



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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Curriculum for Fellowship in Cardiac Anesthesia

(with effect from 2018-19 Batches)

Approved as per BOM - 53/2018], Dated 19/05/2018

Amended History

1. Approved as per BOM - 53/2018, [Resolution No.4.8], Dated 19/05/2018.

Submission of Proposal for Fellowship Course (Super-specialty): Cardiac Anaesthesia

1. Title of Fellowship:

- Fellowship of Indian Association of Cardiovascular Thoracic Anaesthesiologists
- MGMIHS Fellowship of Cardiovascular Thoracic Anaesthesiologists*

2. Duration of Fellowship:

- Post MD
- 1 year course (for both Fellowships)
- Post Diploma*
- 2 year course (for MGMIHS Fellowship only)

3. Commencement:

- January Batch: Start Date Jan 1st
Last Date for Registration: Feb 28
- July Batch: Start Date July 1st
Last Date for Registration: August 31

4. Objectives of Fellowship:

- The objective of the programme is to employ advanced training protocols and equipments to produce highly trained anaesthetists with appropriate knowledge, skills and attitudes to enable them to practise cardio-thoracic anaesthesia and critical care including pre and post operative management of cardiac as well thoracic surgery patients
- Develop the expertise for the anaesthetic management of acquired/adult and congenital heart diseases. Understand the pathophysiology of lung disease, physiology of one lung ventilation (OLV) and management of patients on OLV.
- Develop the knowledge and skill for the postoperative intensive care management of both adult and pediatric cardiac surgical patient

- Understand the postoperative pathophysiology of adult and pediatric cardiac surgical patients and developing the skills in management of these patients
- Develop the skill of undertaking procedures like percutaneous tracheostomy and bronchoscopy
- Understand the needs and develop the skills in the anaesthetic management of patients undergoing various procedures in the cardiac catheterization labs
- Understand, develop and utilize the skills of doing transesophageal echocardiography in adult and pediatric cardiac surgical patients
- To develop the knowledge and skills in the anaesthetic and postoperative management of patients undergoing major vascular surgical procedures
- Develop the skill and spirit of scientific inquiry and orientation to the principles of research methodology and epidemiology
- To plan and set up independent cardiac anaesthesia units catering to cardiothoracic and vascular surgery and intensive care units and cath labs
- Develop the basic skills of teaching students at various levels of medicine
- Develop communication skills with surgeons and other members of cardiac surgical team
- Develop communication skills with patients and relatives

5. **Eligibility Criteria for Admission:** (the basic qualifications must be from a recognised university or MCI equivalent)

Basic qualifications: (any one of the following)

- ✓ Diploma in Anaesthesia* (eligible for MGMIHS Fellowship only)
- ✓ MD/DNB Anaesthesiology
- ✓ DM/DNB in Cardiac Anaesthesia
- Candidate must be life member of IACTA. Life membership form available at www.iacta.co.in *(not mandatory for MGMIHS Fellowship)

6. **Intake Capacity in each Batch:**

- 2 per Session (2 sessions/ year) i.e. 4 Fellows per year (FIACTA)
- ② per Session (2 sessions/ year) i.e. 4 Fellows per year (MGMIHS)

120

7. Application Selection Process/ Procedure:

*For FIACTA Fellowship

The present resolutions and guidelines are aimed at defining the minimal requirements for Fellowship in cardiac anaesthesia (FIACTA) offered by ICCA, the academic body of Indian Association of Cardiovascular Thoracic Anaesthesiologists in India.

