



RAWALPINDI MEDICAL UNIVERSITY

**UNIVERSITY RESIDENCY PROGRAM- 2020  
OF EMERGENCY MEDICINE**

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**RAWALPINDI MEDICAL UNIVERSITY**

**CURRICULUM/STATUTES & REGULATIONS**  
**FOR 5 YEARS DEGREE PROGRAMME IN EMERGENCY**  
**MEDIUCINE**

## **STATUTES**

### ***Nomenclature Of The Proposed Course***

The name of degree programme shall be MD Emergency Medicine. This name is well recognized and established for the last decades worldwide

### ***Course Title***

MD Emergency Medicine

### ***Training Centers***

Departments of Emergency Medicine in an affiliated institute of Rawalpindi Medical University, Rawalpindi, Pakistan

### ***Duration of Course***

The duration of MD Emergency Medicine course shall be five (5) years with structured training in a recognized department under the guidance of an approved supervisor

After admission in MD Emergency Medicine Programme the resident will spend first 6 Months in the relevant Department of Emergency Medicine as **Induction period** during which resident will get orientation about the chosen discipline and will also undertake the **mandatory workshops** (Appendix E). The research project will be designed and the **synopsis** be prepared during this period.

On completion of Induction period the resident will start formal training in the Basic Principles of Internal Medicine for 18 Months. During this period the resident must get the research synopsis approved by AS&RB. At the end of 2<sup>nd</sup> years, the candidate will take up Intermediate Examination.

During the 3<sup>rd</sup>, 4<sup>th</sup>, & 5<sup>th</sup> years, of the Program, there will be two components of the training

- 1) Clinical training in Emergency Medicine
- 2) Research and thesis writing

The candidate shall undergo clinical training to achieve educational objectives of MD Emergency Medicine (knowledge & skills) along with rotations in the relevant fields. Which will be carried out during the 4<sup>th</sup> & 5<sup>th</sup> years of the Program. There shall be generic specialty specific competencies & shall be assessed by Continuous Internal Assessment (Appendix F&G)

Research Component and thesis writing shall be completed over the five years duration of the course. Candidates will spend total time equivalent one calendar year for research during the training. Research can be done as one block or it can be done in the form of regular periodic rotation over five years as long as total research time is equivalent to one calendar year.

### ***Admission Criteria***

Applications for admission to MD Training Programs of Emergency Medicine will be invited through advertisement in print and electronic media mentioning closing date of applications and date of Entry Examination.

Eligibility: The applicant on the last date of submission of applications for admission must possess the:

- i) Basic Medical Qualification of MBBS or equivalent medical qualification recognized by Pakistan Medical & Dental Council.
- ii) Certificate of one year's House Job experience in institutions recognized by Pakistan Medical & Dental Council is essential at the time of interview. The applicant is required to submit House Certificate from the concerned Medical Superintendent that the House Job shall be completed before the Interview.
- iii) Valid certificate of permanent or provisional registration with Pakistan Medical & Dental Council.

### ***Registration and Enrollment***

- As per policy of Pakistan Medical & Dental Council the number of post graduate trainees/ students per supervisor shall be maximum 05 per annum for all PG programs including minor program (if any).
- Beds to trainee ratio at the approved teaching site shall be at least 5 beds per trainee.
- The University will approve supervisors for MD courses.
- Candidates selected for the courses after their enrollment at the relevant institutions shall be registered with UHS as per prescribed Registration Regulations.

### ***Accreditation Related Issues of the Institution***

#### **1. Faculty**

Properly qualified teaching staff in accordance with the requirements of Pakistan Medical and Dental Council (PMDC)

#### **2. Adequate Space**

Including class-rooms (with audiovisual aids), demonstration rooms, computer lab and clinical pathology lab etc.

#### **3. Library**

Departmental library should have latest editions of recommended books, reference books and latest journals (National and International).

- Accreditation of Emergency Medicine training program can be suspended on temporary or permanent basis by the University, if the program does not comply with requirements for residents training as laid out in this curriculum.
- Programs should have documentation of residents training activities and evaluation on monthly basis.
- To ensure a uniform and standardized quality of training and availability of the training facilities, the University reserves the right to make surprise visits of the training program for monitoring purposes and may take appropriate action if deemed necessary.

## **AIMS AND OBJECTIVES OF THE COURSE**

### **AIM:**

The aim of five years MD training program in Emergency Medicine is to train residents to acquire the competency of a specialist in the field of Emergency Medicine so that they can become good teachers, researchers and clinicians in their specialty after completion of their training.

### **GENERAL OBJECTIVES**

MD Emergency Medicine training should enable a student to:

Access and apply relevant knowledge to clinical practice:

- Maintain currency of knowledge
- Apply scientific knowledge in practice
- Appropriate to patient need and context
- Critically evaluate new technology

Safely and effectively performs appropriate clinical skills & procedures:

- Consistently demonstrate sound clinical skills
- Demonstrate procedural knowledge and technical skill at a level appropriate to the level of training
- Demonstrate manual dexterity required to carry out procedures
- Adapt their skills in the context of each patient and procedure
- Maintain and acquire new skills
- Approach and carries out procedures with due attention to safety of patient, self and others
- Critically analyze their own clinical performance for continuous improvement

Design and implement effective management plans:

- Recognize the clinical features, accurately diagnose and manage Emergency Medicine problems
- Formulate a well-reasoned provisional diagnosis and management plan based on a thorough history and examination
- Formulate a differential diagnosis based on investigative findings
- Manage patients in ways that demonstrate sensitivity to their physical, social, cultural and psychological needs
- Recognize disorders of the Emergency Medicine and differentiate those amenable to medical treatment
- Effectively recognize and manage complications
- Accurately identify the benefits, risks and mechanisms of action of current and evolving treatment modalities
- Indicate alternatives in the process of interpreting investigations and in decision-making
- Manage complexity and uncertainty
- Consider all issues relevant to the patient
- Identify risk

- Assess and implement a risk management plan
- Critically evaluate and integrate new technologies and techniques.

