

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

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M.D. / M.S.
POST GRADUATE DEGREE COURSES



SYLLABUS AND CURRICULUM

2021 - 2022

M.D. EMERGENCY MEDICINE

THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY, CHENNAI

M.D. EMERGENCY MEDICINE

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Introduction

Emergency Medicine (EM) is a specialty that is concerned with the initial diagnosis and management of a wide spectrum of acute illnesses and injuries in all age groups. It is a specialty in which time is critical. There is an initiative in developing PG training program in Emergency medicine across the country in various medical institutions. The specialist Emergency Medicine physician is an academic and community resource, providing leadership in the administration of emergency departments, emergency medical systems and programs, and the conduct of relevant research and education.

GOALS

The aim of this curriculum is to create a specialist Emergency Medicine physician who at the completion of the 3-year training period is

- ❖ A competent specialist in Emergency Medicine, capable of assuming a consultant's role in the specialty.
- ❖ Capable of employing pertinent methods of prioritization, assessment, intervention, resuscitation, and further management of patients to the point of transfer.
- ❖ Skilled in emergency department management and disaster management, and has the ability to interface with and play a leadership role in the development and organization of emergency medical services and pre-hospital care in India
- ❖ Able to carry out research and guide trainees in the field of emergency medicine
- ❖ Competent to pass on his/her knowledge, skills and attitudes for effective patient care to undergraduates and post-graduate trainees

COMPETENCIES AND OBJECTIVES

At the end of the post-graduation training, the Emergency Medicine physician should have acquired the required competency in clinical knowledge, skills, and attitudes necessary to rapidly assess and manage a full spectrum of patients, often concomitantly, with acute or undifferentiated illness and injury.

Table 1: Summary of competency domains and objectives during the post graduate training

	Competency domain	Objective
A	Medical Knowledge	The EM post-graduate registrar should acquire knowledge of the principles of resuscitation and critical care management, trauma, acute medical and surgical emergencies, environmental emergencies, pre-hospital care, emergency preparedness and disaster medicine.
C	Clinical skills	The EM post-graduate registrar should be able to apply the knowledge of the clinical, basic sciences and socio-behavioral sciences relevant to Emergency Medicine to rapidly assess and manage patients with acute and/or undifferentiated illness or injury, ranging from life-threatening events to common minor presentations
D	Patient care	The EM post-graduate registrar must be able to provide patient care that is evidence based, appropriate, and effective for the treatment of all emergencies and the promotion of health
E	Practice-Based Learning and Improvement	The EM post-graduate registrar must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning
F	Interpersonal and Communication Skills	The EM post-graduate registrar must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and colleagues
G	Professionalism	The EM post-graduate registrar should develop empathy towards patients, must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles when faced with multiple patients and emergencies
H	Systems-Based Practice	The EM post-graduate registrar must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care

YEAR WISE BREAKDOWN OF COMPETENCY TARGETS

FIRST YEAR OF PG: BY THE END OF FIRST YEAR OF PG TRAINING

The first year EM registrar must achieve the following competency goals and objectives by the end of their first year of training

Table 2: Course description, Competency goals, objectives, evaluation and feedback in the first year of training

1.	Course description (1 st year)	The first year in EM is geared towards laying a foundation in knowledge and basic resuscitation principles. The PG student is posted for 7 months in the ED and for 5 months in peripheral departments (ICU, ENT, Ophthalmology, Orthopedics, Obstetrics and Anesthesia) The first-year registrars should • Understand the basic principles of resuscitation and adapt to the functioning of the ED • Attend scheduled emergency medicine teaching sessions • Attend workshops in cardiac arrest and trauma management • Assist in major trauma cases and cardiac arrests • All procedures will be done under the direct or indirect supervision of the attending consultant on duty
2.	Goals	The overall goals of the second-year training are described by the following basic competencies described in Table 1 ❖ Medical Knowledge ❖ Patient care ❖ Practice-Based Learning and Improvement ❖ Interpersonal and Communication Skills ❖ Professionalism ❖ Systems-Based Practice
3.	Objectives	By the end of their first year, the EM post-graduate registrar should ➤ Demonstrate a level-appropriate knowledge of common emergencies seen in the ED: (Medical Knowledge) • Demonstrate good understanding of the principles of cardiac arrest resuscitation and early management of trauma • Demonstrate adequate knowledge of basic and applied sciences related to EM • Demonstrate adequate knowledge of evaluation and management of minor acute and nonemergent conditions • Demonstrate an appropriate understanding of the core curriculum

		➤ Demonstrate the ability to provide appropriate care to patients with medical and surgical emergencies: (Patient care) • Demonstrate ability to obtain an accurate history and perform a comprehensive physical examination • Be able to make appropriate clinical diagnosis and a list of differential diagnoses • Demonstrate knowledge of the available laboratory and radiological investigations and the appropriate therapeutic options for common medical and surgical emergencies • Be able to implement an appropriate investigative and therapeutic plan • Be able to make an appropriate discharge and follow up plan of patients with minor and non-emergent problems ➤ Demonstrate the ability to appraise and assimilate scientific evidence and follow evidence-based medicine to improve their own practice: (Practice-Based Learning and Improvement) • Demonstrate the ability to critically assess their competency in resuscitating patients with common emergencies • Demonstrate the ability to apply evidence-based medicine to patients in the ED • Demonstrates the ability to use available technology in the evaluation and management of their patients ➤ Demonstrate effective interpersonal and communication skills with • Patients and their relatives • Other health care providers in the ED • Other department physicians ➤ Demonstrate the professionalism required of an EM registrar: (Professionalism) • Accept responsibility for patient care • Demonstrate commitment to sound ethical practices regarding patient care • Demonstrate respect for dignity and privacy of patients • Demonstrate confidence while handing over cases to other specialties • Demonstrate calmness and composure while dealing with difficult relatives and while breaking bad news ➤ Demonstrate a basic understanding of the role of the ED in the larger context of health care delivery: (Systems-Based Practice) • Demonstrate an understanding of cost benefit analysis of acutely ill patients • Know the cost of emergency resuscitation procedures and tests • Demonstrate an understanding of the health care set up, referral system and follow up available and guide patients in this regard
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SECOND YEAR OF PG: BY THE END OF SECOND YEAR OF PG TRAINING

In addition to the skills learnt in the first year, the second year EM registrars must achieve the following competency goals and objectives by the end of their second year of training

Table 3: Course description, Competency goals, objectives, evaluation and feedback in the second year of training

1.	Course description (2 nd year)	The second year in EM is geared towards consolidating the foundation laid in first year in knowledge and basic resuscitation principles. The PG student is posted for 7 months in the ED and for 5 months in peripheral departments (CCU, Surgical ICU, Neurology, Neurosurgery, Radiology, Pulmonary medicine and General surgery) The second-year registrars should • Be confident in the basic principles of resuscitation and the functioning of the ED • Be confident in evaluating and managing major trauma cases • Be confident in resuscitation procedures, securing airway and managing cardiac arrests • Attend scheduled emergency medicine teaching sessions
2.	Goals	The overall goals of the second-year training are described by the following basic competencies as described in Table 1 ❖ Medical Knowledge ❖ Patient care ❖ Practice-Based Learning and Improvement ❖ Interpersonal and Communication Skills ❖ Professionalism ❖ Systems-Based Practice
3.	Objectives	By the end of their second year, the EM post-graduate registrar should ➤ Demonstrate a level-appropriate knowledge of life-threatening emergencies seen in the ED: (Medical Knowledge) • Demonstrate mastery of the principles of cardiac arrest resuscitation and early management of trauma • Demonstrate adequate knowledge of evidence-based medicine in daily practice • Demonstrate an appropriate understanding of the core curriculum ➤ Demonstrate the ability to provide appropriate care to patients with medical and surgical emergencies: (Patient care) • Demonstrate ability to obtain a focused history, perform a comprehensive physical examination and make a list of differential diagnoses • Be confident in implementing appropriate investigative and therapeutic plans • Be confident in making an appropriate discharge and follow up plan of patients

