

**COMPETENCY BASED POSTGRADUATE TRAINING
PROGRAMME
FOR
FELLOWSHIP IN CARDIOVASCULAR ANAESTHESIA
(FCA)
AT
AIIMS NAGPUR**

PREAMBLE:

The FCA (FELLOWSHIP IN CARDIOVASCULAR ANAESTHESIA) is a one-year course aimed at training the anesthesiologists and developing their skills in the field of cardiac surgery, interventional cardiology, Thoracic surgeries, Vascular surgeries, echocardiography, extracorporeal membrane oxygenation (ECMO), and bronchoscopy. The anesthesiologist who has undergone the required training for post doctorate course in cardiac anesthesia should be able to serve the community, should be competent to effectively handle the problems in specialized cardiac anesthesia and should be aware of the recent advances pertaining to the specialty and research methodologies.

OBJECTIVE:

To provide an intense, structured training program for post MD/DNB (Anesthesia) candidates, to enhance quality of anesthetic management in cardiovascular science.

Objectives of One-Year Training Program in Cardiovascular Anesthesia

Cognitive Domain

At the completion of the one-year training program, the candidate must be able to:

- | S.No. | Competencies |
|--------------|---|
| 1.1 | Demonstrate a focused understanding of basic sciences relevant to Cardiovascular Anesthesia. |
| 1.2 | Exhibit knowledge of anesthetic management for common surgical conditions related to cardiovascular diseases, across various age groups, with an understanding of the etiology, pathophysiology, and surgical treatments. |
| 1.3 | Understand the theory behind the etiology, mechanism, and management of critical conditions requiring cardiopulmonary-cerebral resuscitation. |
| 1.4 | Demonstrate an understanding of the principles, pathophysiology, components, conduct, and complications of cardiopulmonary bypass and cardiac assist devices, with an emphasis on common clinical scenarios. |
| 1.5 | Show basic understanding of the principles and complications associated with major vascular surgeries. |
| 1.6 | Apply principles of critical care in postoperative cardiovascular intensive care units. |
| 1.7 | Recognize disease conditions beyond the area of competence and refer patients appropriately before anesthesia. |
| 1.8 | Provide informed advice on anesthetic management for cardiovascular surgical cases and conduct this management effectively. |
| 1.9 | Regularly update knowledge through self-study and participation in relevant CMEs, workshops, and seminars. |
| 1.10 | Teach and guide junior colleagues, students, and paramedical staff. |
| 1.11 | Demonstrate basic understanding of medicolegal aspects specific to cardiovascular anesthesia. |
| 1.12 | Display basic knowledge of administrative aspects of the Cardiovascular Operation Suite. |
| 1.13 | Engage in basic audit processes and apply information technology for clinical and biomedical research, with the intent to publish and present findings. |

Psychomotor Domain

The candidate must be able to:

S.No.	Competencies
2.1	Perform preoperative evaluations for cardiovascular surgery patients, including history-taking, physical examination, and interpretation of relevant investigations.
2.2	Administer anesthesia for cardiovascular surgical procedures with supervision, progressing to independent practice for routine cases.
2.3	Perform invasive procedures essential for optimal perioperative patient care.
2.4	Provide basic and advanced cardiac life support.
2.5	Demonstrate core intensive care skills necessary for managing postoperative cardiovascular patients.
2.6	Take responsibility for monitoring patients during the perioperative period.
2.7	Adapt ethical principles, professional honesty, and integrity in all aspects of cardiovascular anesthesia practice.
2.8	Deliver anesthesia care regardless of the patient's social status, caste, creed, or religion.
2.9	Communicate effectively with patients and their families about anesthetic management, critical care, and pain management, ensuring informed consent is obtained.
2.10	Exhibit leadership in the operating suite, fostering effective teamwork in a supportive environment.
2.11	Apply ethical principles in research involving human and animal subjects.
2.12	Demonstrate humility, recognizing limitations in knowledge and skill, and seek help from colleagues when necessary.
2.13	Respect patients' rights, including the right to information and the right to seek a second opinion.

