

# Study & Evaluation Scheme

of

**M.D. (Medicine)**

**[Applicable for the Batch 2014-15 till revised]**



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# **P.G. Curriculum**

## **M.D. Medicine**

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# Curriculum

## M.D. Medicine

The infrastructure and faculty of the department of medicine will be as per MCI guidelines

**1. Goals:** The goal of MD course in Medicine is to produce a competent physician who:

- Recognizes the health needs of adults and carries out professional obligations in keeping with principles of National Health Policy and professional ethics;
- Has acquired the competencies pertaining to medicine that are required to be practiced in the community and at all levels of health care system;
- Has acquired skills in effectively communicating with the patients, family and the community;
- Is aware of the contemporary advances and developments in medical sciences.
- Acquires a spirit of scientific enquiry and is oriented to principles of research methodology; and
- Has acquired skills in educating medical and paramedical professionals.

**2. Objectives:** At the end of the MD course in Medicine, the student should be able to:

- Recognize the key importance of medical problems in the context of the health priority of the country;
- Practice the specialty of medicine in keeping with the principles of professional ethics;
- Identify social, economic, environmental, biological and emotional determinants of adult medicine and know the therapeutic, rehabilitative, preventive and promotion measures to provide holistic care to all patients;
- Take detailed history, perform full physical examination and make a clinical diagnosis;
- Perform and interpret relevant investigations (Imaging and Laboratory);
- Perform and interpret important diagnostic procedures;
- Diagnose medical illnesses in adults based on the analysis of history, physical examination and investigative work up;
- Plan and deliver comprehensive treatment for illness in adults using principles of rational drug therapy;
- Plan and advise measures for the prevention of medical diseases;
- Plan rehabilitation of adults suffering from chronic illness, and those with special needs;
- Manage medical emergencies efficiently;

- Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation;
- Demonstrate empathy and humane approach towards patients and their families and respect their sensibilities;
- Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities.
- Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based medicine;
- Demonstrate competence in basic concepts of research methodology and epidemiology;
- Facilitate learning of medical/nursing students, practicing physicians, para-medical health workers and other providers as a teacher-trainer;
- Play the assigned role in the implementation of national health programs, effectively and responsibly;
- Organize and supervise the desired managerial and leadership skills;
- Function as a productive member of a team engaged in health care, research and education.

### 3. Syllabus

- 3.1. Theory:** The theory syllabus should include the cardinal manifestations, definition, epidemiology, etiopathogenesis, clinical presentation, complications, differential diagnosis, investigations, treatment and prevention of all adult diseases. It should also cover the advances that have occurred in the science of medicine into its armamentarium of diagnosis, prevention and treatment.
- **Nutrition:** Nutritional requirements and dietary assessment, Malnutrition, Obesity, Enteral and Parenteral therapy, Eating disorders, Vitamins and trace mineral deficiency and excess.
  - **Genetics:** Principles of human genetics, Chromosomal disorders, Single gene disorders, Multifactorial/ Polygenic disorders, Genetic diagnosis, Gene therapy.
  - **Cardiovascular:**
    - Dyspnoea and pulmonary edema, Heart murmur, Hypertension, Chest discomfort, Palpitations, Edema, Syncope.
    - Atherosclerosis, Angina, Myocardial infarction, Revascularisation, Heart failure, Congenital heart diseases (cyanotic and acyanotic), Rheumatic fever and rheumatic heart disease, Infective endocarditis, Brady and Tachyarrhythmias, Diseases of myocardium (cardio-myopathy, myocarditis), Diseases of pericardium, Systemic hypertension, Diseases of the Aorta, Cor Pulmonale, Pulmonary embolism, Pulmonary hypertension, Peripheral vascular disease,

Cardiac involvement in systemic disease, Echocardiography, Tread mill test, Nuclear cardiology, Cardiac catheterization and angiography.