Organize diagnostic testing, imaging and consultation as needed:

- Select medically appropriate investigative tools and monitoring techniques in a cost-effective and useful manner
- Appraise and interpret appropriate diagnostic imaging and investigations according to patients' needs
- Critically evaluates the advantages and disadvantages of different investigative modalities
- Communicate effectively:
- Communicate appropriate information to patients (and their family) about procedures, potentialities and risks associated with surgery in ways that encourage their participation in informed decision making
- Communicate with the patient (and their family) the treatment options including benefits and risks of each
- Communicate with and co-ordinate health management teams to achieve an optimal surgical environment
- Initiate the resolution of misunderstandings or disputes
- Modify communication to accommodate cultural and linguistic sensitivities of the patient
- Recognize the value of knowledge and research and its application to clinical practice:
- Assume responsibility for self-directed learning
- Critically appraise new trends in Pulmonology
- Facilitate the learning of others

Appreciate ethical issues associated with Emergency Medicine:

- Consistently apply ethical principles
- Identify ethical expectations that impact on medico-legal issues
- Recognize the current legal aspects of informed consent and confidentiality
- Be accountable for the management of their patients.
- Professionalism by:
- Employing a critically reflective approach to Emergency Medicine
- Adhering with current regulations concerning workplace harassment
- Regularly carrying out self and peer reviewed audit
- Acknowledging and have insight into their own limitations
- Acknowledging and learning from mistakes

Work in collaboration with members of an interdisciplinary team where appropriate:

- Collaborate with other professionals in the selection and use of various types of treatments assessing and weighing the indications and contraindications associated with each type
- Develop a care plan for a patient in collaboration with members of an interdisciplinary team
- Employ a consultative approach with colleagues and other professionals



- Recognize the need to refer patients to other professionals.
- Management and Leadership
- Effective use of resources to balance patient care and system resources
- Identify and differentiate between system resources and patient needs
- Prioritize needs and demands dealing with limited system resources.
- Manage and lead clinical teams
- Recognize the importance of different types of expertise which contribute to the effective functioning of clinical team
- Maintain clinically relevant and accurate contemporaneous records

Health advocacy:

- Promote health maintenance of patients
- Advocate for appropriate health resource allocation

## REGULATIONS

### *Scheme of the Course*

A summary of five years course in MD Emergency Medicine presented as under:

<b>Course Structure</b>	<b>Components</b>	<b>Examination</b>
At the End of 2 <sup>nd</sup> Year MD Emergency Medicine Program	Principles of Emergency Medicine Relevant Basic Science (Physiology Pharmacology, Pathology)	<b><u>Intermediate Examination</u></b> At the End of 2 <sup>nd</sup> Year MD Emergency Medicine Program Written MCQs = 300 Marks Clinical, TOACS/OSCE = 200 Marks & ORAL Total = 500 Marks
At the End of 5 <sup>th</sup> Year MD Emergency Medicine Program	<b><u>Clinical Component</u></b> Professional Education Emergency Medicine Training in Pulmonology with Compulsory / optional rotations <b><u>Research Component</u></b> Research work / Thesis writing must be completed and thesis be submitted at least 6 months before the end of final year of the program	<b><u>Final Examination</u></b> At the End of 5 <sup>th</sup> Year MD Emergency Medicine Program Written MCQs = 300 Marks Clinical, TOACS/OSCE = 200 Marks & ORAL Contribution of CIS = 100 Marks Total = 500 Marks  Thesis evaluation and defiance at the end of 5 <sup>th</sup> of M.D Emergency Program

**Intermediate Examination of M.D. Emergency Medicine (at the end of 2<sup>nd</sup> calendar year of the programme)**

All candidates admitted in M.D. Emergency Medicine course shall appear in Intermediate examination at the end of 2<sup>nd</sup> calendar year.

**Eligibility Criteria:**

The candidates appearing in Intermediate Examination of the M.D.

Emergency Medicine Programme are required:

- a) To have submitted certificate of completion of mandatory workshops.
- b) To have submitted certificate of completion of first two years of training from the supervisor/ supervisors of rotations.
- c) To have submitted CIS assessment proforma from his/her own supervisor on 03 monthly basis and also from his/her supervisors during rotation, achieving a cumulative score of 75%.
- d) To have submitted certificate of approval of synopsis or undertaking / affidavit that if synopsis not approved with 30 days of submission of application for the Intermediate Examination, the candidate will not be allowed to take the examinations and shall be removed from the training programme.
- e) To have submitted evidence of payment of examination fee.

**Intermediate Examination Schedule and Fee**

- a) Intermediate Examination at completion of two years training, will be held twice a year.
- b) There will be a minimum period of 30 days between submission of application for the examination and the conduction of examination.
- c) Examination fee will be determined periodically by the University.
- d) The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
- e) The Controller of Examinations will issue Roll Number Slips on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of examination fee.

**Components of Intermediate Examination**

Written Examination	= 300 Marks
Clinical, TOACS/OSCE& ORAL	= 200 Marks
Total	= 500 Marks

**Written:**

MCQs 100 (2 marks each MCQ)

SEQs 10 (10 Marks each SEQ)

**Total = 300 Marks**

**Components of Theory Paper**

Principles of Emergency Medicine	=70 MCQs	7 SEQs
Specialty Specific	=10 MCQs	1 SEQs
Basic Sciences	=20 MCQs	2 SEQs

**Clinical, TOACS / OSCE & ORAL**

Four Short Cases	= 100 Marks
One Long Case	= 50 Marks
Toacs/OSCE & Oral	= 50 Marks
<b>Total</b>	<b>= 200 Marks</b>

**Declaration of Results**

The Candidate will have to score 50% marks in written, clinical and Toacs/OSCE & Oral components and a cumulative score of 60% to be declared successful in the Intermediate Examination.

A maximum total of four consecutive attempts (availed or unavailed) will be allowed in the Intermediate Examination during which the candidate will be allowed to continue his training program. If the candidate fails to pass his Intermediate Examination within the above mentioned limit of four attempts, the candidate shall be removed from the training program, and the seat would fall vacant, stipend/ scholarship if any would be stopped.

**Final Examination M.D. Emergency Medicine**

**At the end of 5<sup>th</sup> Calendar year of the Programme Eligibility Criteria:**

To appear in the Final Examination the candidate shall be required:

- i) To have submitted the result of passing Intermediate Examination.
- ii) To have submitted the certificate of completion of training, issued by the Supervisor which will be mandatory.
- iii) To have achieved a cumulative score of 75% in Continuous Internal assessments of all training years.
- iv) To have got the thesis accepted and will then be eligible to appear in Final Examination.
- v) To have submitted no dues certificate from all relevant departments including library, hostel, cashier etc.
- vi) To have submitted evidence of submission of examination fee.

#### **Final Examination Schedule and Fee**

- a) Final examination will be held twice a year.
- b) The candidates have to satisfy eligibility criteria before permission is granted to take the examination.
- c) Examination fee will be determined and varied at periodic intervals by the University.
- d) The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
- e) The Controller of Examinations will issue an Admittance Card with a photograph of the candidate on receipt of prescribed application form,  
documents satisfying eligibility criteria and evidence of payment of examination fee. This card will also show the Roll Number, date / time and venue of examination.

All candidates admitted in M.D. Emergency Medicine course shall appear in Final (clinical) examination at the end of structured training programme (end of 5th calendar year), and having passed the Intermediate examinations.

