



**GUIDELINES FOR COMPETENCY BASED  
POSTGRADUATE TRAINING PROGRAMME  
FOR  
MD IN EMERGENCY MEDICINE**

# **COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR MD IN EMERGENCY MEDICINE**

## **1. PREFACE**

This curriculum sets out the intended aims and objectives, content, experiences, outcomes and processes of the educational programme intended to provide emergency physicians with adequate knowledge and sufficient clinical experience to be safe, expert and independent practitioners functioning at consultant level. It is intended that the curriculum be forward-looking and aspirational and is very much centered on the Emergency Department as the principal learning environment for trainees.

Emergency Medicine has long been established as a primary medical specialty world-wide: however, in India, it has been granted the status of an independent specialty very recently. It is sometimes seen to be synonymous with emergency medical care and within the province and expertise of almost all medical practitioners. However, the specialty of Emergency Medicine incorporates the resuscitation and management of all undifferentiated urgent and emergency cases until discharge or transfer to the care of another physician. Emergency Medicine is an inter-disciplinary specialty, one which is interdependent with all other clinical disciplines. It thus complements and does not seek to compete with other medical specialties.

The essential features of a clinical specialty include a unique field of action, a defined body of knowledge and a rigorous training programme. Emergency Medicine has a unique field of action, both within the Emergency Department and in the community, and this curriculum document not only incorporates the relevant body of knowledge and associated competencies but also establishes the essential principles for a rigorous training programme.

## **2. INTRODUCTION**

### **2.1 THE SPECIALTY OF EMERGENCY MEDICINE**

Emergency Medicine is a medical specialty based on the knowledge and skills required for the prevention, diagnosis and management of the acute and urgent aspects of illness and injury affecting patients of all age groups with a full spectrum of undifferentiated physical and behavioral disorders. It is a specialty in which time is critical. The practice of Emergency Medicine encompasses the pre-hospital and in-hospital reception, resuscitation and management of undifferentiated urgent and emergency cases until discharge from the Emergency Department or transfer to the care of another physician. It also includes involvement in the development of pre-hospital and in-hospital emergency medical systems.

### **2.2 CURRICULUM FOR EMERGENCY MEDICINE**

Any curriculum must state the aims and objectives, content, experiences, outcomes and processes of the educational programme of a specialty]. It should include a description of the training structure, such as entry requirements, length and organization of the programme including its flexibilities, and assessment system and a description of the expected methods of learning, teaching, feedback and supervision. The curriculum should cover both generic

professional and specialty specific areas. This document describes the recommended curriculum for Emergency Medicine training.

### **3. COMPETENCIES, KNOWLEDGE AND SKILLS**

The curriculum covers knowledge, skills and expertise which the trainee in Emergency Medicine must achieve and includes:

- Core Competencies of the Emergency Physician
- System-Based Core Knowledge
- Common Presenting Symptoms
- Special Aspects of Emergency Medicine
- Core Clinical Procedures and Skills.

#### **3.1 CORE COMPETENCIES OF AN EMERGENCY PHYSICIAN**

Some of the competencies identified in this curriculum are those required of a hospital specialist in any medical discipline while others are more specific to the practice of Emergency Medicine. However, it is accepted that the levels of competence required of an Emergency Physician in specialized areas of medical practice should be limited to those which determine whether and when urgent or immediate more specialist referral is appropriate. Emergency Medicine complements and does not seek to compete with other hospital medical disciplines.

The areas of competency in Emergency Medicine are:

- Patient care
- Medical knowledge
- Communication, collaboration and interpersonal skills
- Professionalism, ethical and legal issues
- Organizational planning and service management skills
- Education and research.

##### **3.1.1 PATIENT CARE**

Emergency Physicians care for patients with a wide range of pathology, from the life threatening to the self-limiting and of all age groups. The attendance and number of these patients is unpredictable and they mostly present with symptoms rather than diagnoses. Therefore the provision of care needs to be prioritized, and this is a dynamic process. The approach to the patient is global rather than organ specific. Patient care includes physical, mental and social aspects. It focuses on initial care until discharge or referral to other health

professionals. Patient education and public health aspects must be considered in all cases. To ensure the above patient care, EPs must particularly focus on the following:

#### 3.1.1.1 Triage

EPs must know the principles of triage which is the process of the allocation and medical prioritisation of care for the pre-hospital setting, the Emergency Department and in the event of mass casualties. It is based mainly on the evaluation of vital parameters and key symptoms to prioritize and categorize patients according to severity of injury or illness, prognosis and availability of resources.

#### 3.1.1.2 Primary assessment and stabilization of life threatening conditions

The ABCDE approach must be the primary assessment tool for all patients and does not require a diagnostic work-up. It is a structured approach with which to identify and resuscitate the critically ill and injured. EPs must be able to assess, establish and maintain: Airway [A], Breathing [B], Circulation [C], Disability [D] and Exposure [E] of the patient.

#### 3.1.1.3 Focused medical history

EPs must focus the initial medical history on presenting complaints and on clinical findings as well as on conditions requiring immediate care.

#### 3.1.1.4 Secondary assessment and immediate clinical management

EPs must perform secondary assessment with a timely diagnostic work-up focusing on the need for early action. Clinical management must also include further aspects of health (physical, mental and social).

#### 3.1.1.5 Clinical decision making

EPs must be able to make clinical decisions including:

- re-triage
- immediate and/or definitive care provided in the ED
- planning for admission or discharge.

#### 3.1.1.6 Clinical documentation

EPs must make contemporaneous medical records which focus on:

- relevant medical history
- main complaints and abnormal findings
- provisional diagnosis and planned investigations
- results of investigations
- treatment
- conclusions and management decisions
- patient information.

#### 3.1.1.7 Re-evaluation and further management

EPs must perform continuous re-evaluation of the patient, with adjustment of the provisional diagnosis and care when it becomes necessary.

### 3.1.2 MEDICAL KNOWLEDGE AND CLINICAL SKILLS

Emergency Physicians (EPs) need to acquire the knowledge and skills described in sections 3.2, 3.3, 3.4 and 3.5.

### 3.1.3 COMMUNICATION, COLLABORATION AND INTERPERSONAL SKILLS

Emergency Medicine is practiced in difficult and challenging environments. Effective communication is essential for safe care and for building and maintaining good relationships, avoiding barriers such as emotions, stress and prejudices. EPs must be able to use both verbal and non-verbal communication skills, as well as information and communication technology. In the case of a patient who is incompetent by virtue of age or mental capacity, communication should be with a parent or other legal representative.

EPs must be able to demonstrate communication and interpersonal skills that include the following:

#### 3.1.3.1 Patients and relatives

EPs should give special attention to involving the patient in decision-making, seeking informed consent for diagnostic and therapeutic procedures, sharing information, breaking bad news, giving advice and recommendations on discharge and also communicating with populations with language barriers.

#### 3.1.3.2 Colleagues and other health care providers

Important skills for an EP are sharing information on patient care, working as a member or the leader of a team, referring and transferring patients.

#### 3.1.3.3 Other care providers such as the police, the fire department and social services

EPs must give attention to respecting patient confidentiality.

#### 3.1.3.4 Mass media and the general public

EPs must be able to interact with the mass media in a constructive way, giving correct information to the public and at the same time respecting the privacy of the patient.

### 3.1.4 PROFESSIONALISM AND OTHER ETHICAL AND LEGAL ISSUES

#### 3.1.4.1 Professional behavior and attributes

The general professional behaviour and attributes of Emergency Physicians must not be adversely influenced by working in stressful circumstances and with a diverse patient population. They must learn to identify their educational needs and to work within their own

limitations. They must be able to self-motivate even at times of stress or discomfort. They must recognise their own as well as system errors and value participation in the peer review process.