- **Respiratory:**
  - Cough and Haemoptysis, Breathlessness, Hypoxia and Cyanosis.
  - Infections of upper respiratory tract, tonsils and adenoids, Obstructive sleep apnea, Pneumonia, Suppurative lung disease, COPD and Emphysema, Bronchial asthma, Bronchiectasis, Pleural effusion, Pneumothorax, Mediastinal mass, Carcinoma lung, Chest imaging (X-Ray and CT scan), Bronchoscopy and Spirometry.
- **Gastrointestinal and liver diseases:**
  - Acute and chronic diarrhea, Abdominal pain and distension, Ascites, Vomiting, Constipation, Gastrointestinal bleeding, Jaundice, Dysphagia, Hepatosplenomegaly.
  - Diseases of mouth, Oral cavity and tongue, Disorders of deglutition and esophagus, Peptic ulcer disease, H-pylori infection, Intestinal obstruction, Malabsorption syndrome, Acute and chronic diarrhea, Irritable bowel syndrome, Crohn's disease, Ulcerative colitis, Mesenteric ischaemia, Appendicitis, Peritonitis.
  - Liver disorders: Acute viral hepatitis, Fulminant hepatic failure, Chronic liver disease, Cirrhosis and its complications, Portal hypertension, Ascites, Hepatic encephalopathy, Wilson's disease, Budd-Chiari syndrome, Metabolic diseases of the liver.
  - Acute and Chronic pancreatitis, Diseases of the gall bladder.
- **Nephrological disorders:**
  - Hematuria, Dysuria, Azotemia, Fluid and Electrolyte disturbances.
  - Acute and Chronic Glomerulonephritis, Nephrotic syndrome, Acute renal failure and Chronic renal failure, Peritoneal dialysis and Haemodialysis, Renal transplantation, TTP, Hemolytic uremic syndrome, Urinary tract infection and Pyelonephritis, Renal involvement in systemic diseases, Renal tubular disorders, Renal and bladder stones, Hydronephrosis, Cystic disease in kidney, Renal vascular hypertension.
- **Neurological disorders:**
  - Syncope, Vertigo, Weakness, Movement disorders, Disorders of sensory system, Sleep disorders, Headache, Back and Neck pain, Aphasia, Memory loss, Confusion and delirium
  - Seizure and non seizure paroxysmal events, Epilepsy and epileptic syndromes, Cerebrovascular disorders, Alzheimer's disease, Parkinson's disease, Diseases of the spinal cord, Meningitis, Chronic and recurrent meningitis, Prion diseases, Brain abscess, Acute encephalitis, Neurocysticercosis, HIV encephalopathy, SSPE, Muscle diseases and Muscular dystrophies, Multiple sclerosis, Motor neuron disease, Myasthenia gravis, Acute flaccid paralysis, Guillain-

Barre syndrome, Ataxia, Movement disorders, CNS tumors, Psychiatric disorders, Cranial nerve disorders, Peripheral neuropathy.

- **Hematology and oncology:**
  - Anemia and Polycythaemia, Bleeding and Thrombosis, Lymphadenopathy, Splenomegaly, Disorders of granulocytes and monocytes.
  - Iron deficiency anemia, Megaloblastic anaemia, Hemolytic anemia, Aplastic anemia, Myelodysplastic syndrome, Pancytopenia, Disorders of hemostasis, Thrombocytopenia, Platelets disorders, Blood component therapy, Transfusion related infections, Bone marrow transplant, Stem cell transplant, Acute and Chronic Leukemias, Hodgkin disease, Myeloproliferative disorders, Non-Hodgkin's lymphoma, Hypercoagulable states.
  - Head and neck cancer, Breast cancer, GIT cancer, Tumours of the liver and biliary tract, Pancreatic cancer, Endocrine tumours of the GI tract and Pancreas, Bladder and Renal cell cancer, Carcinoma prostate, Testicular cancer, Gynaecological malignancies, Sarcomas of soft tissue and bone, Metastatic cancer of unknown primary site, Paraneoplastic syndromes.
- **Endocrinology:** Hypopituitarism/hyperpituitarism, Diabetes insipidus, Hypo- and hyper-thyroidism, Hypo- and hyper-parathyroidism, Adrenal insufficiency, Cushing's syndrome, Pheochromocytoma., Diabetes mellitus, Hypoglycemia, Gonadal dysfunction, Disorders of the testes and ovaries, The menopause transition and post menopausal therapy, Disorders affecting multiple endocrine systems.
- **Infections:** Bacterial, Viral, Fungal and algal, Parasitic, Rickettsial, Mycoplasma, Pneumocystis carinii and protozoal infections, Tuberculosis, Spirochaetal diseases, HIV infection, Nosocomial infections, Infective endocarditis, Infection in transplant recipients, Complicated urinary tract infection, Food poisoning, Infections of the Skin, Muscles and Soft tissue, Osteomyelitis, Control of epidemics, Hospital infection control.
- **Emergency and critical care:** Emergency care of shock, Cardio-respiratory arrest, Respiratory failure, Congestive cardiac failure, Acute renal failure, Status epilepticus, Fluid and electrolyte disturbances and its therapy, Acid-base disturbances, Drug overdose and Poisonings, Accidents, Scorpion and snake bites, GI bleed (upper and lower), Hepatic encephalopathy.
- **Immunology and Rheumatology:** Introduction to the immune system, Primary immune deficiency diseases, Rheumatoid arthritis, SLE, Sjogren's syndrome, Vasculitis, Scleroderma, Polymyositis, Gout,

Ankylosing spondylitis, Reactive arthritis, Undifferentiated spondyloarthropathy, Sarcoidosis.