Written Part	= 500 Marks	
Clinical, TOACS/OSCE & ORAL	= 500 Marks	
Contribution Internal Assessment	= 100 Marks	
Thesis Examination	= 400 Marks	
<b>Total</b>	<b>= 1500 Marks</b>	
<b>Written Papers:</b>		
Paper 1	= 100 MCQs	5 SEQs
Paper 2	= 100 MCQs	5 SEQs
<b>Clinical and Oral</b>		
4 Short Cases	= 200 Marks	
1 Long Case	= 100 Marks	
Toacs/OSCE & Oral	= 200 Marks	
Total	= 500 Marks	

### **Declaration of Result**

For the declaration of result

- I. The candidate must get his/her Thesis accepted.
- II. The candidate must have passed the final written examination with 50% marks and the clinical and Toacs/OSCE & Oral securing 50% marks. The cumulative passing score from the written and clinical/ oral examination shall be 60%.
- III. The MD degree shall be awarded after acceptance of thesis and success in the final examination.
- IV. On completion of stipulated training period, irrespective of the result (pass or fail) the training slot of the candidate shall be declared vacant.

### **Submission / Evaluation of Synopsis**

1. The candidates shall prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on university website.
2. The research topic in clinical subject should have 30% component related to basic sciences and 70% component related to applied clinical sciences. The research topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, to collect & analyze the data.
3. Synopsis of research project shall be submitted by the end of the 2<sup>nd</sup> year of MD program. The synopsis after review by an Institutional Review Committee shall be submitted to the University for consideration by the Advanced Studies & Research Board, through the Principal / Dean /Head of the institution.

### **Submission of Thesis**

1. Thesis shall be submitted by the candidate duly recommended by the Supervisor.
2. The minimum duration between approval of synopsis and submission of thesis shall be one year.
3. The research thesis must be compiled and bound in accordance with the Thesis Format Guidelines approved by the University and available on website.
4. The research thesis will be submitted along with the fee prescribed by the University.

## Thesis Examination

1. The candidate will submit his/her thesis at least 06 months prior to completion of training.
2. The Thesis along with a certificate of approval from the supervisory will be submitted to the Registrar's office, who would record the date / time etc. and get received from the Controller of Examinations within 05 working days of receiving.
4. The Controller of Examinations will submit a panel of eight examiners within 07 days for selection of four examiners by the Vice Chancellor. The Vice Chancellor shall return the final panel within 05 working days to the Controller of Examinations for processing and assessment. In case of any delay the Controller of Examinations would bring the case personally to the Vice Chancellor.
5. The Supervisor shall not act as an examiner of the candidate and will not take part in evaluation of thesis.
6. The Controller of Examinations will make sure that the Thesis is submitted to examiners in appropriate fashion and a reminder is sent after every ten days.
7. The thesis will be evaluated by the examiners within a period of 06 weeks.
8. In case the examiners fail to complete the task within 06 weeks with 02 fortnightly reminders by the Controller of Examinations, the Controller of Examinations will bring it to the notice of Vice Chancellor in person.
9. In case of difficulty in find an internal examiner for thesis evaluation, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant person as examiner in supersession of the relevant clause Regulations.
10. There will be two internal and two external examiners. In case of difficulty in finding examiners, the Vice Chancellor would, in consultation with the concerned Deans, appoint minimum of three, one internal and two external examiners.
11. The total marks of thesis evaluation will be 400 and 60% marks will be required to pass the evaluation.
12. The thesis will be considered accepted, if the cumulative score of all the examiners is 60%.
13. The clinical training will end at completion of stipulated training period but the candidate will become eligible to appear in the Final Examination at completion of clinical training and after acceptance of thesis. In case clinical training ends earlier, the slot will fall vacant after stipulated training period.





## Award of MD Emergency Medicine Degree

After successful completion of the structured courses of MD Emergency Medicine and qualifying Intermediate & Final examinations (written Clinical, TOACS/OSCE & ORAL and Thesis), the degree with title MD Emergency Medicine shall be awarded.

### **Specialty training in Emergency Medicine**

#### **Specific Program Content**

1. Specialized training in Emergency Medicine
2. Compulsory rotations
3. Research & thesis writing
4. Maintaining of Log-book

#### **1. System Based Core Knowledge in Emergency Medicine**

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.

#### **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

## **DERMATOLOGICAL EMERGENCIES IN ADULTS AND CHILDREN**

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

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

- *Adrenal insufficiency and crisis*
- *Disorders of glucose metabolism*
  - ¥ hyperosmolar hyperglycaemic state, hypoglycaemia, hyperglycaemia, ketoacidosis
- *Thyroid disease emergencies*
  - ¥ hyperthyroidism, hypothyroidism, myxoedema coma, thyroid storm

## **FLUID AND ELECTROLYTE DISTURBANCES**

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

## **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, peritonsillar abscess, mastoiditis
- *Traumatic problems*

## **GASTROINTESTINAL EMERGENCIES IN ADULTS AND CHILDREN**

- *Congenital disorders*
  - ¥ Hirschsprung's disease, Meckel's diverticulum, pyloric stenosis
- *Inflammatory and Infectious disorders*
  - ¥ appendicitis, cholecystitis, cholangitis, diverticulitis, exacerbations and complications of inflammatory bowel diseases, gastritis, gastroenteritis, gastro-oesophageal reflux disease, hepatitis, pancreatitis, peptic ulcer, peritonitis, pilonidal abscess, perianal abscess
- *Metabolic disorders*

- ¥ hepatic disorders, hepatic failure
- *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, haemorrhoids, thromboses external haemorrhoids
- *Other problems*
  - ¥ complications of gastrointestinal devices and surgical procedures

### **GYNAECOLOGICAL AND OBSTETRIC EMERGENCIES**

- *Inflammatory and Infectious disorders*
  - ¥ mastitis, metritis, pelvic inflammatory disease, vulvovaginitis, toxic shock syndrome, sexual transmitted diseases, herpes simplex virus infection, Bartholin gland abscess
- *Obstetric emergencies*
  - ¥ spontaneous abortion in early pregnancy, abruptio placentae, pre- eclampsia, eclampsia, ectopic pregnancy, emergency delivery (including perimortem c-section), HELLP syndrome during pregnancy, hyperemesis gravidarum, placenta praevia, postpartum haemorrhage,
- *Traumatic and related problems*
  - ¥ ovarian torsion
- *Tumours*
- *Vascular disorders: Ischaemia and Bleeding*
  - ¥ vaginal bleeding

### **HAEMATOLOGY AND ONCOLOGY EMERGENCIES IN ADULTS AND CHILDREN***Anaemias*

- *Complications of lymphomas and leukaemias*
- *Congenital disorders*
  - ¥ haemophilias and Von Willebrand's disease, hereditary haemolytic anaemias, sickle cell disease
- *Inflammatory and Infectious disorders*
  - ¥ neutropenic fever, infections in immunocompromised patients, severe sepsis and septic shock
- *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*

- *Metabolic disorders*  
 ¥ hypercalcaemia, tumour lysis syndrome, SIADH
- *Neurological disorders*  
 ¥ spinal cord compression, brain metastases, raised intracranial pressure
- *Cardiovascular disorders*  
 ¥ malignant pericardial effusion, superior vena cava syndrome