#### 3.1.4.2 Working within a team or as a leader of a team

EPs must understand the role of colleagues in other specialties and must be able to lead or to work effectively even in a new or large team often under considerable stress.

#### 3.1.4.3 Delegation and referral

EPs must understand the responsibilities and potential consequences of delegating, referring to a colleague in another discipline or transferring the patient to another doctor, health care professional or health care setting.

#### 3.1.4.4 Patient confidentiality

EPs must understand the law regarding patient confidentiality and data protection. They must know what confidentiality problems arise when dealing with relatives, the police, EMS communication, telephone discussions and the media.

#### 3.1.4.5 Autonomy and informed consent

EPs must respect the right of competent patients to be fully involved in decisions about their care. They must also value the right of competent patients to refuse clinical procedures or treatment. They must understand how the ethical principles of autonomy and informed consent affect emergency practitioners.

#### 3.1.4.6 The competent/incompetent patient

EPs must be able to assess whether a patient has the competence to make an informed decision. They must also understand the legal rights of a guardian or adult with power of attorney and when they treat minors. They must be familiar with those aspects of mental health legislation which relate to competence.

#### 3.1.4.7 Abuse and violence

EPs must be able to recognise patterns of illness or injury which might suggest physical or sexual abuse or domestic violence to children or adults. They must be able to initiate appropriate child or adult protection procedures. They must also learn to prevent and limit the risks of violence and abuse to staff working in an emergency setting.

### 3.1.4.8 Do not attempt to resuscitate (DNAR) and limitations of therapeutic interventions

EPs must learn to discuss with colleagues and in a professional and empathic manner with relatives, the initiation or possible discontinuation of active interventions when this is considered to be medically appropriate. They must understand when and how they should use advance directives such as living wills and durable powers of attorney.

### 3.1.4.9 Medico-legal issues

EPs must operate within the legal framework of the country.

### 3.1.4.10 Legislation and ethical issues in Emergency Medicine

EPs should have an understanding of ethics and law, as well as the legal aspects of bioethical issues in Emergency Medicine. They must be able to make a reasoned analysis of ethical conflicts and develop the skills to resolve ethical dilemmas in an appropriate manner. They must also look to the law for guidance, although the law does not always provide the answer to many ethical problems.

Ethics in Emergency Medicine help to prepare EPs to face new ethical dilemmas in their practice. The use of ethical analysis provides the framework for determining moral duty, obligation and conduct. EPs must learn to identify, refine, and apply general moral principles to their practice related to:

- Patient autonomy (informed consent and refusal, patient decision-making capacity, treatment of minors, advance directives, the obligations of the Good Samaritan).
- End of life decisions (limiting resuscitation, futility).
  - The physician-patient relationship (confidentiality, truth telling and communication, compassion and empathy).
  - Issues related to justice (duty, ethical issues of resuscitation, health care rationing, moral issues in disaster medicine, research, resuscitation issues in pregnancy).

### 3.1.5 ORGANISATIONAL PLANNING AND SERVICE MANAGEMENT SKILLS

This competence is needed to enhance the safety and quality of patient care and the work environment. Emergency Physicians must continuously adapt and prioritize existing and available resources to meet the needs of all patients and maintain the quality of care.

#### 3.1.5.1 Case management

EPs must be able to provide and balance the different care processes between the individual patient and the total case-mix. After primary and secondary assessment, they may refer a patient to another point of contact within the health care or social network. They must provide clear guidance to those patients discharged without formal follow up.

#### 3.1.5.2 Quality standards, audit and clinical outcomes

It is important that EPs use evidence-based medicine and recognise the value of quality standards to improve patient care which is effective and safe. They must be able to undertake audit and use clinical outcomes, including critical incident reporting, as ways of continuously improving clinical practice.

#### 3.1.5.3 Time management

EPs must be able to manage the individual patient as well as the overall patient flow in a timely manner which is dependent upon available resources, accepted medical standards and public expectation. EPs must also learn to manage their own time in an effective way.

#### 3.1.5.4 Information management

EPs often manage patients for whom limited information is available. They may need to communicate with other agencies to obtain relevant information while respecting the confidentiality of the patient. Patient data collected during the process of care must be accessible to all involved health care professionals through adequate documentation. EPs need a broad knowledge of the latest advances in medicine and must be able to access and manage information relevant to the specific care of an individual patient.

#### 3.1.5.5 Documentation

EPs are responsible for clear, legible, accurate, contemporaneous and complete records of patient care where the author, date and time are clearly identified. Documentation is a continuous process and all entries must be made in real time as far as possible.

### 3.1.6 EDUCATION AND RESEARCH

#### 3.1.6.1 Self education and improvement

EPs must develop their knowledge and practice in EM by continuous education. They have to identify areas for personal improvement and learn to implement patient care based on scientific evidence.

#### 3.1.6.2 Teaching skills

EPs must be involved in teaching undergraduate, graduate and post graduate health care students, and the general population. They must also continuously develop the skills to be



effective teachers.

### 3.1.6.3 Critical appraisal of scientific literature

EPs must be able to investigate and evaluate their own practice. They must learn to use evidence-based medicine and guidelines, where applicable, and become familiar with the principles of clinical epidemiology, biostatistics, quality assessment and risk management.

### 3.1.6.4 Clinical and basic research

EPs must understand the scientific basis of EM, the use of scientific methods in clinical research and the fundamental aspects of basic research. They must be able to critically review research studies and be able to understand, present and implement them into clinical practice. They should understand the process of developing a hypothesis from a clinical problem and of testing that hypothesis. They should also understand the specific aspects of obtaining consent as well as the ethical considerations of research in emergency situations.

## 3.2 SYSTEM-BASED CORE KNOWLEDGE

This section of the curriculum gives an index of the system-based core knowledge appropriate to the management of patients presenting with undifferentiated symptoms and complaints. This list is mostly given in the following sequence: congenital disorders; inflammatory and infectious disorders; metabolic disorders; traumatic and related problems; tumours; vascular disorders, ischaemia and bleeding; other disorders. These lists cannot be exhaustive.

### 3.2.1 CARDIOVASCULAR EMERGENCIES IN ADULTS AND CHILDREN

- Arrhythmias
- Congenital heart disorders
- Contractility disorders, pump failure
  - Cardiomyopathies, congestive heart failure, acute pulmonary oedema, tamponade
- Valvular emergencies
- Inflammatory and infectious cardiac disorders
- Endocarditis, myocarditis, pericarditis
- Ischaemic heart disease - Acute coronary syndromes, stable angina
- Traumatic injuries
- Vascular and thromboembolic disorders
  - Aortic dissection/aneurysm rupture, deep vein thrombosis, hypertensive emergencies, occlusive arterial disease, thrombophlebitis, pulmonary embolism, pulmonary hypertension

### 3.2.2 DERMATOLOGICAL EMERGENCIES IN ADULTS AND CHILDREN

- Inflammatory and Infectious disorders
  - Skin manifestations of immunological disorders, systemic disorders & toxic disorders

### 3.2.3 ENDOCRINE AND METABOLIC EMERGENCIES IN ADULTS AND CHILDREN

- Acute presentation of inborn errors of metabolism
- Adrenal insufficiency, crisis and other adrenal emergencies
- Disorders of glucose metabolism
- Hyperosmolar hyperglycaemic state, hypoglycaemia, ketoacidosis
  - Thyroid emergencies hyperthyroidism, hypothyroidism, myxoedema, thyroid storm

### 3.2.4 FLUID AND ELECTROLYTE DISTURBANCES

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

### 3.2.5 EAR, NOSE, THROAT, ORAL AND NECK EMERGENCIES IN ADULTS AND CHILDREN

- Bleeding
- Complications of tumours
- Airway obstruction, bleeding
- Foreign bodies
- Inflammatory and Infectious disorders
- Angio-oedema, epiglottitis, laryngitis, paratonsillar abscess
- Traumatic problems

