

# HONG KONG COLLEGE OF RADIOLOGISTS

## GENERAL GUIDELINES ON BASIC TRAINING (RADIOLOGY)

### 1. General Aspects

1.1 In this document the following interpretation applies:

- *"Trainer"* = a Fellow of the Hong Kong College of Radiologists, or equivalent
- *"Trainee"* = a medical doctor registered as a trainee with the Hong Kong College of Radiologists
- *"Co-trainer"* = a radiologist other than a Fellow of the Hong Kong College of Radiologists, but approved by the Hong Kong College of Radiologists to provide training supervision to trainees under specified conditions. A Co-trainer has the role to supervise trainees on daily training activities but cannot replace the role of Trainers in the overall supervision for trainees throughout the training period. All Co-trainers of the training centre need to be vetted and approved by the College.

### 1.2 Objectives:

- (a) To gain comprehensive exposure to a broad spectrum of clinical specialties and the application of imaging modalities;
- (b) To acquire general radiological and radiation protection knowledge, skill and competence, with supervised responsibility for patient care;
- (c) To develop disciplined habit of reasoning and a logical approach to specific medical problems with respect to radiology;
- (d) To become acquainted with the updated practice and current literature on relevant subjects;
- (e) To be able to communicate with clinical colleagues and render appropriate recommendation on imaging investigation and patient management;
- (f) To be able to advise on the safest and most cost-effective means of arriving at a diagnosis, and to counsel against unnecessary imaging investigation.

1.3 This document will provide guidelines on the following:

- (a) Core knowledge
- (b) Training program
- (c) Training facilities
- (d) Radiology workload
- (e) Accountability

1.4 Hospitals to provide basic training must apply for accreditation by the College for

evaluation including visitation to confirm that the training program, facilities, radiology workload and other aspects are appropriate. For application as new training centres, the 'Working Principles for Accreditation of New Training Centres' would need to be observed and followed.

- 1.5 Training accreditation is in general considered on the basis of standalone training hospital, except in special circumstances as defined and approved by the College. A training hospital may be deficient in either clinical specialties or imaging modalities but such deficiencies should only form a minor portion of the workload. The trainees in such hospital need to have complementary rotations or attachments to other centres approved. The training facilities involved under such arrangement should satisfy the basic requirements for training purpose. The training arrangement including period of rotation or attachment, level of training involved, any on-call or emergency duty arrangement, leave arrangement, etc. should be submitted in details for approval by College. The training should at all-time be conducted under supervision by accredited trainer(s) or co-trainer(s). The principles of training supervision are delineated in the 'Working Principles for Accreditation of New Training Centres'.

## **2. Core Knowledge**

### **2.1 Basic sciences:**

- (a) Physical basis of image formation including conventional x-ray, computed tomography, radionuclide imaging, magnetic resonance, ultrasonography, and the principles of digital systems as applied to radiology
- (b) Medical physics
- (c) Radiation protection
- (d) Quality improvement and audit
- (e) Anatomy, physiology and techniques related to radiological procedures
- (f) Basic computer knowledge and applications
- (g) Basic pharmacological agents used in imaging
- (h) Professional attitude and medical ethics

### **2.2 Pathology and pathophysiology as related to diagnostic and interventional radiology.**

### **2.3 Current clinical practice.**

### **2.4 Clinical Radiology, including**

- (a) Organ or system based specialties
- (b) Age based specialties
- (c) Common interventional radiology procedures
- (d) Emergency radiology service

2.5 Medico-legal implications of radiological practice.

### **3. Training Program**

3.1 The College organizes centralized Fellowship Basic, Part I Anatomy Preparation, Fellowship Intermediate and Part IIB Preparation courses, as well as series of mandatory lectures, which should be attended by registered trainees.

3.2 The training department should provide relevant teaching in radiography, radiological anatomy & techniques, and clinical radiology to complement the centralized courses.

3.3 Hands on practical training for professional skill should be provided at each training department.

3.4 The trainer:trainee ratio should preferably be 1:1, and not worse than 1:2.

3.5 It is recommended that a nominated tutor should provide personal guidance and continuous assessment for a trainee.

3.6 Training logbooks are provided to trainees to record training activities received by them.

3.7 Plain film interpretation is an important facet of training. Supervised reporting of plain films catered to individual trainee for a reasonable period is required. More exposure and reporting of plain films in particular A&E films should be encouraged by the training centres. Trainees should be exposed to both normal and abnormal films in order to have comprehensive training.

