POST DOCTORAL FELLOWSHIP
EMERGENCY MEDICINE

Duration of Fellowship: One Year

Qualification: The candidate should have completed MD/DNB (General Medicine), MS/DNB General Surgery, MS/DNB Orthopaedics, MD/DNB Anesthesiology, MD Pulmonary Medicine and MD /DNB Emergency Medicine

Objectives:

The main aim of this training program is to create a specialist Emergency Medicine physician who at the completion of the 2 year training period is

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

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

TRAINING SCHEDULE

Adult Emergency Department: 8 months

Pediatric Emergency Department: 2 months

Intensive Care Unit : 1 month

Elective posting: 1 Month - Orthopedics/General Surgery/ Medicine/Ophthalmology/Pediatric ICU/Research/ENT/Anaesthesia/Radiology/ Pulmonary Medicine any of the mentioned speciality

PRACTICAL AND CLINICAL SKILLS

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

	Diagnostic procedures	
1	Minor diagnostic procedures	Abdominal paracentesis , arterial puncture, arthrocentesis, thoracentesis ,venipuncture, Vaginal examination using speculum, Assessment of the sexual assault victim
2	Diagnostic procedures relevant to the critically ill patient	Carotid sinus massage, Lumbar puncture and measurement of cerebrospinal fluid (CSF) pressure
3	Emergency ultrasonography	Focused Assessment of Sonography in Trauma (FAST), Emergency Ultrasound (to identify intrauterine gestation, intra-peritoneal free fluid , pleural fluid), Echocardiology (determination of the absence of cardiac motion, determine regional wall motion abnormalities, identify RA, RV dilatation, pericardial fluid) and facilitation of vascular access
	Therapeutic procedures	
1	Basic and advanced airway management	End-tidal carbon dioxide (CO2) detection and

		monitoring, Laryngoscopy, Laryngoscopy and removal of foreign body, Mask ventilation, Orotracheal intubation, Percutaneous transtracheal ventilation, Rapid sequence intubation , Selection of appropriate mode and parameters for mechanical ventilation, Sellick's manoeuvre, Surgical/needle cricothyrotomy, Difficult airway management, Non-invasive ventilation, Invasive ventilation
2	Therapeutic procedures relevant to the critically ill patient	Interpretation of an ECG, Defibrillation , Needle thoracentesis, Needle thoracostomy, Thoracostomy tube insertion and management, Pericardiocentesis, Synchronized cardioversion, Transcutaneous pacing
3	Peripheral and central vascular access and line insertion/monitoring	Central venous catheter insertion (femoral, brachial, sub clavian, internal jugular), Central venous pressure (CVP) measurement, Cannulation of the external jugular vein and peripheral veins, Intraosseous needle insertion, Administration of fluids including blood and substitutes
4	Minor therapeutic procedures relevant to the daily practice of emergency medicine	Anterior intranasal packing, insertion of indwelling urethral catheter, Bladder irrigation, Gastric lavage, Bursae aspiration/injection, Debridement of burn blisters, External auditory canal wick insertion, Ocular irrigation, Posterior intranasal packing, Subungual hematoma drainage, Incision and drainage of abscess, Needle aspiration of abscess, Testicular torsion reduction
5	Local/regional anesthesia and procedural sedation	Assessment of the level of pain and sedation, Peripheral nerve blocks, local anaesthesia administration, Pediatric and adult procedural sedation with monitoring
6	Wound management	Application of bandages/dressings, Basic wound debridement, Closure with tissue adhesive glue, Management of fingertip amputation, Nail bed laceration repair, Suturing, single and multiple layer closure, Wound hematoma evacuation
7	Extraction of	Corneal or conjunctival foreign body, ear wax, Nasal foreign body, Otic foreign body, Rectal foreign body, Skin/subcutaneous tissues foreign body, Vaginal foreign body
8	Management of fractures and dislocations	❖ Application and removal of cervical

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

ATTITUDES INCLUDING COMMUNICATION SKILLS

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

Key competencies: The post doctoral fellowship resident should be able to

- ❖ Develop rapport, trust, and positive, ethical therapeutic relationships with patients and their relatives
- ❖ Accurately elicit and synthesize relevant information from the patients and act professionally and be sensitive to the patients' perspective while screening for sensitive information.

- ❖ Convey sensitively the relevant information and health care plan that includes a clear explanation of the diagnosis, investigations, treatment and expected outcome to the patient and their relatives
- ❖ Explain clearly the details of therapeutic and diagnostic procedures performed on patents and obtain oral and written consent when required.
- ❖ Act professionally and respectful of his/her colleagues during times of stress of a medical encounter.