- **ENT:** Acute and chronic otitis media, Conductive/sensorineural hearing loss, Acute/Chronic tonsillitis/adenoids, Allergic rhinitis, Sinusitis.
- **Skin diseases:** Exanthematous illnesses, Vascular lesions, Pigment disorders, Vesicobullous disorders, Infections: pyogenic, fungal and parasitic; Steven-Johnson syndrome, Eczema, Seborrhoeic dermatitis, Drug rash, Urticaria, Alopecia, Icthyosis.
- **Eye problems:** Refraction and accommodation, Partial/total loss of vision, Cataract, Night blindness, Chorio-retinitis, Optic atrophy, Papilledema.

**3.2. Practical:** History, examination and writing of records:

- History taking should include the back ground information, presenting complaints and history of present illness, history of previous illness, family history, social and occupational history and treatment history.
- Detailed physical examination should include general examination and systemic examination (Chest, Cardio-vascular system, Abdomen, Central nervous system, locomotor system and joints).
- Skills in writing up notes, maintaining problem oriented records, progress notes, and presentation of cases during ward rounds, planning investigations and making a treatment plan should be taught.

**Bedside procedures & Investigations:**

- Therapeutic skills: Venepuncture and establishment of vascular access, Administration of fluids, blood, blood components and parenteral nutrition, Nasogastric feeding, Urethral catheterization, Administration of oxygen, Cardiopulmonary resuscitation, Endotracheal intubation, Intrathecal administration of drugs, Common dressings, Abscess drainage.
- Investigative skills: Venous blood sampling, Arterial blood sampling, Lumbar puncture, Bone marrow aspiration, Pleural, Peritoneal & Pericardial tap, Biopsy of liver and kidney.

- 4. Clinical Teaching:** Residents should have the practical knowledge and clinical skills to evaluate and manage the various medical disorders. Clinical work should be closely guided and supervised by Consultants and Senior Residents. If a particular clinical teaching material is not available in the institution, then the resident should be posted in another institution for acquiring the practical knowledge and skills.

- **Infectious Diseases**

**Clinical:** The junior resident should have knowledge and skills to assess, common infectious diseases problems:

- (a) OPD: The junior residents should work up common OPD medical problems like acute febrile illness, acute diarrhea, urinary tract infection, lower respiratory tract infection, etc.
- (b) WARD: During the ward posting the resident should acquire the knowledge to assess the following problems:
  - i) Investigative workup of a patient with pyrexia of unknown origin.
  - ii) Diagnosis/investigations and management of common tropical infectious diseases like Malaria, HIV, TB, Typhoid, Dengue fever, Gram +ve and Gram –ve infections, Fungal infections, Viral infections, Protozoal & Helminthic infections.
  - iii) Management of a patient with sepsis, septicaemia and septic shock.
  - iv) Management of patients with multi systemic involvement.
  - v) Awareness about local notification procedures and adult vaccination.
  - vi) Principles of infection control.

- **Toxicology and Clinical Pharmacology**

**Clinical:** Residents should have knowledge and skills to assess and manage acute medical emergencies of drug overdose, illicit drug use and poisonings (accidental/suicidal). The resident should have the following skills:

- i) Assessment and emergency care of the unconscious patient with poisoning.
- ii) Effects of common drugs/poisons ingested.
- iii) Toxicology screen.
- iv) Methods to prevent absorption and enhance elimination.
- v) Specific treatment of various drug overdoses and poisonings.

- **Emergency Medicine**

**Clinical:** At the end of the casualty posting the Junior Resident should be able to diagnose and manage the following medical problems in the casualty:

Acute myocardial infarction, tachyarrhythmias & bradyarrhythmias, hypertensive emergencies, pneumothorax, massive pleural effusion, pulmonary thromboembolism, perforation peritonitis, intestinal obstruction, diabetic ketoacidosis, myxedema coma, thyroid crisis, acute renal failure, metabolic acidosis, cerebrovascular accident, epilepsy, meningitis, cerebral malaria, coma, dehydration, diarrhea, septicemia, common poisonings, drowning, electrical injury etc. He should develop skills of triage and efficient emergency care.