		• Be confident in performing resuscitative procedures for life threatening emergencies • Be confident in assessing and resuscitating patients with sudden cardiac arrest • Be confident in primary and secondary assessment of major trauma victims and in early management of trauma ➤ Demonstrate the ability to appraise and assimilate scientific evidence and follow evidence-based medicine to improve their own practice: (Practice-Based Learning and Improvement) • Demonstrate the ability to critically assess their competency in resuscitating patients with common emergencies, especially cardiac arrests and major trauma • Demonstrate the ability to critically appraise latest evidence and technology and apply them to patients in the ED ➤ Demonstrate effective interpersonal and communication skills with • Patients and their relatives • Other health care providers in the ED • Other department physicians ➤ Demonstrate the professionalism required of an EM registrar: (Professionalism) • Accept responsibility for patient care • Demonstrate commitment to sound ethical practices regarding patient care • Demonstrate respect for dignity and privacy of patients • Demonstrate confidence while handing over cases to other specialties • Demonstrate calmness and composure while dealing with difficult relatives and while breaking bad news ➤ Demonstrate a basic understanding of the role of the ED in the larger context of health care delivery: (Systems-Based Practice) • Understand the health care set up available, its positive and negative features and be able to manage and guide patients accordingly • Develop a good understanding of the cost of emergency resuscitation procedures and tests and evaluate and manage patients accordingly
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THIRD YEAR OF PG: BY THE END OF THIRD YEAR OF PG TRAINING

In addition to the skills learnt in the first two years, the final year EM registrars must achieve the following competency goals and objectives by the end of their third year of training

Table 4: Course description, Competency goals, objectives, evaluation and feedback in the third year of training

1.	Course description (3 rd year)	The third year in EM is geared towards consolidating the foundation laid in first year in knowledge and basic resuscitation principles. The PG student is posted for 8 months in the ED and for 5 months in peripheral departments (Pediatrics, General medicine, Psychiatry and orthopedics) The third-year registrars should • Be confident in the resuscitation of patients with life threatening emergencies • Be confident in evaluating and managing major trauma cases • Respond to cardiac arrest rescue calls from the rest of the hospital • Attend scheduled emergency medicine teaching sessions
2.	Goals	The overall goals of the second-year training are described by the following basic competencies as described in Table 1 ❖ Medical Knowledge ❖ Patient care ❖ Practice-Based Learning and Improvement ❖ Interpersonal and Communication Skills ❖ Professionalism ❖ Systems-Based Practice
3.	Objectives	By the end of their third year, the EM post-graduate registrar should ➤ Demonstrate a level-appropriate knowledge of life-threatening emergencies seen in the ED: (Medical Knowledge) • Demonstrate mastery of the principles of cardiac arrest resuscitation (adult, pediatric and neonatal) and early management of trauma • Demonstrate adequate knowledge of evidence-based medicine in daily practice • Demonstrate an appropriate understanding of the core curriculum ➤ Demonstrate the ability to provide appropriate care to patients with medical and surgical emergencies: (Patient care) • Demonstrate ability to teach and guide junior registrars in obtaining a focused history, performing a comprehensive physical examination and making a list of differential diagnoses • Be the team leader in resuscitating patients with sudden cardiac arrest • Be the team leader in resuscitation of major trauma victims during the early management of trauma ➤ Demonstrate the ability to appraise and assimilate scientific evidence and follow evidence-based medicine to improve their own practice: (Practice-Based Learning and Improvement) • Demonstrate the ability to critically assess their competency in resuscitating patients with common emergencies, especially cardiac arrests and major trauma • Ability to teach and supervise junior registrars and medical students

		➤ Demonstrate effective interpersonal and communication skills with • Patients and their relatives • Junior registrars, colleagues and faculty in the ED • Other department physicians ➤ Demonstrate a basic understanding of the role of the ED in the larger context of health care delivery: (Systems-Based Practice) • Triage patients and show leadership in mass casualty drills and situations • Supervise junior registrars in appropriate evaluation and management of patients in the ED
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EVALUATION PROCESS

The EM PG registrar will be formally evaluated by the ED faculty on a regular basis. Competencies achieved and skills acquired will be assessed and marked at the end of every year by the senior faculty and a global rating of performance would be done. This evaluation will be based on the PG registrar's proficiency in achieving the ED and peripheral rotations' objectives as demonstrated by their ability and participation in the following functions:

- Examining patients and presenting cases to the ED consultants (Chart-stimulated recall oral examination/Clinical patient examination skills)
- Evaluating and implementing management plan (Chart-stimulated recall oral examination)
- Ability to perform emergency resuscitative procedures relevant to cardiac arrest and early management of trauma (Simulations and models)
- Attendance in weekly academic sessions of the ED and peripheral rotations
- Performing procedures learnt during each year
- Knowledge and skills learnt during the peripheral rotations in each year

FEEDBACK MECHANISM

The EM PG registrar will be given feedback by the ED faculty and faculty in charge of peripheral rotations every year. Feedback will be given at the prescheduled review, where the registrar discusses his/her experience regarding procedures, supervision, teaching and overall quality of the ED and peripheral postings. Immediate feedback would be given by the course coordinator or head of the department if potential difficulties with the EM PG registrar or the rotation are revealed.

COMPONENTS OF THE POSTGRADUATE CURRICULUM

THEORITICAL KNOWLWDGE

The post-graduate student should acquire basic science and clinical knowledge of all emergencies ranging from life-threatening events to common minor presentations, including but not limited to the following.

1	Principles of resuscitation and critical care management	Basic life support, Advanced cardiac life support, Pediatric life support
2	Trauma	General concepts in the management of the traumatized patient, Advanced trauma life support, Injuries to the following areas/body systems: Head, face, neck, thorax, abdomen, genitor-urinary, musculoskeletal, nervous system, soft tissue/cutaneous, spine and vascular.
3	Acute medical and surgical disorders including but not limited to the following cardinal presentations:	
	a. Head and neck	Diplopia, eye pain/ ,loss of vision, ear pain, loss of hearing, tinnitus, rhinorrhea, dysphagia, sore throat, stridor
	b. Neurological	Coma, confusion, decreased level of consciousness, delirium, ataxia, dizziness headache, neurologic deficit, paralysis, paresthesia/dysesthesia, seizure, tremor, Vertigo
	c. Cardio-pulmonary	Chest pain. Cough, cyanosis, dyspnea, edema, hemoptysis, palpitations, syncope, wheezing
	d. Abdominal	Abdominal pain, ascites, diarrhea, Gastrointestinal bleeding, jaundice, nausea and/or vomiting
	e. Genito-urinary	Abnormal vaginal bleeding, dysmenorrhea, dysuria, genital ulcers, hematuria, pelvic pain, testicular pain, urethral discharge, urinary incontinence, urinary retention, vaginal discharge

	f. Skin and soft tissue	Abscesses, bites, cellulitis, necrotizing infections, rash
	g. Musculoskeletal	Back pain, limb or joint pain/swelling, neck pain
	h. Systemic	Fever, hypotension, shock, weakness
4	Psychiatric and behavioral disorders	
5	Disorders of special populations, including	Pediatric patients, The pregnant patient and her fetus, Geriatric patients, Immunocompromised patients
6	Toxicology	General measures in the management of poisoning, insecticide and pesticide poisoning, drug overdose, plant poisons and other poisons, snake bites, insect envenomation, Animal bite management.
7	Environmental emergencies	Burns, chemical accidents, occupational injuries, inhalation injuries, Bioterrorism.
8	Pre-hospital care	
9	Emergency preparedness and disaster medicine	

