

Krishna Vishwa Vidyapeeth

(Deemed to be University), Karad

Curriculum for Fellowship in

Interventional Cardiology

Duration 1 year

GOALS

- Fellow should have understanding of indications, risks, and benefits of invasive diagnostic and therapeutic procedures in cardiovascular disease,

OBJECTIVES

The objectives of the clinical training are:

1. Be clinically experienced in the diagnosis and management of patients with acute and chronic ischemic heart disease and valvular disease
2. Acquire knowledge in selecting appropriate treatment modality in patients with coronary artery disease
3. Acquire knowledge in planning percutaneous coronary intervention
4. To know indication and contra indications of coronary and peripheral interventions
5. Have knowledge of procedure & post-procedure complication & its management.
6. To understand importance of patient education, including risk factor modification and discharge planning
7. Have understanding of coronary physiology, plaque morphology and composition, plaque vulnerability, lesion characterization and plaque response to intervention
8. Have acquired the skills needed for the completion and interpretation of Angiograms, hemodynamics, intravascular ultrasound, doppler, coronary flow reserve and pressure measurement
9. Comprehend and have acquired experience in cardiovascular Pharmacology
10. Be able to recognize and manage all aspects of mechanical and ischemic complications
11. Have acquired the necessary skills that are needed to manage acute hemodynamic resuscitation including use of vasoactive agents, use of antiarrhythmic drugs, use of thrombolytic agents, CPR, advanced life support, pericardiocentesis, intra-aortic balloon pump
12. Have learned femoral, brachial/radial cannulation for coronary and peripheral interventions

ELIGIBILITY:

Post DNB/DM (Cardiology) qualification/ Post MD with cardiology residency or equivalent.

METHODS OF TRAINING:

The fundamental components of the teaching programme includes:

- Case presentations & discussion
- Seminar
- Journal club
- Grand round presentation
- poster and have one oral presentation at least once during their training period in a recognized conference

SYLLABUS:

1. Basic Science

- a. **Anatomy and physiology:** cardiac, vascular and coronary artery anatomy, including anatomical variants and frequent congenital abnormalities; basic circulatory physiology, myocardial blood flow regulation, myocardial physiology and metabolism.

Coronary anatomy and physiology, including

- Classification of coronary segments and lesion characteristics;
 - Assessment of lesion severity, intracoronary pressure and flow velocity measurement, fractional flow reserve (FFR);
 - Assessment of collateral circulation
- b. **Vascular biology**, including the processes of vasoreactivity, plaque formation, vascular injury and healing, restenosis, SVG atherosclerosis, cardiac allograft vasculopathy.
- c. **Haematology**, including platelet function and aggregation, clotting cascade, and fibrinolysis.

2. Pharmacology

- a. Pharmacokinetics, pharmacodynamics of vasoactive drugs, antiplatelet agents, thrombolytics, anticoagulants, antiarrhythmics, inotropic agents, and sedatives & its appropriate use.
- b. Biologic effects and appropriate use of angiographic contrast agents, including prevention of renal dysfunction and allergic reactions.
- c. Atherosclerosis secondary prevention of PCI candidates focusing on optimal care of hypertension, dyslipidemia, diabetes and smoking cessation.

3. Imaging

- a. Radiation physics, radiation risks and injury, and radiation safety, including glossary of radiological terms, methods to control radiation exposure for patients, physicians, and technicians.
- b. Specific imaging techniques in interventional cardiology, such as quantitative angiography and intravascular ultrasonography.
- c. Principles of cardiac computed tomography, potential role for non-invasive coronary imaging.
- d. Digital archiving and tele-communication of angiographic images.

