

POST DOCTORAL FELLOWSHIP PROGRAMME IN CARDIOVASCULAR RADIOLOGY

SYLLABUS

COURSE DURATION : ONE YEAR

Need for a Fellowship:

Cardiovascular Radiology is a new and rapidly evolving imaging modality which is poised to alter decision making in clinical practice. Radiology has the ability to provide accurate anatomical and functional information which have both diagnostic and prognostic value. The complex nature of the imaging devices and anatomy as well as the rapidly advancing uses of these modalities requires dedicated training. There is an increasing need for cardiovascular imaging subspecialists adequately trained in the techniques of and practical application and interpretation of cardiovascular and cardiothoracic imaging, which is beyond the training received in a general radiology residency.

Objectives:

The general objectives of this fellowship program in cardiovascular Radiology are to provide sufficient experience and training for the trainee to be in charge of a cardiovascular Radiology imaging program and research.

Topics in Curriculum:

1. Cardiovascular **anatomy**.
2. **Physiology and Pathophysiology** of the Cardiovascular System.
3. Cross sectional **anatomy** of the Heart and Chest as well as the Vascular system.
4. Indications and **appropriateness criteria** for Cardiac Radiology.
5. Contraindications for Radiology.
6. Basic training in interpreting ECG.
7. **Basic training** in interpreting Echocardiogram, Myocardial perfusion imaging and Treadmill test
8. Catheter Angiogram views and interpretations.
9. CT Scan **Equipment** and types.
10. **Physics** of Radiology scanning.
11. **Pre-procedure preparations** and clinical history taking.
12. **Heart rate reduction** and contraindications to pre-procedure medications.
13. **Performance of the Cardiovascular Radiology** procedure for coronary, cerebral, peripheral, pulmonary and aortic angiograms including patient positioning,

iv contrast dose and flow rate, radiation factors, algorithms for reconstruction and obtaining the best dataset.

14. ECG gating
15. Assessing scan quality
16. Identifying various artifacts and their reasons. Correcting for artifacts.
17. **Postprocessing** of the Radiology dataset and virtual manipulation. Obtaining the vascular anatomy with volume rendered, curvilinear, multiplanar and maximum intensity projection reconstructions.
18. **Interpretation** of images and demonstration of pathology with appropriate views.
19. **Correlation** with clinical findings and other investigations, Catheter Angiograms, perfusion scan, echocardiogram, treadmill test and MRI where necessary. Role of other imaging modalities (MRI / Nuclear Imaging) in complementing Cardiovascular Radiology.
20. Analysis for vascular **Stent Placement**.
21. Analysis of post coronary artery **bypass grafting**.
22. Analysis of the **stented** artery
23. **Congenital heart disease** analysis with both adult and paediatric cases, performance of Cardiovascular Radiology and interpretations.
24. Assessment of **heart valves** prior to replacement and TAVI procedures for cross sectional valve area, aortic annular diameters, circumference and area as well as post replacement analysis.
25. Assessment of **Cardiac function**, wall motion abnormalities, LV mass.
26. **Calcium score** of coronary arteries and heart valves
27. Performance of peripheral Radiology **Venograms** including lower and upper limb, neck and intracranial Venograms.
28. Assessment of Vascular **Malformations**.
29. Assessment of **tumor vascularity**, supply and tumor adherence to vascular structures prior to resection.
30. Assessment of **radiation dose** to patient and dose reduction techniques.
31. Management of adverse **reactions** to contrast.
32. **Epidemiology** including risk factors for Atherosclerosis and coronary artery disease and **prevention** of coronary artery disease as well as role of screening in

coronary artery disease.

33. Cardiac MRI

34. Cardiac Nuclear Medicine – SPECT & PET CT

35. Plain Radiograph Chest

36. Basic ECHO

37. Aortic MRI