### 3.2.6 GASTROINTESTINAL EMERGENCIES IN ADULTS AND CHILDREN

- Congenital disorders
- Hirschsprung's disease, Meckel's diverticulum, pyloric stenosis
  - Inflammatory and Infectious disorder –appendicitis,cholecystitis, cholangitis, diverticulitis, exacerbations and
  - Complications of inflammatory bowel diseases, gastritis, gastroenteritis, gastro-oesophageal reflux disease, pancreatitis, peptic ulcer, peritonitis
- Metabolic disorders
  - Traumatic and mechanical problems- foreign bodies, hernia strangulation, intestinal obstruction and occlusion
- Tumours
- Vascular disorders: Ischaemia and Bleeding
  - Ischaemic colitis, upper and lower gastrointestinal bleeding, mesenteric ischaemia
- Other problems
- Complications of gastrointestinal devices and surgical procedures

### 3.2.7 GYNAECOLOGICAL AND OBSTETRIC EMERGENCIES

- Inflammatory and Infectious disorders pelvic inflammatory disease, vulvovaginitis
- Obstetric emergencies

- abruptio placentae, eclampsia, ectopic pregnancy, emergency delivery,
  - HELLP syndrome during pregnancy, hyperemesis gravidarum, placenta previa, post-partum hemorrhage
- Traumatic and related problems
- Ovarian torsion
- Tumors Vaginal bleeding

### 3.2.8 HAEMATOLOGY AND ONCOLOGY EMERGENCIES IN ADULTS AND CHILDREN

- Anaemias
- Complications of lymphomas and leukaemias
  - Congenital disorders- Hemophilia and Von Willebrand's disease, hereditary haemolytic, anaemias, sickle cell disease
- Inflammatory and Infectious disorders
- Neutropenic fever, infections in immuno-compromised patients
- Vascular disorders: Ischaemia and Bleeding
- Acquired bleeding disorders (coagulation factor deficiency, disseminated
  - intravascular coagulation), drug induced bleeding (anticoagulants, antiplatelet agents, fibrinolytics), idiopathic thrombocytopenic purpura, thrombotic thrombocytopenic purpura
- Transfusion reactions, Massive transfusion

### 3.2.9 IMMUNOLOGICAL EMERGENCIES IN ADULTS AND CHILDREN

- Allergies and anaphylactic reactions
- Inflammatory and Infectious disorders
- Acute complications of vasculitis

### 3.2.10 INFECTIOUS DISEASES AND SEPSIS IN ADULTS AND CHILDREN

- Common viral and bacterial infections
- Food and water-borne infectious diseases
- HIV infection and AIDS
- Common tropical diseases
- Parasitic infestations
- Rabies
- Sepsis and septic shock
- Sexually transmitted diseases
- Streptococcal toxic shock syndrome
- Tetanus

### 3.2.11 MUSCULO-SKELETAL EMERGENCIES

- Congenital disorders
- Dislocated hip, osteogenesis imperfecta
- Inflammatory and Infectious disorders
  - Arthritis, bursitis, cellulitis, complications of systemic rheumatic diseases, necrotising

fasciitis, osteomyelitis, polymyalgia rheumatica, soft tissue infections

- Metabolic disorders
- Complications of osteoporosis and other systemic diseases
- Traumatic and degenerative disorders
  - Common fractures and dislocations, compartment syndromes, crush syndrome, osteoarthritis, rhabdomyolysis, soft tissue trauma
- Tumours: pathological fractures

### 3.2.12 NEUROLOGICAL EMERGENCIES IN ADULTS AND CHILDREN

- Inflammatory and Infectious disorders - brain abscess, encephalitis, febrile seizures in children, Guillain-Barrè syndrome, meningitis, peripheral facial palsy (Bell's palsy), temporal arteritis
- Traumatic and related problems

Complications of CNS devices, spinal cord syndromes, peripheral nerve trauma and entrapment, traumatic brain injury

- Tumours - common presentations and acute complications of neurological a metastatic tumours
- Vascular disorders: Ischaemia and Bleeding Carotid artery dissection, stroke, subarachnoid haemorrhage, subdural and extradural haematomata, transient ischaemic attack, venous sinus thrombosis
- Other problems

Acute complications of chronic neurological conditions (e.g. myasthenic crisis, multiple sclerosis), acute peripheral neuropathies, seizures and

- Status epilepticus

### 3.2.13 OPHTHALMIC EMERGENCIES IN ADULTS AND CHILDREN

- Inflammatory and Infectious disorders conjunctivitis, dacryocystitis, endophthalmitis, iritis, keratitis, orbital and Periorbital cellulitis, uveitis
- Traumatic and related problems Foreign body in the eye, ocular injuries,
- Vascular disorders: Ischaemia and Bleeding -retinal artery and vein occlusion, vitreous haemorrhage
- Acute glaucoma, retinal detachment

### 3.2.13 PULMONARY EMERGENCIES IN ADULTS AND CHILDREN

- Congenital -cystic fibrosis
- Inflammatory and Infectious disorder -asthma, bronchitis, bronchiolitis, pneumonia, empyema, COPD exacerbation, lung abscess, pleurisy and pleural effusion, pulmonary fibrosis, tuberculosis
- Traumatic and related problem foreign body inhalation, haemothorax, tension pneumothorax, pneumomediastinum
- Tumours - common complications and acute complications of pulmonary and metastatic tumours
- Vascular disorders pulmonary embolism
- Other disorders
- Acute lung injury, atelectasis, ARDS, spontaneous pneumothorax

### 3.2.15 PSYCHIATRIC AND BEHAVIOUR DISORDERS

- Behaviour disorders- Affective disorders, confusion and consciousness disturbances, intelligence disturbances, memory disorders, perception disorders, psycho-motor disturbances, thinking disturbances.
- Common psychiatric emergencies - Acute psychosis, anorexia and bulimia complications, anxiety and panic attacks, conversion disorders, deliberate self-harm and suicide attempt
- Depressive illness, personality disorders, substance, drug and alcohol abuse

### 3.2.16 RENAL AND UROLOGICAL EMERGENCIES IN ADULTS AND CHILDREN

- Inflammatory and Infectious disorders epididymo-orchitis, glomerulonephritis, pyelonephritis, prostatitis, sexually transmitted diseases, urinary tract infections, etc.
- Metabolic disorders Acute kidney Injury, uraemia , haemolytic uraemic syndrome
- Traumatic and related problems
- Urinary retention, testicular torsion
- Tumours
- Vascular disorders: Ischaemia and Bleeding
- Comorbidities in dialysis and renal transplanted patients
- Complications of urological procedures and devices

### 3.2.17 TRAUMA IN ADULTS AND CHILDREN

- Origin of trauma: Thermal Injury, Chemical injury, Ionising radiation Injury blunt trauma, penetrating trauma
- Anatomical location of trauma: Head and neck, maxillo-facial, thorax, abdomen, pelvis, spine, extremities Polytrauma patient
- Trauma in specific populations: children, elderly, pregnant women.

## COMMON PRESENTING SYMPTOMS

Emergency medicine represents the unique combination of rapid data gathering, simultaneous prioritization, and constant multi-tasking in a time-constrained triage area – with all decisions subject to second-guessing by others. It is a patient complaint-oriented specialty in which stabilization based on anticipation supersedes lengthy differentials and diagnostic precision.

This section of the Curriculum lists the more common presenting symptoms of patients in the emergency setting. The differential diagnoses are listed according to the systems involved and then in alphabetical order. The diagnoses requiring immediate attention, in terms of potential severity and need of priority, are highlighted in bold. These lists of possible diagnoses cannot be exhaustive.

