology.
- Reporting plain radiographs performed to show chest diseases.
- Obtaining experience in performing and reporting computed tomography scans of the chest.

- Obtaining experience in image guided biopsy of chest lesions & of drainage procedures.
- Obtaining experience in the application of nuclear medicine to imaging chest pathology with particular experience in reporting radionuclide lung scans.

### **5.6.3 Gastro-intestinal, Hepato biliary, Pancreas and spleen**

- consolidation of knowledge of the gastrointestinal anatomy and clinical practice relevant to radiology.
- Reporting plain radiographs performed to show gastro-intestinal disease.
- Obtaining practical experience in the application of transabdominal ultrasonography to the gastro-intestinal system.
- Obtaining practical experience in contrast studies
- Obtaining experience in performing and reporting computed tomography of the gastro-intestinal tract.
- Familiarity with the current application of nuclear medicine to the gastro-intestinal tract.
- Familiarity with the relevant application of the following interventional procedures:  
ultrasound / computed tomography guided biopsy percutaneous biliary drainage/ stenting
- awareness of the application of angiography and vascular interventional techniques
- ERCP and other diagnostic and therapeutic endoscopic techniques
- magnetic resonance imaging applied to the gastro-intestinal system.
- endoluminal ultrasound, percutaneous gastrostomy.

### **5.6.4 Uroradiology**

- consolidation of knowledge of urinary tract anatomy and clinical practice relevant to clinical radiology.

- reporting plain radiographs performed to show urinary tract disease
- obtaining practical experience in the application of transabdominal ultrasound and computed tomography in imaging of the urinary tract.
- obtaining experience in performing and reporting the contrast medium studies
- obtaining practical experience in percutaneous renal puncture as a prelude to diagnostic and interventional procedures
- awareness of the application of angiography and vascular interventional techniques
- familiarity with the current application of nuclear imaging to urinary tract imaging
- endorectal ultrasound
- magnetic resonance imaging applied to the urinary tract.
- percutaneous ureteric stent placement
- percutaneous nephrolithotomy
- lithotripsy
- urodynamics

### **5.6.5 Neuroradiology**

- consolidation of knowledge of neuroanatomy and neurological clinical practice relevant to clinical radiology.
- Reporting plain radiographs performed in the investigation of neurological disorders.
- Obtaining experience in performing and reporting computed tomography of brain.
- Obtaining experience in performing and reporting magnetic resonance imaging of brain and spine.
- Familiarity with the applications of magnetic resonance angiography in imaging the cerebral vascular system.
- Obtaining experience in performing and interpreting carotid ultrasound including Doppler.
- Obtaining experience in performing and reporting cerebral angiograms.

- Familiarity with the applications of nuclear medicine to neuro-imaging.
- Obtaining experience in performing and reporting myelogram procedures.
- Familiarity with interventional neuroradiological procedures.

### 5.6.6 Vascular

#### (a) Ateriography / Venography/ vascular Interventional Procedures

- consolidation of knowledge of vascular anatomy and clinical practice relevant to Radiology.
- Be confident with the indications, contraindications, pre-procedure preparation, patient monitoring during procedures and post-procedure patient care.
- confident with procedure and post-procedure complications and their management. Improving practical experience of vascular imaging.
- Performing and reporting the following procedures:
  - o lower limb angiogram
  - o arch aortogram
  - o abdominal aortogram
  - o selective angiogram (e.g. hepatic, renal, cerebral)
- alternative arterial access
- performing and reporting upper limb and lower limb venography
- assisting in the performance of the following interventional procedures, such as Angioplasty, embolisation procedures, thrombolysis, stenting and filter insertion

#### (b) Other vascular imaging techniques

- Doppler ultrasonography
- CT angiography
- Magnetic resonance angiography
- Nuclear imaging

#### (c) Cardiac

- knowledge of cardiac anatomy and clinical practice relevant to Radiology.
- reporting plain radiographs performed to show cardiac disease.
- familiarity with the application of the following techniques:
  - nuclear medicine
  - computed tomography
  - magnetic resonance angiography

### 5.6.7 Musculoskeletal

- knowledge of musculoskeletal anatomy and current clinical practice relevant to radiology.
- reporting plain radiographs relevant to the diagnosis of disorders of the musculoskeletal system.
- Obtaining experience in performing and reporting Ultrasonography, computed Tomography and radionuclide scans of the musculoskeletal system.
- image guided biopsy.
- obtaining experience in performing and reporting, magnetic resonance imaging of the musculoskeletal system.

