*Position Paper*

# The 2014 Academic College of Emergency Experts in India's Education Development Committee (EDC) White Paper on establishing an academic department of Emergency Medicine in India – Guidelines for Staffing, Infrastructure, Resources, Curriculum and Training

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## ABSTRACT

Emergency medicine services and training in Emergency Medicine (EM) has developed to a large extent in developed countries but its establishment is far from optimal in developing countries. In India, Medical Council of India (MCI) has taken great steps by notifying EM as a separate specialty and so far 20 medical colleges have already initiated 3-year training program in EM. However, there has been shortage of trained faculty, and ambiguity regarding curriculum, rotation policy, infrastructure, teachers' eligibility qualifications and scheme of examination. Academic College of Emergency Experts in India (ACEE-India) has been a powerful advocate for developing Academic EM in India. The ACEE's Education Development Committee (EDC) was created to chalk out guidelines for staffing, infrastructure, resources, curriculum, and training which may be of help to the MCI and the National Board of Examinations (NBE) to set standards for starting 3-year training program in EM and develop the departments of EM as centers of quality education, research, and treatment across India. This paper has made an attempt to give recommendations so as to provide a uniform framework to the institutions, thus guiding them towards establishing an academic Department of EM for starting the 3-year training program in the specialty of EM.

**Key Words:** Curriculum, emergency medicine, faculty development, rotation

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## INTRODUCTION

In the twenty first century, non-communicable diseases (NCDs) are rapidly growing and adding to the existing burden of communicable diseases. The health care system needs to reorganize in order to handle the rise in non-communicable illnesses and trauma. Urbanization, better access to health care, improved medical treatment of infectious diseases, and health awareness has led to longer life spans; while changes in diet patterns, decreased physical activity and increased tobacco use predispose this population to development of coronary atherosclerosis. Current statistics indicate that in developing

countries like India, cardiac diseases and stroke will be a major cause of death and disability in 2020.[1] Adding to the burden of cardiac diseases is a growing problem from road traffic accidents. These factors have contributed to the disease transition in developing countries from communicable diseases to long-term chronic health problems and acute trauma.[2-4] Even though the epidemic is in its very early stages, it is projected to emerge as a major threat to the developing nations.

In most hospitals of India, emergency services are provided by general duty medical officers and resident doctors drawn from various specialties. The sickest of the patients are managed by doctors who are inexperienced and unmotivated in managing these sick patients. Even in developed countries, Emergency Medicine (EM) is considered a shortage specialty; in 2001, only 60% of physicians working in emergency departments (ED) were fully trained and certified in the United States.[5] The need to have trained doctors in the Emergency Services was long recognized in India but it was in the year 2009 that the Medical Council of India (MCI) recognized EM as a separate specialty. Over the last 4 years or so, an academic department of EM has been established in only 20 medical colleges with training capacity for 40 post graduates per year.[6]

Despite having academic departments of EM in a few colleges, the training of residents and the qualifications of teachers remain a big question mark. Unfortunately, lack of clarity about the core curriculum, training modules, and qualifications of teachers has led to mushrooming of short term diplomas and 3-year courses in EM offered by corporate hospitals in collaboration with some foreign universities. This may lead to early attrition of newly created academic departments of EM in some of the medical institutions.

In order to promote the specialty of EM, particularly teaching and training of both post graduates and faculty in EM, an INDO-US Emergency and Trauma Collaborative was established in 2007. This collaboration led to the creation of the Academic College of Emergency Experts (ACEE) in India. The main focus of the College is to impart training to faculty from different disciplines in the field of EM so that they in turn can teach and train post graduates of departments of EM. Since creation of workforce in the specialty of EM will take several years, ACEE also endeavors to teach and train doctors who are working in EM so that patients attending emergency room can get quality emergency care.

The ACEE-India has gone into problems faced by existing departments and has tried to address the issues regarding core curriculum, teachers' eligibility qualifications, requirement of staff, rotations of residents, and infrastructure requirement of EDs. Currently, there are no uniform guidelines in these areas. The ACEE-India constituted an Education Development Committee (EDC) to chalk out guidelines on the above issues. This paper has made an attempt to give recommendations to address these issues so as to provide a uniform framework to the institutions, thus guiding them towards establishing an academic department of EM. These guidelines would provide requisite resources for our policy makers such as MCI and National Board of Examinations (NBE) for setting uniform standards for creation of academic departments of EM.

## ESTABLISHING DEPARTMENTS OF EMERGENCY MEDICINE IN MEDICAL COLLEGES

As per the existing MCI Regulations on Minimum Standard Requirements for MBBS Course in various medical institutions, there is no provision for essential requirement of department of EM. It has been observed that the current training program for undergraduates does not involve much of the training in acquisition of various skills in the setting of EM. Further, most of the hospitals are overburdened with large number of patients suffering from various emergency disorders related to one or the other department. Under such circumstances, for the initial few critical hours, there is paucity of ownership of these critically ill patients. These patients require maximum care by experts from various specialities; however the ground reality in most of the emergency rooms is that these patients are attended by the least qualified personnel. Very often because of lack of clarity about the final diagnosis during the first few hours of visit to the emergency room or due to conditions such as trauma and sepsis involving multiple organ systems, the patient is shuttled from one department to the other.[3] Since there is no ownership of the emergency section, maintenance of life-saving equipment is also often adversely affected.

The MCI has made it mandatory for all medical institutions to have separate departments even for minor specialities such as Dentistry, Psychiatry, etc; however establishment of department of EM has always taken a back seat. Further since MCI has recently notified 3-year post graduate (MD) course in EM and a few medical colleges have already started this course, inclusion of the requirement to establish the department of EM as a minimum standard requirement for MBBS course shall go a long way in strengthening the emergency care in addition to creation of a nucleus for growth of the speciality of EM in India. This may be accomplished in a phased manner over the next 3 years.

## MINIMUM STANDARD REQUIREMENTS FOR STARTING/INCREASE OF SEATS/RECOGNITION OF POSTGRADUATE DEGREE COURSE (MD) IN EMERGENCY MEDICINE

### Beds required in emergency medicine

Clause 11.3 of Postgraduate Medical Education Regulations, 2000 of MCI mentions that "A Department to be recognized for training of Post Graduate students, shall have at least 60 (sixty) beds each of general medicine, general surgery, obstetrics and gynecology, and 30 (thirty) beds each for others in case of M.D./M.S. and Diploma courses, and 20 (twenty) beds each in case of D.M./M.Ch."

The ACEE-India proposes that for starting a Department of EM, the hospital should have at least 20 beds exclusively earmarked for EM where initial resuscitation and observation of patients with all types of emergencies can be carried out. Of these 20 beds, at least six beds should be Intensive Care Unit (ICU)/High-Dependency Unit (HDU) beds where immediate resuscitation and stabilization of the patients can be carried out. Other beds should be for observation and management of patients. In addition, facilities for triaging patients should be available. These 20 beds (including 6 beds of ICU/HDU) should specifically be used for observation and management of patients by the emergency physicians and not for admission of patients. The bed occupancy rate of the emergency department should be at least 75%. Minimum number of admissions through ED should be 20 per day before a department is considered eligible for starting MD course in EM.