Medico-legal aspects:

At the end of the training period, the post doctoral fellowship resident should be able to

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

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

The theory syllabus is divided as follows:

A	Core resuscitation knowledge and techniques	• Basic life support • Sudden cardiac death • Cardiopulmonary resuscitation • Airway and breathing • Circulation

		• Fluid and electrolyte disturbances
C	System based core knowledge	• Cardio-vascular emergencies • Pulmonary emergencies • Neurological emergencies • Gastro-intestinal and hepatic emergencies • Dermatological emergencies • Renal and urological emergencies • Endocrine and metabolic emergencies • ENT and dental emergencies • Ophthalmological emergencies • Obstetric and gynaecological emergencies • Hematology and oncological emergencies • Infectious diseases • Trauma • Wound management • Pediatrics
D	Specific aspects of emergency medicine	• Toxicology and envenomation • Disaster medicine • Abuse and assault • Analgesia and procedural sedation • Medico-legal issues • Pre-hospital care

CORE RESUSCITATION KNOWLEDGE AND TECHNIQUES

1. Basic life support
2. Sudden cardiac death
3. Cardiopulmonary resuscitation (CPR)
   - CPR in adults
   - CPR in children
   - Neonatal resuscitation
   - Resuscitation issues in pregnancy
   - Disturbances of cardiac rhythm and conduction
4. Airway and breathing
   - Difficult airway in adults
   - Pediatric airway management
   - Non-invasive airway management
   - Tracheal intubation and mechanical ventilation
   - Surgical airway management
5. **Circulation**

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

6. Fluid and electrolyte disturbances
   - Acid-Base disorders
   - Electrolyte disorders
   - Volume status and fluid balance

SYSTEM BASED CORE KNOWLEDGE

7. Cardio-vascular emergencies
   - Chest pain: etiology
   - Acute coronary syndromes:
     - Acute myocardial infarction (STEMI)
     - NSTEMI
     - Unstable angina
   - Arrhythmias
   - Congestive heart failure and acute pulmonary edema
   - Cardiomyopathies, myocarditis and pericardial diseases
   - Pulmonary embolism
   - Hypertensive emergencies
   - Aortic dissection and aneurysm
   - Hypertensive emergencies
8. Pulmonary emergencies
   - Pulmonary infections: Pneumonia
   - Acute exacerbation of asthma and COPD
   - Pneumothorax: Spontaneous and iatrogenic
   - Hemoptysis

9. Neurological emergencies
   - Headache and facial pain
   - Vascular disorders
     - Cerebrovascular accidents and transient ischemic attacks
     - Cerebral venous sinus thrombosis
     - Subarachnoid hemorrhage
     - Subdural and extradural hematoma
   - CNS infections: Meningitis and encephalitis, brain abscess
   - Altered mental status and coma
   - Vertigo and dizziness
   - Ataxia and gait disturbances

- Seizures and status epilepticus

10. Gastro-intestinal and hepatic emergencies
    - Acute abdominal pain
    - Gastro-intestinal bleeding
    - Peptic ulcer disease and gastritis
    - Acute appendicitis
    - Acute cholecystitis and biliary colic
    - Intestinal obstruction
        - Small bowel obstruction, large bowel obstruction, pseudo-obstruction
    - Ano-rectal disorders
        - Hemorrhoids, fissure-in-ano, ano rectal abscess, fistula in ano, proctitis, rectal prolapsed, pruritis ani, rectal foreign bodies, pilonidal sinus, proctalgia fugax
    - Chronic liver disease and acute liver failure
    - Acute and chronic pancreatitis
11. Dermatological emergencies
    - Serious generalized skin disorders:
        - Erythema multiformae
        - Toxic epidermal necrolysis
12. Renal and urological emergencies
    - Acute renal failure
    - Emergencies in renal failure and patients on dialysis
    - Urinary tract infections: Cystitis and acute pyelonephritis
    - Nephrolithiasis
    - Male genital problems
        - Scrotum: scrotal abscess, Fournier gangrene
        - Penis: phimosis, paraphimosis, Testes and epididymitis: Testicular torsion, epididymo-orchitis
        - Urinary retention
13. Endocrine and metabolic emergencies
    - Adrenal insufficiency and crisis
    - Disorders of glucose metabolism
        - Diabetic ketoacidosis
        - Hyperosmolar hyperglycaemic state
        - Hypoglycaemia
    - Thyroid emergencies:
        - Hyperthyroidism and thyroid storm
        - Hypothyroidism and myxoedema coma
    - Phaeochromocytoma
14. ENT and dental emergencies
    - Emergencies of the external, middle and inner ear