3.8 Tutorial system should be in place and is preferably year round instead of solely preparatory for examinations.

3.9 Clinico-Radiological Conferences (CRC)

- (a) Attendance of CRC is an important aspect of training in clinical management of clinical problems: *Attendance of at least 1 CRC per week.*
- (b) Case presentation by trainee provides good training.
- (c) Trainees are encouraged to attend CRC and the training department may take note of this point in the scheduling of the CRC.
- (d) CRC attendance and case presentation should be recorded in the logbooks.
- (e) CRC should take place in an environment that encourages the interchange of knowledge and experience among the participating disciplines.

3.10 On-call duties are important for the training of emergency imaging management

and should be included as part of the training program and at least once in a week on average.

- 3.11 Angiography and interventional radiology, being invasive, may be observed or assisted rather than independently performed at this stage. Exposure however is necessary.
- 3.12 Regular interaction between trainee and immediate supervisor is essential to prompt timely modification of individual training program. This should be documented at regular intervals in the trainee's logbook, and significant events should be brought to the attention of the College.
- 3.13 There must be regular written evaluation of the trainees, to verify that appropriate training has been undertaken during the specified period under the supervision of trainers, and to evaluate the knowledge gained and the level achieved.
- 3.14 The following are some of the measures of the quality of a training program:
  - (a) performance of a department's trainees in the College examinations
  - (b) research and audit projects
  - (c) publication in professional literature
  - (d) lectures and presentation at local, regional or international professional conferences
  - (e) contribution to College, regional or international professional activities
  - (f) output of radiology specialists from the centre
  - (g) Dormant programs without intake of trainees should be avoided.
- 3.15 Training centres are encouraged to arrange their trainees to rotate to other accredited training centres with an aim to broaden the exposure of their trainees and/or to supplement its deficit. Please see point 1.5 for submitting logistics of arrangement to College for pre-approval before the rotation program commences.

#### **4. Training Facilities**

- 4.1 The hospital administration should be supportive of training in Radiology.
- 4.2 A comprehensive scope of clinical services is available in the hospital.
- 4.3 A full range of imaging modalities is available in the hospital. (See point 1.5 if complementary rotation or attachment of trainees is necessary to make up for deficiencies in a training centre.)
- 4.4 The training department must provide adequate space, equipment and other pertinent facilities to ensure an effective educational experience for the trainees

in Radiology, including

- (a) Departmental library with current books and journals on Radiology, readily available during off-hours and weekends
- (b) Radiology image / film museum, and related training materials like videotapes, CDR, slides, computer programs etc. The teaching file should be indexed, coded and currently maintained
- (c) Study room
- (d) Internet access to online radiological resources such as journals, image libraries & case studies

4.5 The trainees must have ready access to a major medical library.

4.6 There should be ongoing research, audit and teaching activities in a training department.

4.7 Medical physics support to oversee the following areas for the department,

- (a) Radiation safety and protection
- (b) Equipment quality assurance

## 5. Radiology Workload

5.1 A minimum amount of regular workload is necessary for a trainee to be exposed to the spectrum of normal variants and pathology, and to have sufficient hands-on experience.

5.2 The minimum annual workload of a training hospital:

<b>Modality</b>	<b>RIS Coding</b>	<b>No. of examinations</b>
Plain radiographs	1101 – 1799	50,000
GI & other contrast studies	2101 – 2499	300
Ultrasonography	3101 – 3599	3,000
Mammography	5001 – 5099	500
Radionuclide imaging & PET	9001 – 9999 & 9C13 – 9PCT	500
Angiography & Interventional radiology	6101-7599	500
CT	4101 – 4499	7,000
MRI	8101 – 8699	2,500

5.3 The minimum workload of a trainee for the 3 years of basic radiology training:

<b>Activity</b>	<b>RIS Coding</b>	<b>Requirement (No. of examinations)</b>
Plain film reports	1101 – 1799	Total 5,000 (of which at least 2,000 should be from Accident and Emergency Department) (2,000 under direct supervision, of which at least 1,000 should be from Accident and Emergency Department)
Special investigations		
Fluoroscopy , GI study & IVU	2101 – 2499	60
Ultrasonography	3101 – 3599	1,500
CT	4101 – 4499	3,000
MRI	8101 – 8699	400
Radionuclide Imaging & PET	9001 – 9999 & 9C13 – 9PCT	80
Angiogram & IR	6101 – 7599	150
Mammogram	5001 – 5099	40
Obstetric Ultrasound		<i>Observe at least 30</i>

- 5.4 A trainee may be considered competent of independent performance of the following examinations/services, provided that
- Ready access to specialist consultation is available if necessary.
  - The trainee has prior experience of supervised performance of a minimum number of examinations for that particular service as depicted in below table.
  - The trainee has satisfied the evaluation of the Training Centre and considered to be competent in this regard.

