HONG KONG COLLEGE OF RADIOLOGISTS

TRAINING REGULATIONS (RADIOLOGY)

[This document should be read in conjunction with the Working Principles for Accreditation of Training Centres and Conduction of Training Programmes and Training Guidelines (Radiology).]

TRAINING REQUIREMENTS

(A) *Entry Requirement & Duration of Training*

1.0 All trainees must hold registration with the Medical Council of Hong Kong that is deemed acceptable by the College and must enrol with the Hong Kong College of Radiologists at the commencement of their training.

2.0 The duration of training shall last for a minimum of 6 years.

(B) *Basic Specialist Training*

1.0 This stage of training comprises four years of training, including one year of post-registration clinical experience outside radiology.

1.1 The post-registration clinical experience outside radiology should appropriately be taken in disciplines with wide exposure to various clinical situations. In general, clinical exposure to Internal Medicine, General Surgery, Paediatrics, Emergency Medicine, Obstetrics & Gynaecology, Orthopaedics, etc. could count up to a maximum of one year. Clinical exposure to Anaesthesiology, Pathology, Rehabilitative Medicine and Psychiatry training could only count up to a maximum of six months. For clinical exposure in Family Medicine, Intensive Care Unit and other clinical settings, the recognition of training duration shall be considered on individual basis and to be endorsed by the Education Committee and Council of the College.

1.2 Only up to 6 months of the required post-registration clinical experience may be exempted on the basis of equivalent overseas clinical experience. The exact duration of the required post-registration clinical experience that can be exempted will be considered on an individual basis, at the discretion of the Education Committee and the College Council.

2.0 *Scope of Basic Specialist Training*

2.1 The trainee should receive a comprehensive grounding in all subjects related to the production of an organ image or providing the background towards radiological interpretation.

2.2 The topics of Basic Specialist Training includes radiological anatomy, radiographic techniques and equipment, practical radiological procedures, radiation protection, radiation biology, contrast media, relevant aspects of radioisotopes, the physics of radiography, ultrasound, computed tomography, magnetic resonance imaging, and the principles of digital systems as applied to radiology.

2.3 For *Physics*, emphasis is placed on a clear understanding of the physical basis of radiological practice in a qualitative manner, with sufficient knowledge of the basic principles of radiography, ultrasound, computed tomography, magnetic resonance imaging and radionuclide imaging. The trainee is expected to have a broad

understanding of the function of the components in the main types of imaging equipment. Training should also cover interaction of radiation with matter, its effects on irradiated materials, interaction of radiation with the patient, and radiation protection including relevant legislation. The trainee is expected to learn to explain the radiation risk and radiation protection guidelines to medical and radiographic staff as well as to patients, both for clinical practice and research purposes.

2.4 For *Anatomy*, the basic anatomy and normal variants relevant to the common imaging examinations should be acquired, as well as the radiological techniques required to demonstrate this anatomy.

2.5 For *Radiography*, the trainee is expected to know the positioning, centering or tube angulation for standard radiographic projections. He/she should be able to give practical advice on improving the quality of the resulting image.

2.6 For *Radiological Techniques*, there should be general knowledge of the contrast investigations, including barium studies, and imaging with radionuclides, ultrasound, computed tomography, digital systems and magnetic resonance. For everyday conventional examinations, familiarity and experience are expected; for less common investigations, knowledge in outline is required. Where there are alternative methods of studying a region their comparative merits should be appreciated. The trainee should be familiar with radiographic apparatus and related equipment, relative merits and choice of contrast media, technique-related drugs and radiopharmaceuticals, standard methods of resuscitation and management of contrast reactions.

2.7 There should be general knowledge of current clinical medicine, surgery and pathology, especially in relation to radiology.

2.8 A sound basic knowledge and application of general and special imaging methodology, including ultrasound, nuclear medicine, computed tomography, magnetic resonance imaging, vascular radiology and interventional radiology.

2.9 Interpretative skill on and judgement of the end products of imaging modalities, including correlative appreciation of the various modalities.

