HONG KONG COLLEGE OF RADIOLOGISTS

Higher Training (Radiology)

Subspecialty Training in Vascular & Interventional Radiology

[This document should be read in conjunction with ***the General Guidelines on Higher Training (Radiology***)]

1. INTRODUCTION

1.1 The training should cover all aspects of angiographic and interventional radiological procedures. Lymhography and venography studies are also included.

1.2 Vascular & interventional radiology (IR) involves diagnostic as well as therapeutic procedures. Its minimally invasive nature with inherent risks and benefits to patient should be appreciated. Emphasis is placed on clinical indications, patient safety, technical competence & patient management. Attention to radiation safety should be made with prolonged fluoroscopic time. A high degree of alertness should be exercised to avoid or minimize possible complications. Correct decision-making could only be learned through appropriate training, close supervision/guidance and practical hands-on experience.

1.3 The program is listed under Category A of Higher Training by the Hong Kong College of Radiologists.

2. OBJECTIVES

2.1 General objectives

2.1.1 To understand broad surgical principles and the use of aseptic techniques associated with IR procedures;

2.1.2 To have in-depth understanding of indications and contraindications for standard IR procedures;

2.1.3 To be able to evaluate IR procedures with respect to other imaging diagnosis and clinical management options;

2.1.4 To be able to set priorities in time-critical management strategies;

2.1.5 To be aware of medico-legal implications of IR procedures;

2.1.6 To understand cost and cost-effectiveness related to IR procedures;

2.1.7 To understand the importance of radiation protection as applied to IR procedures.

2.2 Procedure-related objectives

2.2.1 To have exposure to a wide spectrum of angiography, vascular and non-vascular interventional procedures;

2.2.2 To show competence in use of non-invasive vascular imaging methods for planning of vascular interventional radiology procedures;

2.2.3 To show competence in performing standard IR procedures independently (e.g. diagnostic angiography, image-guided biopsies, intussusception

reduction, image-guided drainage procedures including abscess drainage, biliary drainage and percutaneous nephrostomy) particularly during on-call scenario;

2.2.4 To be familiar with commonly used drugs, patient monitoring equipment and resuscitation procedures;

2.2.5 To know proper handling, use and deployment of common IR devices and accessories;

2.2.6 To be able to advice on patient preparation and post-procedural care;

2.2.7 To be able to write up procedural record and to interpret and report on results of examination / procedure being performed;

2.2.8 To have an understanding of potential complications and proper method of managing complications.

3. TRAINING REQUIREMENTS

3.1 TRAINING CENTRE REQUIREMENTS

3.1.1 The training centre must be equipped with CT, ultrasound, fluoroscopy and DSA facilities.

3.1.2 A comprehensive stock of IR products must be available (including diagnostic catheters, angioplasty balloon catheters, vascular & non-vascular stents, various embolic agents)

3.1.3 Appropriate drugs, patient-monitoring equipment, resuscitation facilities must be available in procedure rooms.

3.1.4 Scrub up facilities must be available.

3.1.5 24-hr. emergency resuscitation, medical and surgical teams must be available.

3.1.6 24-hr. on-call IR service must be available.

3.2 TRAINER REQUIREMENTS

3.2.1 Subspecialty Trainers should demonstrate considerable experience in both vascular & interventional radiology and themselves capable of performing most level 4 procedures. (*see below in section 3.5 on “Minimum number of examination required”)

3.2.2 They should have at least 2 years of continuous experience in IR following award of Fellow of Hong Kong Academy of Medicine and currently practicing IR actively.

3.2.3 Overseas training in IR and invited lectures, publications & other teaching experience related to IR will be considered as supporting reasons in approval of the application.

3.3 DURATION OF TRAINING

3.3.1 In order to achieve adequate coverage of the subject and exposure to a wide spectrum of procedures and disease processes, a training program of 6 months duration is desirable.

3.3.2 For those who wish to gain some insight into IR, a training program of 3 months duration is acceptable and specific minimum number of examinations requirement would be reduced by 50%. In this circumstance, special attention should be paid by trainers to ensure trainees are not performing high risk procedures without achieving adequate competence.

