

Fellowship in Clinical Cardiology  
Index Course Module Document

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## Detailed course module document

### 1. Programme overview

Name - Fellowship in clinical cardiology

Duration - 1 year full time

Intake - 2 seats (per academic year)

Location - Rohilkhand medical college and hospital

Mode - In campus with clinical training and observership

### Programme objective

To develop competency in diagnosis and guideline directed medical management of cardiac conditions and clinical observership for various non invasive procedures including echocardiography

### 2. Eligibility criteria -

- MD/DNB in medicine or equivalent postgraduate medical degree recognized by NMC.
- Registered with appropriate medical council/ license to practice.
- Good academic record and demonstrated interest in cardiology.
- Candidates with any prior disciplinary issues or ethical violations are not eligible.

### 3. Programme educational objective (PEOs) -

The fellow should be able to -

- PEO 1 - understand the basics of cardiac anatomy, physiology and pharmacology so as to apply them in clinical conditions.
- PEO 2 - diagnosis of various cardiovascular diseases and their management with expertise
- PEO 3 - preventive cardiology and proper risk assessment for ASCVD.
- PEO 4 - conduct meaningful research and contribute to academic publications.
- PEO 5 - perform and interpret non invasive cardiology investigations

### 4. Programme outcomes (POs)

Upon successful completion of the Programme, the fellow will have -

- PO 1 - Clinical expertise - to correctly diagnose, evaluate and manage chronic cardiovascular diseases and cardiac emergencies .
- PO 2 - Preventive and community cardiology - risk assessment of the patients coming to opd for the future ASCVD and hence initiate proper preventive care.
- PO 3 - Procedural competence - to perform and interpret non invasive cardiac investigations correctly.
- PO 4 - Patient centered care - to deliver compassionate, ethical care to the patient and families.
- PO 5 - Professionalism and ethics.
- PO 6 - Research and academics - to contribute to academic publications.

## 5. Programme specific outcomes (PSOs)

- a. PSO 1 - Advance clinical cardiology - to diagnose and manage cardiovascular diseases like heart failure, valvular heart-disease, cardiomyopathies, pulmonary hypertension, adult congenital heart disease.
- b. PSO 2 - Cardiac emergencies and intensive care - to manage cardiac emergencies and critical care settings including management of cardiogenic shock, malignant arrhythmias and post MI complications and advanced cardiac life support.
- c. PSO 3 - Non invasive cardiology expertise - to perform and interpret ECG, HOLTER, TMT, ABPM AND ECHOCARDIOGRAPHY.
- d. PSO 4 - Preventive and rehabilitation cardiology - Apply principals of preventive cardiology and rehabilitation/ lifestyle modification and primary prevention including risk factor assessment and management.
- e. PSO 5 - Research and academics - to conduct clinical research and contribute to academic publications.

## 6. Course outcomes (COs)

At the end of the course, the fellow will be able to -

- a. CO 1 - Diagnose and manage chronic cardiovascular diseases.
- b. CO 2 - Manage cardiac emergencies and critical care.
- c. CO 3 - Primary prevention of patients at risk of ASCVD.
- d. CO 4 - Correctly perform and interpret non invasive cardiovascular investigations.
- e. CO 5 - Publication of an original research paper in an indexed journal.

## 7. Course content modules

- a. Module 1 - Basics of cardiology
  - Cardiac anatomy
  - Cardiac physiology
  - Cardiac electrophysiology basics
  - Basics of ECG
  - Basics of hemodynamics
- b. Module 2 - Heart diseases (all major cardiac disorders)
  - Ischemic heart disease
  - Heart failure
  - Valvular heart disease
  - Arrhythmias
  - Cardiomyopathies
  - Pericardial disease
  - Congenital heart disease
- c. Module 3 - Preventive cardiology
  - Risk assessment
  - Lifestyle medicine
  - Preventive pharmacology
  - Screening

- Cardiac rehab basics

d. Module 4 - Echocardiography

- Echo physics
- LV function assessment
- Valvular severity assessment
- Pericardial assessment
- RV and pulmonary pressure
- Basics of stress echo

e. Module 5 - Observership (clinical exposure)

- OPD exposure
- Ward rounds
- ICU exposure (limited)
- ECHO lab watching
- CATH lab observership (non hands on)
- Case discussions

## 8. Curriculum structure

### 8.1 Theory syllabus -

1. Basics of cardiac anatomy including conduction system and coronary circulation with relevant embryology.
2. Basics of cardiac physiology including cardiac cycle, pressure volume loops and coronary blood flow regulation.
3. Cardiac electrophysiology including basic arrhythmia mechanism and anti arrhythmic drugs.
4. Basics of ECG including P wave, QRS complex, ST segment, various intervals and chamber enlargement.
5. Basics of cardiac hemodynamics.
6. Ischemic heart disease including chronic coronary syndrome classification, NSTEMI, STEMI, indications for thrombolysis/PCI and guideline directed treatment.
7. Heart failure including HFpEF, HFrEF, acute vs chronic HF, NYHA classification, guideline directed management of HFrEF and HFpEF and newer therapies for HF management.
8. Valvular heart disease including rheumatic heart disease - diagnosis, prophylaxis and management.
9. Arrhythmias including AF, SVT, VT, Brady arrhythmias - basics and management.
10. Cardiomyopathies including dilated, hypertrophic, restrictive cardiomyopathy, takotsubo, ARVC and myocarditis.
11. Pericardial disease including pericardial effusion, tamponade and constrictive pericarditis.
12. Congenital heart diseases basics including presentation in adults.