#### **IMMUNOLOGICAL EMERGENCIES IN ADULTS AND CHILDREN**

- *Allergies and anaphylactic reactions*
- *Angioneurotic oedema*
- *Inflammatory and Infectious disorders*  
 ¥ acute complications of vasculitis

#### **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*
- *Parasitosis*
- *Rabies*
- *Sepsis and septic shock*
- *Sexually transmitted diseases*
- *Streptococcal toxic shock syndrome*
- *Tetanus*
- *Ebola, MERS, Tuberculosis, Measles, Influenza outbreak*

#### **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*
  - ¥ back disorders, common fractures and dislocations, compartment syndromes, crush syndrome, osteoarthritis, rhabdomyolysis, soft tissue trauma
- *Tumours:*
  - ¥ pathological fractures

### **NEUROLOGICAL EMERGENCIES IN ADULTS AND CHILDREN**

- *Inflammatory and Infectious disorders*
  - ¥ brain abscess, encephalitis, febrile seizures in children, Guillain-Barré 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 and metastatic tumours
- *Vascular disorders: Ischaemia and Bleeding*
  - ¥ carotid artery dissection, stroke, subarachnoid haemorrhage, subdural and extradural haematoma, 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

### **OPHTHALMIC EMERGENCIES IN ADULTS AND CHILDREN**

- *Inflammatory and Infectious disorders*
  - ¥ conjunctivitis, dacryocystitis, endophthalmitis, iritis, keratitis, orbital and periorbital cellulitis, uveitis, scleritis, episcleritis
- *Traumatic and related problems*
  - ¥ foreign body in the eye, ocular injuries, perforating injuries of the globe
- *Vascular disorders: Ischaemia and Bleeding*
  - ¥ retinal artery and vein occlusion, vitreous haemorrhage
- *Others*
  - ¥ acute glaucoma, retinal detachment

## **PULMONARY EMERGENCIES IN ADULTS AND CHILDREN**

- *Congenital*
  - ¥ cystic fibrosis
- *Inflammatory and Infectious disorders*
  - ¥ asthma, bronchitis, bronchiolitis, pneumonia, empyema, COPD exacerbation, lung abscess, pleurisy and pleural effusion, pulmonary fibrosis, tuberculosis
- *Traumatic and related problems*
  - ¥ 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

## **PSYCHIATRIC AND BEHAVIOUR DISORDERS**

- *Behaviour disorders*
  - ¥ affective disorders, confusion and consciousness disturbances, intelligence disturbances, memory disorders, perception disorders, psychomotor disturbances, thinking disturbances, altered mood, delusion, situational crisis, social crisis
- *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

## **RENAL AND GENITOUROLOGICAL EMERGENCIES IN ADULTS AND CHILDREN**

- *Inflammatory and Infectious disorders*
  - ¥ epididymitis, orchitis, glomerulonephritis, pyelonephritis, prostatitis, sexually transmitted diseases, urinary tract infections, balanitis
- *Metabolic disorders*
  - ¥ acute renal failure, nephrotic syndrome, nephrolithiasis, uraemia
- *Traumatic and related problems*
  - ¥ urinary retention, testicular torsion, torsion of the appendix testis, paraphimosis, phimosis, scrotal hydrocele, testicular haematoma
- *Tumours*
- *Vascular disorders: Ischaemia and Bleeding*

- *Other disorders*  
 ¥ comorbidities in dialysis and renal transplanted patients, complications of urological procedures and devices, haemolytic uraemic syndrome

### **TRAUMA IN ADULTS AND CHILDREN**

- *Origin of trauma:*  
 ¥ burns, blunt trauma, penetrating trauma
- *Anatomical location of trauma:*  
 ¥ head and neck, maxillofacial, thorax, abdomen, pelvis, spine, extremities
- *Polytrauma patient*
- *Trauma in specific populations:*  
 ¥ children, elderly, pregnant women.

### **COMPLICATIONS OF MEDICAL CARE**

- *Abnormal test results*
- *Complication of (recent) treatment and/ or procedure*
- *Drug/ Medications related presentation*

### **PALLIATIVE (END OF LIFE) CARE IN THE ED**

### **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. 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.

### **ACUTE ABDOMINAL PAIN/ DISTENSION IN ADULTS AND CHILDREN**

- *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, intussusception
- *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

#### **ALTERED BEHAVIOUR AND AGITATION**

- *Psychiatric causes*  
 ¥ acute psychosis, depression, hallucination, anxiety, panic attack
- *Cardiac/Vascular causes*  
 ¥ hypertension, vasculitis, ischaemic or hemorrhagic stroke
- *Endocrine and metabolic causes*  
 ¥ hypoglycaemia, hyperglycaemia, electrolyte imbalance, hyperthermia, hypoxaemia, myxoedema coma or crisis, thyrotoxicosis
- *Neurological causes*  
 ¥ cerebral space-occupying lesions, dementia, hydrocephalus, intracranial hypertension, CNS infections, extradural, subdural, subarachnoid or intracranial haemorrhage
- *Toxicology*  
 ¥ alcohol and drug abuse, poisoning

- *Iatrogenic causes and non-compliance*  
¥ missed essential therapy, e.g. dialysis, faulty medication doses

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

- *Neurological causes*  
¥ cerebral tumour, epilepsy and status epilepticus, meningitis, encephalitis, stroke, subarachnoid haemorrhage, subdural and extradural haematoma, traumatic brain injury
- *Cardiovascular causes*  
¥ hypoperfusion states, shock
- *Endocrine and metabolic causes*  
¥ electrolyte imbalances, hepatic coma, hypercapnia, hypothermia, hypoxia, hypoglycaemia/ hyperglycaemia, uraemia, Addison crisis, myxoedema coma or crisis, thyrotoxicosis
- *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
  
- *Iatrogenic causes and non-compliance*  
¥ missed essential therapy, e.g. dialysis, medications

### **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, pathological fractures
- *Neurological cause:*
  - ¥ subarachnoid haemorrhage
- *Renal and Genitourinary causes*
  - ¥ renal abscess, renal calculi
- *Trauma***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)

### **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*

**CHEST PAIN**

- *Cardiac/vascular causes*

¥ acute coronary syndrome, aortic dissection, arrhythmias, pericarditis, myocarditis, pulmonary embolism, pericardial effusion

- *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

**CRYING BABY**

- *I - Infections*

¥ herpes stomatitis, meningitis, osteomyelitis, urinary tract infection

- *T -*

¥ testicular torsion, trauma, teeth problems,

- *C - Cardiac*

¥ arrhythmias, congestive heart failure

- *R -*

- *I -*

¥ reaction to milk, reaction to medications, reflux

¥ immunisation and allergic reactions, insect bites

- *E - Eye*

¥ corneal abrasions, glaucoma, ocular foreign bodies

- *S – Some gastrointestinal causes*
  - ¥ hernia, intussusception, volvulus

### **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”

### **DYSPNOEA IN ADULTS AND CHILDREN**

- *Respiratory Causes*
  - ¥ airway obstruction, broncho-alveolar obstruction, parenchymal diseases, pulmonary shunt, pleural effusion, atelectasis, pneumothorax, haemoptysis, bronchiolitis
- *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