PRACTICAL AND CLINICAL SKILLS

The post-graduate student should have the knowledge of the indications, contraindications, methods, and potential complications of the therapeutic and investigative procedures employed in Emergency Medicine. At the end of the training period, he/she should be able to perform these procedures in an appropriate, safe, and skillful manner, with appropriate attention to minimizing patient risk and discomfort

Diagnostic procedures		
1	Minor diagnostic procedures	Abdominal paracentesis, Arterial puncture, arthrocentesis, Thoracentesis, Venipuncture, Vaginal examination using speculum, Assessment of the sexual assault victim, Slit lamp use
2	Diagnostic procedures relevant to the critically ill patient	Carotid sinus massage, Lumbar puncture and measurement of cerebrospinal fluid (CSF) pressure
3	Emergency ultrasonography	Focused Assessment of Sonography in Trauma (FAST), Emergency Ultrasound (to identify intrauterine gestation, intra-peritoneal free fluid, pleural fluid), Echocardiology (determination of the absence of cardiac motion, determine regional wall motion abnormalities, identify RA, RV dilatation, pericardial fluid) and facilitation of vascular access
Therapeutic procedures		
1	Basic and advanced airway management	Laryngoscopy, Laryngoscopy and removal of foreign body, Mask ventilation, Orotracheal intubation, supra-glottic airway device insertion, End-tidal carbon dioxide (CO ₂) detection and monitoring, Percutaneous transtracheal ventilation, Rapid sequence intubation, Selection of appropriate mode and parameters for mechanical ventilation, Sellick's maneuver, Surgical/needle cricothyrotomy, Difficult airway management, Non-invasive ventilation, Invasive ventilation
2	Therapeutic procedures relevant to the critically ill patient	Interpretation of an ECG, Defibrillation, Needle thoracentesis, Needle thoracostomy, Thoracostomy tube insertion and management, Pericardiocentesis, Synchronized cardioversion, Transcutaneous pacing

3	Peripheral and central vascular access and line insertion/monitoring	central venous catheter insertion (femoral, brachial, sub clavian, internal jugular), Central venous pressure (CVP) measurement, Cannulation of the external jugular vein and peripheral veins, Intraosseous needle insertion, Administration of fluids including blood and substitutes
4	Minor therapeutic procedures relevant to the daily practice of emergency medicine	Anterior intranasal packing, insertion of indwelling urethral catheter, Bladder irrigation, Gastric lavage, Bursae aspiration/injection, Debridement of burn blisters, External auditory canal wick insertion, Ocular irrigation, Posterior intranasal packing, Subungual hematoma drainage, Incision and drainage of abscess, Needle aspiration of abscess, Testicular torsion reduction
5	Local/regional anesthesia and procedural sedation	Assessment of the level of pain and sedation, Peripheral nerve blocks, local anesthesia administration, Pediatric and adult procedural sedation with monitoring
6	Wound management	Application of bandages/dressings, Basic wound debridement, Closure with tissue adhesive glue, Management of fingertip amputation, Nail bed laceration repair, Suturing, single and multiple layer closure, Wound hematoma evacuation
7	Extraction of	Corneal or conjunctival foreign body, ear wax, Nasal foreign body, Otic foreign body, Rectal foreign body, Skin/subcutaneous tissues foreign body, Vaginal foreign body

8	Management of fractures and dislocations	❖ Application and removal of cervical collar/spinal immobilization, ❖ Application and removal of femoral traction device, ❖ Application of upper extremity slings, ❖ Circumferential cast immobilization of extremity fractures, ❖ Definitive reduction and immobilization of the following displaced fractures, when appropriate (Distal radius, Fifth metacarpal neck, Phalanx), ❖ Immobilization of unstable pelvic fractures, ❖ Reduction of subluxations and dislocations, including but not limited to: Ankle, Elbow, Glenohumeral, Hip, Interphalangeal, Metacarpal phalangeal, Patella, Radial head subluxation ❖ Rigid splint immobilization of extremity fractures and injuries ❖ Splinting of tendon and ligament injuries of the hand, including but not limited to: Mallet finger injury, Volar plate injury ❖ Stabilization and immobilization of uncomplicated upper and lower extremity fractures, ❖ Temporary reduction and immobilization of any displaced fracture for the relief of pain and/or neurovascular compromise
9	Management of normal and complicated delivery, including but not limited to	Normal vaginal delivery, Newborn and premature resuscitation, Postpartum hemorrhage

WRITING THESIS / RESEARCH ARTICLES

Research should be an integral part of the education program of all the trainees in emergency medicine. All students must complete a thesis/dissertation by the end of their training period under the guidance of an expert faculty. The basic aim of requiring the candidates to write a thesis/dissertation is to familiarize him/her with research methodology.

The students are also encouraged to attend CME's, publish research papers and present posters, or platform presentations at state, national and international conferences.

ATTITUDES INCLUDING COMMUNICATION SKILLS

At the end of the training period, the post-graduate resident should be an effective communicator who can effectively facilitate the dynamic exchanges that happen during the doctor-patient-relatives interaction during and after the medical encounter.

Key competencies:

The emergency physician should be able to

- ❖ Develop rapport, trust, and positive, ethical therapeutic relationships with patients and their relatives
 - ❖ Accurately elicit and synthesize relevant information from the patients and act professionally and be sensitive to the patients' perspective while screening for sensitive information.
- ❖ Convey sensitively the relevant information and health care plan that includes a clear explanation of the diagnosis, investigations, treatment and expected outcome to the patient and their relatives
 - ❖ Explain clearly the details of therapeutic and diagnostic procedures performed on patients and obtain oral and written consent when required.
- ❖ Act professionally and respectfully of his/her colleagues during times of stress of a medical encounter.

TRAINING IN RESEARCH METHODOLOGY, MEDICAL ETHICS /BIOETHICS AND MEDICOLEGAL ASPECTS

Students should compulsorily attend the research Methodology workshop conducted by the University within first six months of the M.D course.

Students are encouraged to attend workshops/CMEs on Bioethics conducted by the University and other reputed Institutions.

Medical ethics, bioethics, moral and legal issues, medical audit are part and parcel of the curriculum and syllabus.