3.4 DUTY SESSIONS

3.4.1 Five or more service sessions weekly specific for the subspecialty are required.

3.4.2 Trainees should attend to emergency IR procedures during on-call duties.

3.5 MINIMUM NUMBER OF EXAMINATIONS REQUIRED

3.5.1 In a 6-month training period, a trainee is expected to have:

(a) Performed at least 48 numbers of Level 1 examinations. *
(b) Performed at least 90 numbers of Level 2 examinations. *
(c) Assisted in at least 36 numbers of Level 3 or Level 4 examinations. *
(d) Observed at least 6 numbers of Level 4 examinations. *
(e) Diagnostic angiogram or venogram performed immediately before Level 3 or Level 4 examination can be counted as one Level 2 examination, if the trainee has performed the diagnostic part and assisted in the treatment part.
(f) Observed at least 2 sessions of surgical or laparoscopic operations.
(g) Observed at least 2 sessions of interventional endoscopy.
(h) Performed post-procedural ward follow up within 24 hours for at least 20 patients in Level 2 or higher (nature of IR procedure, clinical result & comments to be recorded in training logbook).
(i) To report on 12 (6 for "3 months") CT angiogram or MR angiogram (other than that of circle of Willis).

3.5.2 *Definition of skill levels:

Although there is wide variability in the technical and clinical complexity of individual interventional procedures including the associated risks depending on patient factor, for training purpose broad categorization is still possible.

Level 1: relatively low risk basic procedures that are expected to be achievable by most trainees.

Level 2: angiographic or interventional procedures with some risk involved.

Level 3: technically demanding procedures, risk is likely for those who are not familiar with the procedures.

Level 4: highly demanding procedures with possibility of serious risks even if performed by experienced personnel.

3.5.3 To facilitate use of Radiology Information System to track procedures performed, workload codes would be employed. Only codes listed within the table to reflect more common or standard procedures will be counted for training purpose.

Procedures	RIS Workload Codes
Level 1	6211 Peripheral venogram 7101 Fine needle biopsy 7102 Percutaneous fluid drainage 7103 – 7107 Image-guided fine needle aspiration or biopsy 7108 – 7109 Image-guided drainage
Level 2	2401 Lymphogram 6102 Aortogram 6103 Pelvic arteriogram 6104 Peripheral arteriogram

Procedures	RIS Workload Codes
	6107 Subclavian arteriogram 6108 Coeliac arteriogram 6109 Superior mesenteric arteriogram 6110 Inferior mesenteric arteriogram 6111 Renal arteriogram 6134 Both lower limbs angiogram – bolus chase 6202 Jugular venogram 6203 Pulmonary angiogram 6204 SVC/subclavian venogram 6205 IVC venogram 6206 Renal venogram 6208 Gonadal venogram 6209 Direct portography 6210 TIPSogram 6212 Dialysis fistulogram 7206 Revision of biliary catheter 7299 Others e.g. plug liver biopsy tract 7201 Percutaneous transhepatic cholangiogram 7202 Percutaneous transhepatic biliary drainage 7203 Biliary endoprosthesis insertion / biliary internalisation 7209 Biliary manometry 7301 Percutaneous antegrade pyelogram 7302 Percutaneous nephrostomy
Level 3	6105 Cerebral arteriogram 6106 Vertebral arteriogram 6113 Spinal arteriogram 6114 Bronchial arteriogram 6301 Embolisation, chemoembolisation, Lipiodol angiogram 6302 Percutaneous transluminal angioplasty 6303 Vascular stenting 6306 Intravascular foreign body retrieval 6307 Venous sampling 6308 IVC filter placement 6309 Central venous catheter placement 6325 Stripping of fibrosis sheath for perm catheter 7203 Biliary stenting (insertion or extraction) 7204 Biliary tract dilatation >14 Fr 7205 Biliary tract extraction >20 Fr 7207 Percutaneous cholecystostomy 7208 Trans-jugular liver biopsy 7303 Percutaneous cystostomy 7304 Ureteric stenting 7305 Ureteric stricture dilatation 7306 Percutaneous nephrolithotomy 7310 Recannalisation of Fallopian tubes 7402 GI tract dilatation 7403 GI tract stenting 7404 GI tract diversion

Procedures	RIS Workload Codes
	7406 Gastrostomy 7502 Ablation of tumours etc. 7503 Facet joint injection (1 set per joint) 7509 Extraction of stone or foreign body, non specified 7511 Percutaneous bone biopsy exclusive from 7103-7107
Level 4	6117 Laser angioplasty/rotablation, not PTCA 6301 Portal vein embolization for hepatectomy 6304 Thrombectomy 6305 Thrombolysis 6310 Transjugular intrahepatic portosystemic shunt (TIPS) 6311 Neurointervention 6312 Aortic fenestration (inclusive of all necessary stenting) 6313 Stent graft for aorta 6316 Percutaneous vascular lesion ablation 7501 Tracheal and bronchial stent 7510 Percutaneous vertebroplasty / cementoplasty 7512 Radiofrequency ablation of tumour
Others	Record any special procedures not included

3.5.4 Trainees should have performed at least 6 hands-on emergency procedures in the presence of a trainer during on-call sessions (i.e. after normal working hours) to gain experience in patient management under this setting. Specifically, on-call attendance should be recorded as appendix in training logbook with details of cases performed.