#### **FEVER AND ENDOGENOUS INCREASE IN BODY TEMPERATURE**

- *Systemic infectious causes*
  - ¥ sepsis, severe sepsis and septic shock, multiple organ dysfunction syndrome, parasitosis, flu-like syndrome, common viral and bacterial infections
- *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, neutropenic fever
- *Immunological causes*
  - ¥ arteritis, arthritis, lupus, sarcoidosis
- *Musculo-Skeletal causes*
  - ¥ osteomyelitis, fasciitis and cellulitis, erysipelas, necrotising fasciitis
- *Neurological causes*
  - ¥ cerebral haemorrhage
- *Psychiatric causes*

¥ factitious fever

- *Renal and Genitourinary causes*

¥ pyelonephritis, prostatitis, sexual transmitted diseases

- *Toxicology*

- *pyrexia of unknown origin*

### **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

### **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

### **PAIN IN ARMS**

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

### **PAIN IN LEGS**

- ¥ acute ischaemia, arteritis, deep venous thrombosis, superficial thrombophlebitis
- *Immunological causes*
  - ¥ polymyositis
- *Infectious causes*
  - ¥ arthritis, cellulites, necrotising fasciitis, osteomyelitis
- *Musculo-Skeletal causes*
  - ¥ sciatica
- *Neurological causes*
  - ¥ sciatica
- *Nervous system causes*
  - ¥ peripheral nerve compression
- *Trauma*



## **PALPITATIONS**

- *Cardiac/Vascular causes*
  - ¥ bradyarrhythmias (including sinus bradycardia and AV blocks), extrasystoles, tachyarrhythmias (including atrial fibrillation, sinus tachycardia, supraventricular tachycardia, ventricular tachycardia)
- *Endocrine and metabolic causes*
  - ¥ thyrotoxicosis
- *Toxicology*
  - ¥ drugs

## **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

## **SHOCK IN ADULTS AND CHILDREN**

- *Cardiogenic*
- *Hypovolaemic*
- *Obstructive*
- *Distributive (anaphylactic, septic, neurogenic, Addison crisis)*

- ¥ 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.
- *Others*
  - ¥ Methaemoglobinaemia, carbon monoxide poisoning

#### **SKIN MANIFESTATIONS IN ADULTS AND CHILDREN**

- *Dermatological causes*
  - ¥ eczema, psoriasis, skin tumours
- *Immunological causes*
  - ¥ vasculitides, urticaria, Stevens-Johnson syndrome, Lyell syndrome (toxic epidermal necrolysis)
- *Infectious causes*
  - ¥ viral exanthemata, meningococcaemia, herpes zoster/simplex, abscesses of the skin, cellulitis, lymphangitis
- *Psychiatric causes*
  - ¥ Self-inflicted skin lesions or from abuse

- *Toxicology*
- *Haematological and Oncological causes*
  - ¥ idiopathic thrombocytopenic purpura, thrombotic thrombocytopenic purpura

### **SYNCOPE**

- *Cardiac/vascular causes*
  - ¥ aortic dissection,
  - ¥ cardiac arrhythmias (including bradycardia syndrome, Brugada syndrome, drug overdose, long QT syndrome, sick sinus syndrome, torsades de pointes, ventricular tachycardia, 2<sup>nd</sup> and 3<sup>rd</sup> degree AV-block, junctional rhythm).
  - ¥ 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, gastrointestinal bleeding
- *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

### **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

### **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*

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

#### **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

#### **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

#### **DISASTER MEDICINE**

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

#### **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)
- Major/minor burns
- Toxic ingestion or exposure

#### **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

#### **INJURY PREVENTION AND HEALTH PROMOTION**

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

#### **PATIENT MANAGEMENT ISSUES IN EMERGENCY MEDICINE**

- Emergency Department organisation (administration, structure, staffing, resources)

- Management of specific populations:
  - ¥ children in special circumstances including child protection
  - ¥ elderly patients
  - ¥ homeless patients
  - ¥ mentally incompetent adults
  - ¥ psychiatric patients
  - ¥ overweight/underweight patients

### **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
- Polypharmacy

### **TOXICOLOGY IN ADULTS AND CHILDREN**

- General principles of toxicology and management of poisoned patients
- Principles of drug interactions
- Toxidromes
- 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, alcohol withdrawal
  - ¥ drugs of abuse
    - Organisation and information (e.g. poison centres, databases)

### **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)
- Disaster preparedness and management inclusive triage

#### **PSYCHO-SOCIAL PROBLEMS**

- Social wellbeing of specific populations (see 3.4.7)
- Patients with social issues
- Frequent visitors
- Culture and religion (expectations and beliefs of the health system)
- Financial aspects (ability to purchase medications and/ or treatments)
- Legal aspects (e.g. collaboration with other patient stakeholders)
- Home support (available resources to support discharge, e.g. district nurse, carers)
- Homeless (safety for discharge)
- Pets (reason for presentation, e.g. allergy; or worried if pat needs admission)
- Traveller (arrangement for follow-up)
- Alcohol/ illicit drug use (complex clinical assessment, increased suicide risk)
- Occupation (ability to return to work)

#### **SPECIFIC SKILL COMPETENCIES**

Residents completing MD Emergency Medicine training will have formal instruction, clinical experience, and will be able to demonstrate competence in the evaluation and management of adult, pediatric and gynecological/obstetrics patients and applying scientific principles for the identification, prevention, treatment and rehabilitation of following acute and chronic medical/surgical disorders:

#### **1. Desired skills to be achieved after 1st year**

- o History taking
- o Planning initial management of sick patient in ER
- o Simple airway maneuvers
- o Bag mask ventilation
- o LMA and multilumen esophageal airway insertion
- o Oropharyngeal and nasopharyngeal airway
- o Apply nasal prongs



- o Administer nebulizer
- o Arterial puncture
- o Inline immobilization
- o Application of cervical collar
- o Oxygen therapy
- o Cardiopulmonary resuscitation
- o Basics of ECG
- o Rhythm recognition
- o Defibrillation and cardio version
- o Peripheral IV access
- o NG tube insertion
- o Urinary Catheter insertion
- o Decompression of pneumothorax
- o Examination of Ear, Nose and Throat
- o Splinting
- o Debridement
- o Wound care
- o Suturing
- o P/V and P/R examination
- o Lumbar puncture
- o Basics of radiology