To be eligible to present him or herself for this fellowship, the candidate must present evidence of following minimum requirements:

- Candidates need to apply to the recognized institute/hospital (by IACTA) of their choice directly and then register for the course
- The course of study shall be for a period of 2 academic years
- The list of recognized institutes/teachers and their contact details is available on the IACTA website or will be available on request from the ICCA / IACTA office
- Appointment of candidates will be done by the recognized institutes under the guidance of the recognized teachers at their institute by interview
- The candidate needs to fill up the FIACTA registration form upon joining the course and mail it to the IACTA office. The form can be downloaded from the IACTA website: www.iacta.co.in
- The fee for registration for FIACTA course is Rs 10,000. This should be paid to the IACTA office at the time of enrolment. Further, the candidate will have to pay the examination fee of Rs 10,000 at the time of applying for the examination
- Candidate must become a life member of IACTA. Membership form can be downloaded from the IACTA website
- Fee can be remitted as demand draft/cheque/cash/NEFT. The details are given in the IACTA website. The registration form and the fee to be sent to the IACTA office before 31st May
- Candidates will require to be paid a salary/stipend as per the rules of the institute/hospital where they are appointed. This should be no different from the salary/stipend from that of other similarly qualified employees (senior residents) of that institute/hospital
- No hospital, institute or individual may levy any direct or indirect fee to an individual candidate in any relation to the certificate course
- Appointment letter from the teacher/institute on the institute/teacher letterhead certifying the candidate's qualifications and mentioning the date of joining the course should be mailed to the IACTA office.
- Invitation/Advertisement for applications, appointments and registrations for the course must be completed before 1st June every year
- A recognized FIACTA center would be doing a minimum of 400 open heart surgeries per year and a teacher can admit two FIACTA candidates per year.

*For MGMIHS Fellowship

- Candidates need to apply directly to the Institute

- Selection will be done by criteria including: academic merits, publications, recommendations and personal interview by a committee constituted by Institute
- The selection process may vary based on type of qualifications (MD, DNB or Diploma)
- Selection will be at sole discretion of Institution
- The same will be advertised on the institutional website and the internet besides the notice boards of the college
- Rs. 3 Lakhs/ Year* (for MGMIHS Fellowship only)
- Candidates will be paid a salary/stipend as per the rules of the Institute where they are appointed

9. Course Content: (Syllabus)

A. Basic Sciences

Anatomy

Embryological development of heart & great vessels, and other thoracic structures. Basic and correlative anatomy of heart, lungs and vessels

Physiology

Cardiac cycle, cardiac output & determinants of cardiac output, cardiac failure, coronary circulation and autonomic nervous system

Pulmonary circulation, physiology of lung functions, acid-base balance, pulmonary function tests, Physiology of one-lung-ventilation

Physiology during extracorporeal circulation, assisted circulation

Body water, Oxygen transport, shock, hypothermia

Blood coagulation, hematology, perioperative physiology of liver, kidney and brain

Pharmacology

Pharmacology of drugs acting on heart, lungs, vessels and vital organs: inotropes & vasopressors, cardiac glycosides, diuretics, beta-blockers, calcium channel blockers, antiarrhythmic agents, drugs for ischemic heart diseases

Pharmacological principles: pharmacodynamics, pharmacokinetics, drug distribution, elimination etc.

Inhalational and intravenous anesthetic agents, muscle relaxants, narcotics, analgesics, sedatives and premedicants.

Drugs acting on tracheobronchial tree, pulmonary circulation and parenchyma

Physics

Gas laws, gas cylinders, laminar flow, fluid dynamics

Physics of anesthetic machines, vaporizers

Basic physics of ventilators

Physics of ultrasound

B. Monitoring In Anaesthesia

Invasive & Non-Invasive monitoring techniques for pre-peri & post-operative periods in cardio thoracic center:

Understanding of basic concepts of monitoring

Indications, cost effectiveness, complications

Equipment usage & knowledge of accessories

Hemodynamic monitoring, TEE, Coagulation monitoring, Respiratory & Neurological monitoring, Neuro-muscular monitoring

C. Clinical Sciences

Adult and Pediatric cardiac diseases

Preoperative evaluation, intraoperative anesthetic & postoperative management of all types of congenital, adult cardiac, thoracic and vascular diseases

Management of Cardiopulmonary Bypass, Various types of Circulatory assistance devices

Thoracic Anaesthesia and One Lung Ventilation

Intensive Care Management

Intraoperative Transesophageal Echocardiography

Principles of ultrasound, knobology, evaluation of LV / RV systolic and diastolic function, valvular heart diseases, CAD, aortic diseases, prosthetic valves, congenital heart diseases, hemodynamic assessment