Affective Domain

The candidate must be able to:

S.No.	Competencies
3.1	Uphold ethical principles in all aspects of Cardiovascular Anesthesia practice and research.
3.2	Demonstrate respect, compassion, and integrity while interacting with patients, their relatives, and support staff.

S.No.	Competencies
3.3	Develop skills in listening and respecting patient and family wishes regarding treatment decisions.
3.4	Educate and counsel patients effectively with empathy.
3.5	Lead the consult service effectively, interacting with referring doctors and multimodality teams.
3.6	Understand and practice teamwork, leading surgical teams in both emergency and elective settings.
3.7	Interact effectively with professional colleagues from other specialties to plan multimodality treatment strategies.
3.8	Teach the basics of Cardiovascular Anesthesia to students and support staff.
3.9	Perform required documentation and patient follow-up diligently.
3.10	Adhere to ethical standards in the use of social media for teaching, learning, and communication.
3.11	Develop skills in public health communication and education.
3.12	Maintain the highest ethical standards in both clinical practice and research.
3.13	Manage emergency situations related to cardiovascular diseases and associated procedures/surgeries.
3.14	Conduct administrative tasks such as audits and morbidity/mortality assessments, and present findings in meetings.
3.15	Develop public speaking skills necessary for presenting data and research at conferences.
3.16	Build an aptitude for establishing and leading a Cardiovascular Anesthesia unit.
3.17	Display humility, acknowledge limitations, and seek assistance when needed.

By the end of the fellowship the fellow will be able to:

1. To function as an independent faculty/consultant in the specialty of cardiac anesthesiology.
2. To carry out and help in conducting applied research in the field of cardiac anesthesiology.
3. To plan and set-up independent cardiac anesthesia unit catering to cardiothoracic vascular surgery and intensive cardiac care and cardiac catheterization laboratory.

4. To perform a comprehensive Perioperative Trans Esophageal Echocardiography (TEE) and Transthoracic Echocardiography (TTE) in the setting of Cardiac Surgery.

DURATION OF COURSE:

The course of the study shall be for a period of one year consisting of two terms of six months each.

ELIGIBILITY FOR ADMISSION:

1. Post MD/DNB in Anesthesiology
2. Application form as per format to be submitted before due date as advertised on website

FEES: As per institutional policy

SELECTION METHOD: Entrance Examination conducted by the Institution.

Entrance Exams for Selection:

- 25 Marks MCQ Test based on subject concerned.
- 25 MCQs of 1 mark each
- No Negative Marking
- Merit list will be displayed for eligibility

INFRASTRUCTURE

We have a fully functional Cardiac Anesthesia and Cardio- thoracic surgery department with dedicated staff.

A fully functional cardiothoracic O.T with heart lung machine, IABP machine, ECMO Machine, 11 bedded Cardiac care unit and upcoming heart transplant programme.

CONTRIBUTING DEPARTMENTS

Department of Anaesthesiology & Critical Care, AIIMS Nagpur

Department of C.T.V.S, AIIMS Nagpur

Department of Cardiology, AIIMS Nagpur

COURSE CONTENT

CURRICULUM

- Anatomy & Physiology of Cardiovascular System, coronary circulation, ischemic heart disease, & Anesthetic Management.