- **Procedures:** At the end of the casualty posting, the Junior Resident should possess theoretical knowledge of and should be able to perform the following procedures.
  - i) External cardiac massage.
  - ii) Use of defibrillator/external cardiac pacemaker.
  - iii) Emergency IV cannula insertion and venesection.
  - iv) Emergency ryle's tube insertion.
  - v) Gastric lavage in case of poisonings.
  - vi) Insertion of foley's catheter (both in males and females).
  - vii) CVP line insertion (subclavian/jugular).
  - viii) Endotracheal intubation.
  - ix) Arterial puncture for blood gas analysis.
  - x) Thoracic and abdominal paracentesis.
  
- **Critical Care Medicine:** During the training in internal medicine, residents should be posted in the intensive care unit. The unit should have modern monitoring facilities as well as facilities for providing artificial ventilatory support. The residents should be physically present in the ICU during their hours of posting, including night duties. The working in the ICU is fully supervised by seniors. During their posting in the ICU, the residents should acquire the following skills:
  - i) Care of the seriously ill patients with haemodynamic monitoring.
  - ii) Providing assisted ventilation using correct mode and strategies using modern ventilators under senior advice.
  - iii) Insert central venous lines and arterial lines under supervision.
  - iv) Care of the unconscious patients.
  - v) Care of patients with multiorgan failure.
  - vi) To look after the nutritional requirements of the patients.
  
- **Cardiology**
  - Clinical**
    - a) OPD: Work up and management of common OPD cases (Rheumatic Heart disease, Ischemic heart disease, Heart failure, Hypertension etc.). He/She should be able to give advice regarding primary/secondary prevention of cardiac disease.
    - b) WARD: Duties should include diagnostic case work up and day to day management of common cases (angina, myocardial infarction, rheumatic heart disease, ischemic heart disease, hypertension, congestive heart failure, congenital heart disease etc.).
    - c) Intensive coronary care unit (ICCU): A resident should acquire the expertise/knowledge to diagnose and manage acute myocardial infarction and its complications, common arrhythmias, cardiogenic shock, pericardial

tamponade etc. The resident should also learn to perform the procedures and investigations (listed below) necessary to manage such patients.

Residents should be familiar with the indications/contraindications/complications of thrombolytic therapy and antithrombotic therapy. They should be fully conversant with the pharmacology and usage of anti-arrhythmic drugs, vasopressors and inotropes and indications of pace maker implantation.

- **Procedures:** The Junior Residents should be trained to carry out the following common procedures:
  - a) Performing and interpreting a 12-lead electrocardiogram.
  - b) Pericardiocentesis (under cardiac monitoring).
  - c) Cardioversion (elective/emergent).
  - d) Defibrillation.
  - e) Haemodynamic monitoring.
  
- **Investigations:** The junior resident should be exposed to the theoretical and practical knowledge about the following investigations and their interpretation and applications in the various clinical situations:
  - a) Tread Mill Test (TMT).
  - b) Echocardiography/Doppler.
  - c) Holter monitoring.
  - d) Dobutamine stress test.
  - e) Thallium scan
  - f) Angiography & Angioplasty.
  - g) Pacing (Permanent and temporary).
  
- **Respiratory Medicine**  
**Clinical**
  - a) OPD: Work up and management of common OPD cases like Bronchial asthma, COPD, Acute bronchitis, Tuberculosis etc under consultant supervision.
  - b) WARD: Diagnostic case work up and day to day management of common chest cases (asthma, COPD, pneumonia, tuberculosis including drug resistant tuberculosis, pleural effusion, lung cancer, interstitial lung disease etc.). Residents should be fully trained in assessment/management of emergencies like acute severe asthma, pneumothorax, haemoptysis and respiratory failure. They are expected to be fully conversant with the diagnosis/investigations/treatment of tuberculosis and the Revised National Tuberculosis Control Programme including DOTS (directly observed therapy short course) treatment.