Library facilities:

The institute/hospital/department should maintain a library which will have specialized text books and journals on cardiovascular & thoracic anaesthesia, cardiac surgery, echocardiography and critical care

10. Assessment of candidates

A. Candidates are assessed at 6 monthly intervals by the teacher for progress towards appropriate goals

B. Logbook: A specified logbook will be maintained by FIACTA candidates under the supervision of their teachers that will track the attainment of specified competencies in cardiac anaesthesia. The logbook will have the data on the cases managed, procedures performed, academic presentations etc. The format of the logbook can be obtained from the ICCA/IACTA office or IACTA website.

C. Periodic tests: The concerned department would conduct tests every six months; annual tests would be conducted at the end of first year and the other at the end of second 5 year. The final test may be held three months before the final examination. The tests would include written papers, practical/clinical and viva voce. Records and marks obtained in such tests will be maintained by the head of the department and sent to ICCA, as part of internal assessment of the candidate.

D. Research: Candidates should be encouraged to undertake at least one project during the course.

E. Publication/Presentation: It is mandatory for every FIACTA candidate to publish at least one original article in an indexed peer reviewed journal like Annals of Cardiac Anaesthesia. Presentation in the national conference also is acceptable.

F. List of procedures to be performed:

Procedure	Under Supervision	Independently
Radial / Femoral artery cannulation	20	150
Subclavian vein/ Internal jugular vein cannulation	20	150
TEE	50	100
PA Catheter insertion	10	25
Fiberoptic Bronchoscopy	10	15
Percutaneous Tracheotomy	5	5
IABP Insertion	5	10
Neuraxial blocks such as Epidurals	10	25

11. Teaching Scheme

A: Monitoring of Teaching/ Learning Activities

Activity	Periodicity of Assessment	Method
Journal clubs	Monthly	Faculty and Peer review

Seminars	Monthly	Faculty and Peer review
Theory Knowledge	Six monthly	Written tests
Clinical performance	Six monthly	Clinical exam
Procedures	Monthly	Log book
Research & Presentation	Three monthly	Logbook & Faculty peer view

B: Preferred Period of Posting in Various Units (24 months)

Adult Cardiac Operation theatre & ICU	12 months
Pediatric Cardiac Operation theatre & ICU 9 months	9 months
Cath Lab, MRI, CT room anesthesia	2 months
Research, Visit another center of excellence	1 month (Optional)

12. Complete Curriculum of the Course:

(Refer to point 9.)

13. Textbooks, Reference Books and Journals :

- Oxford Textbook of Cardiac Anaesthesia
- Kaplans Cardiac anaesthesia
- Clinical Practice of Cardiac Anaesthesia –Dr Deepak Tempe
- Annals of Cardiac Anaesthesia (Journal)
- BLS and ACLS Guide, American Heart Association
- The ICU Book, 4E (2014), Marino
- Hemodynamic Monitoring in the ICU, (2016), Giraud-Bendjelid
- Point of Care Ultrasound, (2015), Soni
- Indian Journal of Critical Care Medicine
- Intensive Care Medicine
- Anaesthesia & Intensive Care
- Comprehensive Textbook of Perioperative Transesophageal Echocardiography
- Textbook of Critical Care, 7E (2017), JL Vincent
- Critical Care Medicine, 4E (2013), Parillo-Dellinger

14. Scheme of Examination (in detail)

(Pattern) of exam/ Passing Criteria/ Award of Fellowship)

EXIT EXAMINATION

125

At the end of two years, an examination will be conducted by ICCA, the academic body of IACTA.

*(MGMHHS will conduct for MGM Fellowship in similar format)

Pattern of Examination

Examination is conducted over two days.

Theory examination:

MCQ	50 marks
Theory	100 marks

Practical examination:

Long case (1)	100 marks
Short cases (2)	50x2 = 100 marks
Viva (two tables) (Viva on equipment, pharmacology, ECG, Chest X Ray, PFT, Echo, Monitoring, Recent advances etc)	50x2= 100 marks
Log book	20 marks
Publications / Presentations	30 marks
Total Theory:	150 marks
Total Practical:	300 marks
Others:	50 marks
Sum total:	500 marks

It is mandatory to score minimum of 60% in theory and practical for passing criteria.

