Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow
Department of Emergency Medicine

Minutes of meeting of Board of Studies 2023

A Board of Studies (BoS) meeting was convened on 26.04.2023 at 12:30 pm on hybrid platform (External experts joined online through Zoom virtual platform). Following members were present in the meeting online and offline.

1.	Prof. (Dr.) S P Ambesh, Dean, SGPGIMS, Lucknow,	Chairman
2.	Prof. (Dr.) R K Singh, HoD, EM, SGPGIMS, Lucknow	Member Secretary
3.	Prof. (Dr.) P K Agarwal, HoD, EM, AIIMS, New Delhi,	External Expert
4.	Prof. (Dr.) H Abbas, HoD, EM, KGMU, Lucknow,	External Expert
5.	Dr. S STripathi, HoD, EM, RMLIMS, Lucknow	External Expert
6.	Dr. O P Sanjeev, Associate Professor, EM,	Department Expert
7.	Dr. Tanmoy Ghatak, Associate Professor, EM,	Department Expert
8.	Dr. Alka Verma, Associate Professor, EM,	Department Expert

Agendas of the meeting were as follows.

1. Revision of MD-Emergency Medicine course curriculum to meet the requirement of NAAC accreditation.
2. Revision of PDCC- Resuscitative Emergency Medicine course curriculum to meet the requirement of NAAC accreditation.

Following decisions were unanimously taken by all the members.

1. Modifications in course curriculum of MD-Emergency Medicine and PDCC-Resuscitative Emergency Medicine were approved unanimously by all the members.
2. Members agreed to the fact that NMC has still not published Course Curriculum of MD-Emergency Medicine, hence any new update by NMC should be incorporated in teaching training of both these courses.
3. Prof. Dr. P. K. Aggarwal suggested to recruit more faculties to run smoothly both the courses

Meeting concluded with Vote of thanks from the chairman.

Dr. Alka Verma **Dr. Tanmoy Ghatak** **Dr. O P Sanjeev** **Prof. H. Abbas**

Prof. R K Singh

Dr. S. S. Tripathi **Prof. Praveen Agarwal**

Prof. S P Ambesh

Board of Studies

Department of Emergency Medicine

SGPGIMS, Lucknow

26.04.2023

Revised Course Curriculum 2023

for

MD-Emergency Medicine

MD-Emergency Medicine Curriculum

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

Program Outcome for MD Emergency Medicine

A MD Emergency Medicine student, at the end of its three years program, will have at least the following capabilities

1. A detailed knowledge about the anatomy, physiology, pathogenesis, pharmacology relevant with Emergency Medicine.
2. Knowledge in the areas of Medical Emergency, Trauma, related interventions, Resuscitation so as to understand the disease burden, distribution in the state and country.
3. Clinical, experimental, investigative, surgical aspects of Emergencies.
4. To follow, understand and judiciously implement the recent advances in the field, adopting the cost-effective approach for the country.
5. Team leadership and networking skills to train the medical fraternity in the state or country
6. To evaluate, diagnosis, and manage the patients with common/uncommon, simple/complicated conditions presenting as emergency of endocrine system which are prevalent in the local community, country or region
7. To critically analyse the available scientific evidences and judiciously apply to serve the citizen of the country
8. To advance the field of Emergency Medicine by promoting the research in terms of identification of research gap, conducting research, promoting research, and imparting guidance/training to those who wish to pursue research. They will be helpful in improving the research milieu of the country. They will be capable of play a lead role in global research
9. To identify the research priorities at international, national, and region levels
10. To impart theoretical, clinical, and research training/education to the next generation of health care workers in the country
11. Has acquired skills to establish an effective communication with the patients, patients' relatives, health administration, policy makers, common man of the society, medical fraternity, academicians in the field of Emergency Medicine or other streams of medicine, and the community leaders.

Subject specific learning objectives

The postgraduate training should enable the student to:

1. Practice efficiently emergency medicine specialty, backed by scientific knowledge including basic sciences and skills.
2. Diagnose and manage majority of conditions in emergency medicine on the basis of clinical assessment, and appropriately selected and conducted investigations.
3. Exercise empathy and a caring attitude and maintain professional integrity, honesty and high ethical standards.
4. Practice 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.
5. Plan, develop and implement comprehensive pre-hospital and in hospital emergency systems.
6. Plan and deliver comprehensive treatment using the principles of rational drug therapy.

7. Manage emergencies efficiently by providing Basic Life Support (BLS) and Advanced Life Support (ALS), other interventions and invasive procedures in emergency situations.
8. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
9. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and pre-emptive measure/strategies.
10. Demonstrate competence in basic concepts of research methodology and clinical epidemiology; and be able to critically analyze relevant published research literature.
11. Be a motivated 'teacher'-keen to share knowledge and skills with a colleague or a junior, paramedic or any learner.
12. Develop skills as a self-directed learner, recognize continuing education needs; use appropriate learning resources in educational methods and techniques as applicable to the teaching and learning.
13. Be well versed with his medico-legal responsibilities.
14. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
15. Undertake audit, use information technology tools and carry out research - both basic and clinical, with the aim of publishing the work and presenting the work at scientific forums.