### 3.3.1 ACUTE ABDOMINAL PAIN

- Gastrointestinal causes appendicitis, cholecystitis, cholangitis, acute pancreatitis, complications of hernias, diverticulitis, hepatitis, hiatus hernia, inflammatory bowel disease, intestinal obstruction, ischaemic colitis, mesenteric ischaemia, peptic ulcer, peritonitis, hollow viscus perforation
- Cardiac/vascular causes - acute myocardial infarction, aortic dissection, aortic aneurysm rupture

- Dermatological causes - herpes zoster, other local inflammatory & infective causes
- Endocrine and metabolic causes - Addison's disease, diabetic ketoacidosis, other metabolic acidosis, porphyria
- Gynaecological and Obstetric causes - complications of pregnancy, ectopic pregnancy, pelvic inflammatory disease, rupture of ovarian cyst, ovarian torsion
- Haematological causes - acute porphyria crisis, familial mediterranean fever, sickle cell crisis
- Musculo-skeletal causes - referred pain from thoraco-lumbar spine
- Renal and Genitourinary causes - pyelonephritis, renal stones
- Respiratory causes pneumonia, pleurisy
- Toxicology poisoning
- Trauma- Abdominal

### 3.3.2 ALTERED BEHAVIOUR AND AGITATION

- Neurological causes-cerebral space-occupying lesions, dementia, hydrocephalus, intracranial hypertension, CNS infections
- Toxicology
- alcohol and drug abuse, poisoning
- Endocrine and metabolic causes-hypoglycaemia, hyperglycaemia, electrolyte imbalance, hyperthermia, hypoxaemia
- Cardiac/Vascular causes hypertension, vasculitis
- Psychiatric causes- acute psychosis, depression

### 3.3.3 ALTERED LEVEL OF CONSCIOUSNESS IN ADULTS AND CHILDREN

- Neurological causes- cerebral tumour, epilepsy and status epilepticus, meningitis,encephalitis, stroke, subarachnoid haemorrhage, subdural and extradural haematomata, traumatic brain injury
- Cardiovascular causes -hypoperfusion states, shock
- Endocrine and metabolic causes- electrolyte imbalances, hepatic coma, hypercapnia, hypothermia, hypoxia, hypoglycaemia/ hyperglycaemia, uraemia
- Gynaecological and Obstetric causes - eclampsia
- Infectious causes - septic shock
- Psychiatric causes - Conversion syndrome
- Respiratory causes - Respiratory failure
- Toxicology - Alcohol intoxication, carbon-monoxide poisoning, narcotic and sedative poisoning, other substances

### 3.3.4 BACK PAIN

- Musculo-Skeletal causes-Fractures, intervertebral disc strain and degeneration, strain of muscles, ligaments and tendons, spinal stenosis, arthritis, arthrosis
- Cardiovascular causes-aortic aneurysm, aortic dissection
- Infectious causes-osteomyelitis, discitis, pyelonephritis, prostatitis
- Endocrine and metabolic causes- Paget's disease

- Gastrointestinal causes  
pancreatitis,  
cholecystitis
- Dermatological causes herpes zoster
- Gynaecological causes endometriosis, pelvic inflammatory disease
- Haematological and Oncological causes abdominal or vertebral tumours
- Neurological cause: subarachnoid haemorrhage
- Renal and Genitourinary causes-renal abscess, renal calculi
- Trauma

### 3.3.5 BLEEDING (NON TRAUMATIC)

- Ear, Nose, Throat causes ear bleeding (otitis, trauma, tumours), epistaxis
- Gastrointestinal causes haematemesis and melaena (acute gastritis, gastro-duodenal ulcer, Mallory Weiss syndrome, oesophageal varices) rectal bleeding (acute diverticulitis, haemorrhoids, inflammatory bowel disease, tumours)
- Gynaecological and Obstetric causes menorrhagia/metrorrhagia (abortion, abruptio placentae, tumours)
- Renal and Genitourinary causes haematuria (pyelitis, tumours, urolithiasis)
- Respiratory causes haemoptysis (bronchiectasis, pneumonia, tumours, tuberculosis)

### 3.3.6 CARDIAC ARREST

- Cardiac arrest treatable with defibrillation Ventricular fibrillation, pulseless ventricular tachycardia
- Pulseless electric activity
- Acidosis, hypoxia, hypothermia, hypo/hyperkalaemia, hypocalcaemia, hypo/hyperglycaemia, hypovolaemia, tension pneumothorax, cardiac tamponade, myocardial infarction, pulmonary embolism, poisoning
- Asystole

### 3.3.7 CHEST PAIN

- Cardiac/vascular causes Acute coronary syndrome, aortic dissection, arrhythmias, pericarditis, pulmonary embolism
- Respiratory causes Pneumonia, pneumomediastinum, pneumothorax (especially tension pneumothorax), pleurisy
- Gastrointestinal causes -Gastro-oesophageal reflux, oesophageal rupture, oesophageal spasm
- Musculo-Skeletal causes costosternal injury, costochondritis, intercostal muscle pain, pain referred from thoracic spine
- Psychiatric causes - anxiety, panic attack
- Dermatological causes - herpes zoster

### 3.3.8 CRYING BABY

- Infections herpes stomatitis, meningitis, osteomyelitis, urinary tract infection
- testicular torsion, trauma, teeth problems,
- Cardiac arrhythmias, congestive heart failure
- reaction to milk, reaction to medications, reflux
- immunisation and allergic reactions, insect bites
- Eye corneal abrasions, glaucoma, ocular foreign bodies
- Some gastrointestinal causes hernia, intussusception, volvulus

### 3.3.9 DIARRHOEA

- Infectious causes AIDS, bacterial enteritis, viral, parasites, food-borne, toxins
- Toxicological causes - drugs related, poisoning (including heavy metals, mushrooms, organophosphates, rat poison, seafood)
- Endocrine and metabolic causes - carcinoids, diabetic neuropathy
- Gastrointestinal causes - diverticulitis, dumping syndrome, ischaemic colitis, inflammatory bowel disease, enteritis due to radiation or chemotherapy
- Haematological and Oncological causes toxicity due to cytostatic therapies
- Immunology - food allergy
- Psychiatric disorders - diarrhoea “factitia”

### 3.3.10 DYSPNOEA

- Respiratory Causes airway obstruction, broncho-alveolar obstruction, parenchymal diseases, pulmonary shunt, pleural effusion, atelectasis, pneumothorax
- Cardiac/vascular causes cardiac decompensation, cardiac tamponade, pulmonary embolism
- Ear, Nose, Throat causes epiglottitis, croup and pseudocroup
- Fluid & Electrolyte disorders hypovolaemia, shock, anaemia
- Gastrointestinal causes hiatus hernia
- Immunological causes vasculitis
- Metabolic causes metabolic acidosis, uraemia
- Neurological causes myasthenia gravis, Guillain Barrè syndrome, amyotrophic lateral sclerosis
- Psychiatric disorders conversion syndrome
- Toxicology
- CO intoxication, cyanide intoxication
- Trauma flail chest, lung contusion, traumatic pneumothorax, haemothorax

### 3.3.11 FEVER AND ENDOGENOUS INCREASE IN BODY TEMPERATURE

- Systemic infectious causes sepsis and septic shock, parasitosis, flu-like syndrome
- Organ-specific infectious causes endocarditis, myocarditis, pharyngitis, tonsillitis, abscesses, otitis, cholecystitis and cholangitis, meningitis, encephalitis
- Non-infectious causes Lyell syndrome, Stephen-Johnson syndrome, thyroid storm,
- pancreatitis, inflammatory bowel disease, pelvic inflammatory disease, toxic shock,
- Haematological and Oncological causes leukaemia and lymphomas, solid tumours