MEDICOLEGAL ASPECTS:

At the end of the training period, the student should be able to

- ❖ Possess adequate knowledge of the various medicolegal conditions and the process of informing the police during a medical encounter.
 - ❖ Distinguish a grievous injury from a non-grievous injury (Section 320 IPC) and perform their role as a law-abiding citizen of India.
 - ❖ Provide appropriate medical documentation (including forensic and clinical photography, collection of biological samples, ballistics)
- ❖ Report and refer certain conditions appropriately (eg. child sexual abuse or neglect, elderly abuse, sexual assault allegations)

THEORY SYLLABUS

This is the recommended core theory syllabus for MD in Emergency Medicine. The following are the topics that a post-graduate resident should have in depth knowledge of by the end of their training program. This list is not exhaustive

The theory syllabus is divided as follows:

A	Core resuscitation knowledge and techniques	• Basic life support • Sudden cardiac death • Cardiopulmonary resuscitation • Airway and breathing • Circulation • Fluid and electrolyte disturbances
B	Applied basic sciences	• Applied anatomy • Pathophysiology • Pathology • Pharmacology • Microbiology
C	System based core knowledge	• Cardio-vascular emergencies • Pulmonary emergencies • Neurological emergencies • Gastro-intestinal and hepatic emergencies • Dermatological emergencies • Renal and urological emergencies • Endocrine and metabolic emergencies • ENT and dental emergencies • Ophthalmological emergencies • Obstetric and gynecological emergencies • Hematology and oncological emergencies • Musculoskeletal emergencies • Immunological emergencies • Infectious diseases • Psychiatric and behavior disorders • Trauma • Wound management • Pediatrics •
D	Specific aspects of emergency medicine	Toxicology and envenomation Disaster medicine Abuse and assault Analgesia and procedural sedation Environmental accidents Medico-legal issues Pre-hospital careProblems in the elderly

CORE RESUSCITATION KNOWLEDGE AND TECHNIQUES

1. Basic life support

2. Sudden cardiac death

3. Cardiopulmonary resuscitation (CPR)

- CPR in adults
- CPR in children
- Neonatal resuscitation
- Resuscitation issues in pregnancy
- Disturbances of cardiac rhythm and conduction

2. Airway and breathing

- Difficult airway in adults
- Pediatric airway management
- Non-invasive airway management
- Tracheal intubation and mechanical ventilation
- Surgical airway management

3. Circulation

- Vascular access
- Management of shock: Septic, cardiogenic, hemorrhagic and neurogenic

4. Fluid and electrolyte disturbances

- Acid-Base disorders
- Electrolyte disorders
- Volume status and fluid balance

APPLIED BASIC SCIENCES

1. Applied anatomy

➤ Upper limb

- Pectoral region: Muscles (Surface markings, actions and nerve supply)
- Axilla: Muscles: Surface markings, actions and nerve
- Breast: Lymph drainage pattern to nodes based upon quadrants of the breast
- Muscles: Origin, insertion, neuro vascular innervations and action
- Nerves: Brachial plexus (origin, course, branches), musculocutaneous, axillary, radial, median, ulnar nerves and their branches. Cutaneous supply of the upper limb.
- Bones: Long and short bones of the arm, forearm and hand
- Joints: (coraco-acromial, acromio-clavicular, elbow, wrist and carpal joints) Joint type, bony articulations of the joint, ligaments of the joint, range of motion
- Vascular supply: Subclavian, Axillary, brachial, radial, ulnar and their branches. Vascular supply, surface anatomy, course and relationship to other structures

➤ Lower limb

- Muscles: Origin, insertion, neuro vascular innervations and action
- Nerves: Lumbosacral plexus (origin, course, branches), Femoral, sciatic, obturator, superficial peroneal, deep peroneal, posterior tibial and their branches. Cutaneous supply of the lower limb.
 - Bones: Long and short bones of the thigh, leg and foot
 - Joints: (Hip, knee, ankle, tarsal joint) Joint type, bony articulations of the joint, ligaments of the joint, range of motion
- Vascular supply: Femoral, popliteal, anterior tibial, posterior tibial and their branches. Vascular supply, surface anatomy, course and relationship to other structures.

- Thorax
 - Thoracic wall
 - Diaphragm
 - Thoracic inlet
 - Trachea
 - Heart and pericardium
 - Esophagus
 - Pleura and lungs

- Abdomen and groin
 - Abdominal wall
 - Inguinal region
 - Testis, epididymis and spermatic cord
 - Peritoneum
 - Gastrointestinal tract
 - Intra-abdominal viscera
 - Posterior Abdominal wall: muscles, vessels, nerves
 - Pelvic cavity
 - Rectum and anus
 - Male urogenital region
 - Female urogenital region

➤ Head and neck

- General topography: muscles, spaces & fascia
- Triangles of the neck: anterior and posterior triangles
- Thyroid
- Trachea
- Oesophagus
- Carotid sheath
- Face
- Scalp
- Parotid region
- Infratemporal fossa
- Nerves supply of the head and neck
- Blood supply of the head and neck
- Pterygopalatine fossa
- Nose and paranasal region
- Mouth and palate
- Nasopharynx, Oropharynx and laryngopharynx
- Larynx
- Orbit and eye
- Functional anatomy of eye movement
- Ear: External, middle and internal
- Temporomandibular joint

- Central nervous system
 - Cerebral hemispheres and lobes
 - Cortical areas
 - Thalamus, subthalamus and Limbic system
 - Ventricles
 - Brain stem – midbrain, pons and medulla
 - Cranial nerves – origin, course, motor, sensor and autonomic innervations
 - Cerebral blood supply – Circle of Willis
 - Spinal cord – cross sections cervical, thoracic, lumbar and sacral, blood supply

2. Physiology

- Basic cellular physiology
 - Homeostasis: osmolality and osmolarity
 - Cell structure and function (membrane structure and function)
 - Blood and blood flow
 - Neurological action potential
 - Function of the sympathetic and parasympathetic nervous system
 - Muscle physiology: skeletal muscle, cardiac muscle
- Cardiovascular physiology
 - Control BP and HR (afferent, central, efferent)
 - Factors affecting cardiac output, pre and afterload
 - Measurement of cardiac output
 - Frank Starling curves
 - Control of peripheral blood flow, renal blood flow, cerebral blood flow, coronary blood flow, pulmonary blood flow
 - Electrical & mechanical changes during cardiac cycle
 - ECG
 - Pharmacological manipulation of heart & peripheral circulation
 - Acute & delayed responses to intravascular fluid loss

- Respiratory physiology
 - Lung volumes and pressures: Definition of lung volumes, epithelial function in health, lung compliance, alveolar interfaces, airway resistance, gas transport, alveolar diffusion
 - Gas transport during circulation: Carriage of O₂ and CO₂ in blood, carriage of CO, oxy-Hb dissociation curve (& myoglobin)
 - Control of respiration: Respiratory centre mechanism, chemoreceptors, stress receptors, J receptors
 - Ventilation perfusion mismatch

- Central nervous physiology
 - Intra cranial pressure: Regulation, Measurement, Relationship with cerebral perfusion pressure
 - Sensory & motor pathways
 - Nerve conduction
 - Pain (mechanism & control)
 - Control of sight & hearing
 - Brain stem reflexes & death
 - Temperature: Thermoregulation (central & peripheral), Fever, Measurement of core temperature, Hypothermia, Hyperthermia

- Renal physiology
 - Mechanism of filtration in health: Glomerular filtration, creatinine clearance, tubular transport, proximal tubular function, loop of henle, distal collecting system, regulation of plasma osmolarity, effect of renal hormones
 - Renal function and its measurement
 - Control of electrolytes (Na, K, Cl, Ca) & water homoeostasis
 - Thirst
 - Control of micturition
 - Acid base balance

- Hematology
 - Erythropoiesis
 - Compensatory mechanisms in anemia
 - Blood groups
 - Coagulation pathway
- Endocrine physiology
 - Pituitary function
 - Adrenal function
 - Endocrine pancreas
 - Thyroid physiology
 - Calcium and bone physiology
- Gastro-intestinal physiology
 - Physiology of swallowing
 - Stomach: Acid production, mucosal barrier, secretion patterns, gastric emptying
 - Small and large intestine: Functional anatomy and digestion, peristalsis, defecation reflex
 - Pancreas: Function of exocrine pancreas
 - Liver and gall bladder: Entero-hepatic circulation, bile formation, storage and release