## Teachers eligibility qualifications for the department of emergency medicine

As per MCI Regulations, the minimum requirement of teachers for broad specialties or superspecialties shall be three full time faculty members belonging to the concerned disciplines of whom one shall be a Professor, one Associate Professor/Reader, and one Assistant Professor/Lecturer possessing requisite qualification and teaching experience prescribed by the MCI.

Since EM is not a well-established specialty in India and only a few colleges have this specialty, it may not be possible to get EM-qualified person for the faculty job during the initial few years. As per the MCI Regulations, for the Teachers Eligibility Qualifications in the department of EM, basic qualification should be MD/MS (or equivalent) in EM, general medicine, general surgery, anesthesia, orthopedics, or pulmonary medicine. Therefore, the faculty from other departments who are interested in EM may be asked to shift full time and permanently to EM and should not be shifted back to the parent department. This arrangement of selection from other specialties should continue till adequate EM-trained physicians become available in India. MCI has made provision for this for the next 10 years. The teachers' eligibility criteria may be reviewed after 10 years of existence of EM. Such selection should be based on open competition where faculty from other hospitals can also be considered for these posts.

In the current MCI Regulations, there is a need for 2-years training in EM before one can be considered for teaching posts in the department of EM; however since EM is not a well-established specialty in India, it may not be possible to get teachers having specific experience in the field of EM, especially at Professor and Associate Professor levels during the initial few years. The ACEE-India therefore proposes that the requirement of 2-year training in EM may be deleted; however, the teachers must fulfil the requirement of length of teaching experience in the parent specialty as specified by the MCI for the posts of Professor and Associate Professor/Reader respectively. During selection procedure of faculty, the ACEE-India is of strong view that physicians with training in EM like Fellowship of Academic College of Emergency Experts in India (FACEE) should be given preference as this fellowship is given after 1-year long program in which the physician has to become well versed with the whole body of knowledge of EM as well as acquire skills in various procedures. This fellowship can be achieved while one a working in his own discipline.

If teachers qualified in EM are not available, it should be ensured that at least one teacher should be from the specialty of General Medicine and the other one from the specialty of General Surgery. The third teacher can be from any one of the remaining specialties already approved by the MCI viz. Anesthesia, Pulmonary Medicine, or Orthopedics. The posts should be widely advertised so that the department has faculty from different specialties and not from a single or two specialties.

It has been observed that in many departments currently running MD course in EM, the existing teachers continue to work in their parent departments or in the Critical Care Units (CCUs) of the hospital, thus compromising the teaching facilities and patient care in the Department of EM. ACEE-India strongly feels that MCI must ensure that various medical institutions running MD course in EM must abstain from this practice and ensure that the teachers appointed in the Department of EM must be available on full time basis and should not be involved in the teaching/patient care activities of the parent departments.

## Non-teaching/paramedic staff

In view of critically ill patients attending the ED and high turnover of patients, adequate number of nurses, paramedics, laboratory technicians, and house-keeping staff as per ICU/HDU and emergency ward norms should be available.

## Workload and infrastructure

The Department of EM should have at least 80 patient visits per day for a 20-bedded department with minimum of:

- 40% emergencies related to Medicine and allied disciplines
- 15% trauma patients (unless the hospital has a separate Trauma Centre)
- 10% non-traumatic surgical emergencies
- 10% pediatric patients
- 5% patients requiring immediate resuscitation (including CPR, ventilation)

In the hospital, at least 15 major and 15 minor surgeries should be performed per week in the emergency operation theatres (EOT). The hospital should have at least six ICU beds in anesthesia department; in addition, the Department of EM should have a separate ICU/HDU area with six beds where patients can be resuscitated and monitored before admission. An attached minor operation theatre (MOT) should be available for minor surgeries. Department of EM should have separate areas for examining Obstetrics and Gynecology patients, medico-legal work, triage, and registration.

## Equipment

All the ICU/HDU beds in department of EM should have central oxygen and suction facility, bedside vital sign monitors

(one per bed), ventilators (one per two beds), infusion pumps (two per bed), defibrillator with external pacer (one), and nebulizers (one per three beds). Other beds should also have central oxygen and suction facility, bedside vital sign monitors (one per seven beds), ventilators (one per seven beds), infusion pumps (two per seven beds) and nebulizers (one per seven beds). In addition, the department should have one portable ultrasound and echocardiography machine dedicated to EM.

The hospital should have in-house computed tomography (CT) scan with at least 10 scans performed per day. Department of EM should have a point-of-care (POC) laboratory for quantitative tests [arterial blood gas (ABG), serum electrolytes, cardiac enzymes, etc]. Facilities for analysis of body fluids and cultures should be available in the hospital round-the-clock.

List of equipment which should be available in the Department of EM is given in Table 1. Excellent simulators and mannequins should be available for training. Availability of Skills Laboratory for training is not mandated at present; however ACEE-India emphasizes its requirement for Department of EM.

**Table 1: List of equipment (for 20-bedded Department of Emergency Medicine)**

| |
|---|
| **Essential** |
| ICU beds – Six |
| Central oxygen and suction points – Twenty |
| Cardiac monitors (with $ETCO_2$ facility) – Eight |
| Defibrillator with external pacer – One |
| ECG machine – One |
| ICU ventilators – Three |
| Other ventilators – Two |
| Trolleys/Fowler beds – Eighteen (including those for shifting of patients) |
| Infusion pumps – Sixteen |
| Portable ultrasound with multiple probes including echo probe – One |
| Portable X-ray unit – One |
| Resuscitation trolley – One |
| Artificial breathing bag – Four |
| Endotracheal tubes of all sizes |
| Laryngoscope with all sized blades |
| Chest tubes |
| Point-of-care laboratory for quantitative estimation of cardiac enzymes, ABG and electrolytes |
| Oxygen cylinders – Four |
| Portable suction machines – Four |
| Ultrasonic nebulizers – Four |
| All essential life-saving drugs as per National Essential Drug List |
| Cervical collars of all sizes |
| Spine boards with slings and scotch tape all sizes – Two |
| Splints for all types of fractures |
| Glucometer – Two |
| Central lines of all sizes – Ten |
| **Desirable** |
| Simulators for teaching various emergencies |
| Additional ICU ventilators – Two |
| Additional cardiac monitors – Three |
| Additional infusion pumps – Six |

Establishment of Skills Laboratory should entitle the institution for higher gradation in accreditation.

### Library facilities

Table 2 gives a list of desired books and journals before a Department of EM is established.

