MGM INSTITUTE OF HEALTH SCIENCES

Accredited by NAAC with 'A' Grade

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

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Curriculum for Fellowship in Critical Care Medicine

(w.e.f. Academic Year 2018-19)

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

MGM INSTITUTE OF HEALTH SCIENCES Deemed University NAVI MUMBAI

MGM Institute of Health Sciences, Navi Mumbai

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

Critical Care Medicine

1. Title of Fellowship:

- Postdoctoral Certificate Course in Critical Care (PDCC-CCM)

2. Duration of Fellowship:

- Post MD
  - 1 year course
- Post Diploma
  - 2 year course

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 produce high quality patient-centred doctors with appropriate knowledge, skills and attitudes to enable them to practise at consultant level in critical care medicine.
- It includes the provision of organ system support, the investigation, diagnosis, and treatment of acute illness, systems management and patient safety, ethics, end-of-life care, and the support of families.

5. Eligibility Criteria for Admission:

- Diploma in Anaesthesia/Diploma in Chest diseases
- Diploma in Child Health/ Diploma in Orthopaedics
- MD Medicine/Chest/Anaesthesia/Emergency Medicine/Paediatrics
- DNB Medicine/Chest/Anaesthesia/Emergency Medicine/Paediatrics
- MS General Surgery/Orthopaedics
- FCPS Medicine/Anaesthesia/Paediatrics/Chest Diseases/Surgery/Orthopaedics (subject to MCI-approval of these qualifications)

6. Intake Capacity in each Batch:

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

7. Application Selection Process/ Procedure:

- 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/preference may vary based on type of qualifications (MD/MS, DNB, Diploma or FCPS)
- 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
- Besides regular postings, the candidate will be expected to perform duties as prescribed by the institute conforming to the roles and responsibilities expected for the given academic post

8. Fees:

- Rs. 3 Lakhs/ Year
- Candidates will be paid a salary/stipend as per the rules of the institute where they are appointed (including but not limited to post of Senior Resident)

9. Course Content:

Appendix 1

10. Teaching Scheme (Total and periods allotted to each topic):

Appendix 1

11. Complete Curriculum of the Course:

Appendix 1

12. Textbook and Reference Books:

Appendix 2

13. Scheme of Examination (in detail)
(Pattern of exam/ Passing Criteria/ Award of Fellowship)

- Course and Examination are based on IDCCM Model (by ISCCM)

Eligibility for appearing in Exam
- The candidate must have gained experience in the diagnosis and treatment of patients with serious medical and surgical disease including coronary artery and neurosurgical disease.

In-training assessment of candidates
- Candidates are assessed at monthly intervals by the teacher for progress towards appropriate goals
- The CoBaFolio competencies record book will be maintained by the candidates under the supervision of their teachers that will track the attainment of specified competencies in critical care.

Mandatory requirements to be completed prior to exam
- Certificate from the teacher/institute stating satisfactory completion of training. This training should include attendance at workshops
- CoBaFolio competencies record should be duly filled.

Written exam
- The written exam for will be held every year in March and in July
- It consists of multiple choice questions

Oral (Practical) exam

- The oral exam is conducted by a panel of four examiners over one day and includes:
- Two typical ICU cases scenarios (each case scenario by two examiners) on which questions will be asked by the examiners
- Table viva on ACLS proficiency and airway skills
- Table viva on interpretation of ECGs, lab reports, X-rays, CT-scans etc.
- Table viva on setting up of a ventilator, setting up of hemodynamic monitoring like central line/arterial line/Swan-Ganz insertion skills and bedside monitoring of a critically ill patient.
- Table viva on commonly used drugs.