The intended outcome of a competency-based program is a consultant specialist who can provide quality health care to patients at a defined level of competency in different settings i.e. Pre- hospital, inpatient, and Intensive care at tertiary care as well as in the community.

No limit can be fixed and no fixed number of topics can be prescribed as course contents. The student is expected to know his subject in depth; however, emphasis should be on the diseases/health problems most prevalent in that area. Knowledge of recent advances and basic sciences as applicable to his/her specialty should get high priority. Competence in skills commensurate with the specialty (actual hands-on training) must be ensured.

The student is expected to gain knowledge in the following FOUR key areas:

A. Theoretical Knowledge:

i. The student will acquire knowledge in all aspects pertaining to the practice of Emergency Medicine. Must be familiar with acute emergencies and trauma in the region, state and country. This shall involve teaching and training to enable the MD Emergency Medicine student to provide specialist care to the citizens of the country. In addition to clinical training, research skills shall also be prioritized so that the MD Emergency Medicine trainee gets the skills to set up collaborative networking at institutional, state, national and global levels to add to the research milieu of the country.

ii. The MD trainee shall acquire up-to-date knowledge, skills and attitudes in clinical Emergency Medicine to understand the disease burden, epidemiology, patho-physiology and key determinants of emergency disease in the region, state and country.

iii. Shall be able to make patient-centric decisions based on the latest scientific advances in Emergency Medicine after rationally examining available data and apply these ethically in a cost-effective manner tailored to the needs of the patients of the region, state and country.

iv. Shall be well versed not only with diagnostic and therapeutic modalities related to pharmacological and non-pharmacological management, interventions, cutting edge

research and their application to diverse aspects of Emergency Medicine but shall also be trained in disease patterns, distributions, epidemiological burden and preventive aspects of Emergency Medicine.

B. Teaching skill

i. The student will be able to teach diverse aspects of Emergency diseases to other resident doctors, junior colleagues, nursing and para-medical staff to enhance the skills of the work force at local level.
ii. Shall develop mentorship and leadership qualities to help teach, train and impart clinical and research skills to future cardiologists in the state and country

C. Research methodology

i. Shall have the skills to recognize knowledge gaps and unmet areas of need relevant to Emergency diseases of the local community.
ii. To seek solutions to such areas of unmet clinical need, should be conversant with principles of research as applied to contemporary emergency disease spectrum prevailing in the local community, state or country.
iii. Shall be trained to formulate, write and conduct research proposal using appropriate methodologies related to Emergency Medicine in accordance with ethical guidelines
iv. Shall have the skills to promote inter-institutional research and help train and guide those who wish to undertake pursue research

D. Group approach

i. During the academic training, student will be part of multi-disciplinary meetings with specialists in Cardiology, Nephrology, Anaesthesiology, Neurology, Radiology, Nuclear Medicine departments and allied clinical disciplines.
ii. This will help them to understand the concept of Heart-team approach that seeks a multi-disciplinary approach in patient care. Inputs and insights gained during such interactions shall help in knowledge and skill building and is likely to improve patient outcomes of the region, state and country.

Subject specific competencies

At the end of the course, the MD student should acquire the following competencies under the three domains:

A. Cognitive domain (Knowledge domain)

By the end of the course, the MD student should be able to:

1. Demonstrate that he/she is well versed with the past and current literature on relevant aspects of basic, preventive, investigative, clinical and interventional Emergency Medicine.
2. Demonstrate a thorough knowledge of epidemiology, natural history, pathological abnormalities, etiopathogenesis, clinical manifestations and principles of management of various medical emergencies of adults and children.
3. Plan appropriate investigations applicable for diagnosis and management of patients in a cost-effective manner and interpret correctly the results of various routine and specialized

investigations necessary for proper management of patients reporting to Emergency Medicine.

4. Recognize and manage emergencies.
5. Acquire knowledge of the functioning of various equipments in routine use in the Emergency Medicine.
6. Be able to plan and conduct a research proposal in the specialty in accordance with guidelines of Ethics Committee and critically evaluate published literature in medical journal.
7. Be able to establish a research laboratory.
8. Acquire relevant knowledge of biostatistics so as to be able to critically read and judge new literature.
9. Recognize the value of ethical principles of patient care and research.
10. Be able to take decisions regarding hospitalization or timely referral to other consultants of various specialties recognizing his/her limitations in these areas.