## ELIGIBILITY CRITERIA FOR MCI ASSESSORS

MCI appoints Assessors for evaluation of medical institutions before granting permission for starting new courses, increase

**Table 2: List of books/journals relevant to Emergency Medicine**

| |
|---|
| **Central Library** |
| Books |
| Peter Rosen's Textbook on Emergency Medicine |
| Tintinalli's Emergency Medicine |
| Goldfrank's Toxicologic Emergencies |
| Journals |
| American Journal of Emergency Medicine |
| Annals of Emergency Medicine |
| Clinical Toxicology |
| European Journal of Emergency Medicine |
| Human and Experimental Toxicology |
| International Journal of Critical Illness and Injury Science |
| Journal of Emergencies, Trauma and Shock |
| Journal of Emergency Medicine |
| Journal of Neurotrauma |
| Journal of Trauma and Acute Care Surgery |
| Shock |
| **Departmental Library: Total 40 (including two computers having facilities for e-books and e-journals)** |
| Books (latest editions) |
| Tintinalli's Emergency Medicine |
| Goldfrank's Toxicologic Emergencies |
| Clinical Pharmacology |
| Cardiology (relevant to EM) |
| Nephrology (relevant to EM) |
| Neurology (relevant to EM) |
| Gastroenterology (relevant to EM) |
| Endocrinology (relevant to EM) |
| Surgery (relevant to EM) |
| Pediatrics (relevant to EM) |
| Orthopedics (relevant to EM) |
| Obstetrics and Gynecology (relevant to EM) |
| Forensic Medicine |
| Internal Medicine (relevant to EM) |
| Dermatology (relevant to EM) |
| Psychiatry (relevant to EM) |
| Trauma |
| Anatomy |
| Physiology |
| Microbiology |
| Biostatistics |
| Journals |
| Annals of Emergency Medicine |
| Clinical Toxicology |
| International Journal of Critical Illness and Injury Science |
| Journal of Emergencies, Trauma and Shock |

of seats and recognition of postgraduate degree courses in various disciplines. For assessment of department of EM, MCI Assessors should be appointed only from amongst the MCI-recognized Professors/Additional Professors working in Departments of EM in various medical colleges which are running the MCI-recognized Post Graduate degree course in EM.

## CORE CURRICULUM

At present, the postgraduates of EM do not have any defined core curriculum approved by the MCI. Due to lack of any core curriculum, teaching and training of postgraduates of EM may be inadequate, and at times, irrelevant. ACEE-India has drafted a core curriculum for training of postgraduates of EM [Table 3]. The curriculum is designed to facilitate learning across all age-groups and acquire core competencies in various clinical scenarios including those in pregnancy and during mass casualty events. The curriculum has given emphasis to emergencies which are more common or have different presentations in our country as compared to western countries. For example, section on toxicology deals with pesticide poisoning and snake bites.

## CORE COMPETENCIES AND PROCEDURAL SKILLS IN EMERGENCY MEDICINE

The candidate should be able to perform several emergency skills independently both in adults and children. Table 4 gives core competencies which must be acquired by the postgraduates during the 3-year training in ED as well as during rotation to various departments.

In addition, a postgraduate has to perform many of the emergency procedures himself and should gain full proficiency in performing them. During the training program, a postgraduate must perform a minimum number of each procedure before he can be allowed to appear for the final practical examinations [Table 5]. The details of all the procedures performed by the postgraduate must be recorded in a log book which should be duly verified by the teacher.

## THESIS REQUIREMENT

In order to promote research capabilities and scientific paper writing, all postgraduates of EM shall be required to work on a research topic and submit a thesis at least 6 months before the final examination. The thesis protocol should be submitted and accepted by the appropriate authority within first 6 months of joining the postgraduate course in EM. Thesis topics must be relevant to diagnosis and management of patients presenting to an ED. This may also include topics related to basic sciences but relevant to conditions seen in ED so that outcome of patients can be improved through translational research.

## ROTATION OF RESIDENTS PURSUING POST GRADUATION IN EMERGENCY MEDICINE

This section includes a comprehensive list of goals for residents rotating through various departments/areas [Table 6]. The proposed duration of rotation is also mentioned. The students are expected to learn all procedural skills required and related to every rotation. During first one month in the ED, the student should be given orientation as regards the administrative set up, communication skills and working of the ED along with training on research methodology.

In medical institutions having superspeciality departments, the students should be uniformly rotated through various super specialties namely Cardiology, Neurology, Nephrology, Trauma Surgery, Neurosurgery, etc. for minimum of 2 weeks each. The duration of training in the above mentioned superspecialties shall be deducted out of the training period allocated for the allied broad specialties viz. General Medicine/General Surgery respectively.

## EXAMINATION PATTERN FOR AWARD OF MD IN EMERGENCY MEDICINE

The award of MD (or DNB) degree at the end of three years should be based on both internal/periodic and final/summative assessments:

1. At the end of rotation to various departments, internal assessment should be taken by that particular department. This should be based on the clinical skills acquired during the posting.

| No. | Assessment |
|---|---|
| A | Medical knowledge |
| B | Clinical-based learning |
| C | Interpersonal skills |
| D | Communication skills |

2. Logbook: To be evaluated periodically and checked by the faculty of the concerned department.
3. At the end of three years, the MD final examination should have both theory and practical components. The candidate must pass theory as well as practical examinations separately and the minimum criteria for passing should be 50% marks in theory and practical examination separately. Internal assessment and log book should constitute about 25% of total marks in the final examination.

### Internal and external examiners for final examination

As in other specialties, final examination for postgraduates in EM should also have four examiners (two internal and two external). Internal examiners should be only those teachers who are working exclusively in the Department of EM. The Convener for the examination should not be

**Table 3: Suggested core curriculum for 3-year postgraduate training program in Emergency Medicine**

**Cardiovascular Diseases**
- Cardiopulmonary resuscitation
  - Basic life support (one and two-rescuer CPR)
  - Advanced life support
    - Recognition of cardiac rhythms during cardiac arrest
    - Use of drugs
    - Defibrillation
    - Pacing
  - Leadership during CPR
  - Choking victim
  - Neonatal/pediatric CPR
  - CPR during pregnancy
- Chest pain
  - Stable angina
  - Acute coronary syndromes (unstable angina, ST-elevation and Non-ST-elevation myocardial infarction)
    - Use of thrombolytics
    - Use of glycoprotein inhibitors in ED
    - Angioplasty vs. thrombolytics
  - Pulmonary embolism
  - Aortic dissection
- Congestive heart failure and pulmonary edema
- Palpitations
- Cardiac arrhythmias
  - Tachyarrhythmias
    - Narrow complex vs. broad complex
    - Electric cardioversion
    - Anti-arrhythmic drugs
  - Bradyarrhythmias
- Hypertensive urgencies and emergencies
- Temporary and permanent cardiac pacemaker
- Shock
  - Hemorrhagic shock
  - Cardiogenic shock
  - Neurogenic shock
  - Septic shock
  - Anaphylactic shock
  - Blood/blood products
  - Cardiovascular drugs
    - Fluids
    - Vasopressors
- Deep vein thrombosis
- Valvular heart diseases
- Stuck artificial cardiac valve
- Infective endocarditis
- Acute pericarditis and cardiac tamponade
- Acute myocarditis
- Acute rheumatic fever
- Vascular access
- Peripheral vascular disease
- Sudden cardiac death
- Cardiac transplant patient

**Airways management and Anesthesia**
- Principle of airway management including difficult airway management
- Rapid sequence intubation
- Pain management
- Procedural sedation
- Regional, local and general anesthesia
- Ventilator management

