

# **INTERVENTIONAL RADIOLOGY FELLOWSHIP PROGRAM**

## **I. INTRODUCTION**

Interventional Radiology is a major subspecialty of diagnostic Radiology. It allows specialists to provide minimally invasive treatments that use imaging guidance thus potentially avoiding major open surgical procedures.

## **II. GOAL AND OBJECTIVE**

Upon completing the Fellowship Program, the physician will have achieved a strong foundation of knowledge and skills in non-invasive vascular diagnosis, as well as vascular and non-vascular interventions.

## **HOSPITAL ACCREDITATION**

- Meets the requirements for accreditation as detailed in the general accreditation by-laws.
- A minimum of two qualified interventional radiology consultants classified by SCHS with satisfactory experience in teaching and commitment to carry out the approved teaching and training program as stipulated by the Saudi Commission for Health Specialties.
- The accredited hospital should be reviewed regularly by the Scientific Board/Committee and accreditation will be renewed periodically, according to the SCFHS accreditation by-laws.
- The hospital has to achieve the accreditation requirements outlined in appendix I.

## **III. PREREQUISITES**

- A. Successful completion of an accredited residency training program in Diagnostic Radiology and possession of the Saudi Specialty Certificate in Diagnostic radiology or its equivalent.
- B. Successful completion of an interview.
- C. Provision of three letters of recommendation from consultants with whom the candidate has recently worked with for a minimum period of three months.
- D. Provision of written permission from the sponsoring institution of the candidate allowing him to participate on a full time basis during the entire period of the program.
- E. Pay the annual registration fee to SCHS.

## **IV. DURATION OF FELLOWSHIP**

The program's duration is two years.

## V. NUMBER OF FELLOWSHIP POSITIONS

This depends upon the participating hospital & workflow; however, one fellow may be accepted each year per accredited institution. An overlap period of one year may be allowed between an outgoing and an incoming trainee.

## VI. QUALIFICATIONS OF PROGRAM STAFF

- A. *The Program Director.*** A physician certified in diagnostic radiology and in Interventional radiology. The program director should have appropriate academic background, including experience in supervision of residency training and fellowship programs also he should fill the general SCHS requirements for program director.
- B. *The Department of Radiology*** should have at least two full-time, certified and experienced interventional radiologists. In the event of a joint program the total number of interventional radiologists at the concerned institutions may be taken into consideration.
- C. *Other hospital staff members.*** Other staff members are selected by the program director for their experience in areas relevant to Interventional Radiology, their teaching skills and academic interest. This may include staff in vascular surgery, hepatobiliary surgery, oncology, urology and gastroenterology.

All teaching staff should have experience in education and research as evidenced by publication in peer-reviewed journals.

## VII. STRUCTURE OF THE TRAINING PROGRAM

The number of months in each component is illustrated as follows:

	First year	Second year	Total
Vascular Imaging	8	0	8
Vascular interventions	18	22	40
Non-vascular interventions	22	18	40
Neurointerventions	0	4	4
Pediatric interventions	0	4	4
Electives	4	4	8
TOTAL	52	52	104

Research: 1/2 day/week for one year starting from the second half of the 1<sup>st</sup> year to the first half of the 2<sup>nd</sup> year

## VIII. PROGRAM CONTENT

The fellowship program will provide the trainee with sufficient and comprehensive interventional radiology practice. This will include performance of interventional procedures of the vascular (arterial and venous) system, as well as invasive and diagnostic non-vascular procedures related to other systems of the body. The fellow will have extensive training in ultrasound guided procedures as well.

The trainee is expected to evaluate the patients pre-procedure, including attending the Interventional Radiology clinic and inpatient rounds; as well as to perform the procedures under supervision of a staff interventional radiologist, and provide care in the immediate post-procedure period. The teaching will include discussion of each individual case, which includes decision-making, planning & performing the procedure, and the follow-up of patients.

Discussion of pertinent literature, as well as reviews of text and other materials regarding each case will be carried out. The fellow will have the opportunity to perform noninvasive vascular imaging, which includes ultrasound, Doppler, vascular lab, and CT angiography, and MRA. Experience in CT and MR angiographic procedures and opportunities for post-processing of the studies at dedicated workstations will be provided during this period.

