

POST FCPS FELLOWSHIP OPTIONS FOR RADIOLOGY RESIDENTS

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In the past two decades there have been tremendous advancements in radiology. Since the advent of x-rays in 1895 radiology has developed into a diverse field and includes a spectrum of subspecialties including ultrasound, fluoroscopy, nuclear medicine, mammography, computed tomography (CT), magnetic resonance imaging (MRI) and the latest field of interventional radiology (IR). Along with the progression of radiology, medicine has also developed with increasing medical expertise in various pathologies, ability to identify and treat many diseases and understanding of many radiological manifestations. With this it is becoming difficult for an individual to become an expert in many different subspecialties in radiology. So like other medical fields there has been development of subspecialties in radiology. In international circle many radiologists get trained in one or two subspecialties. In Pakistan subspecialty training is still in developing phase. However, there are a few options within Pakistan and some abroad.

The subspecialties in Pakistan can be divided into interventional and diagnostic. In interventional radiology the available subspecialties are neurointerventions and vascular interventions. On the diagnostic side available options include diagnostic neuroradiology and body cross sectional imaging. We hope that through this article the reader will obtain a good knowledge of the available radiology fellowships in Pakistan. We have also tried to gather information from personal experiences about radiology fellowships abroad. Hope this helps.

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OPTIONS IN PAKISTAN

DEPARTMENT OF DIAGNOSTIC RADIOLOGY, AGA KHAN UNIVERSITY HOSPITAL, KARACHI

1. Fellowship in Diagnostic Neuroradiology:

Overview: The Diagnostic Neuroradiology Fellowship Program covers all disciplines of diagnostic neuroradiology mainly focusing on brain and spine. Through this one-year program the interventional fellow will receive training in all aspects of neuroradiology imaging, including plain films, ultrasound, computed tomography and magnetic resonance imaging. In addition he will also observe neurovascular angiography and intervention procedures. The program provides a well-balanced clinical, research and teaching curriculum. Fellowship includes the requirement to conduct at least two meetings. Trainees will be supervised directly by neuroradiologist. Faculty is always available for supervision, assistance and consultation.

2. Vascular Interventional Radiology (VIR) fellowship:

Overview: This one year program offers opportunity to learn and develop skills in procedures ranging from simple percutaneous biopsies and angiographies to highly sophisticated procedures like cerebral aneurysm coiling and brain AVM embolizations under direct supervision of qualified interventional radiologists. The training program is structured to enhance substantially the subspecialty fellows' knowledge of the application of all forms of imaging including fluoroscopy, angiography, computed tomography and ultrasonography

required for the interpretation of vascular and interventional procedures. The training also encompasses learning patient's care, counseling, history taking, clinical assessment, patient follow up and clinical ward rounds.

DEPARTMENT OF RADIOLOGY, SHAUKAT KHANUM MEMORIAL HOSPITAL, LAHORE

1. Cross sectional imaging fellowship: This one year fellowship involves intensive training and exposure to oncologic as well as general cross-sectional imaging in a busy state-of-the-art setup. The holders of FCPS / FRCR or equivalent with four years of clinical radiology residency training can apply. The position is usually announced once a year in spring, and interviews held in summer when short listed candidates are interviewed by a broad panel of clinical radiologists and consultants from other disciplines. Typical workload is twelve sessions in a week from Monday to Saturday. Ten of the sessions are spent at main hospital doing interpretations directly supervised by consultants, the modalities in which the fellow is required to work mostly include CT, US, MRI, Fluoroscopy and Breast imaging (depending on interest and experience). No interventional work is mandatory at any modality; however, keen individuals are encouraged. Two sessions in a week, the fellow is stationed at satellite diagnostic center where he/she needs to work under indirect supervision of consultant and has to justify imaging and perform studies independently. The PACS / RIS allows sharing at both centers simultaneously making it easy for the fellow and consultants to keep in touch. The cross-sectional fellow is required to attend all hospital multidisciplinary clinical meetings which are fairly frequent and are occurring throughout the week. The fellow is actively encouraged to participate in on going research projects of the department/hospital and is at liberty to propose new projects for approval as well. The workplace environment is ISO certified and JCI accreditation is also under process.

2. CT-PET fellowship: This one year fellowship is new to Shaukat Khanum hospital. It involves training and exposure to CT-PET which is a new imaging modality in our country. The PET scanner with 16-slice CT has an onsite cyclotron and research facility. The eligibility criterion for application remains the same as for cross sectional imaging. The typical workload is ten sessions a week from Monday to Friday with seven sessions in CT-PET division doing all the clinical work and supervised interpretations of CT-PET scans. Three sessions of conventional radiology and cross sectional imaging are required as well per week. No calls and as per case load most weekends are off. The fellow is encouraged to work in close liaison with nuclear physicians/scientists and research analysts to come up with valid ideas for research in this emerging field. The position is announced once a year in autumn and clinical training starts in late fall/winter after interviews and selection.