B. Affective domain (Attitudes including Communication and Professionalism)

The MD student should:

1. Have empathy for patients and their family and should address them as worthy human beings.
2. Discuss options, including advantages and disadvantages of each investigation and treatment. She/He should be able to discuss medical issues with them in layperson's language.
3. Become confident communicators and should be well accomplished professionals.
4. Have developed skills to debate, deliver scientific lecture, participate in panel discussions, and hold group discussions and be ready to deliver the knowledge received by him/her during the course. .
5. Be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
6. Always adopt ethical principles and maintain proper etiquette in dealing with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
7. Develop communication skills to write reports and give professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

C. Psychomotor domain

At the end of the course, the student should have acquired following skills:

1. Arterial Catheterization
2. Point-of-Care Ultrasound
3. Central Venous Catheterization
4. Endotracheal Intubation
5. High Quality CPR
6. Bronchoscopy

Should be able to interpret Radiologic studies for diagnosis and treatment of Medical and Traumatic Emergencies.

1. Plain X-ray/ USG, CT scan/MRI.
2. Radionuclide imaging including PET scan

The student should be able to observe or perform under supervision the following procedures – desirable skills

1. Electromagnetic enteral access System for NJ tube placement
2. Open CPR
3. Lower Section Caesarian Section (LSCS)
4. Bone fracture stabilization
5. Joint dislocation reduction
6. Extracorporeal Membrane Oxygenation (ECMO)

Local, Regional, National and Global perspectives of syllabus.

The Objectives of the 3 year training program is to **train the medical postgraduate as a best skilled "Emergency Physician"** in different aspects of theoretical, clinical and practical spheres of Emergency Medicine and enable them to offer skill based diagnostic, curative and preventive care with the highest professional standards. This training will help to accomplish the local, regional and national health care needs for quality care commensurate with international standards.

Local level	**Our state has a high burden of time sensitive emergency diseases, including Heart Attack (MI), Stroke, Poisoning, Hypertension etc. These trends highlight the need for effective prevention and management strategies to address the growing burden of emergency care in the state. Course curricula are hence designed to be tailor made to these specific disease subsets:** 1. Stroke (A very common medical emergency at local and state level, needs immediate treatment within 3 hours of occurrence of symptoms). 2. Myocardial Infarction (A common Emergency, fatal if not taken care of within stipulated time). 3. Acute Poisoning 4. Trauma 5. Acute Febrile Illness 6. Burns 7. Acute onset Arrhythmias
Regional level	1. Acute Liver Failure/ Acute on Chronic Liver Failure due to Ethanol addiction (EM caters huge number such patients) 2. Acute Pancreatitis (EM caters the large number of acute pancreatitis from large regional area) 3. Acute and Acute on Chronic Renal failure 4. Heart Failure (Rheumatic Heart Disease is a common heart disease in poor socioeconomic group). 5. Gastro-intestinal bleeding (There is high case load in this Emergency Medicine) 6. Acute Pancreatitis 7. Multi organ dysfunction Syndrome (MODS)
National level	1. Covid-19 **(India has observed large number of Covid-19 cases like other countries)** 2. Tropical Illnesses 3. Tuberculosis 4. Trauma and Emergency Networking
Global level	1. MoUs are in process for collaboration with oversea universities to cover the global emergency health issues.

CORE SYLLABUS

A. 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; tumors; vascular disorders, ischaemia and bleeding: other disorders.

These lists cannot be exhaustive.

1. CARDIOVASCULAR EMERGENCIES IN ADULTS AND CHILDREN
   - i. Arrhythmias
   - ii. Congenital heart disorders
   - iii. Contractility disorders, pump failure
     Cardiomyopathies, congestive heart failure, acute pulmonary oedema, Tamponade, valvular emergencies
   - iv. Inflammatory and infectious cardiac disorders
     Endocarditis, myocarditis, pericarditis
   - v. Ischaemic heart disease
     Acute coronary syndromes, stable angina
   - vi. Traumatic injuries
   - vii. Vascular and thromboembolic disorders
     Aortic dissection/aneurysm rupture, deep vein thrombosis, hypertensive Emergencies, occlusive arterial disease, thrombophlebitis, pulmonary Embolism, pulmonary hypertension

2. DERMATOLOGICAL EMERGENCIES IN ADULTS AND CHILDREN
   - i. Inflammatory and infectious disorders
   - ii. Skin manifestations of immunological disorders, systemic disorders, toxic disorders

3. ENDOCRINE AND METABOLIC EMERGENCIES IN ADULTS AND CHILDREN
   - i. Acute presentation of inborn errors of metabolism
   - ii. Adrenal insufficiency and crisis
   - iii. Disorders of glucose metabolism hyperosmolar hyperglycaemic state,
   - iv. hypoglycaemia, ketoacidosis
   - v. Thyroid disease emergencies hyperthyroidism, hypothyroidism,
   - vi. myxoedema coma, thyroid storm

