# HONG KONG COLLEGE OF RADIOLOGISTS

## GUIDELINES ON BASIC SPECIALIST TRAINING (RADIOLOGY)

*[This document should be read in conjunction with the Training Regulations and Working Principles for Accreditation of Training Centres and Conduction of Training Programmes.]*

### 1. General Aspects

1.1 In this document the following interpretation applies:

- *"Trainer"* = a Fellow of the Hong Kong College of Radiologists, or equivalent
- *"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.
- *"Trainee"* = a medical doctor registered as trainee with the Hong Kong College of Radiologists

1.2 Objectives of Basic Specialist Training:

(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 programme
(c) Training facilities
(d) Radiology workload
(e) Accountability

1.4 Training accreditation is in general considered on the basis of standalone training hospital and its satellite facilities, 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 Training Centres and Conduction of Training Programmes.

1.5 Within an accredited Specialist Training Programme of the College, a trainee may attach to another Specialty of the College to broaden his/her training exposure and to fulfil the training requirements. When individual trainee undergoes the accredited Cross-Specialty training arrangement, he/she should be supervised by the accredited Trainer(s) or Co-trainer(s) of the attached accredited Training Centre under Hong Kong College of Radiologists. The Cross-Specialty training arrangement aims to broaden the exposure of trainees and is not equivalent to training for independent practice in the Cross-Specialty trained subject.

## 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. Essential Elements of Training Programme

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 overall minimum trainer:trainee ratio of the centre should not be 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 programme 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 programme. 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 Workplace-based assessments would be conducted in various facets of training as specified by the College from time to time. The progress of trainees should be evaluated according to the requirements of the College. Please refer to the section of Workplace-Based Assessment in the Training Regulation (Radiology).

3.15 The following are some of the measures of the quality of a training programme:

(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 programmes without intake of trainees should be avoided.

3.16 Part of the training can be conducted in satellite facilities of the accredited training centre. The requirements are delineated in the Working Principles for Accreditation of Training Centres and Conduction of Training Programmes.

3.17 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 1.4 for submitting logistics of arrangement to College for pre-approval before the rotation programme commences.

3.18 Trainees may apply for recognition of external training activities as part of accredited training. The requirements are delineated in the Working Principles for Accreditation of Training Centres and Conduction of Training Programmes. A list of pre-approved external training activities would be provided by College to Training Centres on regular basis. It can also be obtained from College upon written request.

## 4. Essential Elements of Training Facilities

4.1 The hospital administration of the training centre should be supportive of training in Radiology.

4.2 A comprehensive scope of clinical services should be available in the hospital and its satellite facilities.

4.3 A full range of imaging modalities should be available in the hospital and its satellite facilities. (See point 1.4 if complementary rotation or attachment of trainees to other training centres is necessary to make up for the 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, either in hardcopies or online format, 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 files 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 physicist support should be available 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 (including the workload generated in its satellite facilities and relevant to the training programme):

| *Modality* | *RIS Coding* | *No. of examinations* |
|---|---|---|
| Plain radiographs | 1101 – 1799 | 50,000 |
| GI & other contrast studies | 2101 – 2499 | 300 |
| Ultrasonography | 3101 – 3599 | 3,000 |
| Mammography | 5001 – 5099 | 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 Specialist Training in radiology (including the workload acquired in satellite facilities of the training centre and relevant to the training programme):

| *Activity* | *RIS Coding* | *Requirement (No. of examinations)* |
|---|---|---|
| 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, see section 5.4) |
| Special investigations | | |
| Fluoroscopy , GI study & IVU | 2101 – 2499 | 40 |
| Ultrasonography | 3101 – 3599 | 1,500 |
| CT | 4101 – 4499 | 3,000 |
| MRI | 8101 – 8699 | 400 |
| Radionuclide Imaging | 9001 – 9999 | 50 |
| Angiogram & IR | 6101 – 7599 | 150 |
| Mammogram | 5001 – 5099 | 100 |
| Obstetric Ultrasound | | *Observe at least 30* |

5.4 A trainee may be considered competent of independent performance of the following examinations/services, provided that

i) Ready access to specialist consultation is available if necessary.

ii) The trainee has prior experience of supervised performance of a minimum number of examinations for that particular service as depicted in below table.

iii) The trainee has satisfied the evaluation of the Training Centre and considered to be competent in this regard.

| *Examination/Service* | *Minimum number of performance of examinations under direct supervision* |
|---|---|
| Plain film reporting | 2,000* |
| Ultrasonography | Abdomen & pelvis: 200<br>Deep vein thrombosis: 15<br>Obstetric & Gynaecological ultrasound: 80 |
| CT scan | Brain CT: 80<br>Abdomen & pelvis CT: 90<br>Thoracic CT: 30 |
| IVU & Fluoroscopy | 15 |

* Of the 2,000 plain film examinations, no fewer than 1,000 should be directly supervised by a trainer/co-trainer. If satisfactory result is obtained in workplace-based assessment related to plain film reporting, the remainder may be under the guidance of and jointly reported with an HKCR Member who has passed the Final FRCR examination in Clinical Radiology but not yet attained trainer/co-trainer status.

Training centres are reminded that the minimum number of performance of examinations under direct supervision serves 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 specialist 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 / 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

(k) To oversee and coordinate the conduction of workplace-based assessments within the training centre

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, programme, 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 Specialist Training (i.e. after passing Joint Final (Part B) Examination), after the first year of Higher Specialist Training and at the end of higher specialist 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 participate in workplace-based assessments as specified by the College
(h) To bring to the notice of the Training Supervisor, and if necessary the College, of any deficiency in the training programme for improvement at the specific training department
(i) To prepare for the examinations and assessments of training at different levels
(j) To be fully aware of the Guide on Good Medical Practice for Radiologists by the College

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