3. Pathology

- Inflammatory response: Normal versus abnormal, inflammatory markers
- Immune response: normal response, hypersensitivity and anaphylaxis
- Wound healing: General principles, healing by repair, scar formation and fibrosis, cutaneous wound healing, factors influencing wound healing
- Hematology:
 - Anaemia: classification, causes, investigation
 - Leukaemia: classification; acute and chronic lymphoblastic leukaemia; acute and chronic myeloid leukaemia
 - Lymphoma and myeloma

- Coagulation: platelet disorders, inherited and acquired coagulation disorder, thrombophilia

4. Pharmacology

➤ CVS

- Cardiac glycosides
- Anti-hypertensives: Beta blockers, alpha blockers, ACE inhibitors, ARB s, calcium channel blockers
- anti-arrhythmic agents
- inotropes and vasopressors

➤ Respiratory:

- Bronchodilators (Beta agonists, anti-cholinergic agents)
- Theophyllines
- Inhaled corticosteroids
- Antihistamines
- Expectorants
- Oxygen

➤ CNS:

- Local anesthesia: Lignocaine, bupivacaine
- Procedural sedation: Benzodiazepines, ketamine, Etomidate, Propofol, Fentanyl
- Anti-epileptics
- Muscle relaxants
- Hypnotics and anxiolytics
- Antipsychotics
- Antidepressants
- Opioid analgesics
- Drugs used in nausea and vertigo

- Renal
 - Diuretics
- Gastro-intestinal:
 - Antacids
 - Proton pump inhibitors,
 - Anti-spasmodic,
 - Laxatives,
 - Anti diarrhoeal
- Musculo skeletal system
 - Anti-inflammatory drugs (NSAIDs)
 - Drugs used in gout & hyperuricemia
- Infections:
 - Antibacterial
 - Antiviral drugs
 - Anti-malarial drugs
 - Anti-fungal drugs: Systemic and topical
 - Anti-helminths
 - Anti-tuberculous therapy
- Endocrine system
 - Oral hypoglycemic agents
 - Glucagon
 - Insulin
 - Corticosteroids
 - Thyroid hormones and antithyroid drugs
- Coagulation: anti platelets, anti- coagulants (parenteral and oral), fibrinolytics, anti-fibrinolytics

5. Microbiology

➤ Principles of microbiology

- Natural and innate immunity: Barriers of infection, normal bacterial flora, phagocytes and complements
- Mechanism of disease: Mechanism of attachment, invasion and persistence
- Controlling infection: Endogenous and exogenous infection sources, hospital acquired infection and prevention
- Principles of investigation: Specimen types, specimen culture, specimen examination, serology, molecular techniques (PCR)
- Principles of immunization: Childhood immunization schedule, Additional immunization schedules
- Specific pathogens
 - Bacteria: Streptococci, staphylococci, Clostridial infections, Neisseria, Pertussis, Enterobacteriaceae (Klebsiella, E. coli, Salmonella, Shigella), Legionella, Pseudomonas
 - Viruses: Herpes simplex and zoster, HIV, Hepatitis, Measles, Mumps, Rubella, Respiratory viruses (Influenza, parainfluenza, Rhinoviruses, RSV), gastro-intestinal viruses(Rota virus, Novo virus, Adeno virus)
 - Mycobacterium tuberculosis
 - Chlamydia
 - Fungii: Candida, Cryptococcus, dermatophytes, mucormycosis
 - Worms: nematodes, trematodes and cestodes
 - Parasites: malaria, amoebiasis
 - Spirochetes and rickettsial infections (scrub typhus)

SYSTEM BASED CORE KNOWLEDGE

6. Cardio-vascular emergencies

- Congenital heart disorders
- Chest pain: etiology
- Acute coronary syndromes:
 - Acute myocardial infarction (STEMI)
 - NSTEMI
 - Unstable angina
- Syncope
- Congestive heart failure and acute pulmonary edema
- Valvular emergencies
- Cardiomyopathies, myocarditis and pericardial diseases
- Pulmonary embolism
- Hypertensive emergencies
- Aortic dissection and aneurysm
- Hypertensive emergencies
- Occlusive arterial disease, thrombophlebitis

7. Pulmonary emergencies

- Congenital: cystic fibrosis
- Pulmonary infections:
 - Bronchitis, bronchiolitis
 - Pneumonia
 - Empyema
 - Aspiration pneumonia and lung abscess
 - Tuberculosis

- Acute asthma in adults and children
- Chronic obstructive pulmonary disease
- Pneumothorax: Spontaneous and iatrogenic
- Hemoptysis
- Tumours: acute complications of pulmonary and metastatic tumours
- Lung transplant: complications
- Others: Acute lung injury, Atelectasis, Acute respiratory distress syndrome

8. Neurological emergencies

- Headache and facial pain
- Vascular disorders
 - Cerebrovascular accidents and transient ischemic attacks
 - Cerebral venous sinus thrombosis
 - Subarachnoid hemorrhage
 - Subdural and extradural hematoma
- CNS infections: Meningitis and encephalitis, brain abscess
- Altered mental status and coma
- Vertigo and dizziness
- Ataxia and gait disturbances
- Seizures and status epilepticus
- Acute peripheral neurologic lesions
- Neuroimaging in the emergency department
- Others: Guillain-Barrè syndrome, temporal arteritis, myasthenic crisis, multiple sclerosis

9. Gastro-intestinal and hepatic emergencies

- Acute abdominal pain
- Gastro-intestinal bleeding
- Esophageal emergencies
 - Dysphagia, GERD, Esophagitis, Esophageal perforation, Swallowed foreign bodies
- Peptic ulcer disease and gastritis
- Acute appendicitis
- Acute cholecystitis and biliary colic
- Ileitis, colitis and diverticulitis
 - Crohn disease, ulcerative colitis, pseudomembranous enterocolitis, diverticulitis
- Intestinal obstruction
 - Small bowel obstruction, large bowel obstruction, pseudo-obstruction
- Hernia
- Ano-rectal disorders
 - Hemorrhoids, fissure-in-ano, anorectal abscess, fistula in ano, proctitis, rectal prolapsed, pruritis ani, rectal foreign bodies, pilonidal sinus, proctalgia fugax
- Vomiting, diarrhea and constipation
- Jaundice
- Chronic liver disease and acute liver failure
- Acute and chronic pancreatitis
- The liver transplant patient

10. Dermatological emergencies

- Serious generalized skin disorders:
 - Erythema multiforme
 - Toxic epidermal necrolysis
 - Exfoliative dermatitis

- Toxic infective erythemas (Toxic shock syndrome, streptococcal toxic shock syndrome, staphylococcal scalded skin syndrome)
 - Disseminated viral infections (Infectious exanthems, herpes zoster, herpes simplex)
 - Disseminated gonococcal infections
 - Purpura fulminans
 - Bullous diseases (pemphigus vulgaris and bullous pemphigoid)
- Disorders of face and scalp
- Acneform eruptions
 - Seborrheic dermatitis
 - Erysipelas and facial cellulitis
 - Photosensitivity
 - Contact dermatitis of the face
- Disorders of hands, feet and extremities
- Psoriasis
 - Lichen simplex chronicus
 - Venous stasis dermatitis
 - Erythema nodosum
- Skin infections and infestations
- Scabies
 - Tinea
 - Candidiasis
 - Hansen's disease