**2. Desired Skills to be inculcated in training during First year Medical skills**

- o Advanced Airway management
- o Ventilator support
- o Noninvasive ventilation
- o Central Vascular access
- o CVP monitoring
- o Trans cutaneous pacemaker
- o Trans venous pacing
- o PCI
- o Invasive hemodynamic monitoring
- o Temporary pacemaker insertion and maintenance
- o Pain relief

- o Nasojejunal tube placement
- o Bronchoscopy
- o Abdominal paracentesis
- o Hemodialysis
- o CRRT

### **Surgical Skills**

- o Percutaneous tracheostomy
- o Cricothyroidotomy
- o Surgical tracheostomy
- o Burr hole
- o ICP measurement
- o Venous Cut down
- o Thoracocentesis
- o ICD tube placement
- o External fixation of Pelvis
- o Fasciatomy
- o Escharotomy
- o Embolization bleeding vessels
- o Retrograde urethrogram
- o IVU

### **Hands on Training of Trauma Care**

- o ICD
- o Needle thorococentesis
- o Cricothyroidectomy
- o Needle cricothyroidotomy
- o Suprapubic catheterization
- o Interosseous nailing
- o Central Venous access
- o Spine immobilization

- Splinting
- POP casting
- Compartment pressure measurement
- Invasive pressure monitoring
- Suturing technique
- ABG sampling
- Anterior and posterior nasal packing
- Foreign body removal
- Suprapubic catheterization
- Reducing dislocated joints
- Debridement
- Endotracheal insertion
- Difficult urinary catheter insertion
- Umbilical vein catheterization
- Emergency ultrasonography
- Nail bed hematoma removal
- Reducing paraphymosis
- External fixator for pelvis #
- Reading trauma & Surgical related CT
- Reading trauma & Surgical related MRI
- Reading trauma & Surgical related X-rays
- Auto transfusion technique
- Incision & Drainage
- Nerve blocks
- Abdominal compartment pressure monitoring

**Desired Be Inculcated In Training During Second Year Medical**

- CT Angiography of lung
- CT Angiography of brain

- Angioplasty
- Stenting
- IABP
- Permanent pacemaker placement
- EEG
- EMG
- Emergency delivery
- Bronchoscopy
- Epidural anesthesia
- Intravenous Urogram
- MARS

### **Surgical procedures**

- CT guided Biopsies
- Renal biopsy
- Endoscopy
- Banding of esophageal varices
- Incision & Drainage
- Laparotomy
- Craniotomy
- Coiling of aneurysm
- LSCS
- CABG
- PEG
- ERCP
- Open reduction and internal fixation of fractures
- Lithotripsy

### **Desired Be Inculcated In Training During Third Year Medical**

- EEG
- Nerve conduction study
- EMG
- Ventilatory management
- Haemodialysis
- Echocardiography
- Slit lamp examination
- Temporary pacemaker insertion
- Bronchoscopy
- Pericardiocentesis

### **Surgical**

- Burr hole
- External fixators
- Fasciotomy
- Escharectomy
- Sengstaken tube Insertion
- DPL
- External wire Fixation of Mandible
- Venous Cutdown
- PCT
- Cricothyroidotomy
- Tracheostomy
- Emergency delivery
- Banding
- Detorsion of torsion of testis
- Paraphimosis reduction

### **Desired Be Inculcated In Training During Fourth Year Medical**

- Coronary angioplasty and stenting
- Catheter related embolization
- Intra-arterial thrombolysis

## **Surgical**

- Decompression Craniotomy
- Maxillofacial Surgeries
- Open Thoracotomy
- CABG
- Vascular repair
- IVC filter insertion
- IM nailing
- K wire fixation
- Transplant surgeries

## **Professionalism:**

Residents shall learn professional skills in:

- Patient Management including eliciting pertinent history, performing physical examination, ordering and interpreting the result of appropriate investigations and thereby deciding and implementing appropriate treatment plan by maintaining follow up
- Psychosocial and emotional effects of acute and chronic illness on patients and their families
- Management of end of life issues and palliative care
- Quality improvement and patient safety activities

## **RESEARCH/ THESIS WRITING**

Total of one year will be allocated for work on a research project with thesis writing. Project must be completed and thesis be submitted before the end of training. Research can be done as one block in 5<sup>th</sup> year of training or it can be stretched over five years of training in the form of regular periodic rotations during the course as long as total research time is equivalent to one calendar year.

## **Research Experience**

The active research component program must ensure meaningful, supervised research experience with appropriate protected time for each resident

while maintaining the essential clinical experience. Recent productivity by the program faculty and by the residents will be required, including publications in peer-reviewed journals. Residents must learn the design and interpretation of research studies, responsible use of informed consent, and research methodology and interpretation of data. The program must provide instruction in the critical assessment of new therapies and of the surgical literature. Residents should be advised and supervised by qualified staff members in the conduct of research.

### **Clinical Research**

Each resident will participate in at least one clinical research study to become familiar with:

1. Research design
2. Research involving human subjects including informed consent and operations of the Institutional Review Board and ethics of human experimentation
3. Data collection and data analysis
4. Research ethics and honesty
5. Peer review process

This usually is done during the consultation and outpatient clinic rotations.

### **Case Studies or Literature Reviews**

Each resident will write, and submit for publication in a peer-reviewed journal, a case study or literature review on a topic of his/her choice.

### **Laboratory Research**

#### *Bench Research*

Participation in laboratory research is at the option of the resident and may be arranged through any faculty member of the Division. When appropriate, the research may be done at other institutions.

#### *Research involving animals*

Each resident participating in research involving animals is required to:

1. Become familiar with the pertinent Rules and Regulations of the University of Health Sciences Lahore i.e. those relating to "Health and Medical Surveillance Program for Laboratory Animal Care Personnel" and "Care and Use of Vertebrate Animals as Subjects in Research and Teaching"
2. Read the "Guide for the Care and Use of Laboratory Animals"
3. View the videotape of the symposium on Humane Animal Care

#### *Research involving Radioactivity*

Each resident participating in research involving radioactive materials is required to

1. Attend a Radiation Review session
2. Work with an Authorized User and receive appropriate instruction from him/her.

#### METHODS OF INSTRUCTION/COURSE CONDUCTION

As a policy, active participation of students at all levels will be encouraged. Following teaching modalities will be employed:

1. Lectures
2. Seminar Presentation and Journal Club Presentations
3. Group Discussions
4. Grand Rounds
5. Clinico-pathological Conferences
6. SEQ as assignments on the content areas
7. Skill teaching in ICU, emergency and ward settings
8. Attend genetic clinics and rounds for at least one month.
9. Attend sessions of genetic counseling
10. Self study, assignments and use of internet
11. Bedside teaching rounds in ward
12. OPD & Follow up clinics
13. Long and short case presentations

In addition to the conventional teaching methodologies interactive strategies like conferences will also be introduced to improve both communication and clinical skills in the upcoming consultants. Conferences must be conducted regularly as scheduled and attended by all available faculty and residents. Residents must actively request autopsies and participate in formal review of gross and microscopic pathological material from patients who have been under their care. It is essential that residents participate in planning and in conducting conferences.