**Trauma**
- Trauma resuscitation
  - Primary survey
  - Secondary survey
  - Advanced trauma life support
  - Transfer arrangements
- Wound management:
  - Lacerations
  - Abrasions
  - Contusion
  - Puncture wounds
  - Principles of management
  - Control of local bleeding
  - Suturing
    - General
    - Specific sites
  - Local anesthesia
- Head and facial trauma
  - Head injury
  - Fractures of bones of face
  - Facial injuries
  - Dental injuries
  - Nasal injuries
  - Ear injuries
  - Oral cavity injuries
  - Temporomandibular joint dislocation
- Spinal trauma
  - Immobilization
  - Examination
  - Cervical
  - Dorsal
  - Lumbar
- Chest trauma
  - Blunt/penetrating
  - Tension pneumothorax
  - Cardiac tamponade
  - Massive hemothorax
  - Open chest wound
  - Ruptured aorta
  - Flail chest
  - Contusion lung
  - Emphysema
- Abdominal trauma
  - Blunt/penetrating trauma
  - FAST
  - Diagnostic peritoneal lavage
  - Ultrasound and CT
  - Pelvic trauma
  - Genitourinary trauma
- Pelvic fracture

**Trauma (cont.)**
- Extremity trauma
  - Skeletal trauma (fractures)
  - Dislocation
  - Vascular trauma
  - Soft tissue trauma (strains and sprains)
  - Hand trauma
  - Compartment syndrome
  - Degloving injuries
  - Amputation/reimplantation
  - Fat embolism
- Trauma in children
- Trauma during pregnancy
- Trauma in elderly
- Blast injuries
- Mass casualties and injury care

**Respiratory emergencies**
- Dyspnea
- Respiratory failure and ARDS
- Hemoptysis
- Acute severe asthma / COPD
- Pneumothorax
- Foreign body
- Pneumonia and chest infections
- Thermal/chemical injury to lungs
- Sleep apnea syndrome

**Gastrointestinal and Hepatic emergencies**
- Abdominal pain
  - Acute abdomen
  - Acute gastritis
  - Cholangitis, cholecystitis
  - Acute pancreatitis
  - Acute appendicitis
  - Perforation/peritonitis
  - Mesenteric ischemia
  - Renal pain
  - Intestinal obstruction
  - Paralytic ileus
  - Inflammatory bowel disease
- Vomiting and diarrhoea
  - Evaluation of dehydration
  - Fluid therapy
- Acute GI bleed
  - Upper GI bleed
  - Lower GI bleed
- Foreign body ingestion
- Acute volvulus
- Hemorrhoids
- Rectal prolapse
- Perirectal abscess
- Hernias
- Ascites
- Acute liver failure
- Cirrhosis and its complications
- Liver abscess
- Jaundice
- Liver transplant patient

**Onco-haematological emergencies**
- Acute bleeding (including hemophilia)
- Disseminated intravascular coagulation
- Use of antithrombotic and antiplatelet agents
- Febrile neutropenia
- Thrombocytopenia
- Severe anemia
- Acute hemolysis
- Superior vena cava syndrome
- Tumour lysis syndrome
- Cord compression
- Metastatic emergencies
- Blood/blood products and transfusion
- Stem cell and bone marrow transplantation

**Non-traumatic orthopedic emergencies**
- Orthopedic and neurovascular examination of extremities
- Acute osteomyelitis
- Acute arthritis
- Acute gout
- Prosthesis-related emergencies
- Acute back pain
- Acute neck pain
- Acute shoulder pain
- Hand and foot infections
- Joint infections and inflammations
- Muscle and tendon infections and inflammation

**Genitourinary emergencies**
- Nephrolithiasis
- Acute renal failure
- Acute retention of urine
- Sexual assault
- Complications of chronic kidney disease
- Hematuria
- Torsion of testis
- Sexually transmitted diseases
- Epididymitis/orchitis/prostatitis
- Obstructive uropathy
- Acute pyelonephritis and perinephric abscess
- Phimosis and paraphimosis
- Foreign body insertion
- Kidney transplant patient

**Rheumatological emergencies**
- Acute vasculitis
- Anti-phospholipid antibody syndrome
- Rheumatologic disorders involving vital organs
- Kawasaki's syndrome

**Ocular emergencies**
- Red eye
  - Conjunctivitis
  - Acute glaucoma
  - Uveitis

**Table 3: (Continued)**

**Ocular emergencies (cont.)**
- Trauma
  - Foreign body
  - Corneal abrasión
  - Hyphema
  - Blow-out fracture
  - Chemical burns
- Visual loss/impairment
- Orbital cellulitis

**CNS emergencies**
- Headache
  - Approach
  - Specific disorders (including migraine)
- Syncope, vertigo and dizziness
- Seizures
  - Epileptic seizures
  - Pseudoseizures
  - Status epilepticus
- Coma and neurological impairment
  - Metabolic coma
    - Hypoglycemia
    - Ketoacidosis
    - Hyperosmolar coma
    - Hepatic encephalopathy
  - Neurological coma
- Meningitis and encephalitis
- Acute stroke
  - Ischemic
  - Hemorrhagic
  - Transient ischemic attack
  - Subarachnoid hemorrhage
- Cavernous sinus thrombosis
- Compressive and non-compressive myelopathies
- Peripheral neuropathy (including LGB syndrome)
- Myasthenic crisis
- Cranial nerve palsies

**Infections**
- HIV in emergency department
- Malaria (complicated and uncomplicated)
- Leptospirosis
- Enteric fever
- Chicken pox and herpes zoster
- Measles/mumps
- Dengue and other hemorrhagic fevers
- Chikungunya
- Evaluation of fever in Emergency Department
- Acute hepatitis
- Disseminated tuberculosis
- Management of needlestick injury
- Tetanus

**Infections (cont.)**
- Rabies
- Diphtheria/Pertussis
- Cholera
- Food poisoning
- Polio
- Plague
- Toxic shock syndrome
- Gas gangrene and other anerobic infections
- Sexually transmitted diseases
- Influenza
- Fever
- Immunization

**ENT emergencies**
- Upper airway obstruction and stridor
- Epistaxis
- Acute tonsillitis/sore throat/acute laryngitis
- Foreign bodies
- Acute suppurative otitis media and externa
- Acute sinusitis
- Other infections

**Dermatological emergencies**
- Exfoliative dermatitis
- Steven Johnson syndrome
- Toxic epidermal necrolysis
- Skin infections, inflammation and allergies

**Gynecology and Obstetrics emergencies**
- Ectopic pregnancy
- Lower abdominal pain
- Vaginal bleeding
- Abortion
- Pre-eclampsia/Eclampsia
- Conduct of delivery
- Emergency contraception
- Rape victim
- Amniotic fluid embolism

**Pediatric emergencies**
- Advanced pediatric life support
- Neonatal advanced life support
- Care of newborn
- Croup/epiglottitis
- Asthma
- Fever (neonate, young infant, older infant, child)
- Septicemia
- Meningitis
- Seizures
- Congenital heart diseases
- Non-cardiac congenital diseases

**Pediatric emergencies (cont.)**
- Pain relief
- Dehydration
- Care of pre-term baby
- Drug therapy in newborns, infants and children
- Child abuse
- Drugs in pediatric emergencies