4. Indications for treatment and patient selection

- a. Indications for elective cardiac catheterisation and related catheter-based interventions in management of ischaemic and valvular heart disease, in accordance with the ESC guidelines and evidence based medicine.
- b. Indications for urgent catheterisation and management of acute myocardial infarction, including differentiation between patients who require primary or rescue angioplasty, coronary bypass surgery or conservative treatment.
- e. Indications for mechanical support devices in the management of haemodynamically compromised patients (intra-aortic balloon pump etc.)
- c. Present indications for surgical re-vascularisation in coronary artery disease

5. Procedural Techniques

- a. Vascular access including principles of femoral, radial, and brachial procedures, closure techniques, detection and treatment of complications.
- b. Appropriate catheter selection to achieve optimal opacification and support.
- c. Selection of optimal projections for lesion visualisation and treatment.
- d. Knowledge of angioplasty material and proper selection of guidewires, balloon catheters, and stents.
- e. Knowledge of types and characteristics of bare metal and drug-eluting stents including post-implantation pharmacological treatment and their risk of thrombosis and restenosis.
- f. Classification, mechanisms, and therapy of in-stent restenosis.
- g. Indications for mitral, aortic, and pulmonary valvuloplasty in management of
- h. valvular disorders, including factors that differentiate patients who require
- i. surgical commissurotomy or valve repair or replacement.
- j. Indication for catheter-based interventions in management of congenital heart disease in adults, such as closure of intracardiac defects (ASD, PFO, VSD,PDA).
- k. Indications for septal alcoholisation in obstructive hypertrophic cardiomyopathy

6. Management of complications of percutaneous intervention

- a. Mechanical complications, such as coronary dissection, spasm, perforation, “slow/ no reflow”, cardiogenic shock, left main trunk dissection, cardiac tamponade including pericardiocentesis, peripheral vessel occlusion, and retained components.
- b. Thrombotic and haemorrhagic complications associated with percutaneous intervention or drugs.

7. Miscellaneous

- a. Peripheral angiography and angioplasty including essential radiological anatomy, indications and principles of carotid, subclavian, renal and iliac stenting.
- b. Ethical issues and risks associated with diagnostic and therapeutic techniques.
- c. Statistics, epidemiologic data, and economic issues related to interventional procedures.

LOG BOOK

A candidate shall maintain a log book of operations (assisted / performed) during the training

period, certified by the concerned post graduate teacher / Head of the department senior consultant.

ASSESSMENT

Formative Assessment

Part I:- Conduction of theory examination

Part-II :- Work place based clinical assessment

Summative Assessment

Theory Examination:

1. Theory examination comprises of one paper with maximum marks of 100.
2. There are 10 short notes of 10 marks each in the Theory paper
3. Maximum time permitted is 3 hours.

Practical Examination:

1. Maximum marks : 300
2. Comprises of Clinical Examination and viva

Recommended Text Books and Journals

a. Books

1. Baim DS, Grossman W, eds. Cardiac Catheterization, Angiography, and Intervention, Sixth edition. Baltimore: Lippincott, Williams & Wilkins, 2000.
2. Pepine CJ, Hill JA, Lambert CR, eds. Diagnostic and Therapeutic Cardiac Catheterization. Third Edition, Baltimore: Williams & Wilkins, 1998.
3. Perler BA, Becker GJ, eds. Vascular Intervention: A Clinical Approach. New York: Thieme, 1998.
4. Safian R, Freed M, eds. The Manual of Interventional Cardiology. Third Edition, Birmingham: Physicians Press, 2001.
5. Topol EJ, ed. Textbook of Interventional Cardiology, Third Edition, Philadelphia: WB Saunders, 1999.
6. Uflacker R, ed. Atlas of Vascular Anatomy. Baltimore: Williams & Wilkins, 1997.
7. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine
8. Cardiology an Illustrated Textbook
9. Mayo Clinic Cardiology: Concise Textbook
10. Textbook of Interventional Cardiology, 7th Edition
11. The ESC Textbook of Cardiovascular Imaging
12. Heart

b. Journals:

1. Annals of Pediatric Cardiology
2. Circulation
3. Heart
4. Heart Rhythm