### 5.6.8 Obstetrics and Gynaecology

- consolidation of knowledge of obstetric and gynaecological anatomy and clinical practice relevant to clinical radiology.
- Obtaining practical experience of the application of transabdominal and endovaginal ultrasound in:
  - obstetrics
  - gynaecology
- Hysterosalpingogram - appearance of pathologies causing subfertility.
- Obtaining experience in performing and reporting computed tomography scans in gynaecological disorders, and to be aware of all obstetric applications (e.g. assessing pelvic dimensions)
- Awareness of the applications of angiography and vascular interventional techniques.

- Magnetic resonance imaging applied to gynaecological disorders.

#### 5.6.9 **Breast**

- Understanding the principles of current practice in breast imaging and breast cancer screening.
- Knowledge of breast pathology and clinical practice relevant to Radiology.
- Obtaining experience in mammographic reporting
- performing and reporting Breast ultrasound
- Awareness of the proper application of imaging techniques to this specialty, breast biopsy and localisation techniques.

#### 5.6.10. **E.N.T.**

- Consolidation of knowledge of ENT anatomy and clinical practice relevant to Radiology
- reporting plain radiographs performed to show ENT disease.
- obtaining practical experience of relevant contrast examinations
- obtaining experience of performing and reporting computed tomography.
- an awareness of the proper application of other imaging techniques to this specialty.
- Obtaining experience of performing and reporting magnetic resonance scans.

#### 5.6.11 **Head and neck / thyroid**

- Secure knowledge in anatomy and application of appropriate imaging in this region , including anatomy of the supra and infra hyoid neck.
- Knowledge of common pathology in head and neck region ( eg- carotid stenosis, tumours in the neck including thyroid )
- experience in invasive procedures such as biopsies

#### 5.6.12 **Male genital tract**

- Secure knowledge of anatomy and current practice of imaging in the male genital tract
- Knowledge of testicular pathology and application of imaging
- Knowledge of transrectal anatomy and pathology and TRUS biopsy of prostate

#### 5.6.13 **Ultrasonography**

- Consolidation of knowledge of the technical aspects and anatomy of ultrasound relevant to optimising image quality
- Obtaining practical experience in performing transabdominal ultrasound and ultrasound of small parts, transcranial ultrasonography.
- Familiarity with the practical applications of doppler ultrasound imaging.
- Obtaining practical experience in ultrasound guided interventional procedures (e.g. biopsy and drainage) endoluminal ultrasound, ultrasound of the eye

#### 5.6.14 **Nuclear Medicine**

- A secure knowledge of the relevant aspects of current legislation regarding the administration of radiopharmaceuticals.
- Knowledge of the technical aspects of nuclear medicine relevant to optimizing image quality.
- Knowledge of radiopharmaceuticals currently available for the purposes of imaging organs and locating inflammatory collections, tumours and site of haemorrhages.
- Experience of reporting radionuclide investigations with particular experience in kidney, bone, lung.

#### 5.6.15 **Computed Tomography**

- Consolidation of knowledge of the technical aspects of performing a computed tomographic scan, including the use of contrast media and knowledge of anatomy as visualized on computed tomography.
- Practical experience in performing and reporting computed tomography.