#### **1. Clinical Case Conference**

Each resident will be responsible for at least one clinical case conference each month. The cases discussed may be those seen on either the consultation or clinic service or during rotations in specialty areas. The resident, with the advice of the Attending Physician on the Consultation Service, will prepare and present the case(s) and review the relevant literature.

#### **2. Monthly Student Meetings**

Each affiliated medical college approved to conduct training for MD Pulmonology will provide a room for student meetings/discussions such as:



- a. Journal Club Meeting
- b. Core Curriculum Meetings
- c. Skill Development

**a. *Journal Club Meeting***

A resident will be assigned to present, in depth, a research article or topic of his/her choice of actual or potential broad interest and/or application. Two hours per month should be allocated to discussion of any current articles or topics introduced by any participant. Faculty or outside researchers will be invited to present outlines or results of current research activities. The article should be critically evaluated and its applicable results should be highlighted, which can be incorporated in clinical practice. Record of all such articles should be maintained in the relevant department.

**b. *Core Curriculum Meetings***

All the core topics of Pulmonology should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. It should be chaired by the chief resident (elected by the residents of the relevant discipline). Each resident should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the course structure

**c. *Skill Development***

Two hours twice a month should be assigned for learning and practicing clinical skills.

**List of skills to be learnt during these sessions is as follows:**

1. Residents must develop a comprehensive understanding of the indications, contraindications, limitations, complications, techniques, and interpretation of results of those technical procedures integral to the discipline (mentioned in pg. 10).
2. Residents must acquire knowledge of and skill in educating patients about the technique, rationale and ramifications of procedures and in obtaining procedure-specific informed consent. Faculty supervision of residents in their performance is required, and each resident's experience in such procedures must be documented by the program director.
3. Residents must have instruction in the evaluation of medical literature, clinical epidemiology, clinical study design, relative and absolute risks of disease, medical statistics and medical decision-making.
4. Training must include cultural, social, family, behavioral and economic issues, such as confidentiality of information, indications for life support systems, and allocation of limited resources.

5. Residents must be taught the social and economic impact of their decisions on patients, the primary care physician and society. This can be achieved by attending the bioethics lectures and becoming familiar with Project Professionalism Manual such as that of the American Board of Internal Medicine.
6. Residents should have instruction and experience with patient counseling skills and community education.
7. This training should emphasize effective communication techniques for diverse populations, as well as organizational resources useful for patient and community education.
8. Residents may attend the series of lectures on Nuclear Medicine procedures (radionuclide scanning and localization tests and therapy) presented to the Radiology residents.
10. Residents should have experience in the performance of clinical laboratory and radionuclide studies and basic laboratory techniques, including quality control, quality assurance and proficiency standards.
11. Each resident will observe and participate in each of the following procedures, preferably done on patients firstly under supervision and then independently (pg.10)

### **3. Annual Grand Meeting**

Once a year all residents enrolled for MD Emergency Medicine should be invited to the annual meeting at UHS Lahore.

One full day will be allocated to this event. All the chief residents from affiliated institutes will present their annual reports. Issues and concerns related to their relevant courses will be discussed. Feedback should be collected and suggestions should be sought in order to involve residents in decision making.

The research work done by residents and their literary work may be displayed.

In the evening an informal gathering and dinner can be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.

## LOG BOOK

The residents must maintain a log book and get it signed regularly by the supervisor. A complete and duly certified log book should be part of the requirement to sit for MD examination. Log book should include adequate number of diagnostic and therapeutic procedures observed and performed, the indications for the procedure, any complications and the interpretation of the results, routine and emergency management of patients, case presentations in CPCs, journal club meetings and literature review.

### **Proposed Format of Log Book is as follows:**

Candidate's Name: -----

Supervisor -----

Roll No. -----

The procedures shall be entered in the log book as per format

Residents should become proficient in performing the related procedures. After observing the technique, they will be observed while performing the procedure and, when deemed competent by the supervising physician, will perform it independently. They will be responsible for obtaining informed consent, performing the procedure, reviewing the results with the pathologist and the attending physician and informing the patient and, where appropriate, the referring physician of the results.

### **Procedures Performed**

<b>Sr.#</b>	<b>Date</b>	<b>Name of Patient, Age, Sex &amp; Admission No.</b>	<b>Diagnosis</b>	<b>Procedure Performed</b>	<b>Supervisor's Signature</b>
1					
2					
3					
4					

**Emergency Medicine cases Handled**

Sr. #	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure/ Management	Supervisor's Signature
1					
2					
3					
4					

**Cases Presented**

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Case Presented	Supervisor's Signature
1				
2				
3				
4				

**Seminar/Journal Club Presentation**

Sr.#	Date	Topic	Supervisor's Signature
1			
2			

## Evaluation Record

(Excellent, Good, Adequate, Inadequate, Poor)

At the end of the rotation, each faculty member will provide an evaluation of the clinical performance of the fellow.

Sr.#	Date	Method of Evaluation (Oral, Practical, Theory)	Rating	Supervisor's Signature
1				
2				

## EVALUATION & ASSESSMENT STRATEGIES

### Assessment

It will consist of action and professional growth oriented ***student-centered integrated assessment*** with an additional component of ***informal internal assessment, formative assessment*** and measurement-based ***summative assessment***.

### Student-Centered Integrated Assessment

It views students as decision-makers in need of information about their own performance. Integrated Assessment is meant to give students responsibility for deciding what to evaluate, as well as how to evaluate it, encourages students to **'own'** the evaluation and to use it as a basis for self-improvement. Therefore, it tends to be growth-oriented, student-controlled, collaborative, dynamic, contextualized, informal, flexible and action-oriented.

In the proposed curriculum, it will be based on: Self Assessment by the student

Peer Assessment

Informal Internal Assessment by the Faculty

### ***Self Assessment by the Student***

Each student will be provided with a pre-designed self-assessment form to evaluate his/her level of comfort and competency in dealing with different relevant clinical situations. It will be the responsibility of the student to correctly identify his/her areas of weakness and to take appropriate measures to address those weaknesses.

### ***Peer Assessment***

The students will also be expected to evaluate their peers after the monthly small group meeting. These should be followed by a constructive feedback according to the prescribed guidelines and should be non-judgmental in nature. This will enable students to become good mentors in future.

### ***Informal Internal Assessment by the Faculty***

There will be no formal allocation of marks for the component of Internal Assessment so that students are willing to confront their weaknesses rather than hiding them from their instructors.

It will include:

- a.** Punctuality
- b.** Ward work
- c.** Monthly assessment (written tests to indicate particular areas of weaknesses)
- d.** Participation in interactive sessions

### **Formative Assessment**

Will help to improve the existing instructional methods and the curriculum in use

### ***Feedback to the faculty by the students:***

After every three months students will be providing a written feedback regarding their course components and teaching methods. This will help to identify strengths and weaknesses of the relevant course, faculty members and to ascertain areas for further improvement.