15. Infrastructure required for conducting the course and its availability in the College/Hospital:

A. Teacher requirements:

- Teacher should be fully accredited/certified faculty by IACTA
- Teacher should be working full time cardiac anaesthesiologist in the institute to be considered
- Teacher should be a post graduate degree with MCI recognised qualification- MD/ DNB with at least 10 years of post qualification experience in cardiac anaesthesia in a recognized major hospital or institute
- He / She must be competent in different clinical/administrative skills required for cardio thoracic anesthesia inside the OT and ICU. Further they must have the time and dedication to fulfill the teaching responsibilities
- The teacher must demonstrate commitment to training and practice of cardiac anaesthesia by participating associating with regional, national or international cardiac anaesthesia CME's, seminars and conferences (preferably as a faculty) and

associating with the regional, national or international cardiac anaesthesia organizations

- They must exhibit active interest in medical research, scientific presentations or publications in or related to the field of cardiac anaesthesia
- The Indian College of Cardiac Anaesthesia (ICCA) board would verify the credentials before certifying him/her as a teacher in cardiac anaesthesia
- Application form for Teacher Certification is available in the IACTA website (www.iacta.co.in)

B: Institute requirements:

- The center must have a fully accredited/certified teacher. He/She must be a full time cardiac anesthesiologist
- The center should have an annual turnover of at least 400 cardiac surgical procedures
- The number of cases student ratio is 400:2 i.e., for every 400 cardiac cases, there can be 2 FIACTA candidates. A single centre may have a maximum of 4 candidates per year
- The teacher student ratio is 1: 2. If the center has other courses like DNB, DM, PDCC, the ratio is 1:1
- These operating rooms and intensive care beds must have state of the art equipments for invasive & non-invasive monitoring and ventilation. In addition there should be 24 hours biochemical laboratory services including an arterial blood gas analyzer. Availability of echocardiography facilities with TEE is also desirable
- The center should have access to at least two journals of cardiovascular thoracic anaesthesia, two journals of cardiac surgery and two journals related to critical care medicine. Standard text books dealing with cardiac anaesthesia, transesophageal echocardiography, pediatric cardiac anaesthesia and general critical care is mandatory for any center seeking accreditation for the FIACTA course
- The center shall not levy any direct or indirect charges from FIACTA candidates in relation to the fellowship program. However the students shall pay the registration and examination fees directly to IACTA
- The candidate shall be paid stipend / remuneration as applicable to a Senior Resident by the centers
- Newly started centres desirous of accreditation need to be functional for one year before it can be inspected for recognition
- All accredited centers will be re-inspected after 5 years. In case an accredited center have candidates failing their FIACTA examination / no appearance consecutively for 3 years, the center recognition will be withdrawn and a re-accreditation will be subjected to further inspection
- For newly opened centers; initial recognition will be for 2 years following which re-accreditation will be required and which will be valid for 5 years
- IACTA assumes no responsibility for accidents/illness/insurance etc towards the candidate during the course of the fellowship
- The center and the teacher are given common recognition. No center can be accredited without certified teachers. No cardiac anesthesiologist can apply for certification as a FIACTA teacher without simultaneous center accreditation. In case a certified teacher leaves an accredited center, this should be informed to ICCA Registrar / IACTA office

- When more than one / multiple centers seek combined accreditation, they will be treated as one center of training and need to meet all the above criteria. The duration spent by a candidate in each center needs to be specified at the time of application for accreditation
- Accreditation Fee: The center will be required to pay IACTA a registration fee of Rs 25,000 towards accreditation. In addition Travelling expenditure and local hospitality of the Inspector/inspectors also to be borne by centre. For reaccreditation the registration is Rs 10000 only
- For payment options please refer IACTA membership application form
- On the receipt of application and registration fee for center recognition, ICCA will depute a college-board member from nearby place to inspect the center within 60 days



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