- Otalgia
- Tinnitus
- Infections: Otitis externa, otitis media, bullous myringitis
- Temporomandibular joint dislocation
- Bells palsy

➢ Nasal emergencies
- Epistaxis

➢ Infections and disorders of the neck and upper airway
- Pharyngitis/ tonsillitis
- Peri-tonsilar abscess
- Epiglotitis
- Retropharyngeal abscess
- Dental abscess, Ludwigs angina, deep neck abscesses

➢ Foreign bodies
➢ Stridor

15. Ophthalmic emergencies
➢ Inflammatory and Infectious disorders: conjunctivitis, herpes zoster ophthalmicus
➢ Occular trauma: foreign body in the eye, ocular injuries
➢ Acute visual reduction / loss
- Painful visual reduction/ loss: Acute angle closure glaucoma, optic neuritis
- Painless visual reduction/ loss : Central retinal artery and vein occlusions, giant cell arteritis, vitreous hemorrhage, retinal detachment

16. Obstetric and gynaecological emergencies
➢ Vaginal bleeding in the non-pregnant patient
➢ Abdominal pain and pelvic pain in the non-pregnant patient
- Functional ovarian cysts, adnexal torsion, endometriosis, adenomyosis, leiomyosis

➢ Pelvic inflammatory disease
➢ Ectopic pregnancy

17. Hematology and oncological emergencies
➢ Anemia
➢ Acquired bleeding disorders
- Acquired platelet defects:
  - Thrombocytopenia: Immune thrombocytopenic purpura, other causes of thrombocytopenia
  - Qualitative platelet abnormalities

➢ Hemophilias and von Willebrand disease
➢ Heriditary hemolytic anemias

- Sickle cell anemia
- Thalassemias
- Glucose 6 phosphate dehydrogenase deficiency
- Heriditary spherocytosis

- Transfusion therapy
  - Blood products
  - Complications of blood transfusion
- Complications of lymphomas and leukemias
- Febrile neutropenia
- Anticoagulants, antiplatelet agents and fibrinolytics

18. Infectious diseases

- Common viral infections: Influenza virus, Herpes viruses, Ebstein Barr virus, cytomegalo virus, Measles, Mumps, Rubella, Dengue
- Common bacterial infections: Streptococcal and staphylococcal infections, Diphtheria, Botulism, Gas gangrene, Tetanus, Salmonellosis
- Leptospirosis
- Scrub typhus
- HIV and opportunistic infections
- Rabies
- Protozoal infections: Malaria, Toxoplasmosis
- Helminthiasis: Nematodes, trematodes and cystodes
- Food borne and water borne diseases
- Skin and soft tissue infections: Cellulitis, necrotizing fasciitis

19. Trauma

- Early management of trauma
  - Primary survey: Airway with cervical spine stabilization, Breathing, Circulation with hemorrhage control, Disability, Exposure
  - Secondary survey
- Head injuries
- Maxillo-facial trauma
- Neck trauma: Blunt and penetrating injuries
- Thoracic trauma: Blunt and penetrating injuries
- Abdominal trauma: Blunt and penetrating injuries
- Genito-urinary trauma
- Extremity injuries
- Spinal cord injuries
- Pediatric trauma
- Injury prevention

20. Wound management:

- Evaluation of wounds

- Wounds preparation
- Methods for wound closure: Sutures, staples, adhesive tapes, cyanoacrylate tissue adhesives
- Face and scalp lacerations

21. Pediatrics
    - The normal child
    - Bacteremia, sepsis and meningitis in children
    - Sudden infant death syndrome (SIDS)
    - Otitis and pharyngitis in children
    - Skin and soft tissue infections
    - Viral and bacterial pneumonia in children
    - Pediatric asthma and bronchiolitis
    - Seizures and status epilepticus
    - Vomiting and diarrhea
    - Pediatric abdominal emergencies
    - Diabetic ketoacidosis
    - Altered mental status and headache in children
    - Syncope and sudden death
    - Fluid and electrolyte therapy
    - Pediatric exanthems
    - Pediatric urinary tract infections

SPECIFIC ASPECTS OF EMERGENCY MEDICINE

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

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

3. Abuse and assault
   - Child abuse and neglect
   - Female and male sexual assault
   - Abuse in the elderly and impaired
   - Violence in the emergency department
4. Analgesia and procedural sedation
   - Acute pain management
   - Local and regional anaesthesia
   - Procedural sedation and analgesia
5. Environmental accidents
   - Electricity (electrical and lightning injuries)
   - High-altitude medical problems
   - Temperature (heat and cold related emergencies)
   - Travel medicine
   - Water (near-drowning, dysbarism and complications of diving, marine fauna)
   - Inhalation injuries (carbon monoxide poisoning)
6. Medico-legal issues
   - Medico-legal cases and reporting
   - Grievous injuries
7. Pre-hospital care
   - Emergency Medical Services organization (administration, structure, staffing, resources)
   - Medical transport (including neonates and children, air transport)
   - Paramedic training and function
   - Safety at the scene
   - Collaboration with other emergency services (e.g. police, fire department)

The following teaching learning methods are recommended.