- Pharmacology of IV, Inhalation agents Pharmacology of antiarrhythmics, anti-failure & antianginal drugs.
- Pre-operative assessment and evaluation of cardiac patients, intra-operative monitoring, blood transfusion conservation of blood, coagulation monitoring.
- Pathophysiology of Congenital Heart Disease (CHD) & Anesthetic management of Pediatric Cardiac Surgery.
- Pathophysiology of cardiac valve lesions & Anesthetic management.
- Cardiopulmonary Bypass, CNS monitoring, PFT, acid base balance, post-operative care, ventilatory care, psychiatric care.
- Monitoring in anesthesia both invasive and noninvasive techniques in the perioperative period during cardiothoracic surgeries and interventions.
- Infections, AIDS, anti-biotics & Nutrition.
- Renal failure, ARDS, Multi Organ Failure, immunology
- Cardiac Catheterization, pacing and other procedures.
- Echocardiography TTE, TEE, MRI, PET.
- Heart failure, transplantation, ethical & legal aspects.
- BCLS, ACLS critical care.

TEACHING METHODS: -

Training includes:

Sr No	Teaching/Learning Activity	Frequency
1.	Clinical Case presentation	Once a fortnight
2.	Clinical grand rounds	Once a fortnight
3.	Operative procedure perioperative planning and discussion	Before every case
4.	Journal Club	Once a fortnight
5.	Seminars/Webinars	Once a fortnight
6.	Cardiology / CTVS meet	Once a fortnight
7.	Project review	Once

PERIOD OF POSTING IN VARIOUS UNITS

The trainee will be posted in different specialties and during of this posting will be as following :

S. No.	Posting	Duration	Timing
1.	Adult Cardiac anaesthesia and ICU	6 months	All semesters
2.	Paediatric cardiac anesthesia and ICU	4 months	All semesters
3.	Cath Lab	1 month	2 nd Semester
4.	Echo room	1 months	2 nd Semester

Every candidate shall maintain a Logbook/work diary and record his/her participation in the training programs conducted by the department such as journal reviews, seminars, etc. The Logbook shall be scrutinized and certified by the Head of the Department and Head of the Institution and presented during practical/clinical examination.

PROJECT WORK

One project work is mandatory during the course tenure.

A. SCHEME OF EXAMINATION

The formative & Summative Examination Pattern is as follows:

(i) Formative Examination: -

- One month prior to summative exam and pattern is as summative exam.

(ii) Summative Examination: -

- Paper of 50 Marks
- MCQs: 20 x 1=20 Marks
- Short Notes: 4 x 5 Marks =20 Marks
- LAQ: 1 x 10 Marks=10 Marks
- Practicals of 50 Marks

Eligibility to appear for Summative exam: -

- 40% Marks in formative exam separately in Theory & Practical
- 75% Attendance

For certification the Qualifying marks will be 50% Marks Separately in Theory & Practicals in the Summative exam.

Repeat Summative Exam in 45 Days after results.

B. SIX MONTHLY PROGRESS REPORT

The progress of the trainees will be monitored with the help of a six-monthly structured report. The report will contain details pertaining to attendance, teaching-learning activities, clinical duties, teaching assignments, practical work, marks obtained at intermediate examinations, papers/posters presented and progress of project work. The performance of the student will be graded by the PG Guide and the Head of the Department.

C. ESSENTIAL PRE-REQUISITE TO APPEAR FOR SUMMATIVE ASSESSMENT

- i. Minimum 75% attendance
- ii. Completion of the project work
- iii. Minimum one scientific paper/poster presentation at an International/National/State Conference

AWARD OF FELLOWSHIP:

Candidates who fulfill requirements mentioned above shall be eligible for award of fellowship.

TEXT BOOKS FOR REFERENCE

The following textbooks are recommended for reference:

1	Cardiac anesthesia	Joel Kaplan, Reich, Konstadt
2	Pediatric cardiac intensive care	Chang, Hanley
3	Perioperative care in cardiac anesthesia and surgery	Cheng, Davy
4	A practical approach to cardiac anesthesia	Hansley, Martin
5	Pediatric cardiac anesthesia	Carol .l. Lake, Peter .D.Booker
6	Clinical recognition of Congenital Heart disease	Joseph .K.Perloff
7	Principle and practice of mechanical	Tobin