- Practical experience in performing computed tomography guided procedures (e.g. biopsy and drainage).
- CT angiography

#### 5.6.16 **Magnetic Resonance Imaging**

- Understand the safety aspects of magnetic resonance imaging.
- Knowledge of the basic physical principles of magnetic resonance imaging, including the use of contrast media.
- Knowledge of anatomy and application of different pulse sequences.
- Experience in performing and reporting magnetic resonance scans

#### 5.6.17 **Interventional Radiology**

- Familiarity with the equipment and techniques used in vascular, hepato-biliary, and renal interventional techniques.
- Familiarity with the indications, contraindications, pre-procedure preparation patient monitoring during the procedure and post-procedure patient care.
- Familiarity with procedure and post procedure complications and their management.
- Assisting and obtaining practical experience in the performance of the interventional procedures, familiarity with advanced interventional procedures.

#### 5.6.18 **Oncology**

- Knowledge of clinical practice relevant to radiology.
- Familiarity with tumour staging nomenclature
- Reporting plain radiographs performed to assess these patients
- Obtaining practical experience in trans-abdominal ultrasound, nuclear medicine, computed tomography, MRI and interventional procedures in oncological staging, management and monitoring the response of tumours to therapy.
- Familiarity with the radiological manifestations of complications which may occur in tumour management.

#### 5.6.19 **Trauma**

- Knowledge of current clinical practice relevant to radiology
- Knowledge of anatomical variants and normal anatomy which may mimic trauma

- Reporting plain radiographs performed to show trauma
- Obtaining practical experience of the proper application of other imaging techniques such as CT, MRI.

#### 5.6.20 **Paediatrics**

- Knowledge of paediatric anatomy and clinical practice relevant to Radiology
- Knowledge of disease entities specific to the paediatric age group and their clinical manifestations
- Reporting plain radiographs performed in the investigation of paediatric disorders.
- Obtaining practical experience in performing ultrasound in children
- Obtaining practical experience of routine contrast studies
- Obtaining practical experience in computed tomography and MRI
- Familiarity with the practical management of intussusception

#### 5.6.21 **Geriatric**

- Knowledge of pathology related to ageing
- Reporting plain radiographs performed on elderly patients.
- Performing routine contrast studies in elderly patients.
- Interpretation of CT, MRI with relevance to age related change.

### **6. MD Radiology part II examination**

#### **Objectives**

At the end of the third year the trainee should:

- have substantial experience of interpreting and reporting plain radiographs, CT, MRI and Nuclear imaging
- have acquired experience in performing and reporting the radiological procedures confidently
- be able to perform and give a provisional interpretation of standard emergency imaging procedures
- be able to advise clinicians on appropriate imaging algorithms for the investigation of standard clinical situations.
- be in a position to attempt the MD (Radiology) Part II examination.

## **7. Fourth and Fifth years of Training (Post MD)**

After successfully completing MD Radiology Part II examination, the trainee shall undergo one year of local and one year of overseas training in Radiology.

### **7.1 Post MD local training**

#### **7.1.1 Objectives**

- (a) Consolidate the knowledge and skills obtained at pre MD level
- (b) Further improve the attitudes of a trainee required to function as a specialist in Radiology in any part of the country.
- (c) Develop the ability of decision making which is an essential requirement for a specialist in Radiology
- (d) Acquire the necessary strengths to join the task of further improving the field of Radiology in the country

#### **7.1.2 programme for post MD local training**

The Board of study in Radiology shall decide on the post MD training to fulfill the above objectives

### **7.2 Post MD training overseas**

#### **7.2.1 Objectives**

- (a) Enhance the knowledge obtained locally
- (b) learn the global applications of Radiology and recent advances
- (c) Consolidate the skills by getting exposed to ideal standard of imaging.
- (d) improve the field of Radiology locally by applying such facets of knowledge and skills thus obtained

#### **7.2.2 programme for overseas training**

- Training at a center of excellence, approved by the Board of study in Radiology
- Type of training will be decided by the Board of study according to the prevailing regulations on post MD training and needs of the country
- Trainee should take an interest to make this opportunity to remedy the deficiencies experienced locally