**Metabolic and Endocrine emergencies**
- Diabetic emergencies:
  - Hypoglycemia
  - Hyperosmolar hyperglycemic state
  - Keoacidosis
- Fluid and electrolyte abnormalities
  - Normal physiology
  - Hypovolemia
  - Hyper/Hyponatremia
  - Hyper/hypokalemia
  - Hyper/hypocalcemia
- Acid-base disturbances
- Hypopituitarism/Hypoadrenalism
- Thyrotoxic crisis and myxedema coma

**Acute toxicology**
- Initial management
- Recognition of toxidromes
- Antidotes
- Insecticides and pesticides
- Drug overdose
- Snake bites, and scorpion and insect stings
- Plant poisoning
- Kerosene oil poisoning
- Ethyl alcohol poisoning and withdrawal
- Other alcohols (methyl alcohol, ethylene glycol)
- Methemoglobinemia
- Hyperthermias
- Substance abuse
- Hazardous chemicals
- Metal poisoning
- CBRN disasters
- Poison control centers

**Environmental emergencies**
- Burns
- Smoke inhalation
- Lightening
- Electric burns
- High altitude illnesses
- Diving emergencies
- Cold-induced illnesses
- Heat-induced illnesses
- Near-drowning
- Animal and human bites

**Geriatric emergencies**
- Psycho-social assessment
- Mobility assessment
- Drug pharmacology
- Geriatric abuse

**Psychiatric emergencies**
- Thought and mood disorders
- Anxiety and somatiform disorders
- Self-harm
- Delirium, dementia and psychosis
- Suicide and homicide
- Alcohol and substance abuse
- IV drug abuse
- Sexual assault and child abuse
- Domestic violence and elder abuse
- Violence in the ED

**Disaster medicine**
- Definitions
- Disaster planning
- Medical response to terrorist incidents

**Miscellaneous**
- Pre-hospital care
- Forensic aspects
  - Medico-legal examination
  - Examination of rape accused
  - Wound examination
  - Bullet wounds
  - Types of injuries (simple, grievous, dangerous)
  - Signs of death
- Biostatistics
- Research methodology
- Imaging techniques:
  - Plain x-rays
  - Ultrasound and echocardiography
  - CT
  - MRI
  - Angiography
  - Interventional techniques
- Nuclear medicine in emergencies
- Ethical issues

below the rank of a Professor while the second examiner should not be below the rank of Associate Professor/ Reader. External examiners should be appointed as per the MCI norms. Both the external examiners should not be below the rank of Professor/Additional Professor and should be only from the Departments of EM of various medical colleges running MCI-recognized postgraduate degree course in EM.

**Table 4: Procedural skills in Emergency Medicine**

- Airway management and cervical spine control
  - Basic airway management (opening airway by various methods)
  - Bag mask ventilation
  - Advanced airway management
    - Tracheal intubation
    - Alternative procedures (non-surgical and surgical)
  - Pediatric airway management
  - Neonatal airway management
- Cardiopulmonary resuscitation
  - Basic
  - Advanced
- Electric therapy
  - Cardioversion/defibrillation
  - Cardiac pacing
- ECG interpretation
- Ventilator management
- Basic trauma management and Advanced Trauma Life Support (non-Orthopedics)
  - Intercostal chest tube
  - Needle thoracentesis
  - Surgical and needle cricothyroidotomy
  - Suprapubic catheterization
  - Central venous access
  - Suture technique
  - Arterial puncture
  - Nasal packing
  - Foreign body removal
  - Foley's catheterization
- Needle and tube thoracotomy (in penetrating chest injuries) and aortic clamping
- Pulmonary procedures
  - Invasive ventilation principles
  - Thoracentesis
  - Needle/tube thoracostomy
- Cardiovascular procedures
  - Cardiac compression
  - Central venous access
    - Subclavian vein
    - Jugular vein
    - Femoral vein
  - Arterial access
  - Cut down techniques
  - Intra-osseous access
  - CVP monitoring
  - Pericardiocentesis
  - Monitoring
- Decontamination procedures
  - Gastric lavage
  - Skin/eye decontamination
- Paracentesis
- Neurological
  - Lumbar puncture
  - Burr hole
- Wound management
  - Wound preparation
  - Wound closure techniques
  - Debridement
  - Dressing techniques
  - Removal of foreign bodies
  - Tendon repair
- Orthopedic emergency procedures
  - Splinting/immobilization
    - Spinal immobilization
    - Limb splinting
    - Logrolling
    - Helmet removal
  - Fasciotomy
  - Reduction of dislocations
  - Traction splints
  - Plaster techniques for various fractures
  - Joint aspiration
  - Cervical collar application
  - Pelvic stabilization techniques
- Local and regional anesthesia
- Conscious sedation and analgesia
- Ear, nose and throat procedures
  - Indirect larngoscopy
  - Nasal packing
  - Removal of foreign bodies
- Maxillo-facial techniques
  - Dental anesthesia
  - Dental socket suture
- Ocular techniques
  - Slit lamp
  - Foreign body removal
- Gynaecological and Obstetrics:
  - Delivery
  - Speculum examination
- Others
  - Reducing paraphimosis
  - Nasogastric tube insertion
  - Incision and drainage of abscess
  - Nerve blocks
  - Detorsion of torsion of testis
- Transportation of patients
  - Intra-hospital
  - Inter-hospital
- Communication skills
  - Patients and relatives
  - Colleagues and other personnel
  - Bereavement
- Ultrasonography and echoardiography (both diagnostic and therapeutic)
- Designing a research study
- Interpretation of laboratory investigations/plain X-rays/CT/MRI
- Major incident planning

## Theory examination

As with other specialties, the final examination should have four question papers (3 hours each) as given below in Table 7.

### *Composition of theory assessment*

The theory papers should be based on short questions-answers pattern. The examiners must set only those questions which are relevant to the specialty of EM. Each paper may have 20 questions of five marks each; all questions should be compulsory.

## Practical examination

Not more than 4 candidates should be examined in one day. The practical should have following composition:

1. Case work up (cases to be taken from ED who are under observation and from those who are not seriously ill and are admitted to a department)
   - *Short cases:* Assessment should be based only on short cases. At least 10 cases should be given to each postgraduate student with distribution of cases as follows: two from medicine, one from surgery, one from trauma, one from pediatrics, and one each from dermatology, psychiatry, ophthalmology (trauma/fundus), ENT (ear, nose or throat acute problem) and obstetrics and gynecology.
2. Procedural skills: Ten procedures needs to be demonstrated on simulators or theoretically described on live persons by the candidate (if simulator is not available): (Example: Please describe the procedure for chest tube insertion.). The skills should include:
   - Ultrasound (at least two)
   - Cardiac resuscitation in adults, children and neonates
   - Trauma resuscitation
   - Other procedures
3. Spotting: Twenty spotters should be given and these should include X-rays, ECG, CT/MRI imaging, instruments, blood gas and acid-base reports, ultrasound, clinical photographs.
4. Objective Structured Clinical Examination (OSCE): Two cases (one single and one multiple patient encounters) should be given to test the candidates.
5. Viva voce: Only questions relevant to EM should be asked in viva voce.