11. Renal and urological emergencies

- Acute renal failure
- Emergencies in renal failure and patients on dialysis
- Urinary tract infections: Cystitis and acute pyelonephritis
- Nephrolithiasis
- Complications of urological procedures
- Complications of renal transplant
- Male genital problems
 - Scrotum: scrotal abscess, Fournier gangrene
 - Penis: Balanoposthitis, phimosis, paraphimosis, entrapment injuries, fracture of the penis, priapism
 - Testes and epididymitis: Testicular torsion, epididymo-orchitis
 - Acute prostatitis
 - Urethral stricture
 - Urinary retention

12. Endocrine and metabolic emergencies

- Acute presentation of inborn errors of metabolism
- Adrenal insufficiency and crisis
- Disorders of glucose metabolism
 - Diabetic ketoacidosis
 - Hyperosmolar hyperglycaemic state
 - Hypoglycaemia
- Thyroid emergencies:
 - Hyperthyroidism and thyroid storm
 - Hypothyroidism and myxoedema coma
- Pheochromocytoma

13. ENT and dental emergencies

- Emergencies of the external, middle and inner ear
 - Otolgia
 - Tinnitus
 - Infections: Otitis externa, otitis media, bullous myringitis
 - Foreign bodies, cerumen impaction
 - Tympanic membrane perforation
- Face and jaw emergencies
 - Salivary glands infection
 - Masticator space infection
 - Temporomandibular joint dislocation
 - Bells palsy
- Nasal emergencies
 - Epistaxis
 - Nasal fracture
 - Nasal foreign body
 - Sinusitis
- Oral and dental emergencies:
 - Oro-facial pain: Tooth eruption, dental caries, post-extraction alveolar osteitis
 - Soft tissue lesions: Oral candidiasis, aphthous stomatitis, herpangina, hand foot and mouth disease, herpes simplex
 - Oro-facial trauma
 - Oral manifestations of systemic diseases
- Infections and disorders of the neck and upper airway
 - Pharyngitis/ tonsillitis
 - Peri-tonsilar abscess
 - Epiglottitis
 - Retropharyngeal abscess
 - Dental abscess, Ludwigs angina, deep neck abscesses

- Foreign bodies
- Stridor
- Complications of airway devices

14. Ophthalmic emergencies

- Inflammatory and Infectious disorders: conjunctivitis, dacryocystitis, endophthalmitis, iritis, keratitis, orbital and periorbital cellulitis, uveitis, herpes zoster ophthalmicus
- Occular trauma: foreign body in the eye, ocular injuries
- Acute visual reduction / loss
 - Painful visual reduction/ loss: Acute angle closure glaucoma, optic neuritis
 - Painless visual reduction/ loss: Central retinal artery and vein occlusions, giant cell arteritis, vitreous hemorrhage, retinal detachment

15. Obstetric and gynaecological emergencies

- Vaginal bleeding in the non-pregnant patient
- Abdominal pain and pelvic pain in the non-pregnant patient
 - Functional ovarian cysts, adnexal torsion, endometriosis, adenomyosis, leiomyoma
- Pelvic inflammatory disease
- Normal pregnancy: Physiological changes during pregnancy
- Co-morbid diseases in pregnancy: Diabetes, hypertension, hyperthyroidism, thromboembolism, asthma, HIV infection
- Ectopic pregnancy
- Maternal resuscitation
- Emergencies during pregnancy and post-partum period
 - Emergencies during the first half of pregnancy: vaginal bleeding, abortion, gestational trophoblastic disease, hyperemesis gravidarum
 - Emergencies during the second half of pregnancy: Pre-eclampsia, eclampsia, HELLP syndrome, abruption placentae, placenta previa, premature labour and premature rupture of membranes

- Emergencies during the post-partum period: Post-partum hemorrhage, post-partum infections, thrombo-embolic diseases, peri-partum cardiomyopathy
- Emergency delivery:
 - caesarian delivery, fetal distress
 - Complications of delivery: Cord prolapse, shoulder dystocia, breech presentation, preterm delivery
- Breast disorders
 - Acute mastitis and breast abscess
 - Mastalgia, nipple discharge
- Urogynaecologic disorders and gynaecologic oncology
 - Incontinence
 - Prolapse
 - Complications of gynaecological malignancies

16. Hematology and oncological emergencies

- Anemia
- Acquired bleeding disorders
 - Acquired platelet defects:
 - Thrombocytopenia: Immune thrombocytopenic purpura, other causes of thrombocytopenia
 - Qualitative platelet abnormalities
 - Anticoagulants and fibrinolytics
 - Liver disease and renal disease
 - Disseminated intravascular coagulation
 - Circulating anticoagulants: Factor VIII inhibitors, anti-phospholipid antibody syndrome
- Hemophilias and von Willebrand disease
- Hereditary hemolytic anemias
 - Sickle cell anemia
 - Thalassemias
 - Glucose 6 phosphate dehydrogenase deficiency

- Hereditary spherocytosis
- Acquired hemolytic anemias
 - Immune mediated hemolytic anemia: autoimmune, alloimmune and drug related
 - Microangiopathic hemolytic anemia: Thrombotic thrombocytopenic purpura, hemolytic uremic syndrome
 - Macrovascular hemolytic anemia: prosthetic heart valve, extra-corporeal circulation
- Transfusion therapy
 - Blood products
 - Complications of blood transfusion
- Complications of lymphomas and leukemias
- Febrile neutropenia
- Anticoagulants, antiplatelet agents and fibrinolytics
- Emergency complications of malignancies
 - Related to local tumour effects: pathological fractures, acute spinal cord compression, upper airway obstruction, malignant pleural effusion, superior vena cava syndrome
 - Related to biochemical derangements: Hypercalcemia, SIADH, tumour lysis syndrome
 - Related to hematologic derangement: granulocytopenia, infections, hyperviscosity syndrome, thromboembolism

17. Musculoskeletal emergencies

- Congenital disorders: dislocated hip, osteogenesis imperfecta
- Neck pain
- Thoracic and lumbar pain syndromes
- Acute disorders of the joints and bursae
- Inflammatory and Infectious disorders: arthritis, bursitis,
- Complications of systemic rheumatic diseases
- Metabolic disorders complications of osteoporosis and other systemic diseases

- Non-traumatic disorders of the hands and feet
 - Hand:
 - Infections: Flexor tenosynovitis, deep space infections, paronychia, felon
 - Non-infectious conditions: Tendinitis, tenosynovitis, trigger finger, De Quervain tenosynovitis, carpal tunnel syndrome, ganglion cysts
 - Feet: Corns and calluses, plantar warts, onychocryptosis, plantar fasciitis, tarsal tunnel syndrome, foot ulcers

18. Immunological emergencies

- Allergies and anaphylactic reactions
- Acute complications of vasculitis

19. Infectious diseases

- Common viral infections: Influenza virus, Herpes viruses, Epstein Barr virus, cytomegalovirus, Measles, Mumps, Rubella, Dengue
- Common bacterial infections: Streptococcal and staphylococcal infections, Diphtheria, Botulism, Gas gangrene, Tetanus, Salmonellosis
- Leptospirosis
- Scrub typhus
- HIV and opportunistic infections
- Rabies
- Protozoal infections: Malaria, Toxoplasmosis
- Helminthiasis: Nematodes, trematodes and cystodes
- Food borne and water borne diseases
- Zoonotic infections:
- Sexually transmitted diseases:
 - STD's presenting as urethritis, cervicitis or discharge: Chlamydia, Gonococci, Trichomonas
 - STDs with genital ulcers: Syphilis, HSV, Chancroid, Lymphogranuloma venereum, Donovanosis, genital warts
- Skin and soft tissue infections: Cellulitis, necrotizing fasciitis
- COVID 19 and other viruses causing pandemics