	ventilation	
8	Anesthesia for cardiac surgery	James A. Dinardo
9	Principles of Crititcal Care	Hall, Jesse B
10	Blood gas analysis: A practical perspective	Shyam sunder T
11	Heart transplantation	Kirklin, james K
12	The ICU book	Marino, Paul L
13	Clinical Anesthesiology	Morgan, Edward G
14	Understanding Anesthesia Equipment (R)	Dorsch, Jerry A
15	Medicine for Anesthetists	Vickers, M D
16	Procedures and techniquies in intensive caremanagement	Irwin and Richard S
17	Essentials of Anaesthetic Equipment	Al-Shaikh, Baha
18	Anesthetic Physiology and Pharmacology	McCaughey, William
19	Paediatric Anesthesia (R)	Gregory, George A

20	Anesthesia and Co-existing Disease (R)	Stoelting, Robert K
21	Textbook of Regional Anesthesia ®	Raj, Prithvi P
22	Clinical application of mechanical ventilation	Chang, David W
23	Drugs and Equipment in Anaesthetic Practice	Paul, Arun Kumar
24	Pain Management	Main, Chris J
25	Procedures and Techniques in Intensive CareMedicine	Irwin, Richard S
26	Mechanical Ventilation	MacIntyre, Neil R

27	Essential Anatomy for Anesthesia	Black, Sue M
28	Miller's Anesthesia Vol.1(R)	Miller, Ronald D
29	Miller's Anesthesia Vol.2(R)	Miller, Ronald D
30	Mechanical Ventilation and Nutrition	Verma, P K
31	Pediatric Cardiac Anesthesia	Lake, Carol L
32	Laryngeal Mask Anesthesia	Brimacombe, Joseph R
33	Comprehensive Textbook of Intraoperatively Transesophageal Echocardiography	Savage, Robert M
34	A practical approach to Transesophageal echocardiography	Albert Perrino
35	Oh's Intensive Care Manual	Bernsten, Andrew
36	Cardiovascular Physiology for Anesthesiologists	Gordon
37	Nunn's Applied Respiratory Physiology	Lump
38	Principles of Critical Care	Hall, Jesse B
39	ECG Complete	Bowbrick, Steven
40	ECG in Emergency Decision Making	Wellens
41	Electrocardiography in Clinical Practice	Chou, Te-Chuan
42	Lung function tests	Hughes, J M B
43	Chou's Electrocardiography in Clinical Practice	Surawicz, Borys

44	Marriott's Practical Electrocardiography	Wagner, Galen S
45	Handbook of Clinical Electrocardiography	Koley, Kumar Tapas

46	Twelve-Lead Electrocardiography	Foster, Bruce D
47	An Introduction to Electrocardiography	Colin, Schamroth
48	Advanced Therapy in Cardiac Surgery	Franco, Kenneth L
49	Glenns Thoracic and cardiovascular surgery Vol 1&2	Baue, Arther E
50	Clinical cardiovascular and pulmonary physiology	Rosedorff, Clive
51	Blood Conservation in Cardiac Surgery	Krieger, Karl H
52	Cardiac Surgery	Doty, Donald B
53	Nadas' Pediatric Cardiology	Fyler, Donald C
54	Pediatric Cardiology - Vol. 1 (R)	Anderson, Robert H
55	Pediatric Cardiac Surgery	Mavroudis, Constantine
56	Bronchoscopy	Udaya B S Prakash
57	Interventional bronchoscopy	Bolliger, C T

LIST OF RECOMMENDED JOURNALS

- ❖ Anesthesia analgesia
- ❖ Anesthesiology clinics
- ❖ British journal of anesthesia
- ❖ Critical care clinics
- ❖ Critical care medicine
- ❖ Current opinion in critical care
- ❖ Indian journal of anaesthesia
- ❖ Journal of cardio thoracic and vascular anaesthesia
- ❖ Advances in anaesthesia
- ❖ Annals of cardiac anaesthesia
- ❖ Canadian journal of anaesthesia