Passing the Exam

- Candidate has to clear theory exam, for being eligible for appearing for practical exam
- Trainee who pass theory but fail the practical exam may make ONE more attempt at Practical exam (within two years of completion of the theory exam)
- Trainee has maximum 2 attempts for theory exam (within one year of completion of the course)

Exam Schedule

- Exam session will be held twice a year
- Dates will be notified as per batch

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

- **Currently 50 beds for CCM**

ICU:	36 beds
MICU	10
SICU	10
CCU	4
CVTS-ICU	4
EMS-ICU	8

HDU:	14 beds
OBGY	5
EMS	9

Appendix 3 (Ideal requirements)

15. Faculty required with qualification for conducting the course:

- For 1 unit (20-beds): 1 Senior Faculty + 1 Junior Faculty + 1 SR + 1JR
- Teacher should be working full time in the institute to be considered
- Teachers must devote at least 50% of their professional time in Critical Care Medicine
- Teacher should be a post graduate degree with MCI recognised qualification- MD, MS, with at least 8 years of experience in critical care medicine post MD/MS qualification, in a recognized major hospital.
- Teachers with a MCI recognised Post Graduate Diploma-DA (Diploma in Anaesthesia) or DTCD (Diploma in TB and Chest Diseases), with at least 10 years of experience in critical care medicine after MCI recognised Post Graduate Diploma, in a recognized major hospital.
- The teacher should have formal qualification in Intensive Care which can be any one or more of them: IDCCM, IFCCM, FNB - Critical Care, DM - Critical Care, DM-Pulmonary & Critical Care or equivalent qualification from Australia (FCICM), USA (AB Critical Care), U.K. or Canada

Current Structure (Proposed):

Critical Care Division* (*may be converted to Department later) with

CCM Division Head	Dr. Roshan L. Gogna	MD Anaesthesia	Professor, Anaesthesia
MICU Head	Dr. Jaishree Ghanekar	MD Medicine	Professor & HOD, Medicine
SICU Head	Dr. Suhasinee Sonavdekar	MD Anaesthesia	Associate Professor, Anaesthesia
CVTS-ICU Head	Dr. Vishwas Sathe	MD Anaesthesia	Associate Professor, Anaesthesia
CCU Head	Dr. Shilpa Kadam	MD Paediatrics, DM Cardiology	Assistant Professor, Cardiology
EMS-ICU Head	Dr. Sagar Sinha	MD-DNB Medicine, FNB Critical Care	Assistant Professor, Emergency Medicine

Professors and Senior Associate Professors: Senior Faculty

Junior Associate Professors and Assistant Professors: Junior Faculty

SRs and JRs (as per rotational duty posting): Residents

Appendix I: Curriculum & Training

Academic activities will be conducted on daily basis (52 week pattern).

Each week, in addition to the teaching program (which the Fellow will be the primary presenter), the following will be adopted:

Syllabus (*Annexure* Below):
1. Basic Sciences (from CoBaTrICE)
2. Theoretical Knowledge (from ISCCM)
3. Interventions & Procedures (from ISCCM)
4. 12 Domains (from IDCCM-CoBaTrICE)

will be covered in a modular fashion, as below:

For topics pertaining to Basic Sciences, Faculty will be delegated from relevant pre- and para- clinical departments of the medical college.

For topics pertaining to Theoretical Knowledge and Interventions & Procedures, Faculty will be delegated from relevant para- and clinical (specialty and super-specialty) departments of medical college and hospital.

For all modules, Intensivists (from the ICUs) will cover aspects of topics pertaining to core fundamentals and especially viz. applied aspects.

Guest visiting faculty will be invited for certain aspects for certain modules.

Each module will have 2-4 sessions weekly (sub-type number depending on type of module)
- Theoretical Sessions
- Practical Sessions

Also, topics for Journal Club and Seminars will be preferably adopted from relevant modules (of the same topic/system)

No	Activity	Led by	Schedule	Frequency	Annual
1	Bed-side Clinics	Faculty	Everyday	Daily	312
2	Seminar	Fellow	Monday	Weekly	52
3	Multidisciplinary (Integrated) - Grand Rounds - CPC - Case Presentation - M&M	Fellow	Tuesday 1st 2nd 3rd 4th	Weekly (once a month for each)	52 - 12 - 12 - 12 - 12
4	Modular Sessions	Faculty	Wednesday	Weekly	52
5	Advanced (Special) - Board Review & MCQs - Skill Lab - Stations Special Training - Others	Faculty	Thursday 1st 2nd 3rd 4th	Weekly (once a month for each)	52 - 12 - 12 - 12 - 12
6	Modular Sessions	Faculty	Friday	Weekly	52
7	Journal Club	Fellow	Saturday	Weekly	52