20. Psychiatric and behavior disorders

- Common psychiatric emergencies
 - Acute psychosis
 - Anorexia nervosa and bulimia nervosa
 - Anxiety and panic attacks
 - Conversion disorders
 - Deliberate self-harm
 - Depressive illness
- Substance and alcohol abuse
- Behavioral disorders

21 Trauma

- Early management of trauma
 - Primary survey: Airway with cervical spine stabilization, Breathing, Circulation with hemorrhage control, Disability, Exposure
 - Secondary survey
- Head injuries
- Maxillo-facial trauma
- Neck trauma: Blunt and penetrating injuries
- Thoracic trauma: Blunt and penetrating injuries
- Abdominal trauma: Blunt and penetrating injuries
- Genito-urinary trauma
- Extremity injuries
- Spinal cord injuries
- Trauma in pregnancy: Maternal and fetal injuries, pre hospital care, ED management, disposition
- Pediatric trauma
- Wound ballistics
- Injury prevention

22. Wound management:

- Evaluation of wounds
- Wound wash
- Methods for wound closure: Sutures, staples, adhesive tapes, cyanoacrylate tissue adhesives
- Face and scalp lacerations

23. Pediatrics

- The normal child Bacteremia, sepsis and meningitis in children
- Common neonatal problems
- Sudden infant death syndrome (SIDS)
- Otitis and pharyngitis in children
- Skin and soft tissue infections
- Viral and bacterial pneumonia in children
- Pediatric asthma and bronchiolitis
- Seizures and status epilepticus
- Vomiting and diarrhea
- Pediatric abdominal emergencies
- Diabetic ketoacidosis
- Altered mental status and headache in children
- Syncope and sudden death
- Fluid and electrolyte therapy
- Acute pain management and procedural sedation in children
- Pediatric exanthems
- Sickle cell disease
- Evaluating the child with special care needs
- Urologic and gynaecologic problems in children
- Pediatric urinary tract infections

SPECIFIC ASPECTS OF EMERGENCY MEDICINE

1. Toxicology and envenomation

- General principles of toxicology and management of poisoned patients
- Insecticides, herbicides and rodenticides
- Drug overdose
 - Paracetamol, benzodiazepines, barbiturates, beta blockers, calcium channel blockers, lithium, phenytoin, antidepressants, theophylline,
- Metals and metalloids: Lead, arsenic, mercury, copper, chromium and others
- Plant poisons: Datura, oleander, oduvanthalai, mushroom
- Corrosive poisoning
- Methemoglobinemia
- Methanol poisoning
- Cyanide poisoning
- Substance abuse: Cannabis, Cocaine, Amphetamine, LSD, opioids
- Snake bite
- Arthropod bites and stings

2. Disaster medicine

- Disaster medical services
- Disaster preparedness and response
- NBCR (nuclear, biological, chemical and radiological: decontamination, specific aspects)

3. Abuse and assault

- Child abuse and neglect
- Female and male sexual assault
- Abuse in the elderly and impaired
- Violence in the emergency department

4. Analgesia and procedural sedation

- Acute pain management
- Local and regional anaesthesia
- Procedural sedation and analgesia

5. Environmental accidents

- Electricity (electrical and lightning injuries)
- High-altitude medical problems
- Temperature (heat and cold related emergencies)
- Travel medicine
- Water (near-drowning, dysbarism and complications of diving, marine fauna)
- Inhalation injuries (carbon monoxide poisoning)

6. Medico-legal issues

- Medico-legal cases and reporting
- Grievous injuries

7. Pre-hospital care

- Emergency Medical Services organization (administration, structure, staffing, resources)
- Medical transport (including neonates and children, air transport)
- Paramedic training and function
- Safety at the scene
- Collaboration with other emergency services (e.g. police, fire department)

8. Problems in the elderly

- Atypical presentations (e.g. abdominal pain, infections, myocardial infarction)
- Delirium
- Dementia
- Falls (causes & investigations)

- Incontinence
- Immobility
- Multiple pathology and multiple therapies

TEACHING LEARNING METHODS (Including clinical study)

The following teaching learning methods are recommended.

- Simulation based teaching using mannequins
- Lectures
- Case based discussion
- Bed side clinics
- Teaching on ward rounds
- Symposia
- Seminars
- Journal clubs
- Problem based learning
- Telemedicine (where available)

STRUCTURED TRAINING PROGRAMME

Duration of the course: 3 years

* THE POSTGRADUATE WILL BE ATTACHED TO DEPARTMENT OF MEDICINE AND THEY WILL MONITOR, CONDUCT EXAMINATIONS IN INSTITUTIONS WHERE THERE IS NO DEPARTMENT FOR EMERGENCY MEDICINE.

	Posting	Duration
First year		
1.	Emergency Medicine	7 months
2.	Pediatrics	1 month
3.	Obstetrics	2 weeks
4.	Orthopedics	2 weeks
5.	ENT	2 weeks
6.	Ophthalmology	2 weeks
7.	Anaesthesiology	1 month
8.	Medical ICU	1 month

Second year		
1.	Emergency medicine	8 months
2.	Surgical ICU / Neuro ICU	1 month
3.	Cardiac ICU	1 month
6.	Pulmonology	2 weeks
7.	Radiology	2 weeks
8.	General surgery	1 month
Third year		
1.	Emergency Medicine	8 months
2.	Pediatrics/PICU	2 months
3.	General Medicine	1 month
4.	Orthopedics	2 weeks
5.	Psychiatry	2 weeks

During 2nd year, the students are encouraged to undergo special postings for learning new advanced techniques / procedure / skills in institutions of higher repute where the requisite facilities are available without affecting the duties of the parent department.

Evaluation of the candidates in both theory and practical aspects will help the candidate in improvement of his/her knowledge, skills and attitude.

COMPETENCY ASSESSMENT:

OVERALL:

a) Communication / commitment / Contribution / Compassion towards patients and Innovation	()	
	()	- 5 Marks
b) Implementation of newly learnt techniques/Skills	()	
Number of cases presented in Clinical Meetings/ Journal clubs/seminars		- 5 marks
Number of Posters/Papers presented in Conferences/ Publications and Research Projects		- 5 marks
No. of Medals / Certificates won in the conference / Quiz competitions and other academic meetings with details.		- <u>5 marks</u>
	Total	- 20 Marks

PG CLINICAL COURSES

VIVA including Competency Assessment	- 80 Marks (60 +
20) Log Book	- 20 marks

ASSESSMENT SCHEDULE IS AS FOLLOWS

Year of study	Period				Total Max.20 marks
I year	Upto Dec	10 marks	Upto June	10 marks	20 Marks
II year	Upto Dec	10 marks	Upto June	10 marks	20 Marks
III year	Upto Oct	10 marks	Upto Feb	10 marks	20 Marks
	AVERAGE				20 Marks

DISSERTATION AND UNIVERSITY JOURNAL OF MEDICAL SCIENCES

As per the 49th SAB Resolution under Point No. 2 and in the 52nd SAB it was reiterated regarding the topic for dissertation

The topic for the dissertation should be registered and sent to the University after Ethics Committee approval before 31st of December of the first Post Graduate Year. Only one change of topic with proper justification from the Head of the Department is permitted before 31st March of the first Post Graduate Year. The change of dissertation title will not be permitted after 31st March of the First Post Graduate Year. This modification in regulation will be scrupulously followed from the academic year 2015-16 admission onwards.