## EMERGENCY MEDICINE CURRICULUM FOR MBBS COURSE

ACEE-India recommends that every medical student should be posted in the Department of EM as a part of his/her clinical rotation. The rotation in EM should be for one month followed by assessment. The student should do clinical shifts in the EM department during this rotation. He/she should attend all academic activities of the department, namely journal club, clinical presentations, seminars, etc. held in the department. It is recommended that the medical students learn in detail all fundamentals of resuscitation and also do various procedures in the ED under supervision of teachers and/or senior residents. A log book needs to be maintained where in the student should record all activities he or she has done during the rotation in EM. Topics to be covered during the rotation are mentioned in Table 8. During the internship period, 2 weeks posting in Casualty may be replaced by 1 month posting in EM; accordingly a period of 2 weeks posting may be reduced in other departments.

**Table 5: List of procedures along with minimum number to be performed independently**

| Procedure | Numbers to be performed independently | Procedure | Numbers to be performed independently |
|---|---|---|---|
| Airway management (opening airway by various methods) | 100 | Nasal packing | 10 |
| Bag mask ventilation | 100 | Foley's catheterization | 50 |
| Tracheal intubation | 100 | Paracentesis | 10 |
| Alternative airway management methods (non-surgical and surgical) | 25 | Pericardiocentesis | 10 |
| | | Wound care | 100 |
| Pediatric and neonatal airway management | 35 | Splint application for various fractures | 100 |
| Cardiopulmonary resuscitation | 50 | Spinal immobilization | 10 |
| Cardioversion/defibrillation | 40 | Reduction of dislocations | 20 |
| Cardiac pacing | 10 | Plaster techniques for various fractures | 50 |
| Ventilator management | 50 | Cervical collar application | 10 |
| Intercostal chest tube | 10 | Pelvic stabilization | 5 |
| Needle thoracentesis | 10 | Local and regional anesthesia | 50 |
| Suprapubic catheterization | 5 | Conscious sedation and analgesia | 10 |
| Central venous access | 50 | Nerve blocks | 10 |
| Suturing (various techniques) | 100 | Slit lamp examination | 20 |
| Arterial puncture | 100 | Delivery | 10 |
| Cut down | 10 | Lumbar puncture | 10 |
| Intraosseous access | 10 | Burr hole | 5 |
| CVP monitoring | 10 | Reducing paraphimosis | 5 |
| Ultrasound and echocardiogram | 40 normal and 60 abnormal with various emergency conditions equally represented | Nasogastric tube insertion | 50 |
| | | Incision and drainage of abscess | 50 |
| | | Analysis of plain X-ray films | 200 |
| | | Analysis of CT scans | 20 |

## CONCERNS ABOUT THREE-YEAR MASTER OF SURGERY DEGREE COURSE IN TRAUMA AND SURGERY

It has been noted that MCI has recently given permission for a 3-year postgraduate degree course (MS) in Trauma and Surgery. It may create confusion and conflict with the broad specialty training programs in orthopedics and general surgery. As per the existing world-wide practice, the academic programs in orthopedic trauma and surgical trauma are two separate superspecialties at post-doctoral level. It would be very difficult for a person to be trained both in the fields of orthopedic trauma as well as surgical trauma, as these are two different fields. Therefore, it would be appropriate that instead of having the broad specialty of MS in trauma and surgery, we should have superspecialties/fellowships in orthopedic trauma and surgical trauma which can be undertaken only after the MS course in orthopedics and general surgery respectively. Additionally neurosurgeons already have enough training in neurotrauma as a part of their curriculum. The ACEE-India recalls that infectious disease was initially notified as a broad specialty by the MCI but later was upgraded to a superspeciality.

## CONCERNS ABOUT CURRENT TRAINING PRACTICES OF PLACING POST GRADUATES OF EMERGENCY MEDICINE IN CRITICAL CARE UNITS

Currently, MD EM program is running in 20 medical colleges in the country. It has been observed that due to the absence of clearly defined curriculum in this specialty, the postgraduates are being rotated through larger part of their three year training program in the Critical Care Medicine units at the cost of teaching and training in the core discipline of EM. This is adversely affecting the growth of academic EM and the post graduates are not being adequately trained in the main department. Further, it may be noted that the training program in Critical Care Medicine is in itself a superspeciality/post-doctoral training program; hence it is likely to create confusion with the personnel being trained in this superspeciality. Hence the ACEE-India recommends that the students undergoing MD course in EM should spend larger part of their training in the department of EM as per the proposed rotation schedule stated in Table 6.

## CAREER PATHWAYS OF SUPERSPECIALITY TRAINING OPPORTUNITIES FOR THE MD EMERGENCY MEDICINE POSTGRADUATES

MCI has recognized DM course in Critical Care Medicine as a superspeciality. Post graduates with MD in EM should be eligible to pursue super specialty courses in Critical Care Medicine. This is suggested keeping in mind that critical care begins in the Department of EM and the training as an emergency physician lays strong foundation to pursue DM course in Critical Care Medicine. These post graduates should also be eligible for super specilization (doctorate in medicine) in other disciplines. In addition, once the specialty of EM is fully established in India, superspeciality courses in pediatric EM, toxicology, disaster management, and tropical emergencies may be established.

## Table 6: Proposed rotation plan and goals of rotation

**Anesthesia (Duration – One month)**

Goals

- Develop airway management skills
- Develop familiarity with pharmacological agents used in anesthesia
- Learn standard monitoring techniques
- Learn ventilator management
- Learn relevant pre-operative historical and physical exam considerations
- Learn principles of pain management.

**Emergency Medicine (Duration – 18 months)**

Goals

- Develop the ability to rapidly evaluate, diagnose, stabilize, and disposition of critically ill patients.
- Learn respiratory, cardiovascular, renal and neurologic physiology and the pathophysiology of trauma, toxins, shock, sepsis, cardiac failure, and respiratory failure that affect critically ill patients.
- Learn the principles of medical instrumentation and hemodynamic monitoring and be able to utilize them in the care of critically ill patients.
- Learn the indications and develop the technical skills needed to perform diagnostic and therapeutic interventions in critically ill patients.
- Learn the rational use of laboratory, radiographic and other diagnostic tests in the management of critically ill patients.
- Understand the etiologies and pathophysiology of cardiac arrest.
- Learn to recognize the dysrhythmias associated with cardiac arrest and their treatment.
- Learn the American Heart Association (AHA) recommendations and develop skill in the performance of standard resuscitative procedures.
- Learn the principles of pharmacotherapy and the routes and dosages of drugs recommended during cardiac arrest and following resuscitation.
- Learn the indications for withholding and terminating resuscitation.
- Learn common organizational structures of emergency medical services.
- Learn the pathophysiology, patient evaluation and management of thermal and chemical burns.
- Learn the pathophysiology, patient evaluation and management of electrical injury, including lightning injury.
- Learn the pathophysiology, patient evaluation and management of radiation injuries.
- Learn the pathophysiology, patient evaluation and management of hypothermia and frostbite.
- Learn the pathophysiology, patient evaluation and management of heat illness.
- Learn the pathophysiology, patient evaluation and management of drowning and near-drowning.
- Learn the pathophysiology, patient evaluation and management of high altitude illness.
- Learn basic ethical principles relevant to emergency medicine.
- Learn basic legal principles relevant to emergency medicine.
- Learn the overall principles of managing the geriatric patient in an emergency care environment.
- Learn basic statistics and research methodologies
- Learn the presenting signs, symptoms, laboratory findings, pathophysiology and treatment of common therapeutic drug poisonings, drugs of abuse, natural toxins, and general household poisons as delineated in the core curriculum of Emergency Medicine
- Learn the common hazardous materials (HAZMAT) of the workplace and prehospital operations with regard to HAZMAT incidents.
- Learn use of the diagnostic imaging modalities available for the evaluation of orthopedic disorders.
- Develop skill in the diagnosis and treatment of inflammatory and infectious disorders of the musculoskeletal system.
- Learn principles of acute and chronic pain management in patients with musculoskeletal disorders.
- Master the understanding of the components of the immune system, and the disorders of hyper and hypofunction of the immune system.
- Know the major systemic infectious disorders, their diagnosis and treatment.
- Develop knowledge of the etiologies, manifestations, and treatment of endocrine and metabolic disorders.
- Develop familiarity with common general surgical disorders presenting to Emergency, and develop relevant history and physical exam skills.
- Develop procedural skills relevant to general surgery.
- Learn indications for consultation and surgical intervention in patients with acute abdominal pain.
- Learn the principles of trauma management including ATLS.
- Learn how CSF shunts function and learn to evaluate patients with possible shunt malfunction.