During the period of training, the fellow will be involved in all aspects of patient care (e.g.) IR clinic workup of patients, obtaining informed consent, analysis of lab results, risk-benefit assessment, etc. The required training must include but is not limited to the following procedures:

### First year

#### Vascular

- Diagnostic angiography (femoral, mesenteric, pulmonary & neuroangiography) 40 cases
- Angioplasty and stenting (iliofemoral, SVC and central veins, renal, mesenteric, hemodialysis grafts and fistulae & subclavian artery) 10 cases
- AV fistula/graft surveillance and intervention: thrombolysis, angioplasty. 40 cases
- Uterine artery embolization 10 cases
- Pharmacologic and mechanical thrombolysis, lungs (PE), lower limb veins (DVT). 10 cases
- Embolotherapy: trauma, pre-operative (renal cell carcinoma, bone metastases, trauma with abdominal or pelvic hemorrhage.), gonadal veins (varicoceles, pelvic congestion), AVM, epistaxis, hemoptysis. 10 cases
- Transjugular liver biopsy 10 cases
- Intra-arterial and venous thrombolysis 10 cases
- Venous access: subcutaneous ports, dialysis lines, PICC lines, Hickman lines 50 cases
- IVC filters (retrievable & permanent) 20 cases
- Laser ablation of varicose veins. 20 cases
- Foreign body retrieval. 10 cases

## Non-vascular

- Percutaneous nephrostomies 20 cases
- Antegrade ureteric double J stents 10 cases
- Percutaneous feeding tubes (gastrostomies, gastrojejunostomies, primary jejunostomies & Cecostomy) 30 cases
- Percutaneous transhepatic cholangiography, Biliary drains and endoprosthesis insertions( external & internal stents + metallic stent) 25 cases
- Gallbladder interventional procedures (cholecystostomies) 10 cases
- Abscess drainages from (trans-abdominal, trans-vaginal, trans-rectal and trans-gluteal) 40 cases
- Biopsies under fluoroscopic, Ultrasound, and CT guidance 100 cases

## Second year

### Vascular

- Angioplasty and stenting (iliofemoral, SVC and central veins, renal, mesenteric, hemodialysis grafts and fistulae & subclavian artery) 30 cases
- AV fistula/graft surveillance and intervention: thrombolysis, angioplasty. 20 cases
- Uterine artery embolization 20 cases
- Transarterial chemoembolization (TACE), transarterial embolization (TAE) 10 cases
- Pharmacologic and mechanical thrombolysis, lungs (PE), lower limb veins (DVT). 20 cases
- Embolotherapy: trauma, pre-operative (renal cell carcinoma, bone metastases, trauma with abdominal or pelvic hemorrhage.), gonadal veins (varicoceles, pelvic congestion) , AVM, epistaxis, hemoptysis. 20 cases
- Transjugular liver biopsy 10 cases
- Intra-arterial and venous thrombolysis 10 cases
- Transjugular intrahepatic portosystemic shunting (TIPS) 10 cases
- Treatment of GI hemorrhage 10 cases
- Venous access: subcutaneous ports, dialysis lines, PIC lines, Hickman lines 10 cases
- IVC filters (retrievable & permanent) 20 cases
- Embolization for trauma and post-partum hemorrhage 10 cases
- Laser ablation of varicose veins. 10 cases
- Foreign body retrieval. 10 cases
- Sclerotherapy for Hemangioma , hygroma and others 10 cases

### Non-vascular

- Percutaneous vertebroplasty. 10 cases
- Percutaneous nephrostomies 10 cases
- Antegrade ureteric double J stents 5 cases
- Percutaneous feeding tubes (gastrostomies, gastrojejunostomies, primary jejunostomies & Cecostomy) 30 cases
- Tumour ablation liver, bone, renal and lung. 10 cases
- Percutaneous transhepatic cholangiography, Biliary drains and endoprosthesis insertions( external & internal stents + metallic stent) 25 cases
- Gallbladder interventional procedures (cholecystostomies) 5 cases
- Esophageal stents for obstruction and TE fistula 5 cases
- Cyst ablation (liver & kidneys) 5 cases
- Colorectal and duodenal stents 10 cases

- Abscess drainages from (trans-abdominal, trans-vaginal, trans-rectal and trans-gluteal) 20 cases
- Biopsies under fluoroscopic, Ultrasound, and CT guidance 20 cases
- Sympathectomies 20 cases

These cases represent the minimum number of cases the fellow should perform in each type of procedure however, the total number of cases should not be less than 1700 cases and it will be monitored by PACS system and/or manually (log book) if PACS is not available.

## **ON-CALL DUTIES**

It is expected that the fellow will be the first to respond to urgent calls and make decisions about accepting new cases, managing simple cases (e.g.) abscess drainage, nephrostomy; and managing post procedural follow up/ complications.

The fellow will not be allowed to conduct major procedures (e.g.) GI bleeding procedures without informing the consultant on call first.

The fellow will have a minimum of seven and a maximum of ten night calls/ month.