4. FLUID AND ELECTROLYTE DISTURBANCES
   - i. Acid-Base disorders
   - ii. Electrolyte disorders
   - iii. Volume status and fluid balance

5. EAR, NOSE, THROAT, ORAL AND NECK EMERGENCIES IN ADULTS AND CHILDREN
   - i. Bleeding
   - ii. Complications of tumours, airway obstruction
   - iii. Foreign bodies
   - iv. Inflammatory and Infectious disorders angio-oedema, epiglottitis,
   - v. laryngitis, paratonsillar abscess
   - vi. Traumatic problems

6. GASTROINTESTINAL EMERGENCIES IN ADULTS AND CHILDREN

i. Congenital disorders Hirschsprung's disease, Meckel's diverticulum, pyloric stenosis
ii. Inflammatory and infectious disorders appendicitis, cholecystitis, cholangitis, diverticulitis,
iii. Exacerbations and complications of inflammatory bowel diseases, gastritis, gastroenteritis, gastro-oesophageal reflux disease, hepatitis, pancreatitis, peptic ulcer, peritonitis
iv. Metabolic disorders hepatic disorders, hepatic failure
v. Traumatic and mechanical problems foreign bodies, hernia strangulation, intestinal obstruction and occlusion
vi. Tumours
vii. Vascular disorders/Ischaemia and bleeding: ischaemic colitis, upper and lower gastrointestinal bleeding, mesenteric ischaemia
viii. Other problems complications of gastrointestinal devices and surgical procedures

7. GYNAECOLOGICAL AND OBSTETRIC EMERGENCIES

i. Inflammatory and Infectious disorders mastitis, pelvic inflammatory disease, vulvovaginitis
ii. Obstetric emergencies, abruptio placentae, eclampsia, ectopic pregnancy, emergency delivery,
iii. HELLP syndrome during pregnancy, hyperemesis gravidarum, placenta praevia, post-partum haemorrhage
iv. Traumatic and related problems ovarian torsion
v. Tumours
vi. Vascular disorders/ Ischaemia and bleeding: vaginal bleeding

8. HAEMATOLOGY AND ONCOLOGY EMERGENCIES IN ADULTS AND CHILDREN

i. Anaemias
ii. Complications of lymphomas and leukaemias
iii. Congenital disorders haemophilias and Von Willebrand's disease, hereditary haemolytic anaemias, sickle cell disease
iv. Inflammatory and Infectious disorders neutropenic fever, infections in immuno-compromised patients
v. Vascular disorders/ Ischaemia and bleeding: acquired bleeding disorders
vi. (coagulation factor deficiency, disseminated intravascular coagulation), drug induced bleeding (anticoagulants,antiplatelet agents, fibrinolytics), idiopathic thrombocytopenic purpura, thrombotic thrombocytopenic purpura
vii. Transfusion reactions

9. IMMUNOLOGICAL EMERGENCIES IN ADULTS AND CHILDREN

i. Allergies and anaphylactic reactions
ii. Inflammatory and Infectious disorders
iii. Acute complications of vasculitis

10. INFECTIOUS DISEASES AND SEPSIS IN ADULTS AND CHILDREN

i. Common viral and bacterial infections
ii. Food and water-born infectious diseases
iii. HIV infection and AIDS
iv. Common tropical diseases

v. Parasitosis
vi. Rabies
vii. Sepsis and septic shock
viii. Sexually transmitted diseases
ix. Streptococcal toxic shock syndrome
x. Tetanus

11. MUSCULO-SKELETAL EMERGENCIES

i. Congenital disorders dislocated hip, osteogenesis imperfecta
ii. Inflammatory and Infectious disorders arthritis, bursitis, cellulitis,
iii. complications of systemic rheumatic diseases, necrotising fasciitis,
iv. osteomyelitis, polymyalgia rheumatica, soft tissue infections
v. Metabolic disorders complications of osteoporosis and other systemic diseases
vi. Traumatic and degenerative disorders back disorders, common fractures
vii. and dislocations, compartment syndromes, crush syndrome, osteoarthrosis,
viii. rhabdomyolysis, soft tissue trauma
ix. Tumours: pathological fractures

12. NEUROLOGICAL EMERGENCIES IN ADULTS AND CHILDREN

i. Inflammatory and Infectious disorders brain abscess, encephalitis, febrile seizures in children, Guillain-Barrè syndrome, meningitis, peripheral facial palsy (Bell's palsy), temporal arteritis
ii. Traumatic and related problems complications of CNS devices, spinal cord syndromes, peripheral nerve trauma and entrapment, traumatic brain injury
iii. Tumours common presentations and acute complications of neurological and metastatic tumours
iv. Vascular disorders: carotid artery dissection, stroke, subarachnoid haemorrhage, subdural and extradural haematomata, transient ischaemic attack, venous sinus thrombosis
v. Other problems acute complications of chronic neurological conditions (e.g. myasthenic crisis, multiple sclerosis), acute peripheral neuropathies,
vi. seizures and status epilepticus