As per Medical Council of India Post Graduate Medical Education Regulations 2000 (amended upto 10th August 2016) clause 13.9 A Postgraduate student of a Postgraduate degree Course in broad specialties/Super Specialties would be required to present one poster presentation to read one paper at a National/State conference and to present one Research paper which should be published/accepted for publication/sent for publication during the period of his Postgraduate studies so as to make him eligible to appear at the Postgraduate Degree Examination.

As per MCI Clause 14 (4)(a), thesis shall be submitted atleast 6 Months before the Theory and Clinical/Practical Examination.

A candidate shall be allowed to appear for the Theory and Practical/Clinical Examination only after the acceptance of the Thesis by the Examiners.

The periodical evaluation of dissertation/log book should be done by the guide / HOD once in every six months. The HOD should ensure about the submission of dissertation within the stipulated time.

Regarding submission of articles to the University Journal of Medical Sciences for all the PG Degree/Diploma courses, it is mandatory that the students have to submit at-least one research paper. Case Reports are not considered as Research Paper

THEORY EXAMINATION

Paper I	Applied Basic Sciences related to Emergency Medicine
Paper II	Medical Emergencies including toxicology
Paper III	Surgery emergencies and trauma
Paper IV	Pediatrics, disaster management, pre hospital care and Recent advances in Emergency Medicine

Question paper pattern:

Paper I :	Write notes on	
i.	Anatomy	4 x 5 = 20
ii.	Physiology	4 x 5 = 20
iii.	Biochemistry	3 x 5 = 15
iv.	Pharmacology	3 x 5 = 15
v.	Pathology	3 x 5 = 15
vi.	Microbiology	3 x 5 = 15
Total =		100marks

Paper II, III & IV:		2 x 15 = 30
i.	Elaborate on	
ii.	Write notes on	10 x 7 = 70

TOTAL = 100MARKS

PRACTICAL EXAMINATION

CLINICAL			
ASSESSMENT METHOD	EXAMINATION TIME	DISCUSSION TIME	MARKS
Long Case (1)	45 min	30 min	1 x 60 = 60
Short cases (5)	(10 min x 5) = 50 min	(6 min x 5 cases) = 30 min	5 x 30 = 150
Ward Rounds (3)	30 min	30 min	(3 cases x 10 marks) = 30
OSCE (4)	20 min	20 min	4 stations x 10 marks = 40
DISSERTATION / THESIS			20
CLINICAL TOTAL (Including Dissertation / Thesis)			300 (A)
VIVA VOCE			
VIVA			80 MARKS
LOG BOOK			20 MARKS
VIVA TOTAL			100 MARKS (B)
AGGREGATE (CLINICAL + VIVA)			400 MARKS (A + B)
MINIMUM PASS (50%)			200 MARKS

EXAMINERS:

INTERNAL EXAMINERS - PROFESSOR OF MEDICINE /
 PROFESSOR OF SURGERY EXTERNAL EXAMINERS -
 PROFESSOR OF ORTHOPEDICS / PROFESSOR OF
 PAEDIATRICS

LOG BOOK

Logbook serves as a document of the trainee's work. A detailed log book should be maintained for the entire duration of the course and its authenticity shall be assessed regularly by the concerned post graduate teacher/ head of the department. This shall be made available for the board of examiners for their perusal at the time of his/ her appearing for the final examination. The log book shall be evaluated during the PG examination.

It should contain the following details.

1. Procedures performed (in the ED and in peripheral postings)
2. Record of academics (Journal clubs and seminars presented)
3. Important/interesting cases discussed/ presented
4. Poster/Oral presentations in conferences/meetings

The logbook should also bear record of the training that the student has undergone in the following courses (or their equivalent):

1. Basic life support (BLS) and Advanced cardiac life support (ACLS): 3-day course
2. Advanced Trauma Life Support (ATLS) – 3-day course
3. Advanced Pediatric Life Support (APLS)- 3-day course
4. Neonatal advanced life support (NALS)- 3-day course

Periodic review of Logbook and Dissertation have to be done in the Department by the guide/HOD once a year.

VIVA including Competency Assessment

VIVA including Competency Assessment-80 Marks (60 + 20)

The viva shall have 4 stations.

5. Emergency radiology
6. ECG interpretation
7. Instruments
8. ABG interpretation

OSCE

The following are suggested stations for the OSCE. Any 4 can be chosen at the discretion of the examiners. All the 4 stations should be common to all candidates appearing on that day

	Station
1.	Basic life support
2.	Advanced cardiac life support
3.	Advanced trauma life support
4.	Pediatric life support
5.	Neonatal resuscitation
6.	Airway and breathing skills
7.	Splinting
8.	Communication skills (breaking bad news / angry relatives)

REFERENCE BOOKS

- Emergency Medicine: a comprehensive study guide. Tintinalli, J et al, New York: McGraw- Hill
 - Emergency Medicine (latest edition) Anthony FT Brown, Michael D Cadgan, London, Hodder Arnold
- Medicine Textbook of Adult Emergency (Latest Edition) Peter Cameron, George Jelinek, Anne- Maree Kelly, Lindsay Murray, Anthony FT Brown, Jhon Heyworth eds. Edinburgh, Churchill Livingstone
 - Oxford Hand Book of Accident and Emergency Medicine (Latest edition) JP Wyatt, RN Illingworth, CE Robertson, MJ Clancy, PT Munro eds. Oxford, oxford University Press.
- Handbook of Emergency medicine. (EMAC) KPP Abhilash, 2021. (Latest edition) Jaypee publishers, New Delhi

- Textbook of pediatric Emergency Medicine (Latest edition) Peter Cameron, George Jelinek, Ian Everitt, Gary Browne, Jeremy Raftos. London, Churchill Livingstone.
 - Textbook of Adult Emergency Medicine, Edinburgh: Churchill Livingstone.
 - Rosen's textbook of emergency Medicine
 - Accident & Emergency Radiology, A survival guide- Nigel Raby

- Harwood-Nuss' Clinical Practice of Emergency Medicine, Wolfson A (Editor), New York: Lippincott, Williams & Wilkins.
 - Goldfrank's Toxicologic Emergencies, Nelson, L et al., New York: McGraw-Hill.
 - Modern Medical Toxicology, Pillay V.V.
 - Textbook of Critical Care, Fink, M (Editor): Philadelphia, Elsevier Saunders.
 - ECG For Emergency Physician, Mattu and Brady (Editors), London: BMJ Publishing.

- An Introduction to Clinical Emergency Medicine, Mahadevan, S.V. (Editor), New York: Cambridge University Press.
 - American Heart Association Basic Life Support, Advanced Cardiovascular Life Support and Pediatric Life Support manuals
 - Advanced Trauma Life Support manual published by the American College of Surgeons

** NOTE: THE EDITIONS ARE AS APPLICABLE, AND
THE LATEST EDITIONS SHALL BE THE PART
OF THE SYLLABI.

JOURNALS

- The journal of Emergency Medicine- Elsevier (the official journal of the American Academy of Emergency Medicine)
 - American Journal of Emergency Medicine
- European Journal of Emergency Medicine (the official journal of the European Society for Emergency Medicine)
 - Annals of Emergency Medicine (the official journal of the American College of Emergency Medicine)
 - Emergency Medicine Australasia
 - Prehospital emergency care
 - Injury and violence research
 - Turkish journal of emergency medicine