<b>Examination/Service</b>	<b>Minimum number of performance of examinations under direct supervision</b>
Plain film reporting	2,000 (at least 1,000 should be from Accident and Emergency Department)
Ultrasonography	Abdomen & pelvis: 200 Deep vein thrombosis: 15 Obstetric & Gynecological ultrasound: 80
CT scan	Brain CT: 80

	Abdomen & pelvis CT: 90 Thoracic CT: 30
IVU & Fluoroscopy	15

Training centres are reminded that the requirements on the number of minimum number of performance of examinations under direct supervision serve only as reference in evaluating whether the trainees are considered competent of performing that particular examination. In light of wide spectrum of diversified complexity of radiological examinations in clinical situations, the Training Centres should exercise stringent monitoring of performance of their trainees and ensure that they can have ready access to trainers or co-trainers for consultation whenever needed.

During basic training, a trainee should be directly supervised by a trainer or a co-trainer when performing interventional radiology, mammography, MRI and nuclear medicine examination.

#### 5.5 Report Format & Training Record System

A trainee could perform radiology examinations and reporting independently after fulfilling the training requirements as stipulated in the Training Guidelines AND that his / her competence level has attained the required standards as confirmed by the Training Head in the performance appraisal report. Examination reports should be signed by the trainee if the cases are performed on his / her own independently. The report should be endorsed by the trainer or the co-trainer and the trainee if the case is performed by the trainee under direct supervision. Record of reporting without trainees' name would not be accepted and counted in his / her training profile.

For situations in which reporting or performing of examinations cannot be accurately reflected via the standard method (e.g. RIS system of HA), trainees may use separate manual log with counter-signage by trainers or co-trainers.

### 6. Accountability of the Training Department

6.1 It is advisable that the Training Supervisor is not the same person as the Administrative Head of the Department.

#### 6.2 Accountability of the **Training Head**:

- (a) To initiate application for training accreditation by the College, with submission of the required data
- (b) To manage the training department and be responsible for the supervised training provided in the department in accordance with the training regulations and guidelines
- (c) To report immediately to the College any significant discrepancy from the

status on accreditation, in respect of training manpower, facilities and workload that may have occurred or are expected to occur. All training centres are required to regularly notify the College on the updated number of trainers, co-trainers and trainees, and any change of their status. Suboptimal number of trainers and co-trainers, or failure to timely report to College for important change of status of trainers and co-trainers might prompt the College to actively review the accreditation status of a training centre

- (d) To initiate timely consultation and notification with the College on matters related to training, especially on major change of training provision which may risk on jeopardizing the quality of training
- (e) To advance the views of the College and to disseminate to the trainees relevant information from the College
- (f) To facilitate the trainees to attend training and educational activities
- (g) To provide annual return to the College on the status of trainers, co-trainers and trainees, and the assessment forms of the trainees in the department
- (h) To meet the trainees regularly, to be able to evaluate and provide advice to the trainees in Radiology
- (i) To answer trainees for questions relating to training, and channel the questions to College for consultation if necessary
- (j) To oversee the system of evaluation and monitoring on the level of supervision of trainees in different radiological examinations

### 6.3 Accountability of the **Trainee**:

- (a) To register as a trainee with the College on entry into the training system
- (b) To be aware of the scope, program, facilities, workload and other aspects of training required in Radiology
- (c) To participate in the training courses organized by the College, and the training activities held at the training department.
- (d) To participate in and contribute to scientific and other activities organized by the College
- (e) To enter the training records in the logbooks regularly. The logbooks from all trainees would be reviewed at three fixed check points, namely after basic training (i.e. after passing Joint Final (Part B) Examination), after the first year of higher training and at the end of higher training (i.e. before Exit Assessment), by College to verify that appropriate training had been undertaken during the specified period under supervision of trainers
- (f) To interact with the trainers during the regular appraisal sessions
- (g) To bring to the notice of the Training Supervisor, and if necessary the College, of any deficiency in the training program for improvement at the specific training department
- (h) To prepare for the examinations and assessments of training at different levels



- (i) To be fully aware of the Guide on Good Medical Practice for Radiologists by the College

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