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

The post-doctoral fellowship residents will be evaluated throughout their postings on

- ❖ Their ability to care for the critically ill patients – clinical knowledge, procedural skills ,decision making, team spirit, resuscitation skills.
- ❖ Their interaction with parents and relatives
- ❖ Their interaction with residents, other staff members
- ❖ Teaching skills
- ❖ Ethical aspects in critical care

Formative assessment will consist of quarterly assessment and feedback from supervising faculty. Trainees will be assessed for competence in patient care, medical knowledge, interpersonal and communication skills, and professionalism.

- ➢ Log book of Clinical Work, Presentations, etc.

Log book:

Every candidate will maintain a log book of the work done by them, including:

1. Procedures
2. Teaching
3. CME s and conferences
4. Presentations (Journal clubs and seminars)
5. Publications/ manuscripts written during the course

At the end of the fellowship course there will be a viva voice and practicals .The fellows should pass both separately to get the fellowship certificate.

EXAMINATION

There is no Theory Examination. Only Clinical Examination and Viva will be conducted. A candidate who undergoes the Post Doctoral Fellowship programme shall satisfy the required eligibility criteria to appear for the examination.

Clinical/Practical examination

The viva shall have OSCE/OSPE stations. Example.,

- Emergency radiology
- ECG interpretation
- Instruments
- ABG interpretation
- ACLS guidelines
- ATLS guidelines

REFERENCE BOOKS:-

- Emergency Medicine: a comprehensive study guide. Tintinalli, J et al, New York: McGraw-Hill
- Emergency Medicine (latest edition) Anthony FT Brown, Michael D Cadgan, London, Hodder Arnold
- Medicine Textbook of Adult Emergency (Latest Edition) Peter Cameron, George Jelinek, Anne- Maree Kelly, Lindsay Murray, Anthony FT Brown, Jhon Heyworth eds. Edinburgh, Churchill Livingstone
- Oxford Hand Book of Accident and Emergency Medicine (Latest edition) JP Wyatt, RN Illingworth, CE Robertson, MJ Clancy, PT Munro eds. Oxford, oxford University Press
- Text book of pediatric Emergency Medicine (Latest edition) Peter Cameron, George Jelinek, Ian Everitt, Gary Browne, Jeremy Raftos. London, Churchill Livingstone.
- Textbook of Adult Emergency Medicine, Edinburgh: Churchill Livingstone.
- Rosen's textbook of emergency Medicine
- Accident & Emergency Radiology, A survival guide- Nigel Raby
- Harwood-Nuss' Clinical Practice of Emergency Medicine, Wolfson A (Editor), New York: Lippincott, Williams & Wilkins.
- Textbook of Emergency Medicine, David, S (Editor), New York: Lippincott, Williams & Wilkins.

- Goldfrank's Toxicologic Emergencies, Nelson, L et al., New York: McGraw-Hill.
- Modern Medical Toxicology, Pillay V.V.
- Textbook of Critical Care, Fink, M (Editor): Philadelphia, Elsevier Saunders.
- ECG For Emergency Physician, Mattu and Brady (Editors), London: BMJ Publishing.
- An Introduction to Clinical Emergency Medicine, Mahadevan, S.V. (Editor), New York: Cambridge University Press.
- American Heart Association Basic Life Support, Advanced Cardiovascular Life Support and Pediatric Life Support manuals
- Advanced Trauma Life Support manual published by the American College of Surgeons
- The journal of Emergency Medicine- Elsevier (the official journal of the American Academy of Emergency Medicine)
- American Journal of Emergency Medicine
- European Journal of Emergency Medicine (the official journal of the European Society for Emergency Medicine)
- Annals of Emergency Medicine (the official journal of the American College of Emergency Medicine)
- Emergency Medicine Australasia
- Academy Emergency Medicine
- Emergency Medicine Journal
- Journal of emergencies, trauma and shock
- National Journal of Emergency Medicine published by SEMI
- American Heart Association journal, Circulation