2.10 Planning and decision-making in imaging work-up to solve clinical problems.

2.11 A general awareness of current trends is desirable, including updated radiological literature, relevant statutory radiation protection measures and emerging technologies such as artificial intelligence, machine learning, deep learning and radiomics.

2.12 During the whole period of clinical training, emphasis would be put on the cultivation of a high level of professional conduct and ethics. Communication skills would be developed to ensure sound communication among professionals and good patient-doctor relationship.

(C) <u>*Higher Specialist Training*</u>

1.0 This stage of training comprises the two years of training started immediately after the trainee has passed the Part II B Examination.

1.1 The two years of Higher Specialist Training should consist of General Radiology Training, Subspecialty Training, and training in relevant attributes.

1.2 For a broad knowledge-based exposure, the two years of training should consist of:

(A) Minimum of 9 months fulltime training in General Radiology, including 1 month of PET-CT training

(B) Minimum of two Category A Subspecialty subjects (well-recognized radiology Subspecialties, in terms of body systems or population subgroups, or interventional procedures such as Paediatric Radiology, Musculoskeletal Radiology, Diagnostic Neuroradiology, Interventional Neuroradiology, Vascular & Interventional Radiology,

Thoracic Radiology, Gastrointestinal & Hepatobiliary Radiology, Head & Neck Radiology, Breast Radiology, Cardiovascular Imaging, Obstetrics & Gynaecology Radiology and Oncologic Radiology), of which one subject should be of at least 6-month duration

(C) Remaining period of training in General Radiology, Category A Subspecialty subjects, Category B Subspecialty subjects (technique-based subspecialties including Ultrasonography, CT, MRI and Radionuclide Imaging).

2.0 *Scope of Higher Specialist Training*

2.1 Emphasis will be made on providing the trainee with opportunities for practical experience, increased responsibility, independent thinking and action in various disciplines of Radiology through a system-based structured programme.

2.2 There should be in-depth knowledge and application of Conventional Radiology. Subspecialty development is also encouraged, with training and interest in more than one Subspecialty.

2.3 The Higher Specialist Training differs from Basic Specialist Training with emphasis on independent performance and supervising responsibility.

2.4 There should be knowledge of the ethical standards and legal responsibilities of radiology practice.

2.5 Active participation in intra- and inter-departmental clinico-radiology meetings is required.

2.6 Teaching activities (to clinicians, younger trainee radiologists, radiographers, nurses and medical students) are required to attain in-depth knowledge of a subject and to improve on presentation skills.

2.7 Management of and contribution to film museum and teaching files are required.

2.8 Audit and quality assurance activities are required.

2.9 Trainees should participate in academic radiology: research techniques, presentation skills, literature review.

2.9.1 **During the entire period of Basic and Higher Specialist Training, trainees should participate actively in research activities.**

1) **At least one project** must be accepted at College scientific meetings, or regional / international scientific conferences with the trainee as the oral presenter or first author of a poster presentation; and

2) **At least one radiological / oncological / nuclear medicine article** with the trainee as the first author, must be published / accepted for publication in the Journal of the College or other indexed medical journals.

Training centres should facilitate trainees to participate in research projects.

2.10 Training also involves administrative skills and practice.

WORKPLACE-BASED ASSESSMENT

1.0 Workplace-based assessments are conducted during both Basic and Higher Specialist Training to provide formative assessment on the progress of trainees at different stages of training.

2.0 Reflection and feedback is an integral component of workplace-based assessment to enhance and drive learning. These assessments aim to identify the strength and areas of further development of trainees in day-to-day practice.

3.0 Workplace-based assessment is a process led by trainees. Assessments are initiated by trainees, and are carried out by assessors who are Trainers/Co-trainers from the training centre where the trainee is currently working in or rotating to, at the time of assessment.

4.0 Various workplace-based assessment methods would be adopted to cover different facets of training during Basic and Higher Specialist Training.

5.0 The College would regularly determine and update the facets of training to be assessed and the pertinent workplace-based assessment methods to be used. Trainees should conduct workplace-based assessments according to the requirements specified by the College.