- Immunological causes arteritis, arthritis, lupus, sarcoidosis
- Musculo-Skeletal causes osteomyelitis, fasciitis and cellulitis
- Neurological causes cerebral haemorrhage
- Psychiatric causes factitious fever
- Renal and Genitourinary causes pyelonephritis, prostatitis
- Toxicology

### 3.3.12 HEADACHE IN ADULTS AND CHILDREN

- Vascular causes migraine, cluster headache, tension headache, cerebral haemorrhage, hypertensive encephalopathy, ischaemic stroke
- Haematological and Oncological causes -brain tumours
- Immunological causes temporal arteritis, vasculitis
- Infectious causes abscesses, dental infections, encephalitis, mastoiditis, meningitis, sinusitis
- Musculo-Skeletal causes cervical spine diseases, temporomandibular joint syndrome
- Neurological causes trigeminal neuralgia
- Ophthalmological causes optic neuritis, acute glaucoma
- Toxicology - alcohol, analgesic abuse, calcium channel blockers, glutamate, nitrates, opioids and caffeine withdrawal
- Trauma - head trauma

### 3.3.13 JAUNDICE

- Gastrointestinal causes cholangitis, hepatic failure, pancreatic head tumour, pancreatitis, obstructive cholestasis
- Cardiac/Vascular causes chronic cardiac decompensation
- Haematological and Oncological causes haemolytic anaemias, thrombotic thrombocytopenic purpura, haemolytic uraemic syndrome, disseminated intravascular coagulation
- Infectious causes malaria, leptospirosis, infective endocarditis
- Gynaecological causes HELLP syndrome
- Toxicology drug induced haemolytic anaemias, snake venom

### PAIN IN ARMS

- Cardiac/Vascular causes aortic dissection, deep venous thromboembolism, ischaemic heart disease
- Musculo-skeletal causes peri-arthritis, cervical spine arthrosis
- Trauma

### 3.3.14 PAIN IN LEGS

- Cardiac/Vascular causes acute ischaemia, arteritis, deep venous thrombosis, superficial thrombophlebitis
- Immunological causes polymyositis
- Infectious causes arthritis, cellulites, necrotising fasciitis, osteomyelitis
- Musculo-Skeletal causes sciatalgia
- Neurological causes sciatica

- Nervous system causes peripheral nerve compression
- Trauma

### 3.3.15 PALPITATIONS

- Cardiac/Vascular causes brady-arrhythmias (including sinus bradycardia and AV blocks), extrasystoles, tachy-arrhythmias (including atrial fibrillation, sinus tachycardia, supraventricular tachycardia, ventricular tachycardia)
- Endocrine and metabolic causes Thyrotoxicosis, Pheochromocytoma
- Toxicology - Drugs

### 3.3.16 SEIZURES IN ADULTS AND CHILDREN

- Neurological causes generalised epilepsy, partial complex or focal epilepsy, status epilepticus
- Cardiac/Vascular causes hypertensive encephalopathy, syncope, dysrhythmias, migraines
- Endocrine and metabolic causes metabolic seizures
- Gynaecological causes eclampsia
- Infective causes febrile seizures in children
- Psychiatric causes narcolepsy, pseudo-seizures
- Respiratory causes respiratory arrest
- Toxicology drugs/toxins

### 3.3.17 SHOCK IN ADULTS AND CHILDREN

- Anaphylactic
- Cardiogenic
- Hypovolaemic
- Obstructive
- Cardiac/Vascular causes - cardiogenic shock, arrhythmias
- Endocrine and metabolic causes - Addison's crisis
- Fluid and Electrolyte disorders - hypovolaemic shock
- Gastrointestinal causes - vomiting, diarrhoea
- Gynaecological causes - toxic shock
- Immunological causes - anaphylactic shock
- Infectious causes - septic shock
- Neurological causes - neurogenic shock
- Trauma - hypovolaemic shock, neurogenic shock.

### 3.3.18 SKIN MANIFESTATIONS IN ADULTS AND CHILDREN

- Dermatological causes - eczema, psoriasis, skin tumours
- Immunological causes - vasculitides, urticaria, Stevens-Johnson syndrome, Lyell syndrome (TENS)
- Infectious causes - viral exanthemata, meningococcaemia, herpes zoster/simplex, abscesses of the skin

- Psychiatric causes -Self-inflicted skin lesions or from abuse
- Toxicology
- Haematological and Oncological causes idiopathic thrombocytopenic purpura, thrombotic thrombocytopenic purpura

### 3.3.19 SYNCOPE

- Cardiac/vascular causes aortic dissection, cardiac arrhythmias (including brady-tachy syndrome, Brugada syndrome, drug overdose, long QT syndrome, sick sinus syndrome, torsades de pointes, ventricular tachycardia), other causes of hypoperfusion (including ischaemia, valvular,haemorrhage, obstruction: e.g. aortic stenosis, pulmonary embolism, tamponade)orthostatic hypotension
  - Endocrine and metabolic causes Addison's disease
  - Fluid and Electrolyte disorders hypovolaemia
- Gastrointestinal causes - vomiting, diarrhoea
  - Neurological causes - autonomic nervous system disorder, epilepsy, vasovagal reflex,
- Toxicology - alcoholic or drug consumption
- URINARY SYMPTOMS (DYSURIA, OLIGO/ANURIA, POLYURIA)
  - Renal and Genitourinary causes acute renal failure, acute urinary retention, cystitis and pyelonephritis, prostatitis
  - Cardiac/Vascular causes cardiac decompensation
  - Endocrine and metabolic causes - diabetes mellitus, diabetes insipidus
  - Fluid and Electrolyte disorders Hypovolaemia

### 3.3.20 VERTIGO AND DIZZINESS

- Ear and Labyrinth causes benign postural vertigo, Meniere's disease, otitis, vestibular neuritis, viral labyrinthitis
- Cardiac/Vascular causes arrhythmias, hypotension
- Endocrine and metabolic causes hypoglycaemia
- Haematological and Oncological causes anaemias
- Nervous system causes acoustic neuroma, bulbar or cerebellar lesions, multiple sclerosis, temporal lobe epilepsy
- Psychiatric causes anxiety
- Respiratory causes hypoxia
- Toxicology
- alcohol abuse, drugs and substances

### 3.3.21 VOMITING

- Gastrointestinal causes appendicitis, cholecystitis, gastroparesis, gastric obstruction and retention,gastroenteritis, hepatitis, pancreatitis, pyloric stenosis, small bowel obstructions
- Cardiac/Vascular causes - myocardial ischaemia
- Ear, Nose, Throat causes, vestibular disorders

- Endocrine and metabolic causes -diabetic ketoacidosis, hypercalcaemia
- Fluid and Electrolyte disorders - hypovolaemia
- Gynaecological and Obstetric causes - pregnancy
- Infectious causes -sepsis, meningitis
- Neurological causes - cerebral oedema or haemorrhage, hydrocephalus, intracranial space occupying lesions
- Ophthalmological causes - acute glaucoma
- Psychiatric causes - eating disorders
- Renal and Genitourinary causes - renal calculi, uraemia
- Toxicology

### **3.4 SPECIFIC ASPECTS OF EMERGENCY MEDICINE**

#### **3.4.1 ABUSE AND ASSAULT IN ADULTS AND CHILDREN**

- Abuse in the elderly and impaired
- Child abuse and neglect
- Intimate partner violence and abuse
- Sexual assault
- Patient safety in Emergency Medicine
- Violence management and prevention in the Emergency Department

#### **3.4.2 ANALGESIA AND SEDATION IN ADULTS AND CHILDREN**

- Pain transmission (anatomy, physiology, pharmacology)
- Pain assessment
- Pharmacology of sedative and pain relieving drugs
- Psychological and social aspects of pain in paediatric, adult and elderly patients