13. Risk assessment including various ASCVD scores, lipid profile and coronary calcium for primary prevention.
14. Preventive pharmacology and lifestyle medicines.
15. Non invasive screening for patients at risk.
16. Echocardiography including physics, LV function assessment, valvular severity assessment, pericardial effusion, tamponade, pulmonary artery pressure assessment.
17. Research methodology with study design, biostatistics and ethics in research.

#### 8.2 Practical training

- Management of chronic cardiovascular diseases
- Observership and management of critically sick cardiac patients requiring CCU care including acute decompensated heart failure, cardiogenic shock , arrhythmia management, post MI, post PCI management.
- ECHO lab watching with how echo is performed, color Doppler, EF calculation
- Cath lab observership (non hands on) including angiography, temporal pacing and pericardiocentesis.

#### 9. Teaching and learning methods

- Didactic lectures and seminars
- Case based learning
- Weekly clinical discussions and ECG discussions
- Non invasive cardiac laboratory training
- Research presentation
- Regular formative assessment

#### 10. Clinical exposure

- Diagnosis and guideline directed management of cardiovascular conditions.
- Management of critically sick cardiac patients.
- Non invasive cardiovascular assessment like ECG, TMT, HOLTER, ABPM and ECHO.
- Non hands on exposure of CATH lab procedures.

#### 11. Research project

- Each fellow will undertake 1-2 original academics work related to cardiology under course director.
- Encouragement to publish original research in indexed journals.

#### 12. Assessment and evaluation

- Continuous formative internal assessment via case discussions/lab work/log book etc (30%)
- Mid term practical/viva exam (10%)
- Final examination comprising (30%)
  1. Theory exam
  2. Practical exam/ viva voce
- Academic work submission (30%)

#### 13. Code of conduct policy

- Fellows must maintain professional ethics in all academics and clinical activities
- Timely attendance and active participation are mandatory

- Disclosure of any conflict or interest related to diagnostic, research or patient care is required
- Fellows involved in unethical behavior or malpractice may face disciplinary action.

#### 14. Career opportunities -

- Consultant physician with expertise in cardiology in hospitals.
- Academic faculty position in medical college.
- Diagnostic non invasive cardiology investigations

#### 15. Timetable

MONTH	ACTIVITY	DETAILS
1 - 3	BASICS OF CARDIOLOGY	CARDIAC ANATOMY, PHYSIOLOGY, ELECTROPHYSIOLOGY, ECG, HAEMODYNAMICS
4 - 7	ALL MAJOR CARDIOVASCULAR DISORDERS	ISCHEMIC HEART DISEASE, HEART FAILURE, VALVULAR HEART DISEASE, ARRHYTHMIAS, CARDIOMYOPATHIES, PERICARDIAL DISEASES AND CONGENITAL HEART DISEASES.
8 - 9	PREVENTIVE CARDIOLOGY	RISK ASSESSMENT, LIFESTYLE MEDICINE, PREVENTIVE PHARMACOLOGY, SCREENING, CARDIC REHAB BASICS
10 - 11	ECHOCARDIOGRAPHY, TMT. HOLTER, ABPM	INTERPREATION OF NON INVASIVE NON INVASIVE CARDIOLOGY INVESTIGATIONS AND THEIR CLINICAL APPLICATIONS
12	CATH LAB OBSERVERSHIP	NON HANDS ON OBSERVERSHIP OF CATH LAB PROCEDURES.

#### 16. Faculty profiles

- Dr. Aditi Rastogi - DM (INTERVENTIONAL CARDIOLOGY) - course director, expert in cardiology with 10+ years of experience.

## 17. Conflict of interest and ineligibility

To maintain the academic integrity and ethical standards of the fellowship in clinical cardiology, the following candidates shall not be eligible to apply -

1. Employment/ Age conflicts
  - Individuals already holding a full time appointment that prevents them from fulfilling full time academic responsibilities during the fellowship.
  - Candidates enrolled in any other fellowship, residency, or academic program simultaneously.
  - Candidates who already have enough work experience in clinical cardiology as faculty/staff member shall be ineligible.
2. Professional misconduct
  - Applicants who have faced disciplinary action, suspension or license cancellation by a medical council or any other competent regulatory authority.
3. Financial or ethical conflict
  - Candidates with ongoing legal or ethical investigations related to laboratory practices, patient misdiagnosis or clinical fraud
  - Any candidate with declared or undeclared financial interest in competing private cardiology ventures, labs offering incentives that may pose a bias in training or evaluation.
4. Academic dishonesty
  - Prior record of plagiarism, data falsification or unethical research conduct disqualifies participation.