Integrated Modular Curriculum

Module	Segment	Hours (1-yr course)	Hours (2-yr course)
1	Organization Aspects	4	6
2	Research Methodology	4	6
3	Shock	12	18
4	Hemodynamic Monitoring	16	24
5	Cardiovascular Care	16	24
6	Respiratory Failure	16	24
7	Ventilation	16	24
8	Gastro-intestinal & Hepato-biliary Disease	8	12
9	Renal Care	12	18
10	Neurocritical Care	12	18
11	Endocrinology	4	6
12	Infectious Diseases	12	18
13	Immunology & Rheumatology	4	6
14	Metabolic Diseases	8	12
15	Haematology	4	6
16	Transplant	4	6
17	Paediatric Critical Care	4	6
18	ObGyn-Critical Care	4	6
19	Trauma	4	6
20	Nutrition	4	6
21	Environmental Aspects	4	6
22	Pharmacological Aspects	4	6
23	Interventions / Procedures	16	24
24	Others	8	12
		200	300

Anatomy
Respiratory system
Cardiovascular system
Nervous system
Vertebral column
Surface anatomy
Abdomen

Physiology & Biochemistry
General
Biochemistry
Body fluids
Haematology & immunology
Muscle
Heart & circulation
Renal tract
Respiration
Nervous system
Liver
Gastrointestinal system
Metabolism & nutrition
Endocrinology
Pregnancy

Pharmacology
Applied chemistry
Principles of pharmacology
Pharmacokinetics & pharmacodynamics
Systemic pharmacology

Physics & clinical measurement
Mathematical concepts
Heat
Gases & vapours
Electricity & magnetism
Electrical safety
Pressure & flow monitoring
Clinical measurement

Research methods
Data collection
Descriptive statistics
Deductive & inferential statistics

Appendix IB: Theoretical Knowledge

Respiratory
Management of airways (including respiratory arrest, upper airways obstruction, smoke or burns airways damage), pulmonary edema, adult respiratory distress syndrome and hypercapnic respiratory failure, severe asthma, chest trauma, respiratory muscle disorders, thoracic surgery.

Cardiovascular
Haemodynamic instability and shock, cardiac arrest acute myocardial infarction and unstable angina severe heart failure, common arrhythmias and conduction disturbance, specific cardiac disorders (cardiomyopathies, valvular heart disease, atrial or ventricular septal defects, myocarditis), cardiac tamponade, pulmonary embolism, aortic dissection, hypertensive crisis, peripheral vascular diseases. Cardiovascular surgery. Cardio pulmonary resuscitation (CPR) Training in Basic Life Support (BLS), and Advance Life Support (ALS)

Neurology
Coma, head trauma, intracranial hypertension, cerebrovascular accidents, cerebral vasospasm, meningo-encephalitis, acute neuromuscular disease (including myasthenia & Guillain Barre syndrome), post anoxic brain damage, acute confusional states, spinal cord injury, neurosurgery, brain death.

Renal
Oliguria, Acute renal failure, renal replacement therapy

Metabolic & Nutritional
Fluid electrolyte and acid-base disorders, endocrine disorders (including diabetes), nutritional requirements, monitoring of nutrition.

Haematological
Disseminated intravascular coagulation and other coagulation disorders, haemolytic syndromes, acute and anaemia, blood component therapy, immune disorders.

Infections
Severe infection due to aerobic and anaerobic bacteria, viruses, fungal and parasites, nosocomial infection, infection in the immunocopromised, tropical disease, antimicrobial therapy, immunotherapy.

Gastro-intestinal
Inflammatory bowel diseases, pancreatitis, acute and chronic liver failure, prevention and treatment of acute G.I. Bleeding (including variceal bleeding) peritonitis, mesenteric infarction, perforated viscus, bowel obstruction, abdominal trauma, abdominal surgery.

Obstetric
Toxemia (including in HELLP syndrome), amniotic fluid embolism, eclampsia, and haemorrhage.

Environmental Hazards
Burns, hypo-and hyperthermia, near-drowning electrocution, radiations, chemical injuries, animal bites.

Toxicology, poisoning
Acute intoxications, drug overdose, serious adverse reactions, anaphylaxis.