13. OPHTHALMIC EMERGENCIES IN ADULTS AND CHILDREN

i. Inflammatory and Infectious disorders conjunctivitis, dacrocystitis,
ii. endophthalmitis, iritis, keratitis, orbital and periorbital cellulitis, uveitis
iii. Traumatic and related problems foreign body in the eye, ocular injuries,
iv. Vascular disorders: retinal artery and vein occlusion, vitreous haemorrhage
v. Others like acute glaucoma, retinal detachment

14. PULMONARY EMERGENCIES IN ADULTS AND CHILDREN

i. Congenital cystic fibrosis
ii. Inflammatory and Infectious disorders asthma, bronchitis, bronchiolitis,
iii. pneumonia, empyema, COPD exacerbation, lung abscess, pleurisy and
iv. pleural effusion, pulmonary fibrosis, tuberculosis
v. Traumatic and related problems foreign body inhalation, haemothorax, Tension pneumothorax, pneumomediastinum
vi. Tumours common complications and acute complications of pulmonary
vii. and metastatic tumours,
viii. Vascular disorders pulmonary embolism
ix. Other disorders: acute lung injury, atelectasis, ARDS, spontaneous pneumothorax

15. PSYCHIATRIC AND BEHAVIOUR DISORDERS

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

16. RENAL AND UROLOGICAL EMERGENCIES IN ADULTS AND CHILDREN

i. Inflammatory and Infectious disorders epididymo-orchitis,
ii. glomerulonephritis, pyelonephritis, prostatitis, sexually transmitted diseases, urinary tract infections
iii. Metabolic disorders acute renal failure, nephrotic syndrome, nephrolithiasis, uraemia
iv. Traumatic and related problemsurinary retention, testicular torsion
v. Tumours
vi. Vascular disorders: Ischaemia and Bleeding
vii. Other disorders comorbidities in dialysis and renal transplanted patients,
viii. complications of urological procedures and devices, haemolytic uraemic syndrome

1. TRAUMA IN ADULTS AND CHILDREN

i. Origin of trauma: burns, blunt trauma, penetrating trauma
ii. Anatomical location of trauma: head and neck, maxillo-facial, thorax,
iii. abdomen, pelvis, spine, extremities
iv. Polytrauma patient
v. Trauma in specific populations: children, elderly, pregnant women.

A. COMMON PRESENTING SYMPTOMS

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.

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, viscus perforation
   - Cardiac/vascular causes
     - Acute myocardial infarction, aortic dissection, aortic aneurysm rupture
   - Dermatological causes
     - Herpes zoster
   - 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

2. **Altered Behaviour and Agitation**
   - **Psychiatric causes**
     Acute psychosis, depression
   - **Cardiac/Vascular causes**
     Hypertension, vasculitis
   - **Endocrine and metabolic causes**
     Hypoglycaemia, hyperglycaemia, electrolyte imbalance, hyperthermia, hypoxaemia
   - **Neurological causes**
     Cerebral space-occupying lesions, dementia, hydrocephalus, intracranial hypertension,
     CNS infections
   - **Toxicology**
     Alcohol and drug abuse, poisoning

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

4. **Back Pain**
   - **Musculo-Skeletal causes**
     Fractures, intervertebral disc strain and degeneration, strain of muscles, ligaments and tendons, spinal stenosis, arthritides, 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**

5. **Bleeding (Non Traumatic)**
   - **Ear, Nose, Throat causes**
     Ear bleeding (otitis, trauma, tumours), epistaxis
   - **Gastrontestinal 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 (bronchiectasia, pneumonia, tumours, tuberculosis)

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**

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

8. **Crying Baby**
   I – Infections: herpes stomatitis, meningitis, osteomyelitis, urinary tract infection
   T – Testicular torsion, trauma, teeth problems,
   C – Cardiac: arrhythmias, congestive heart failure
   R -Reaction to milk, reaction to medications, reflux
   I - Immunisation and allergic reactions, insect bites
   E – Eye: corneal abrasions, glaucoma, ocular foreign bodies
   S – Some gastrointestinal causes: hernia, intussusception, volvulus

9. **Diarrhea**
   - **Infectious causes**
     AIDS, bacterial enteritis, viral, parasites, food-borne, toxins
   - **Toxicological causes**
     Drugs related, poisoning (including heavy metals, mushrooms, organophosphates, rat poison, and 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**
     Diarrhea "factitia"

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

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**

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

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
- **Gynaecological causes**