- c) Procedures: The Junior Resident should be trained to carry out the following common procedures:
    - (i) Observation of pleural biopsy.
    - (ii) Nebulisation.
  - d) Pleural fluid tapping.
  - e) Oxygenation therapy.
- **Investigations:** The Junior Resident should be guided and helped in acquiring theoretical and practical knowledge about the following investigations and their interpretation and applications to the various clinical situations.
    - a) Basic chest radiology.
    - b) CT scans chest (spiral/HRCT) - indications/patterns.
    - c) Indications/applications of fiberoptic bronchoscopy.
    - d) Interpretation of spirometry.
- **Neurology**  
**Clinical**
    - a) OPD: A Junior Resident should work up patients, discuss them with the consultant and suggest relevant investigations and management of common neurological problems.
    - b) WARD: The Junior Resident should be able to carry out diagnostic case work up and day to day management of the following cases: Meningitis, encephalitis, comatose patients, seizures (including monitoring of drug levels and management of status epilepticus), cerebrovascular accidents, systemic disease with CNS involvement, peripheral neuropathy, metabolic and degenerative diseases of nervous system, polymyositis and other muscle disorders, spinal cord diseases.
    - c) Stroke ICU: Residents should know the concepts of Stroke ICU where patients of acute stroke, thrombolytic therapy in stroke and comatose patients are being managed.
- **Procedures and Investigations:** The junior resident should be able to know the indications/interpretation of the following:
    - a) CSF examination.
    - b) Muscle and Nerve biopsy.
    - c) Interpretation of plain X-ray-skull, CT scan, and MRI scans.
    - d) Indications/interpretation of EEG record.
    - e) Indications/applications of nerve conduction studies.
    - f) Indications/interpretation of EMG record.
    - g) Indications/applications of evoked potentials.
    - h) Edrophonium test.
    - i) Indications of continuous EEG monitoring.

- **Gastroenterology**

- Clinical**

- a) OPD: A Junior Resident should work up common cases and discuss with the consultant.
    - b) WARD: A Junior Resident should gain competency in diagnostic case work up and day to day management of the following cases:

- Acute viral hepatitis and its complications, chronic hepatitis, cirrhosis of liver and its complications, management of hepatic encephalopathy, upper and lower gastrointestinal bleed (assessment/monitoring/indications for transfusion), acute abdomen (peritonitis, intestinal obstruction, pancreatitis etc), liver abscess, inflammatory bowel disease, malabsorption, intestinal tuberculosis and its complications, malignant lesions of liver, gall bladder, stomach, pancreas and intestines etc.

- Procedures:** The Junior Resident should have acquired practical knowledge of/and should be able to carry out the following:

- a) Per rectal examination and proctoscopy.
    - b) Nasogastric intubation.
    - c) Ascitic tap.
    - d) Liver biopsy.
    - e) FNAC of abdominal masses (under ultrasound guidance).
    - f) Needle aspiration from liver abscess (under ultrasound guidance).

- Investigations:** The Junior Resident should have acquired the theoretical/practical knowledge about following investigations:

- a) Interpretation of plain X-ray of the abdomen, barium swallow, barium meal, barium enema, abdominal ultrasound and CT scan of the abdomen.
    - b) Pattern of liver biopsy in common diseases (e.g. chronic hepatitis, cirrhosis of the liver etc.).
    - c) Indication for upper GI Endoscopy, Sigmoidoscopy, Colonoscopy, Endoscopic Sclerotherapy and Banding, Enteroscopy.
    - d) ERCP and MRCP – indications and interpretations.
    - e) Capsule Endoscopy – indications and interpretations.

- **Endocrinology**

- Clinical**

- a) OPD: A Junior Resident in the OPD should work up common endocrine disorders listed below.
    - b) WARD: A Junior Resident should be able to manage of the following common endocrine disorders: Type 1 & 2 Diabetes Mellitus and their complications (insulin therapy/oral drug therapy/dietary advice and management of emergencies like ketoacidosis, hypoglycemia,

hyperosmolar coma), Hypo and Hyperthyroidism, Cushing's syndrome, Addison's disease, Pituitary disorders (growth retardation, panhypopituitarism), Hirsutism and Virilisation, Pubertal disorders, Disorders of fertility and sexual potency, etc.

**Procedures and Investigations:** The Junior Resident should have the knowledge about the following procedures:

- a) Daily glucose monitoring with glucometer.
- b) Stimulation tests (ACTH stimulation test etc.).
- c) Suppression tests (dexamethasone suppression tests, GH suppression test).
- d) Prolonged fasting test, water deprivation test, etc.
- e) Continuous blood glucose monitoring.

- **Oncology/Haematology**

- **Clinical**

- a) OPD: A Junior Resident should undergo the following clinical/other teaching exercise and acquire knowledge of following:
  - (i) Basic workup of a cancer patient.
  - (ii) Metastatic work up.
  - (iii) Principles of staging a tumor.
  - (iv) OPD work up of a patient of anemia.
  