General
Pharmacology, pharmacokinetics and drug interactions. Analgesia, sedation and muscle relaxants, inflammation and anti-inflammatory agents, multiple trauma, transport of the critically ill, multisystems disorders (including Multi-Organ Dysfunction syndrome MODS and the Systemic Inflammatory Response Syndrome SIRS) Management of the organ donor.

Appendix 1C: Interventions & Procedures

General
Pharmacology, pharmacokinetics and drug interactions. Analgesia, sedation and muscle relaxants, inflammation and anti-inflammatory agents, multiple trauma, transport of the critically ill, multisystems disorders (including Multi-Organ Dysfunction syndrome MODS and the Systemic Inflammatory Response Syndrome SIRS) Management of the organ donor

Respiratory
Maintenance of open airway, endotracheal intubation (oral and nasal) and emergency cricothyrotomy, suctioning of the airway, setting and turning of the respirator with different modes of ventilation, titration of oxygen therapy, use of ambubag, techniques of weaning from mechanical ventilation, placement of a intercostal tube, implementation of respiratory pharmacological support, fiberoptic bronchoscopy, interpretation of arterial and mixed venous blood gases, assessment of gas exchange and respiratory mechanics.

Cardiovascular
Placement of a central venous catheter (by different routes), pulmonary artery (Swan Ganz) catheter, arterial catheter (by different routes) measurement and interpretation of the hemodynamic variables (including the derived variables), implementation of cardiovascular support antiarrhythmic therapy and thrombolysis.

Neurologic
Basic interpretation of brain CT/MRI scan, intracranial pressure monitoring.

Nutrition
Metabolic and Nutritional Implementation of intravenous fluid therapy, enteral and parental nutrition.

Haematologic
Correction of haemostatic and coagulation disorders, interpretation of a coagulation profile, implementation of thrombolysis.

Renal
Bladder catheterization, renal replacement techniques.

Gastro-intestinal
Placement of gastric tube, an esophageal and gastric tamponade balloon
General Measurement of severity of illness and outcome assessment. Exposure to clinical research, ethical and legal aspects of critical care.
Participation in regional and national CME's seminars, and conference in critical care and affiliation with such critical care organizations is desirable

Appendix 1D: CoBaTrICE Domains

1: Resuscitation and initial management of the acutely ill patient

2: Diagnosis: assessment, investigation, monitoring and data interpretation

3: Disease management

- Acute disease
- Co-morbid disease
- Organ system failure

4: Therapeutic interventions / organ system support in single or multiple organ failure

5: Practical procedures

- Respiratory system
- Cardiovascular system
- Central nervous system
- Gastrointestinal system
- Renal / Genitourinary system

6: Peri-operative care

7: Comfort and recovery

8: End of life care

9: Paediatric care

10: Transport

11: Patient safety and health systems management

12: Professionalism

- Communication skills
- Professional relationships with patients and relatives
- Professional relationships with colleagues
- Self governance

Appendix 2: Library Material

Textbooks:

1. Textbook of Critical Care, 7E (2017), JL Vincent
2. Critical Care Medicine, 4E (2013), Parillo-Dellinger
3. Intensive Care Medicine, 8E (2017), Irwin-Rippe
4. Oh's Intensive Care manual, 7E (2014), Bersten-Soni
5. Principles and Practice of Mechanical Ventilation, 3E (2013), Tobin
6. The ESC Textbook of Intensive and Acute Cardiovascular Care, 2E (2015), Tobaro-Vranckz
7. Oxford Textbook of Neurocritical Care, (2016), Smith
8. Critical Care Update 2017, (2017), Todi-Kulkarni
9. Textbook Of Critical Care: Including Trauma And Emergency Care (2016), Mehta
10. Principles of Critical Care, 4E (2015), Hall-Schmidt
11. The Protocol Book for Intensive Care, 5E (2017), Kumar
12. Textbook of Pulmonary and Critical Care Medicine, 2E (2017), Jindal
13. ICU Protocols: A stepwise approach, (2012), Chawla-Todi
14. Principles Of Critical Care, 3E (2014), Udwadia

Handbooks:

1. The ICU Book, 4E (2014), Marino
2. Hemodynamic Monitoring in the ICU, (2016), Giraud-Bendjelid
3. Evidence-Based Critical Care, 2E (2016), Deutschman-Neligan
4. Point of Care Ultrasound, (2015), Soni
5. Critical Care Secrets, 6E (2018), Parsons
6. The Washington Manual of Critical Care, 3E (2017), Kollef
7. BLS and ACLS Guide, American Heart Association
8. Evidence-Based Critical Care, 3E (2014), Marik
9. Case Files Critical Care, (2014), Toy-Suarez-Liu
10. Acute Nephrology for the Critical Care Physician, (2015), Straten
11. Critical Care Medicine at Glance, 3E (2014), Leach
12. Critical Care Manual of Clinical Procedures and Competencies, (2014), Mallet
13. Equipment in Anaesthesia and Critical Care: A compiete guide for the FRCA, (2014), Aston
14. ITLS and ATLS Guide

Journals:

1. Critical Care Medicine
2. Indian Journal of Critical Care Medicine
3. Intensive Care Medicine
4. Anaesthesia & Intensive Care
5. Critical Care & Resuscitation
6. Critical Care Clinics
7. Critical Care
8. Current Opinion in Critical Care Medicine
9. American Journal of Respiratory & Critical Care Medicine
10. Chest
11. Journal of Enternal & Parenteral Nutrition
12. Journal of Trauma

Appendix 3: Equipment List for a 20-bed ICU (12 Level-3 beds + 8 Level-2 beds)

No	Name of equipment	Number	Specification
1	Bedside Monitors (For ICU)	One per Bed	Modular -2 Invasive BP, SPO2,NIBP, ECG, RR, Temp Probes with trays
2	Monitors for HDU	Same	Same but without Invasive BP but upgradeable
3	Ventilators	6	With paediatric and adult provisions, graphics and Non- Invasive Modes (Two Ventilators should be with inbuilt Compressor, each should have a Fisher and Paykel Humidifier
4	Non invasive Ventilators	3	With Provision for CPAP and IPAP
5	Infusion Pumps	2 Per bed in ICU 1 Per Bed in HDU	Volumetric with all Recent upgraded drug calculations
6	Syringe Pumps	2 per bed in ICU	With recent up gradation
7	Head End Panel	1 Per bed	With 2 O2 Outlets, two vacuum, one compressed air and 12 electric outlets, provision for Music, Alarm, trays for two monitors, Two Drip stands, One Procedure light
8	Defibrillator	Two with TCP facility (one standby)	Adult and paediatric pads with Trascutaneous pacing facility
10	ICU Beds (Shock Proof) (Fibre)	One for each bed	Electronically Manoeuvred with all positions possible with mattress. Now beds are available which give lateral positions also
11	Over Bed Tables	One for each Bed	ALL SS with 6 to 8 cupboards in each to store Drugs Medicines, side tray for x-rays, BHT, on wheels
12	ABG Machine	One+One	facility for ABG and Electrolytes Second one as stand-bye
13	Crash/ Resuscitation trolley	Two for ICU + One for HDU	To hold all resuscitation equipment and Medicines
14	Pulse Oxymeter (Small Units)	Two	As stand-bye units
15	Freeze	One + One for use of staff and doctors	With deep freeze facility
16	Computers	2 (for ICU), One for HDU, One for In charge	With laning, Internet facility and printer to be connected with all departments
17	HD Machines	2	User friendly so that even a Nurse can Operate
18	CRRT	One	High flow /Speed Model
19	CO, SVR, ScvO2 Monitor	One	As Described
20	Intermittent Leg Compressing	Two	To prevent DVT

	Machine		
21	Airbeds	6	To Prevent Bed sores
22	Intubating Video scope	One	To make difficult Intubations easy
23	Glucometer	ICU-2, HDU-1	
24	ICU Dedicated Ultrasound and Echo machine	One	With recent advances to look instantly even at odd hours. Vascular filling, central lines, etc
25	Bedside X ray	One	
26	ETO sterilization	One	To sterilize ICU disposables regularly
27	Spinal Board	Two	For spine trauma patients
28	Rigid Cervical Spine collars	4	For stabilizing cervical spine
29	Ambu Mask different sizes	10 sets including two for Pediatric use	Silicon, ETO sterilisable
30	Pollution control buckets	One set for each Bed	
31	Trays for Procedures	For putting central lines, ICD, catheters etc	
32	I A Balloon Pump	One	
33	Fibroptic Bronchoscope	One	