HELLP syndrome
- **Toxicology**
  Drug induced haemolytic anaemias, snake venom

14. Pain in Arms
- **Cardiac/Vascular causes**
  Aortic dissection, deep venous thromboembolism, ischaemic heart disease
- **Musculo-skeletal causes**
  Periarthritis, cervical spine arthrosis
- **Trauma**

15. 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**

16. Palpitations
- **Cardiac/Vascular causes**
  Brady-arrythmias (including sinus bradycardia and AV blocks), extrasystoles, tachyarrythmias (including atrial fibrillation, sinus tachycardia, supraventricular tachycardia, ventricular tachycardia)
- **Endocrine and metabolic causes**
  Thyrotoxicosis
- **Toxicology**
  Drugs

17. 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
- **Infectious causes**
  Febrile seizures in children
- **Psychiatric causes**
  Narcolepsy, pseudo-seizures
- **Respiratory causes**
  Respiratory arrest
- **Toxicology**
  Drugs/toxins

18. Shock in Adults and Children

- **Anaphylactic**
- **Cardiogenic**
- **Hypovolaemic**
- **Obstructive**
- **Septic**
- **Neurogenic**
- **Cardiac/Vascular causes**
  Cardiogenic shock, arrhythmias
- **Endocrine and metabolic causes**
  Addison's crisis
- **Fluid and Electrolyte disorders**
  Hypovolaemic shock
- **Gastrontestinal causes**
  Vomiting, diarrhoea
- **Gynaecological causes**
  Toxic shock
- **Immunological causes**
  Anaphylactic shock
- **Infectious causes**
  Septic shock
- **Neurological causes**
  Neurogenic shock
- **Trauma**
  Hypovolaemic shock, neurogenic shock.

19. Skin Manifestations in Adults and Children

- **Dermatological causes**
  Eczema, psoriasis, skin tumours
- **Immunological causes**
  Vasculitides, urticaria, Stevens-Johnson syndrome, Lyell syndrome
- **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

20. 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

21. 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

22. 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 epilepsy
- **Psychiatric causes**
  Anxiety
- **Respiratory causes**
  Hypoxia
- **Toxicology**
  Alcohol abuse, drugs and substances

23. 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**

C. SPECIFIC ASPECTS OF EMERGENCY MEDICINE

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

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. 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

4. ENVIRONMENTAL ACCIDENTS IN ADULT AND CHILDREN

- Electricity (electrical and lightening 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)

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

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

7. PATIENT MANAGEMENT ISSUES IN EMERGENCY MEDICINE

- Emergency Department organization (administration, structure, staffing, resources)
- Management of specific populations:
  - Children in special circumstances including child protection
  - Elderly patients
  - Homeless patients
  - Mentally incompetent adults
  - Psychiatric patients

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

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
- Local poisonings such as OPC, aluminium phosphide, yellow phosphorous, heavy metal poisoning, plant poisonings, paraquat poisoning, cyber methrine poisoning, corrosives petroleum products, methanol and ethanol, dyes and nitrobenzene.
- Organization and information (e.g. poison centres, databases)

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)

11. PSYCHO-SOCIAL PROBLEMS

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

D. CORE CLINICAL PROCEDURES AND SKILLS

1. CPR SKILLS

- Cardio-pulmonary resuscitation procedures in a timely and effective manner according to the current ILCOR guidelines for adults and children
- Advanced CPR skills (e.g. therapeutic hypothermia, open chest CPR)

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. 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

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

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 catheterisation, intraosseous access)

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)
- Focused Assessment of Sonography in Trauma (FAST).

- Emergency Ultrasound and Echocardiology
- Gastrointestinal Procedures: Shangstaken tube insertion, endoscopic banding, scelerotherapy in UGI bleed

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

8. GASTROINTESTINAL PROCEDURES
- Insertion of nasogastric tube
- Gastric lavage
- Peritoneal lavage
- Abdominal hernia reduction
- Abdominal paracentesis
- Measurement of abdominal pressure
- Proctoscopy

9. GENITOURINARY PROCEDURES
- Insertion of indwelling urethral catheter
- Suprapubic cystostomy
- Testicular torsion reduction
- Evaluation of patency of urethral catheter

10. HYGIENE SKILLS AND PROCEDURES
- Decontamination of patient and the environment
- Patient isolation and staff protection

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

12. NEUROLOGICAL SKILLS AND PROCEDURES
- Evaluation of consciousness including the Glascow Coma Scale
- Fundoscopy
- Lumbar puncture
- Interpretation of neuro-imaging

13. OBSTETRIC AND GYNAECOLOGICAL SKILLS AND PROCEDURES
- Emergency delivery
- Vaginal examination using speculum
- Assessment of the sexual assault victim

14. OPHTHALMIC SKILLS AND PROCEDURES
- Removal of foreign body from the eye

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

16. TRANSPORTATION OF THE CRITICALLY ILL PATIENT
- Telecommunication and telemedicine procedures
- Preparation of the EMS vehicle
- Specific aspects of monitoring and treatment during transportation