#### **3.4.3 DISASTER MEDICINE**

- Disaster preparedness
- Major incident planning/procedures/practice
- Disaster response
- Mass gatherings
  - Specific medical topics (triage, bioterrorism, blast and crush injuries, chemical agents, radiation injuries)
- Debriefing and mitigation

#### **3.4.4 ENVIRONMENTAL ACCIDENTS IN ADULT AND CHILDREN**

- Electricity (electrical and lightning injuries)
- Flora and Fauna (injuries from exposure, bites and stings)
- High-altitude (medical problems)
  - NBCR (nuclear, biological, chemical and radiological:, decontamination, specific aspects)
- Temperature (heat and cold related emergencies)
- Travel medicine
- Water (near-drowning, dysbarism and complications of diving, marine fauna)

#### 3.4.5 FORENSIC ISSUES

- Basics of relevant legislation in the country of practice
- Recognise and preserve evidence
  - Provide appropriate medical documentation (including forensic and clinical photography, collection of biological samples, ballistics)
  - Appropriate reporting and referrals (e.g. child abuse or neglect, gunshot and other forms of penetrating wounds, elder abuse, sexual assault allegations)
- Medico-legal documentation

#### 3.4.6 INJURY PREVENTION AND HEALTH PROMOTION

- Collection and interpretation of data related to prevention and health promotion
- Epidemiology of Accidents and Emergencies
- Formulation of recommendations

#### 3.4.7 PATIENT MANAGEMENT ISSUES IN EMERGENCY MEDICINE

- Emergency Department organisation (administration, structure, staffing, resources)
- Management of specific populations: children in special circumstances including child protection women elderly patients homeless patients mentally incompetent adults psychiatric patients

#### 3.4.8 PROBLEMS IN THE ELDERLY

- Atypical presentations (e.g. abdominal pain, infections, myocardial infarction)
- Delirium
- Dementia
- Falls (causes & investigations)
- Immobility
- Multiple pathology and multiple therapies
- Self-dependency
- Trauma & co-morbidity

#### 3.4.9 TOXICOLOGY IN ADULTS AND CHILDREN

- General principles of toxicology and management of poisoned patients
- Principles of drug interactions
- Specific aspects of poisoning drugs (including paracetamol, amphetamine, anticholinergics, anticonvulsants, antidepressants, antihypertensives, benzodiazepines, digitalis, monoamine oxidase inhibitors, neuroleptics) industrial, chemicals plants & mushrooms
- alcohol abuse and alcohols poisoning drugs of abuse
- Organisation and information (e.g. poison centres, databases)

#### 3.4.10 PRE-HOSPITAL CARE

- Emergency Medical Services organisation (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)

#### 3.4.11 PSYCHO-SOCIAL PROBLEMS

- Social wellbeing of specific populations
- Patients with social issues
- Frequent visitors
- Social care following discharge

### 3.5 CORE CLINICAL PROCEDURES AND SKILLS

#### 3.5.1 CPR SKILLS

- Cardio-pulmonary resuscitation procedures in a timely and effective manner according to the current AHA-ECC guidelines for adults and children.

BLS, ACLS Certification Mandatory

#### 3.5.2 AIRWAY MANAGEMENT SKILLS

- Open and maintain the airway in the emergency setting (insertion of oropharyngeal or nasopharyngeal airway)
- Endotracheal intubation
  - Alternative airway techniques in the emergency setting (e.g. laryngeal mask insertion, surgical airway)
- Difficult airway management algorithm
- Use of rapid sequence intubation in the emergency setting

#### 3.5.3 ANALGESIA AND SEDATION SKILLS

- Assessment of the level of pain and sedation
- Monitor vital signs and potential side effects during pain management
  - Provide procedural sedation and analgesia including conscious sedation (including testing of life support equipment)
- Use of appropriate local, topical and regional anaesthesia techniques

#### 3.5.4 BREATHING AND VENTILATION MANAGEMENT SKILLS

- Assessment of breathing and ventilation
- Oxygen therapy
- Interpretation of blood gas analysis, pulse oximetry and capnography
- Bag-mask-valve ventilation
- Thoracocentesis
  - Chest tube insertion, connection to under-water drainage and assessment of functioning
- Non-invasive ventilation techniques
- Invasive ventilation techniques

#### 3.5.5 CIRCULATORY SUPPORT AND CARDIAC SKILLS AND PROCEDURES

- Administration of fluids including blood and substitutes
- Monitoring of ECG and the circulation
- Defibrillation and pacing (e.g. cardioversion, transcutaneous pacing)

- Emergency pericardiocentesis
  - Vascular access (peripheral venous, arterial, and central venous catheterization, intraosseous access)

### 3.5.6 DIAGNOSTIC PROCEDURES AND SKILLS

- Interpretation of ECG
  - Appropriate request and interpretation of laboratory investigations (blood chemistry, blood gases, respiratory function testing and biological markers)
  - Appropriate request and interpretation of imaging (e.g. x-rays, ultrasound, CT/MRI)
- Performance of focused sonographic assessment

### 3.5.7 ENT SKILLS AND PROCEDURES

- Anterior rhinoscopy
- Insertion of nasal pack
- Inspection of oropharynx and larynx
- Otoscopy
- Removal of foreign body if airway is compromised
- Insertion and replacement of tracheostomy tube

### 3.5.8 GASTROINTESTINAL PROCEDURES

- Insertion of nasogastric tube
- Gastric lavage
- Peritoneal lavage
- Abdominal paracentesis
- Measurement of abdominal pressure
- Proctoscopy

### 3.5.9 GENITOURINARY PROCEDURES

- Insertion of indwelling urethral catheter
- Suprapubic cystostomy
- Testicular torsion reduction
- Evaluation of patency of urethral catheter
- Management of paraphimosis
- Dorsal slit operation

### 3.5.10 HYGIENE SKILLS AND PROCEDURES

- Decontamination of patient and the environment
- Patient isolation and staff protection

### 3.5.11 MUSCULOSKELETAL TECHNIQUES

- Aseptic joint aspiration
- Fracture immobilisation
- Reduction of joint dislocation
- Log roll and spine immobilisation
- Splinting (plasters, braces, slings, tapes and other bandages)

- Management of compartment syndrome
- Fasciotomy, escharotomy

### 3.5.12 NEUROLOGICAL SKILLS AND PROCEDURES

- Evaluation of consciousness
- Evaluation of Stroke
- Fundoscopy
- Lumbar puncture
- Interpretation of neuro-imaging

### 3.5.13 OBSTETRIC AND GYNAECOLOGICAL SKILLS AND PROCEDURES

- Emergency delivery
- Vaginal examination using speculum
- Assessment of the sexual assault victim

### 3.5.14 OPHTHALMIC SKILLS AND PROCEDURES

- Removal of foreign body from the eye Fundus examination
- Slit lamp use
- Lateral canthotomy

### 3.5.15 TEMPERATURE CONTROL PROCEDURES

- Measuring and monitoring of body temperature
- Cooling techniques (evaporative cooling, ice water or slush immersion)
- Internal cooling methods
- Warming techniques
- Monitoring heat stroke patients
- Treatment and prevention of hyper- and hypothermia

### 3.5.16 TRANSPORTATION OF THE CRITICALLY ILL PATIENT

- Telecommunication and telemedicine procedures
- Preparation of the EMS vehicle
- Specific aspects of monitoring and treatment during transportation

### 3.5.17 GENERAL SURGICAL SKILLS

- Abscess incision and drainage
- Aseptic techniques
- Treatment of lacerations and soft tissue injuries
- Wound irrigation and wound closure
- Wound debridement
- Minor amputations
- Minor surgical procedures –
  - Abdominal hernia reduction
  - Resuscitation and Management of burns patient including dressing burns patient.
  - ATLS Certification is mandatory



## Teaching and Learning Activities

A candidate pursuing the course should work in the institution as a full time student. No candidate should be permitted to run a clinic/laboratory/nursing home while studying postgraduate course. Each year should be taken as a unit for the purpose of calculating attendance

Every student shall attend teaching and learning activities during each year as prescribed by the department and not absent himself / herself from work without valid reasons.