## **DIDACTIC ACTIVITIES**

The fellow is expected to deliver a minimum of:

- Four lectures/yr.
- Six journal club presentations/yr.
- Present sectional morning reports if available
- Participate actively in not less than 70% of interventional clinical-radiological meetings.
- Attend no less than 75% of weekly didactic activities.
- The fellows' teaching requirements toward junior staff is mandatory.

## **RESEARCH PROJECT**

The fellow is expected to complete at least one manuscript in interventional radiology during his training program and the project has to be accepted in one of the scientific journals either in interventional radiology or general radiology with the fellow as first author.

## **IX. EVALUATION & PROMOTION**

- The fellow will be counseled every month and a written evaluation will be made every three months.
- An end of year clinical promotion exam (oral) will be conducted.
- At the end of the two years training period, an end of training oral examination will be administered by local (& external examiner if possible), as well as a written exam in one center for all fellows in the Kingdom.

## **X. CERTIFICATION**

A certificate identifying the fellow as having successfully completed the fellowship training will be awarded by SCHS upon completion of the program under the title “Saudi Specialty Certificate of interventional radiology”.

## **XI. LEAVES**

The leaves will be according to the SCHS regulations as follows:

4 weeks /yr

5 days Eid

5 days emergency /yr

5 days academic leave /yr

The vacation should not exceed half of the assigned rotation.

## **Appendix I**

### **Conditions for hospital accreditation for interventional radiology**

#### **General conditions**

- The hospital is obliged to apply all conditions and regulations of the Saudi Commission for interventional radiology fellowship bylaws
- There has to be at least two Saudi Commission registered interventional radiologists.
- The radiology department has to provide lectures, tutorials, grand rounds, clinico-radiological meetings, journal club meetings, and mortality and morbidity meetings.
- The hospital has to provide scientific resource texts, journals and electronic databases in interventional radiology.
- There has to be a sufficient number of interventional radiology cases to complete the fellows' case requirements.
- The department has to pass the annual or biannual accreditation evaluation.
- The accreditation committee will be the body responsible to identify the number of accreditation years and the number of fellows allowed each year.
- There has to be suitable space facilities for didactic education.
- The department should give appropriate time for the faculty to participate in the educational activities of the program.
- The department should assign a program director in coordination with the scientific committee.
- The on-call duties should not be less than 7 and should not exceed 10 / month.
- Non compliance with the training requirements of the Saudi Commission for interventional radiology program may lead to withdrawal of the accreditation.

#### **Specific conditions**

- The hospital should have at least 300 beds.
- The faculty has to ensure the application of the interventional radiology training program including the revision of the radiology reports.
- There has to be at least one tutorial session / week.

- At least one clinico-radiological meeting / week.
- The accreditation committee will evaluate the hospital periodically.
- There has to be a radiation protection program in place.
- The department has to ensure the appropriate filing of cases, preferably by PACS.
- There has to be a sufficient number of faculty and support staff, including:
  - 2 interventional radiology consultants
  - 5 technologists
  - 4 nurses
  - 1 case manager
- Equipment:
  - One digital subtraction angiography machine
  - One ultrasound machine
  - One MRI unit
  - One CT scanner
  - An adequate number of recovery beds
  - A minimum total of six interventional cases / day



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Saudi Commission  
For Health Specialties



**Interventional Radiology-Training Evaluation**

Name: \_\_\_\_\_ Registration No.: \_\_\_\_\_ Level of Training: F1 F2  
Rotation: \_\_\_\_\_ Date From: \_\_\_\_\_ To: \_\_\_\_\_

No.	CRITERIA	PERFORMANCE EXPECTATION					
		Unsatis- factory (<5)	Below Average (5-<6)	Meet (6-7)	Above Average (>7-<9)	Outstanding (9-10)	Not Applicable
I	Knowledge and Academic activity						
	1. Basic Science						
	2. Clinical Science						
	3. Current Literature						
	4. Participation in Scientific Activities						
II	5. Research						
	Clinical and Technical Skills						
	6. Organization of Work						
	7. Records and Reports						
	8. Interpretation and Utilization of Information						
	9. Clinical Judgment and Decision-Making						
	10. Indications for Procedures						
	11. Procedures and Operative Skills						
	12. Performance in Emergencies						
III	13. Supervision and Consultations						
	Attitudes and Ethics						
	14. Discipline and Reliability						
	15. Patient Relations						
	16. Inter-professional Relations						
	17. Ethical Standards						

Total Score:  $\frac{\text{Total Score}}{\text{No. of Evaluated}} \times 10 =$

Comments:

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Director: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Fellowship Training Program

Fellow: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_