**Dermatology (Duration – 2 weeks)**

Goals

- Develop ability to recognize and appropriately treat disorders of the skin and mucous membranes.

**Forensic Medicine (Duration – 2 weeks)**

Goals

- Learn basic principles of medico-legal cases
- Learn various types of wounds
- Learn medico-legal aspects of gunshot wounds
- Learn preservation of various samples for medico-legal purpose.

**General Medicine (Duration – 3 months including critical care for 1 month)**

Goals

- Assimilate general concepts of Internal Medicine, history taking and physical examination skills to develop a systematic evaluation for patients presenting to the emergency department.
- Learn the pathophysiology, presentation, and management of diseases related to the alimentary tract.
- Develop knowledge of the pathophysiology, presentation, and management of common hematologic diseases.
- Master the understanding of the components of the immune system, and the disorders of hyper- and hypofunction of the immune system.
- Know the major systemic infectious disorders, their diagnosis and treatment.
- Learn the pathophysiology, evaluation, and treatment of renal disorders.
- Develop knowledge of the etiologies, manifestations, and treatment of endocrine and metabolic disorders.
- Master the understanding of the diseases of the respiratory system, including pathophysiology, evaluation, and treatment.
- Learn management of upper and lower gastrointestinal bleed
- Learn management of acute hepatic failure
- Learn management of complications of cirrhosis
- Learn about acid-base and electrolyte disturbances
- Perform peritoneal dialysis
- Learn about complications of dialysis and renal failure
- Demonstrate the ability to stabilize patients who present in cardiopulmonary arrest.
- Develop skills in the evaluation of patients who present with chest pain.
- Demonstrate the ability to evaluate, stabilize, treat, and arrange for appropriate disposition of patients with cardiac disease processes.
- Demonstrate the ability to develop a differential diagnosis for patients presenting with cardiac symptomatology (chest pain, shortness of breath, weakness, palpitations), etc.
- Demonstrate skill in the interpretation of diagnostic modalities (ECG, chest x-ray and cardiac ultrasonography).
- Develop familiarity with cardiac pharmacologic agents.
- Demonstrate skill at cardiac related procedures: venous line and CVP pressure monitoring, pericardiocentesis, defibrillation and cardioversion, Swan Ganz catheterization, and ultrasonography.
- Demonstrate the ability to diagnose, stabilize, and apply thrombolytic therapy to patients presenting with acute myocardial infarction.
- Learn the anatomy, pathophysiology, presentation, and management of common nervous system disorders.
- Develop skill in the performance of a screening and detailed neurological evaluation.
- Develop skill in the use and performance of diagnostic procedures in the evaluation of neurological disorders.

**Table 6: (Continued)**

**General Surgery including Trauma (Duration – 6 weeks)**

Goals

- Develop familiarity with common general surgical disorders.
- Develop relevant history and physical examination skills.
- Develop procedural skills relevant to general surgery.
- Develop skill in the overall assessment of the general surgical patient.
- Learn indications for consultation and surgical intervention in patients with acute abdominal pain.
- Learn the principles of care of the preoperative patient.
- Learn the anatomy, pathophysiology, presentation, and management of common nervous system injuries.
- Develop skill in the performance of screening and detailed neurological evaluation.
- Develop skill in the use and performance of diagnostic procedures in the evaluation of neurological injuries.
- Effectively utilize radiologic studies to diagnose neurological injuries.
- Diagnose, stabilize and provide initial treatment of injuries of the brain, spinal cord, bony spine and peripheral nerves.
- Learn how CSF shunts function and learn to evaluate patients with possible shunt malfunction.
- Learn about special aspects of trauma in children
- Learn surgical emergencies in children
- Learn the relevant history and physical examination skills.
- Learn the use of diagnostic imaging modalities available for the evaluation of urologic disorders.
- Learn the diagnosis and management of urinary tract infections, including pyelonephritis and prostatitis.
- Learn the diagnosis and management of renal calculi.
- Learn the evaluation and management of renal and genitourinary trauma.
- Learn the diagnosis and management of disorders of the male genitalia.

**Obstetrics/Gynecology (Duration – 1 month)**

Goals

- Learn the principles of contraception.
- Develop expertise in the diagnosis and management of emergent complications of pregnancy.
- Develop expertise in the management of uncomplicated and complicated labor and delivery.
- Develop expertise in the management of sexual assault.
- Learn the principles of management of gynecologic and obstetrical trauma.
- Learn diagnosis and treatment of genital and pelvic infectious diseases.
- Develop expertise in the diagnosis and management of abdominal pain in females.
- Develop expertise in the diagnosis and management of vaginal bleeding.

**Ophthalmology (Duration – 2 weeks)**

Goals

- Develop relevant history and physical examination skills
- Learn to recognize and treat emergent causes of visual loss
- Learn the principles of ocular trauma management
- Learn the evaluation and management of common ophthalmologic complaints.

**Orthopedics (Duration – 6 weeks)**

Goals

- Develop relevant history and physical examination skills.
- Learn use of the diagnostic imaging modalities available for the evaluation of orthopedic disorders.
- Develop skill in the evaluation and management of musculoskeletal trauma.
- Develop skill in the diagnosis and treatment of inflammatory and infectious disorders of the musculoskeletal system.
- Learn principles of acute and chronic pain management in patients with musculoskeletal disorders.
- Learn principles trauma care.
- Develop an organized approach to the assessment, resuscitation, stabilization and provision of definitive care for the trauma victim.
- Learn use of the diagnostic imaging modalities available for evaluation of the trauma victim.
- Develop procedural skills necessary in the evaluation and management of the trauma victim.
- Learn to recognize and treat immediate life and limb threatening injuries in the trauma victim.
- Learn special considerations in the evaluation and management of the pregnant trauma victim.
- Learn special considerations in the evaluation and management of the pediatric trauma victim.
- Learn special considerations in the evaluation and management of the geriatric trauma victim.
- Learn the principles of disaster management
- Learn how to manage fractures, reduce dislocations and learn the splint and plaster techniques

**Otolaryngology (Duration – 2 weeks)**

Goals

- Develop relevant history and physical examination skills.
- Learn the evaluation and management of common problems of the head and neck.
- Learn the evaluation and management of facial trauma.
- Develop skill in the evaluation and management of upper airway disorders.
- Learn use of the diagnostic imaging modalities available for evaluation of head and neck disorders.