3.5.5 Trainees are encouraged to attend hands-on workshop organised by local and international interventional radiology societies and institutions during the 2-year higher training period, which will provide a more comprehensive learning of IR skill.
A half-day course (3 hours or more) will be counted as 3 Level 2 examinations.
A full-day course (6 hours or more) will be counted as 6 Level 2 examinations.
The maximal number of equivalent counts is 12 (6 for 3 months).
The courses have to be accredited by the education committee of the HKCR for CME purpose.

3.6 CLINICAL RADIOLOGICAL CONFERENCES AND OTHER MEETINGS
Chaired and/or present in at least 6 CRC on IR cases.

3.7 PRESENTATIONS AND PUBLICATIONS
Please refer to the General Guidelines in Higher Training.

3.8 OTHER REQUIREMENTS
3.8.1 For documentation of training, the attached forms should be completed and attached to the training logbook for assessment.
3.8.2 Training assessment should include technical competency, safety, clinical knowledge, patient care, and knowledge of IR devices and learning attitude.

VASCULAR AND INTERVENTIONAL RADIOLOGY

TRAINING REPORT FORM AT 3 MONTHS

Name of trainee:
Name of trainer:
Name of co-trainer:
Trainer: trainee ratio:
Period of training with dates:

	Expected	Actual
Duration of training	3 months	
Sessions of IR per week	5 or more	
No. of level 1 examinations performed RIS examination codes: 6211, 7101, 7102, 7103-7107, 7108-7109	24	
No. of level 2 examinations performed RIS examination codes: 2401, 6102, 6103, 6104, 6107, 6108, 6109, 6110, 6111, 6134, 6202, 6203, 6204, 6205, 6206, 6208, 6209, 6210, 6212, 7206, 7299, 7201, 7202, 7203, 7209, 7301, 7302, 7205	45	
No. of level 3 or level 4 examinations assisted or performed RIS examination codes: 6105, 6106, 6113, 6114, 6117, 6301, 6302, 6303, 6304, 6305, 6306, 6307, 6308, 6309, 6310, 6311, 6312, 6313, 6316, 6325, 7203, 7204, 7205, 7207, 7208, 7303, 7304, 7305, 7306, 7310, 7402, 7403, 7404, 7406, 7501, 7502, 7503, 7509, 7510, 7511, 7512	18	
No. of level 4 examinations observed RIS examination codes: 6117, 6301, 6304, 6305, 6310, 6311, 6312, 6313, 6316, 7501, 7510, 7512	3	
No. of surgical or laparoscopic operations sessions observed	1	
No. of interventional endoscopy session observed	1	
No. of procedures with post-procedural ward follow up within 24 hours (level 2 or higher)	10	
No. of on-call emergency IR cases performed	3	
No. of CRC presented or chaired	3	

VASCULAR AND INTERVENTIONAL RADIOLOGY

TRAINING REPORT FORM AT 6 MONTHS

Name of trainee:
Name of trainer:
Name of co-trainer:
Trainer: trainee ratio:
Period of training with dates:

	Expected	Actual
Duration of training	6 months	
Sessions of IR per week	5 or more	
No. of level 1 examinations performed RIS examination codes: 6211, 7101, 7102, 7103-7107, 7108-7109	48	
No. of level 2 examinations performed RIS examination codes: 2401, 6102, 6103, 6104, 6107, 6108, 6109, 6110, 6111, 6134, 6202, 6203, 6204, 6205, 6206, 6208, 6209, 6210, 6212, 7206, 7299, 7201, 7202, 7203, 7209, 7301, 7302, 7205	90	
No. of level 3 or level 4 examinations assisted or performed RIS examination codes: 6105, 6106, 6113, 6114, 6117, 6301, 6302, 6303, 6304, 6305, 6306, 6307, 6308, 6309, 6310, 6311, 6312, 6313, 6316, 6325, 7203, 7204, 7205, 7207, 7208, 7303, 7304, 7305, 7306, 7310, 7402, 7403, 7404, 7406, 7501, 7502, 7503, 7509, 7510, 7511, 7512	36	
No. of level 4 examinations observed RIS examination codes: 6117, 6301, 6304, 6305, 6310, 6311, 6312, 6313, 6316, 7501, 7510, 7512	6	
No. of surgical or laparoscopic operations sessions observed	2	
No. of interventional endoscopy session observed	2	
No. of procedures with post-procedural ward follow up within 24 hours (level 2 or higher)	20	
No. of on-call emergency IR cases performed	6	
No. of CRC presented or chaired	6	