A list of teaching and learning activities designed to facilitate students acquire essential knowledge and skills outlined is given below:

1. **Lectures:** Lectures are to be kept to a minimum. They may, however, be employed for teaching certain topics. Lectures may be didactic or integrated.

a. **Didactic Lectures:** Recommended for selected common topics for post graduate students of all specialties. Few topics are suggested as examples:

- i. Bio-statistics.
- ii. Use of library.
- iii. Research methods.
- iv. Medical code of conduct and medical ethics.
- v. National Health and Disease Control programmes.
- vi. Communication skills etc.

These topics may preferably taken up in the first few weeks of the 1st year.

b. **Integrated Lectures:** These are recommended to be taken by multidisciplinary teams for selected topics, eg. Jaundice, diabetes mellitus, thyroid etc.

2. **Journal Club:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the log book relevant details. Further, every candidate must make a presentation from the allotted journal(s), selected articles at least four times a year and a total of 12 seminar presentations in three years. The presentations would be evaluated using check lists and would carry weightage for internal assessment (See checklist in chapter IV). A time table with names of the student and the moderator should be announced at the beginning of every year.

3. **Subject Seminar:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the log book relevant details. Further, every candidate must present on selected topics at least four times a year and a total of 12 seminar presentations in three years. The presentations would be evaluated using check lists and would carry weightage for internal assessment (See checklist in chapter IV). A timetable for the subject with names of the student and the moderator should be scheduled at the beginning of every year.

4. **Student Symposium:** Recommended as an optional multi disciplinary programme. The evaluation may be similar to that described for subject seminar.

5. **Ward Rounds:** Ward rounds may be service or teaching rounds.

- a. **Service Rounds:** Postgraduate students and Interns should do every day for the care of the patients. Newly admitted patients should be worked up by the PGs and presented to the seniors the following day.
- b. **Teaching Rounds:** Every unit should have 'grand rounds' for teaching purpose. A diary should be maintained for day to day activities by the students.

Entries of (a) and (b) should be made in the log book.

6. **Clinico-Pathological Conference:** Recommended once a month for all post graduate students. Presentation be done by rotation. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPCs.
7. **Inter Departmental Meetings:** Strongly recommended particularly with departments of pathology and radio-diagnosis at least once a week. these meetings should be attended by post graduate students and relevant entries must be made in the Log Book.

**Pathology:** A dozen interesting cases may be chosen and presented by the post graduate students and discussed by them as well as the senior staff of Surgery department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advance immuno-histo-chemical techniques, the burgeoning markers other recent developments can be discussed.

**Radio-diagnosis:** Interesting cases and the imaging modalities should be discussed.

8. **Teaching Skills:** Post graduate students must teach under graduate students (eg medical, nursing) by taking demonstrations, bed side clinics, tutorials, lectures etc. Assessment is made using a checklist by surgery faculty as well students. (See model check in chapter IV). Record of their participation be kept in Log book. Training of post graduate students in educational science and technology is recommended.
9. **Continuing Medical Education Programmes (CME):** Recommended that at least state level CME programmes should be attended by each student in 3 years.
10. **Conferences:** Attending conferences is optional. However it is encouraged.

### **Rotation and posting in other departments**

The listed knowledge and skills are to be learnt over a period of 3 years. The process is a continuous one. However the recommended period and timing of training in basic subjects, allied departments and specialty departments is given below.

### **Basic Science**

Basic science should be an essential part of training. It should be done as concurrent studies during the 1<sup>st</sup> year of training. At least two hours daily may be in the first six months of the course. In the first year, during the morning session, time is spent in the parent department. In the afternoons basic science teaching relevant to surgery can be done in the respective

departments.

Topics for study to include anatomy, physiology, pathology, microbiology, pharmacology, anaesthesia and radiology.

Pathology: concurrent study. Recommend daily grossing sessions, weekly surgical pathology sessions and monthly CPCs.

Radiology: concurrent study. Adequate exposure to modern imaging modalities like u/s, CT, MRI and angiography

### **Allied Specialty Training**

Postings to other specialty departments and duration of postings are as under:

<b>Department</b>	<b>Duration of posting</b>
General Medicine	1 month
Cardiology including CCU	1 month
Pediatrics including PICU	1 month
Anaesthesia	15 days
General Surgery	1 month
Orthopaedics	15 days
Obstetrics & Gynecology	1 month
Radiology	15 days
Pulmonary Medicine	1 month
ICU	1 month
ENT Surgery	15 days
Neurology	15 days
Neurosurgery	15 days
Nephrology	15 days
Ophthalmology	15 days
Psychiatry	15 days

### **Dissertation**

Every candidate pursuing MD degree course is required to carry out work on a selected research project under the guidance of a recognised post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, comparison of results and drawing conclusions.

Every candidate shall submit to the Registrar (Academic) of the University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work

within six months from the date of commencement of the course, on or before the dates notified by the University. The synopsis shall be sent through proper channel.

Such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior approval of the University.

The dissertation should be written under the following headings:

1. Introduction
2. Aims or Objectives of study
3. Review of Literature
4. Material and Methods
5. Results
6. Discussion
7. Conclusion
8. Summarys
9. References
10. Tables
11. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexures. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

Our copies of dissertation thus prepared shall be submitted to the Registrar (Evaluation), six months before final examination, on or before the dates notified by the University.

The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.

For some more details regarding Guide etc, please see chapter I and for books on research methodology, ethics, etc, see chapter IV.

### **Monitoring Learning Progress**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. checklists are given in chapter IV.

The learning out comes to be assessed should included: (1) Personal attitudes, (1) Acquisition of knowledge, (3) Clinical and operative skills, (4) Teaching skills and (5) Dissertation.

**1. Personal Attitudes:** The essential items are:

- a. Caring attitudes.
- b. Initiative.
- c. Organisational ability.
- d. Potential to cope with stressful situations and undertake responsibility
- e. Trust worthiness and reliability.
- f. To understand and communicate intelligibly with patients and others.
- g. To behave in a manner which establishes professional relationships with patients and colleagues.
- h. Ability to work in team.
- i. A critical enquiring approach to the acquisition of knowledge.

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

**2. Acquisition of Knowledge:** The methods used comprise of 'Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The log book should periodically be validated by the supervisors. Some of the activities are listed. The list is not complete. Institutions may include additional activities, if so, desired.

- a. **Journal Review Meeting (Journal Club):** The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist (see Model Checklist – I, in Chapter IV)
- b. **Seminars / Symposia:** The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio- visual aids are to be assessed using a checklist (see Model Checklist-II, Chapter IV)
- c. **Clinico-Pathological conferences:** This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.
- d. **Audit:** Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

**3. Clinical skills**

- a. **Day to Day work:** Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see model checklist III, chapter IV).

- b. **Clinical meetings:** Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see model checklist IV, chapter IV).
  - c. **Clinical and Operative skills:** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book. (Table No 3, chapter IV)
4. **Teaching skills:** Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See model checklist V, chapter IV)
  5. **Dissertation in the Department:** Periodic presentations are to be made in the department. Initially the topic selected is to be presented before submission to the University for registration, again before finalisation for critical evaluation and another before final submission of the completed work (See model checklist VI & VII, chapter IV)
  6. **Periodic tests:** The departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practical / clinical and viva voce.
  7. **Work diary / Log Book:** Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.
  8. **Records:** Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or NMC.

### **Log book**

The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate.

**Format for the log book** for the different activities is given in Tables 1, 2 and 3 of chapter IV. Copies may be made and used by the institutions.