EXAMINATIONS

1.0 The intermediate examination (Fellowship Examination) shall be in two parts (Part I and Part II).

2.0 *Part I Fellowship Examination:*

2.1 *Entry requirements of Part I Fellowship Examination*

2.1.1 Satisfactory attendance of the Fellowship Basic Training Course organized by the College is mandatory before trainees are allowed to attempt the Part I Fellowship Examination.

2.1.2 Trainees need to hold a formal clinical radiology training post, in which they are actively receiving clinical radiology training, (or to have held such a post in the past) in order to enter the Part I Fellowship Examination.

2.2 *Format of Part I Fellowship Examination*

2.2.1 Part I Fellowship Examination comprises 2 modules: Anatomy and Physics. Anatomy is examined by an image viewing session and Physics by a multiple choice questions (MCQ) paper. The anatomy module assesses knowledge of anatomy as shown by radiological studies. The physics module assesses knowledge of those physical, cellular and molecular principles that underpin the generation of radiological studies.

2.2.2 Trainee may attempt the modules at the same sitting or at separate sittings and may pass them either together or separately in any order. Trainee will be deemed to have achieved success at the Part I Fellowship Examination once both modules have been passed.

2.2.3 No trainee will automatically be permitted more than six attempts at Part I Fellowship Examination. In order to attempt an examination for a seventh, or further time, trainee will have to demonstrate additional educational experience.

2.3 Training Curriculum, examination format and requirements are subjected to constant review and revision. For updated information of the Part I Fellowship Examination, please also refer to the HKCR website.

3.0 *Part IIA Fellowship Examination:*

3.1 *Entry requirements of Part IIA Fellowship Examination*

3.1.1 Trainees need to hold a formal clinical radiology training post, in which they are actively receiving clinical radiology training, (or to have held such a post in the past), must have acquired 24 months in a formal clinical radiology training post and to have passed the Part I Fellowship Examination in order to enter the Part IIA Fellowship Examination.

3.2 *Format of Part IIA Fellowship Examination*

3.2.1 Part IIA Fellowship Examination comprises two single best answer (SBA) question papers each containing 120 questions. The Part IIA Fellowship Examination assesses knowledge

of the pathology, imaging techniques, congenital abnormalities and radiological findings that underpin clinical radiology practice.

3.2.2 Trainees need to pass both papers at one sitting in order to be deemed to have achieved overall success in the Part IIA Fellowship Examination.

3.2.3 No trainee will automatically be permitted more than six attempts at Part IIA Fellowship Examination. In order to attempt an examination for a seventh, or further time, trainee will have to demonstrate additional educational experience.

3.3 Training Curriculum, examination format and requirements are subjected to constant review and revision. For updated information of the Part IIA Fellowship Examination, please also refer to the HKCR website.

4.0 *Part IIB Fellowship Examination*

4.1 *Entry requirements of Part IIB Fellowship Examination*

4.1.1 Trainees who have passed the Part IIA Fellowship Examination are permitted to enter the Part IIB Fellowship Examination upon completion of three years in formal clinical radiology training. Each trainee's training supervisor is required to provide confirmation that the candidate has completed the required training.

4.2 *Format of Part IIB Fellowship Examination*

4.2.1 Part IIB Fellowship Examination is currently only in the form of Joint Fellowship Examination organized by Hong Kong College of Radiologists and The Royal College of Radiologists. Trainees who have passed the Part IIA Fellowship Examination are permitted to enter the Part IIB Fellowship Examination upon completion of three years in formal clinical radiology training. The Part IIB Fellowship Examination consists of a rapid reporting session, a reporting session and two oral examination sessions.

4.2.2 The reporting session comprises six cases, each of which require a written report, and it runs for 75 minutes. Each case may comprise multiple modalities including CT, ultrasound, radionuclide and MR scans. Cross-sectional imaging may comprise up to four sequences, which can be scrolled through. Brief case histories and other relevant clinical data for each case will be displayed, and responses should be presented in a standard format as follows:

Observations: This section is for recording observations on the films from all the imaging studies available, including relevant positive and negative findings.

Interpretation: This section is for stating interpretations of the observed findings; for example, describing whether the mass or process observed in benign, malignant or infective rather than neoplastic, giving reasons.