**Pediatrics (Duration – Three months including PICU and NICU for one month each)**

Goals

- Develop skill in infant/pediatric resuscitation.
- Develop skill in performance of appropriate pediatric history and physical examination, including general growth and development, assessment and knowledge of current immunization requirements.
- Learn the etiologies, significance, and treatment of fever and infection in the child.
- Learn the manifestations and significance of abdominal related complaints in the child.
- Learn the etiologies and treatment of neurologic emergencies in the child.
- Learn the physiology and management of derangements of fluid and electrolyte in children.
- Learn the indications of social and/or psychological disturbances.
- Learn the specific problems of pediatric trauma victims.
- Learn the manifestations and treatment of pediatric cardiac abnormalities.
- Learn the pathophysiology, etiologies, and treatment of respiratory disorders of children.
- Learn the pathophysiology, etiologies, and treatment of common serious endocrine and hematologic disorders of children.
- Learn the pathophysiology, etiologies, and treatment of common serious gynecologic and urologic conditions of children.
- Learn to recognize and provide appropriate treatment for orthopedic and soft tissue problems of childhood.
- Learn the common dermatologic diseases and dermatologic manifestations of systemic diseases in children.
- Learn to recognize and treat children with common and/or serious problems of the head and neck.

**Psychiatry (Duration – 2 weeks)**

Goals

- Develop familiarity with common psychotherapeutic agents.
- Learn relevant interviewing techniques to deal with patients with various psychiatric disorders.
- Learn principles of managing the violent patient.

**Radiology ( Duration – 1 month)**

Goals

- Learn all the possible presentations of injuries and clinical conditions with their related radiological findings in CT Scan, X-Ray and MRI, Ultrasound, etc.

**Elective (Duration – 2 weeks)**

Goals

- Upgrade any area of deficient expertise

**Community Medicine – (Duration - One month)**

Goals

- Learn management of emergencies in the community setting

**Table 7: Syllabus of theory papers for final examination**

| | |
|---|---|
| Paper 1 | Basic sciences as relevant to Emergency Medicine (Applied Anatomy, Clinical Physiology, Clinical Biochemistry, Clinical Pharmacology, Clinical Microbiology, Clinical Pathology, Research Methodology, Biostatistics) |
| Paper 2 | Emergency Medicine (Medicine, Dermatology, Psychiatry) |
| Paper 3 | Emergency Medicine (Surgery, Trauma, Orthopedics, Obstetrics, Anesthesia, Eye, ENT, Dental, Radiology) |
| Paper 4 | Emergency Medicine including recent advances (Pediatrics, Principles of Pre-hospital Care, Disaster Medicine, Forensic Medicine) |

**Table 8: Topics for MBBS curriculum during undergraduates' posting in Emergency Department**

| |
|---|
| History, clinical examination, documentation and critical differentials in Emergency Medicine |
| High risk Emergency Medicine |
| Avoiding common medical error |
| Risk reduction to enhance patient safety |
| Resuscitation |
| ECG |
| Basics of ultrasound |
| Common X-rays, CT Scans and MRI images |
| Approach to chest pain, shortness of breath, altered mental status |
| Management of pain anywhere in the body |
| Approach to bleeding from anywhere in the body |
| Medico-legal issues with respect to emergency patients |
| Dermatological manifestations in emergency patients |
| Approach to poisonings |

## EMERGENCY MEDICINE AND NATIONAL BOARD OF EXAMINATIONS

NBE has also approved Diplomate of National Board (DNB) in EM. NBE may include the guidelines suggested here to approve any hospital for DNB in EM. Since various hospitals running DNB program in EM do not have teaching program for MBBS, ACEE-India is of firm view that before allowing any hospital to start DNB in EM, NBE must ensure that the hospital has fully-staffed ED and has facilities of training DNB candidates in various broad specialties and superspecialties during their rotation postings.

## KEY RECOMMENDATIONS

The ACCE-India proposes the following recommendations to help in growth of academic departments of EM in India so as to produce fully trained emergency physicians:

1. Every medical college should have a Department of EM staffed by full-time faculty. This will help in teaching and training of undergraduates and postgraduates, and will also provide efficient emergency care to patients.
2. For assessing eligibility of a medical institution to start 3-year MD course in EM, MCI should appoint only those assessors who are working as MCI-recognized Professors/ Additional Professors in MCI-recognized Departments of EM in various medical colleges. Similar guidelines should be followed by NBE.
3. For starting a Department of EM, the hospital should have at least 20 beds exclusively earmarked for EM where initial resuscitation, management and observation of patients can be carried out.
4. Initially, the teachers for department of EM should be selected from broad specialties of general medicine, general surgery, anesthesia, orthopedics, and pulmonary medicine, if a candidate with MD in EM is not available. This may be reviewed later, once adequate number of trained emergency physicians becomes available.
5. The MCI may drop the requirement of 2-year training in EM as the eligibility criteria for recruitment of teachers. In view of the shortage of teachers trained in EM, when the teachers are selected for the department of EM from other identified specialties, teachers with in-house experience/ under-going a course or fellowship program in EM (like FACCE) may be considered for the initial period of 10 years.
6. The Faculty must work only in the Department of EM on full time basis and should not continue to work part time in their parent departments.
7. Department of EM should have adequate infrastructure and equipment for management of patients.
8. Department of EM must not admit patients under its care.
9. MCI and NBE should adopt a uniform core curriculum at the earliest so that the existing as well as future departments of EM have a clear direction for training of the postgraduates.
10. The departments running EM program should have a proper rotational plan for the postgraduates so that they get exposure to all sorts of emergencies across all age-groups.
11. The postgraduates should be given a list of procedural skills they need to acquire during the 3-year training program so that they become fully competent to perform life-saving procedures independently.
12. Final theory examination should be based on short question-answers and not lengthy, essay type answers.
13. The practical examination should not have any long cases. Only short cases should be given to the candidates. Procedural skills must be checked at the time of practical examination.
14. Every MBBS student should be posted in the Department of EM as a part of clinical rotation.
15. The MCI should reconsider its approval for the 3-year post graduate degree course (MS) in trauma and surgery and replace it with superspeciality courses in orthopedics and surgical trauma.

## CONCLUSION

The ACCE-India is at forefront in spearheading the specialty of EM in India. Even though MCI and NBE has recognized EM as a separate specialty, it has not grown at a pace which is desirable considering number of emergencies seen in our country.

Further, training of these postgraduates is still not being done in a proper and scientific manner. Teachers Eligibility Qualifications for faculty selection in the department of EM as given by the MCI need some modification, particularly with regard to the requirement on 2-year experience in EM after obtaining postgraduate degree. Through this paper, ACEE-India wishes to optimize growth of departments of EM with emphasis on competency-based curriculum, so that fully trained competent emergency physicians are produced who can take care of all types of emergencies.

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