17. WOUND MANAGEMENT
- Abscess incision and drainage
- Aseptic techniques
- Treatment of lacerations and soft tissue injuries
- Wound irrigation and wound closure

Interdisciplinary Teaching and Training

Anesthesia

Topics to be covered

1) Airway
2) Mechanical ventilation & non-invasive ventilatory support
3) Resuscitation
   - adults
   -neonates
   -children
   -issues in pregnancy
4) Monitoring the emergency patient
5) Acute pain management in adults
6) Pain management in infants & children
7) Adults with chronic pain
8) Procedural sedation & analgesia
9) Local & regional anaesthesia

Psycomotor sills:

1) Oral airway, Nasal airway
2) LMA placement
3) Endotracheal intubation/Rapid Sequence intubation
4) Bag- mask ventilation
5) Regional anesthesia
6) Arterial line
7) Sedation

Cardiology

Topics to be covered

1) Chest pain: Cardiac or not
2) Acute Coronary Syndromes: Acute Myocardial Infarction and Unstable Angina
3) Cardiogenic shock
4) Low probability Acute coronary syndrome
5) Syncope
6) Congestive Heart failure and Acute Pulmonary Oedema
7) Valvular Emergencies
8) The cardiomyopathies, Myocarditis, and Pericardial diseases
9) Thromboembolism
10) Systemic and pulmonary hypertension
11) Aortic Dissection and Related Aortic Syndromes
12) Aneurysm of the Aorta and Major Arteries

Psychomote skills
1) ACLS protocols
2) Transthoracic pacing
3) Transvenous pacing
4) CVS placement
5) Defibrillation
6) Cardioversion/SVT conversion
7) Bedside Echocardiography

Critical care
Topics to be covered
1) Dosages, indication and contraindication of pharmacologic interventions
   -shock
   -cardiac failure
   -dysrhythmias
   -sepsis
   -trauma
   -toxins
   -respiratory failure
   -hepatic failure
   -renal failure
   -neurologic illnesses
2) Ventilator
3) Diagnose and treat
   -shock
   - sepsis
   -fluid and electrolyte abnormalities
   -cardiac failure
   -cardiac dysrhythmias
   -renal failure
   -hepatic failure
   -toxicologic
   emergencies

Psychomotr skills
1) ACLS protocols

2) Endotracheal intubation
3) Ventilator management
4) CVS placement
5) Arterial line
6) Cardiac pacing
7) Thoracentesis
8) Thoracostomy tube placement

Ophthalmology topics to be covered

1) Normal ocular anatomy
2) Ocular exam
3) Approach to patient with
   -red eye
   -painful eye
   -foreign body in the eye
   -abrasion / laceration
4) Ocular trauma – blunt % penetrating
5) Chemical ocular injury
6) Acute or painful vision reduction loss
7) Painless vision reduction or loss
8) Ocular manifestation of systemic disease
9) Topical and systemic ophthalmologic medications

Psychomotor skills

1) Fundoscopy
2) Slit lamp exam
3) Eye irrigation
4) Intraocular pressure measurement
5) Lateral canthotomy

TEACHING AND LEARNING METHODS

General principles

The basic aim of postgraduate medical training and education is to produce specialists who understand the needs of community health of the state and country and enhance the quality of health care as well as provide an impetus to research, education, and training of the medical community. The postgraduate doctor after completion of the skill based competency training programme should be able to successfully address the medical requirements of the community. Learning during the programme is not only goal-oriented and diadactic but also essentially self-directed and emanates from clinical and academic work. The designated academic sessions are meant to supplement the student's core efforts.

Teaching Methodology

The post graduate student shall be given the responsibility of managing and caring for patients in a gradual and phased manner under supervision, after the student demonstrates skill and efficiency at each step. Teaching sessions shall be an overall judicious amalgamation of case presentations, journal clubs, seminars, group discussion related to non-invasive and invasive lab data, cardiac cath meetings, bed-side teaching, focused brief topic presentations as allotted from time to time, case-based learning, integrated and interdepartmental meetings including any other collaborative activity with allied departments, as deemed necessary. Suggested modalities of teaching-learning methods are summarized below but shall not be limited to these. The frequency of the mentioned teaching and learning methods may vary based on perceived requirements, candidates' competencies, work load and overall working schedule. Self-directed motivational learning forms a key part of the training for which although the hours are not specifically ear-marked, but it shall be integrated into day to day learning.

Formal teaching sessions

These include regular bedside case presentations and demonstrations, didactic lectures, journal clubs, seminars, discussions related to non-invasive and invasive lab data, cardiac cath meetings, bed-side teaching, case-based learning, interdepartmental meetings and collaborative meetings with allied departments.