Main or Principal Diagnosis: This single diagnosis should be based on the interpretations provided above. If a single diagnosis is not possible, then the most likely diagnosis should be stated with a list of other possibilities, in order of likelihood, supplied in the differential diagnosis section below.

Any Differential Diagnoses: For some cases there will be no differential diagnoses; in others a few may merit inclusion. These should be limited in number and brief, and the report should indicate why these were less likely than the main or principal diagnosis above.

Any Relevant Further Investigations or Management: This section is for indicating any further appropriate investigations or clinical management. For example, if a patient with a subdural collection is diagnosed then urgent referral is needed if there is evidence of brain compression. Similarly, if an abscess or tumour is diagnosed indicate if a drainage or biopsy is appropriate.

4.2.3 The cases vary in complexity and difficulty; some require more time for analysis and reporting than others. Trainees should ensure sufficient time is allocated to report each case adequately.

4.2.4 The rapid reporting session comprises 30 cases and it runs for 35 minutes. It requires trainees to identify those cases that show normal appearances and those that show an abnormality. Many cases are similar to those encountered in the reporting of A&E and GP-referred cases; the images are primarily plain radiographs. Where an abnormality is present, candidates are expected to briefly identify this or give a diagnosis. Each abnormal case shows one significant diagnosable abnormality. Abnormalities in the Rapid Reporting component are not complex and therefore differential diagnoses should not be given. Anatomical variants should be recorded as 'normal' and some cases may show minor age-related changes only which should also be recorded as 'normal'.

4.2.5 The oral examination lasts for 60 minutes in total, during which time the trainee spends 30 minutes with each of two pairs of examiners (and so will be assessed by four radiologists in 15-minute blocks).

4.2.6 During each of the two viva sessions, a wide range of material of varying complexity will be shown. A higher level of performance will be expected in interpreting the common and routine examinations than will be the case with the highly specialized investigations.

4.2.7 Trainees will be given the opportunity to demonstrate their powers of observation and deduction. A logical and informed approach to image interpretation, as well as a clear ability to debate the merits, relevance, and role of techniques, that might assist in further investigation of diagnostic problems, will be expected.

4.3 Training curriculum, examination format and requirements are subjected to constant review and revision. For updated information of the Part IIB Fellowship Examination, please also refer to the HKCR website.

4.4 *Review of Performance at Examinations*

4.4.1 Candidates who fail the Part IIB Fellowship Examination will be informed of their performance at each paper/session. It is expected that the Training Head at each training centre will provide counselling.

4.4.2 After 2 unsuccessful attempts at Part IIB Fellowship Examination, a candidate's performance will be reviewed by the Warden, one examiner of the examination together with the trainee and the respective supervisor, to advise on the required improvement areas and remedial actions.

4.4.3 The Review Committee of the College will consider queries and appeals.

EXIT ASSESSMENT FOR COLLEGE FELLOWSHIP

1.0 After completion of the required period of Higher Specialist Training, a trainee can apply for consideration of the Fellowship of the College.

2.0 Exit Assessment exercises are conducted by the College twice a year, normally in January and July.

3.0 A panel of assessors comprising the following members would carry out a formal assessment of the trainee's completion of training:

(i) The Warden.

(ii) Two other experienced College Fellows of the trainee's profession, who should NOT be the trainee's supervisors, appointed by the Education Committee and approved by the Council.

4.0 The procedure of assessment would include:

(i) Scrutiny of the training records of the trainee for completeness of training.

(ii) Appreciation of the regular continuous appraisal reports of the respective supervisor.

(iii) Further supportive documents may need to be furnished by the trainee or the respective training centre on request.

(iv) Oral assessment of the trainee by the panel of assessors will be held to evaluate the trainee's professional attitude, ability in communication skill, solving clinical or management issues and appreciation of radiology literature.

5.0 After an unsuccessful attempt at Exit Assessment, a candidate's performance will be reviewed by the Warden, one assessor of the Panel together with the trainee and the respective supervisor, to advise on the required improvement areas and remedial actions.

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