3. Interventional Radiology/ VIR fellowship: This one year fellowship is aimed at intensive training in the field of interventional radiology, with emphasis on vascular intervention (VIR). The fellow works closely with the consultant interventionists and under their direct supervision. The workload is heavy with wide variation in the procedures regarding both diagnostic and therapeutic interventions. Large part of caseload comprises neurointervention. However, peripheral vascular interventions and embolizations are also very frequent. Hepatobiliary intervention makes a big chunk of the workload as well, from transarterial embolization of hepatic tumors to radiofrequency ablative procedures all are being done on regular basis. It requires ten sessions a week from Monday till Friday with weekend on-call with the consultant. The fellow is given challenging opportunities and is required to attend emergency calls requiring radiological intervention. The eligibility criteria include basic qualification like FCPS/FRCR with four years of clinical radiology training in an institute where trainees are regularly rotated through interventional modalities. Some keenness and understanding of the basic interventional procedures and protocols is preferred. Work routine is very busy and competitive and the atmosphere is demanding in the hospital with prolonged working hours.

OPTIONS IN UNITED STATES

Overview: Acquiring radiology fellowship in USA is a daunting task. Unreliability of visa and security clearance makes it even more difficult. However 100s of doctors make it to USA every year and successfully enroll in residency programs. Many doctors also make it to radiology fellowships without actually having done radiology residency in USA. Therefore it is not impossible. However there are certain hurdles such as getting through USMLE step 1, USMLE step 2 and Clinical skill assessment (CSA) examinations to become ECFMG certified. USMLE step 3 is also a requirement for fellowship programs.

So once you are eligible the next step is to start early, preferable in your 2nd year of radiology residency. Remember that you have to apply for fellowships a year ahead of the start of residency and in the USA fellowships start on July 1st on the dot. And you need plenty of time to get information about different programs such as which ones are foreign medical graduate (FMG) friendly programs. The only way you will find out is by going to teach fellowship program and getting in touch with the program directors. So how to I make my self more eligible? Of course USMLE scores are most important. But the heading in your resume which says *Publications & Presentations & Awards*, is very important and a powerful way of letting someone know how good you are and how much you like radiology. Research papers, grants and clinical trials have maximum points. Publications, posters, presentations and conferences all play a role. If possible try to get rotation/electives in the place you want to go for fellowship during your residency. This will allow you to get to know the people there and for them to evaluate you. It is also an excellent way of getting letters of recommendations.

Where and how do I start applying? Once you have decided which subspecialty you want to do fellowship in start gathering information. Obtain the list of programs that offer you fellowships in that subspecialty.


Surprisingly VIR and nuclear medicine are easier fellowships to get. Musculoskeletal, body imaging and pediatrics are more competitive. Next get the list of accredited and non-accredited fellowships. You can obtain the list Accreditation Council for Graduate Medical Education or ACGME (www.acgme.org/adspublic/) and the AMA website (<https://freida.ama-assn.org/Freida/user/view ProgramSearch.do>). It is easier to get fellowships in non-accredited programs as they don't use the match which is the online program like for the residency programs. But remember not all accredited programs fill up all positions and sometimes have to take fellows outside the matching program to fill up positions.

Go to each program website and look for information that will help you decide if you are eligible. If you can not find information, then email them. If you will not ask, you will not find out. The more aggressive you will be the more easily you will get the information and they will show more interest in you. You can use similar tactics in getting information about fellowship programs in other countries such as Europe and Australia.

Will be worth it? Of course it is. Acquiring fellowship abroad would be a learning experience like no other. The new environment will help you attain a more confident approach to your work. And imagine the endless possibilities....

CONCLUSION

In an increasingly competitive world of radiology one needs to plan his future well to achieve the desired goals. Usually fellowships are not sought out early and are usually an afterthought. The key is know what you want, start early, make contacts, get to know fellowship program directors, let them know you exist and are very interested in their program, aggressively pursue your dream and don't give up easily. There are opportunities in foreign countries such as USA, Australia, Europe and UK and Singapore. However the programs in Pakistan have been developed by



professionals who are well trained, have tremendous experience and work in high volume centers where learning and teaching are fundamentals of training program. One to two years in subspecialty training will make a great addition to the resume, attitude and overall confidence as an individual. More radiologists with subspecialty training will also give our clinical fields support, improve diagnosis and patient care. *Good luck in getting the radiology fellowship of your choice!*

This article is a collective effort by residents of different residency programs in Pakistan. We only hope that this will in any way help you in planning your future career in radiology. Please feel free to contact us if you need any information or guidance regarding the above. If you have any experience to share your information will be helpful to us all.