- b) WARD: A Junior Resident should be trained for carrying out diagnostic workup and management of common oncological diseases and anaemias.
  - (i) Indications for chemotherapy/radiation therapy/surgery in the various oncological diseases & awareness of the toxicity of chemotherapy/ radiation therapy and its management.
  - (ii) Palliation of a patient with cancer.
  - (iii) Management of oncological complications like hypercalcaemia, tumor lysis syndrome, SVC obstruction, cord compression etc.
  - (iv) Management of a patient with neutropenia including principles of infection control/isolation/barrier nursing.
  - (v) Workup of a patient presenting with anemia, its investigations and treatment.
  - (vi) Investigations and management of coagulation abnormalities and thrombocytopenia.
  - (vii) Indications, contraindications and complications of blood transfusion and component therapy like packed cell transfusion, platelet transfusion and fresh frozen plasma transfusion.

**Procedures:** The Junior Resident should be able to know the indications of the following diagnostic and therapeutic modalities:

- a) Intra thecal drug administration.
- b) Chemo port needle insertion.
- c) PICC line insertion.
- d) Stem cell transplantation.
- e) Bone marrow transplantation.

- **Nephrology**

- **Clinical**

- a) OPD: A junior resident is expected to work up common nephrology cases and discuss with the consultant.
    - b) WARD: A Junior Resident should be trained for carrying out diagnostic case work up and day to day management of the following cases:

RPGN (rapidly progressive glomerulonephritis), acute renal failure (ARF), chronic renal failure (CRF), renal carcinoma, obstructive uropathy, congenital renal disorders, renal calculus disease, systemic diseases with renal involvement, urinary tract infection, hypertension, renal transplant management (pre-operative workup and follow up), renal tubular disorders. He should have complete knowledge of drug pharmacology in renal failure, dietary modification, fluid and electrolyte balance and acid base balance.

**Investigations:** The Junior Resident should have practical and theoretical knowledge of following investigations:

- a) Urine examination.
      - b) Serum and urine osmolality.
      - c) Glomerular and renal function test studies.
      - d) Renal dynamic screening and imaging (esp., renal ultrasound).
      - e) Immunological tests related to renal diseases.
      - f) Cyclosporin immunoassay (interpretation).
      - g) Pattern of renal biopsy of common renal disease.
    - **Dialysis training:** The Junior Resident should be exposed to dialysis unit functioning. They should acquire the knowledge of:
      - a) Initiation/indications/monitoring of peritoneal dialysis.
      - b) Indications/contraindications of hemodialysis.
      - c) Initiation of hemodialysis.
      - d) Familiarity with various routes of dialysis access: veno-venous, fistulas, shunt.
      - e) Monitoring during hemodialysis and knowledge of the likely complications.
      - f) Indications for hemofiltration.

- **Rheumatology**

- **Clinical**

- a) OPD: Residents should have knowledge and skills to be able to assess common rheumatological problems like Rheumatoid arthritis, SLE, Sjogren's syndrome, Gout, Scleroderma, Spondyloarthropathies, Osteoarthritis, Vasculitis, etc.
  - b) WARD: Residents should have knowledge and skills to be able to assess and manage the patients admitted with the diseases listed above.
- **Nutrition:** During training in wards and ICU, resident should have the knowledge and skills in nutritional issues that are listed below:
    - a) Assessment of nutritional status.
    - b) Malnutrition.
    - c) Impact of disease on nutritional status.
    - d) Calculation of caloric requirement in various disease states.
    - e) Principles and routes of nutrition support (enteral/parenteral).
    - f) Methods of providing nutrition support.

## 5. Teaching Programme

- 5.1.** General Principals: Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training is skills oriented.

Learning in postgraduate program is essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

- 5.2.** Teaching Sessions: The teaching methodology consists of bedside discussions, ward rounds, case presentations, clinical grand rounds, statistical meetings, journal club, lectures and seminars. Along with these activities, trainees should take part in inter-departmental meetings i.e. clinico-pathological and clinico-radiological meetings that are organized regularly.

Trainees are expected to be fully conversant with the use of computers and be able to use databases like the Medline, Pub med etc.

They should be familiar with concept of evidence based medicine and the use of guidelines available for managing various diseases.