### **Summative Assessment**

It will be carried out at the end of the programme to empirically evaluate **cognitive, psychomotor** and **affective domains** in order to award degrees for successful completion of courses.

**Intermediate Examination  
MD Emergency Medicine  
Total Marks: 500**

All candidates admitted in MD Pulmonology course shall appear in Intermediate examination at the end of 2nd calendar year.

There shall be one written paper of 300 marks each, Clinical, TOACS/OSCE & ORAL of 200 marks.

**Components of Intermediate Examination**

<b>Theory</b>		
<b>Paper I</b>	<b><u>250 Marks</u></b>	<b>3 Hours</b>
5 SEQs	50 Marks	
100 MCQs	200 Marks	
<b>Paper II</b>	<b><u>250 Marks</u></b>	<b>3 Hours</b>
5 SEQs	50 Marks	
100 MCQs	200 Marks	

The candidates, who pass in theory papers, will be eligible to appear in the Clinical, TOACS/OSCE & ORAL.

<b>Clinical</b>	<b>500 Marks</b>
Four short cases	200 Marks
One long case	100 Marks
TOACS/OSCE & ORAL	200 Marks
<b>Continuous Internal Assessment</b>	<b>100 Marks</b>

**Thesis Examination** **400 Marks**

All candidates admitted in MD courses shall appear in thesis examination at the end of 5th calendar year of the MD programme. The examination shall include thesis evaluation with defen

**APPENDEX E**  
**(SEE Registration 9-iii )**  
**MANDTORY WORKSHOPOS**

1. Each candidate of MD/MS/MDS program would attend the 04 mandatory workshop and other workshop as required by the university.
2. The four mandatory workshops will include following
  - a. Communication skills
  - b. Introduction to computer / information technology and software programs.

The workshop fee for each workshop will be charged.

3. An appropriate fee for each workshop will be charged.
4. Each workshop will be of 02-05 days duration.
5. Certificates of attendance will be issued upon satisfactory completion of workshops.



**APPENDIX F**  
**(SEE Registration 9xxiii,13 ,14 & 16)**  
**CONTINUOUS INTERNAL ASSESMENTS**

**a) Workplace Bases Assessments**

Workplace based assessments will consist of Generic as well as Specialty Specific competency Assessments and Multisource Feedback Evaluation.

**Generic Competency Training & Assessments**

The Candidates of all MD /MS /MDS programs will be trained and assessed in the following five generic competencies

**Patient Care**

- a. Patient care competency will include skills of history taking, examination, diagnosis, plan of investigation, clinical judgment, plan of treatment, consent, counseling, plan of follow up, communication with patient / relatives and staff
- b. The candidate shall learn patient care thorough ward teaching, departmental conferences, morbidity meetings, core curriculum lectures and training in procedure and operations.
- c. The candidates will be assessed by the supervisor during presentation of cases on clinical ward rounds, scenario-based discussion on patient management, multisource feedback evaluation, Direct Observation of Procedures (DOPS) and operating room assessments.
- d. These methods of assessments will have equal weightage.

**Medical Knowledge and Research**

- a. The candidate will learn basic factual knowledge of illnesses relevant to the specialty through lectures/discussions on topics selected from the syllabus, small group tutorials and bed side rounds.
- b. The medical knowledge/skill will be assessed by the teacher.
- c. The candidate will be trained in designing research project, data collection, data analysis and presentation of result by supervisor.
- d. The acquisition of research skill will be assessed as per regulations of governing thesis evaluation and its acceptance.

**Practice and system Based Learning**

- a. This competency will be Learnt from journal club, review of literature , policies and guidelines, audit projects medical error investigation, root cause analysis and awareness of healthcare facilities
- b. The assessment methods will include case studies, presentation in morbidity and mortality review meetings and presentation of audit project if any.
- c. These methods of assessment shall have equal weight-age

**Communication skills**

- a. These will be learnt from role models, supervisor and workshops.

- b. They will be assessed by direct observation of the candidate whilst interacting with patients, relatives, colleagues and with multisource feedback evaluation.

### **Professionalism as per Hippocratic Oath**

- a. This competency is learnt from supervisor acting as a role model, ethical case conferences and lecture on ethical issue such as confidentiality, informed consent, end of life decisions, conflict of interest, harassment and use of human subject in research.
- b. The assessment of residents will be through multisource, feedback evaluation according to proformas of evaluation and its scoring method.

### **Specialty Specific Competencies**

- a. The candidates will be trained in operative and procedural skills according to a quarterly based schedule.
- b. The level of procedural competency will be according to a competency table to be developed by specialty.
- c. The following key will be used for assessing operative and procedural competencies:

#### **A. Level 1 Observer status**

The candidate physically present and observing the supervisor and senior colleagues

#### **B. Level 2 Assistant status**

The candidate assisting procedures and operations

#### **C. Level 3 Performed under supervision**

The candidate operating or performing a procedure under direct supervision.

#### **D. Level 4 Performed independently**

The candidate operating or performing a procedure without any supervision.

### **Procedure Based Assessment (PBA)**

- a. Procedural competency will assess the skill of consent taking, preoperative preparation and planning, intraoperative general and specific tasking and postoperative management
- b. Procedure based assessment will be carried out during teaching and training of each procedure.
- c. The assessors may be supervisors, constant colleagues and senior residents.
- d. The standardized forms will be filled in by the assessor after direct observation.
- e. The resident's evaluation will be graded as satisfactory deficient requirement further training and not assessed at all.
- f. Assessment report will be submitted.

g. A satisfactory score will be required to be eligible for taking final examination.

### **Multisource Feedback Evaluation**

a. The supervisor would ensure a multisource feedback to collect peer assessments in medical knowledge, clinical skills, communication skills, professionalism, and responsibility.

b. Satisfactory annual report will be required to become eligible for the final examination

### **Completion of Candidate's Training Portfolio**

1. The candidate's Training Portfolio (CTP) will be published (or computer-based portfolio downloadable) by the university.

2. The candidates would either purchase the CTP or download it from the KEMU web site.

3. The portfolio will consist of the following component

a. Enrollment details

b. Candidate's credentials as submitted on the application for admission from.

c. Timeline of scheduled activities e.g dates of commencement and completion of training, submission of synopsis and thesis assessment and examination dates etc (**Appendix H**)

d. Logbook of case presentations, operations and procedures recorded in an appropriate format and validated by the supervisor

e. Record of participation and presentation in academic activities e.g lectures, workshops, journals clubs, clinical audit project, morbidity and mortality review meetings, presentation in house as well as national and international meetings.

f. Record of Publications if any.

g. Record of results assessment and examination if any

h. Synopsis submission proforma and IRB proforma and AS&RB approval Letter.

i. Copy of Synopsis as approved by AS&RB.