This will comprise of the following:

TEACHING MODEL (With frequency)

Sl No.	Module Name	Minimum Frequency
1.	Specialty Lectures	Once in a week
2.	Inter-speciality Lectures	Once in a week
3.	Inter-institutional Lectures	Once in a month
4.	Seminars	Twice a week
5.	Journal Club	Once in a week
6.	Periodical Exams	Formal Six-monthly exams to meet NMC criteria.

7.	Honing special skills in simulation lab	Once a week
8.	BCLS/ACLS/ATLS/NALS/PALS	Every year
9.	Thesis	Once in three year course

The Post graduate examination shall be in three parts:

1. **Thesis**

Every post graduate student shall carry out work on an assigned research project under the guidance of a recognised Post Graduate Teacher, the result of which shall be written up and submitted in the form of a Thesis. Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the post graduate student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature.

2. **Theory:**

There will be four theory papers, as below: **Course I**	:	Basic Medical Sciences (at the end of first year of training) (Applied Basic Sciences, General Emergency Medicine and Disaster Preparedness)
Course II	:	Infectious Disease, HIV and AIDS, CVS, GIT, Critical Care, Paediatrics, Environmental Emergencies and Toxicology
Course III	:	Respiratory Medicine, CNS, Surgical Emergencies, Obstetric and Gynaecological Emergencies, Surgical Specialities, Procedures
Course IV	:	Nephrology, Endocrinology, Haematology, Oncology, Psychiatry, Dermatology, Occupational disease and Recent Advances.

Clinical / Practical and Oral/viva voce Examination:

The final clinical examination should include:

- cases pertaining to major systems
- stations for clinical, procedural and communication skills
- Log Book Records and day-to-day observation during the training

Oral/viva voce examination shall be comprehensive enough to test the post graduate student's overall knowledge of the subject.

Recommended Reading

- **Text Books (latest edition)**

1. Emergency Medicine – Concept and Clinical Practice –VII Edition, Rosen Barkin
2. Principle and Practice of Emergency Medicine – George Schwartz - IV Edition
3. Emergency Medicine – Hamilton
4. Essential of Immediate Medical Care, II Edition – Dr. C. John Eaton
5. Clinical Management of Drug Overdose and Poisoning, - Haddad, Shannon, Winchester
6. Emergency Department Management Principles and Application - Richard F Salluzzo
7. The Five Minute Emergency Medicine Consult - Rosen Barkin – III Edison
8. Disaster Medicine - David E Hugan
9. Text Book of Paediatric Emergency Medicine – Fleisher – XVII Edition
10. Medical Emergencies In Children - Meherban Singh
11. Drugs Therapy in Emergency Medicine - Joseph P. Ornato/Edgar R. Gonalez
12. Hamilton Bailey's 1995 - Emergency Surgery - BW Ellis, 12th edition.
13. Davidson's Principles and Practices of Medicine
14. Clinical Medicine - Kumar & Clark
15. Harrisons Principles of Internal Medicine
16. Emergency Medicine – A comprehensive Study Guide – VII Edition. – Judith Tintinalli
17. Text Book of Critical Care – V Edition – Shoe maker
18. Gold frank's Toxicologic Emergencies – V Edition
19. Pediatric Emergency Medicine: A Comprehensive Study Guide by Gary R. Strange, William R. Ahrens, Steven Lelyveld, William Ahrens- McGraw-Hill Professional; 1st edition (August 1, 1995)
20. Emergencies in Obstetrics and Gynaecology (Oxford Handbooks in Emergency Medicine, Vol 8) by Lindsey Stevens, Anthony Kenney- Oxford University Press; (July 1, 1994)
21. Principles of Critical Care by Jesse B. Hall, Gregory A. Schmidt, Lawrence D. H. Wood- McGraw-Hill Professional Publishing; 2nd edition (January 1, 1998)
22. Critical Care by Joseph M. Civetta, Robert W. Taylor, Robert R. Kirby- Lippincott Williams &Wilkins; 3rd edition (January 15, 1997)
23. Emergency Medicine: Topics and Problems for Students by Jelinek- Blackwell Science Ltd; (September 28, 1999)
24. Accidents and Emergencies in Children (Oxford Handbooks in Emergency Medicine)

- **List of Journals**

1. Emergency Medical Journal BMJ
2. Journal of Trauma and Shock
3. Canadian journal of emergency medicine
4. Annals of Emergency Medicine
5. Paediatric Emergency Medicine journals
6. Journal of Accident and Emergency Medicine
7. The American journal of Emergency Medicine

E-learning Contents:

1. **https://www.clinicalkey.com**
2. **https://www.wolterskluwer.com/en-in/solutions/uptodate**
3. **https://www.medscape.com**
4. **https://swayam.gov.in**

Note: NMC is yet to come up with course curriculum of MD in Emergency Medicine. So any new additions brought will be incorporated.

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