- 5.3.** Teaching Schedule: Following is the suggested weekly teaching programmed in the Department of Medicine:

1.	Case Presentation & Discussion	Twice a week
2.	Seminar	Once a week
3.	Journal Club	Once a week
4.	Statistical & Mortality Meet	Once a month
5.	Vertically Integrated Clinic	Once a month

6.	Thesis Review/ Guest Talk	Once a month
7.	Faculty lecture teaching	Once a month

- Each unit should have regular teaching rounds for residents posted in that unit. The rounds should include bedside case discussions, file rounds (documentation of case history and examination, progress notes, round discussions, investigations and management plan), interesting and difficult case unit discussions.
- Central hospital teaching sessions should be conducted regularly and junior residents should present interesting cases, seminars and take part in clinico-pathological case discussions.

## 6. Posting

- During 1<sup>st</sup> three months the residents will fully acquaint himself with the hospital working & patient management protocols in all the indoor segments including casualty, ICU wards, labs, radiology & interdepartmental referral/consultation protocols.

During 1<sup>st</sup> year the student will work under direct supervision of his seniors and consultants on call. He will be entrusted with the job of preparing indoor patient files, record the detailed history & examination findings, send the required in investigations & make discharge cards as per advice of the seniors.

He shall observe and assist the seniors during the conduct of procedures & learn disease management protocols.

- In 2<sup>nd</sup> year the residents will be posted in emergency and ICU for a minimum of one month & shall be rotated in sub specialties/allied subjects for minimum of one month each.
- In 3<sup>rd</sup> year the residents is encouraged to take independent decisions in the management of patients. He is also to engage himself in undergraduate teaching.

### ROSTER OF RESIDENCY POSTINGS

#### First Year Residency

- Rotation in General Wards with Parent Unit
- Rotation duty in ICCU/MICU/Dialysis Unit

#### Second Year Residency

- Rotation Unit Based in Casualty
- Rotation in General Wards with Parent Unit
- Rotation duty in ICCU/MICU/Dialysis Unit/Sub Specialty Units

#### Third Year Residency

- Rotation in General Ward with Parent Unit
- Rotation Duty in Casualty & OPD



## **7. Thesis**

- 7.1.** Every candidate shall carry out work on an assigned research project under the guidance of a recognized Postgraduate Teacher; the project shall be written and submitted in the form of a thesis.
- 7.2.** Every candidate shall submit thesis plan to the University within the time frame specified by the university.
- 7.3.** Thesis shall be submitted to the University before the commencement of theory examination as per the regulation of the university (atleast 6 months before the theory and practical examinations).
- 7.4.** Requirements:
  - (i) Identify a relevant research question
  - (ii) Conduct a critical review of literature
  - (iii) Formulate a hypothesis
  - (iv) Determine the most suitable study design
  - (v) State the objectives of the study
  - (vi) Prepare a study protocol
  - (vii) Undertake the study according to the protocol
  - (viii) Analyze and interpret research data, discuss, summarize and draw conclusions.
  - (ix) Write a research paper.
- 7.5.** Thesis assessment: the thesis shall be examined by a minimum of three examiners, one internal and two external examiners, who shall not be the examiners for theory and practical exams. Only on the acceptance of the thesis by the examiners the candidate shall appear for the final exams.

## **8. Assessment:** All the PG residents should be assessed daily as well as periodically.

### **8.1.** General Principles:

- The assessment should be valid, objective, and reliable.
- It should cover cognitive, psychomotor and affective domains.
- Formative and summative (final) assessment is to be conducted in theory as well as practicals/clinicals. In addition, thesis should be assessed separately.

### **8.2.** Formative Assessment

- The formative assessment is continuous as well as end of term.
- The former is based on the feedback from the consultants concerned.
- Formative assessment will provide feedback to the candidate about his/her performance and help to improve in the areas they lack.
- Record of internal assessment should be presented to the board of examiners for consideration at the time of final examination.

### **8.3.** Internal Assessment: The performance of the Postgraduate student during the training period should be monitored throughout the course and duly

recorded in the log books as evidence of the ability and daily work of the student. Marks should be allotted out of 100 as followed.

Sl. No.	Item	Marks
1.	Personal Attributes	20
2.	Clinical Work	20
3.	Academic activities	20
4.	End of term theory examination	20
5.	End of term practical examination	20

(a) Personal attributes:

- (i) Behavior and Emotional Stability: Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.
- (ii) Motivation and Initiative: Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.
- (iii) Honesty and Integrity: Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.
- (iv) Interpersonal Skills and Leadership Quality: Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

(b) Clinical Work:

- (i) Availability: Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
- (ii) Diligence: Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
- (iii) Academic ability: Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
- (iv) Clinical Performance: Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

(c) Academic Activity: Performance during presentation at Journal club/ Seminar/ Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.