**Procedure for defaulters:** Every department should have a committee to review such situations. The defaulting candidate is counselled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.



### **Recommended books and Journals Text books**

1. Tintinalli, Judith E Stapczynski, Stephen J et al. Tintinalli's emergency medicine, McGraw Hill Medical Publishing 7th E.2011
2. Marx, Hockberger Walls Rosen's emergency medicine Mosby, 7th E, 2010
3. Dennis L. Kasper, Eugene Braunwald, Anthony S. Fauci et al.Harrison's Principles of Internal Medicine 19th E McGraw Hill 2011
4. Norman Williams,Christopher Bulstrode, P Ronan O'Connell. Bailey & Love's Short Practice of Surgery 26E
5. F. Brunicardi, Dana Andersen, Timothy Billiar and David Dunn.Schwartz's Principles of Surgery, Ninth E
6. Brian W Ellis,Hamilion Bailey's emergency surgery. Jaypee Borthers13th Ed.2012
7. Hagberg,Benumof and Hagberg's Airway Management 3/E 2012 Elsevier
8. Valani -Essential emergency procedural sedation and painmanagement .LWW 2011
9. Taylor.K.J.W;Viscomi.G.N EDS., Ultrasound in Emergency Medicine Churchill Livingstone, NY

### **Reference works recommended**

1. William F. Ganong : Review of Medical Physiology, 2000, Lange
2. Lee McGregor : Synopsis of Surgical Anatomy, 12th E, 1998, K.M. Verghese
3. W.T. Irvine : Modern Trends in Surgery, Series, Butterworths
4. R.F. Rintoul : Farqharson's Text Book of Operative Surgery, 8th E
5. Cuschiery : Essentials of Surgical Practice, 3rd Edition, 1995, K.M. Verghese Company E 1995
6. Somen Das: A practical Guide to Operative Surgery, 4th Edition, 1999, S. Das, Calcutta.
7. Pankaj Patel, V.V. Dewoodkar, Handbook of Surgical Instruments for Undergraduates, 1992, Bhalani publishing, House
8. R.A. Jamieson and A.W. Kay: Text book of Surgical Physiology, Lavingstone.
9. James Kyle : Pye's Surgical Handicraft, Indian Edition, K.M. Varghese Company
10. Mark Feldman Sleisengar and Fordtran's Gastrointestinal and Liver Disease 2Vol.Saunder, Philadelpea-2010
11. Farokh Erach Udwardia. Principles of critical care. Oxford 2E.2005



12. Fleisher, Gary R Ludwig, Stephen. Text book of pediatric emergency medicine Wolters Kluwer LWW Philadelphia 6E.2011
13. Mattu, Amal Chanmugam, Arjuns Swadron, Stuart P Tibbles. Avoiding common error's in the emergency department. Wolters Kluwer LWW Philadelphia.2010
14. Cameron, Peter Jelinck, George Everitt. Text book of pediatric emergency medicine. C L Elsevier Edinburgh 2E 2012
15. Simon, Robert R. Sherman, Scott C. Koenigsnecht, Steren J. Emergency orthopadics the extremities MC Graw hill. 5th E. 2007
16. Valani Essential Emergency Procedural Sedation and Pain Management 2011.
17. Shah. Essential Emergency Trauma 2011. LWW. 5E. 18. Pope. Harris and Harris Radiology of Emergency Medicine, 5/E 2012. LWW. 2012
19. Amieva-Wang. A Practical Guide to Pediatric Emergency Medicine. 2011. Cambridge
20. Glick, Rachel lipson. ; Berlin. Emergency psychiatry principal and practice. Wolterskluwer. 2008
21. Ehlers, Justis. P, Shah, Chirag. P, ; The wills eye manual. LWW Wolters Kluwer Philadelphia 5. 2009
22. Rachel Lipson glick; Jon. S. Berlin; Avrim .B, Fish Kind; Scott. L, Zeller Emergency psychiatry principles and practice. Lippincott 2009

## JOURNALS

1. JI of Emergencies, Trauma and Shock
2. Emergency Medicine Clinics of North America
3. Academic Emergency Medicine
4. American JI of Emergency Medicine
5. Annals of Emergency Medicine
6. Emergency Medicine JI
7. Clinical Pediatric Emergency Medicine
8. Environmental Toxicology and Pharmacology
9. Journal of Acute Medicine
10. Journal of Emergency Medicine
11. Resuscitation
12. Toxicology
13. Wilderness & Environmental Medicine
14. The New England Journal of Medicine
15. The Lancet
16. British Medical Journal
17. Journal of Association of Physicians

## Format of Model Check Lists

### Check List-I

#### MODEL CHECK-LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student:

Name of the Faculty/Observer: Date:

SI No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper / subject					
6.	Audio-visual aids used					
7.	Ability to defend the paper					
8.	Clarity of presentation					
9.	Any other observation					
	<b>Total Score</b>					

## Check List – II

### MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Student:

Name of the Faculty/Observer: Date:

Sl No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Whether other relevant publications consulted					
2.	Whether cross references have been consulted					
3.	Completeness of Preparation					
4.	Clarity of Presentation					
5.	Understanding of subject					
6.	Ability to answer questions					
7.	Time scheduling					
8.	Appropriate use of Audio-Visual aids					
9.	Overall Performance					
10.	Any other observation					
	<b>Total Score</b>					

### Check List - III

#### MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN WARD / OPD

(To be completed once a month by respective Unit Heads, including posting in other departments)

**Name of the Student:**

**Name of the Faculty/Observer: Date:**

SI No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases during rounds					
6.	Investigations work up					
7.	Beside manners					
8.	Rapport with patients					
9.	Counseling patient's relatives for blood donation or Postmortem and Case follow up.					
10.	Overall quality of ward work					
	<b>Total Score</b>					

### Check List - IV

#### EVALUATION FORM FOR CLINICAL PRESENTATION

**Name of the Student: Name of  
the Faculty: Date:**

Sl No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of Presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Whether any major signs missed or misinterpreted					
9.	Diagnosis: Whether it follows logically from history and findings					
10.	Investigations required <input type="checkbox"/> Complete list <input type="checkbox"/> Relevant order <input type="checkbox"/> Interpretation of investigations					
11.	Ability to react to questioning Whether it follows logically from history and findings					
12.	Ability to defend diagnosis					
13.	Ability to justify differential diagnosis					
14.	Others					
	<b>Total Score</b>					

### Check List - V

#### MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

Sl No		Strong Point	Weak Point
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	The introduction		
4.	The sequence of ideas		
5.	The use of practical examples and/or illustrations		
6.	Speaking style (enjoyable, monotonous, etc., specify)		
7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Asks questions		
10.	Answers questions asked by the audience		
11.	Rapport of speaker with his audience		
12.	Effectiveness of the talk		
13.	Uses AV aids appropriately		

## Check List - VI

### MODEL CHECK LIST FOR DISSERTATION PRESENTATION

Name of the Student: Name of  
the Faculty: Date:

SI No	Points to be considered divine	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting a topic					
2.	Appropriate review of literature					
3.	Discussion with guide & other faculty					
4.	Quality of Protocol					
5.	Preparation of proforma					
	<b>Total Score</b>					

Check List - VII

**CONTINUOUS EVALUATION OF DISSERTATION  
WORK BY GUIDE / CO GUIDE**

**Name of the Student: Name of  
the Faculty: Date:**

<b>SI No</b>	<b>Items for observation during presentations</b>	<b>Poor 0</b>	<b>Below Average 1</b>	<b>Average 2</b>	<b>Good 3</b>	<b>Very Good 4</b>
1.	Periodic consultation with guide/co-guide					
2.	Regular collection of case Material					
3.	Depth of analysis / discussion					
4.	Departmental presentation of findings					
5.	Quality of final output					
6.	Others					
	<b>Total Score</b>					