(d) End of term theory examination conducted at end of 1st, 2nd year and after 2 years 9 months

(e) End of term practical/oral examinations after 2 years 9 months.

- (f) Marks for personal attributes and clinical work should be given annually by all the consultants under whom the resident was posted during the year. Average of the three years should be put as the final marks out of 20.
- (g) Marks for academic activity should be given by the all consultants who have attended the session presented by the resident.
- (h) The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examinations. 50% Marks would be mandatory for appearing in Final Examinations.
- (i) Minimum 80% attendance in imparted training in each calendar year of residency is mandatory.
- (j) The post graduate candidate would be required to present one poster presentation, to read one paper at a National/State conference and to present one research paper which should be published / Accepted for publication / sent for publication during the period of his post graduate studies so as to be eligible to appear at the post graduate degree examination

#### 8.4. Summative Assessment

- Ratio of marks in theory and practical will be equal.
- The pass percentage will be 50%.
- Candidate will have to pass theory and practical examinations separately.

#### **Theory examination (Total=400)**

Each paper will consist of:

2 (two) long answer type questions (20 x 2=40)

6 (six) short answer type questions (6 x 10=60)

Paper 1	Basic sciences as related to Medicine	:	100
Paper 2	Principles & Practice of Medicine	:	100
Paper 3	Principles & Practice of Medicine	:	100
Paper 4	Recent Advances in Medicine	:	100
<b>Total</b>			<b>400</b>

#### **Practical & Viva-Voce Examination**

1	(One) Long Case (150 x 1=150)	:	150
2	(Two) Short Cases (75 x 2=150)	:	150
	Viva-voce/ Grand Viva	:	100
<b>Total</b>			<b>400</b>

9. Job Responsibilities: The trainees in internal medicine should be designated as residents. According to year of residency he/she should be designated as First/Second/Third year resident.

- Outdoor Patient (OPD) Responsibilities
  - (a) The working of the residents in the OPD should be fully supervised.
  - (b) They should evaluate each patient and write the observations on the OPD card with date and signature.
  - (c) Investigations should be ordered as and when necessary using prescribed forms.
  - (d) Residents should discuss all the cases with the consultant and formulate a management plan. Patient requiring admission according to resident's assessment should be shown to the consultant on duty.
  - (e) Patient requiring immediate medical attention should be sent to the casualty services with details of the clinical problem clearly written on the card.
  - (f) Patient should be clearly explained as to the nature of the illness, the treatment advice and the investigations to be done.
  - (g) Resident should specify the date and time when the patient has to return for follow up.
  
- In-Patient Responsibilities: Each resident should be responsible and accountable for all the patients admitted under his care. The following are the general guidelines for the functioning of the residents in the ward:
  - (a) Detailed work up of the case and case sheet maintenance: He/She should record a proper history and document the various symptoms. Perform a proper patient examination using standard methodology. He should develop skills to ensure patient comfort/consent for examination. Based on the above evaluation he/she should be able to formulate a differential diagnosis and prepare a management plan. Should develop skills for recording of medical notes, investigations and be able to properly document the consultant round notes.
  - (b) To organize his/her investigations and ensure collection of reports.
  - (c) Bedside procedures for therapeutic or diagnostic purpose.
  - (d) Presentation of a precise and comprehensive overview of the patient in clinical rounds to facilitate discussion with senior residents and consultants.
  - (e) To evaluate the patient twice daily (and more frequently if necessary) and maintain a progress report in the case file.
  - (f) To establish rapport with the patient for communication regarding the nature of illness and further plan management.
  - (g) To write instructions about patient's treatment clearly in the instruction book along with time, date and the bed number with legible signature of the resident.

- (h) All treatment alterations should be done by the residents with the advice of the concerned consultants and senior residents of the unit.
- Admission day
  - Following guidelines should be observed by the resident during admission day.
  - (a) Resident should work up the patient in detail and be ready with the preliminary necessary investigations reports for the evening discussion with the consultant on duty.
  - (b) After the evening round the resident should make changes in the treatment and plan out the investigations for the next day in advance.
- Doctor on Duty
  - (a) Duty days for each Junior Resident should be allotted according to the duty roster.
  - (b) The resident on duty for the day should know about all sick patients in the wards and relevant problems of all other patients, so that he could face an emergency situation effectively.
  - (c) In the morning, detailed over (written and verbal) should be given to the next resident on duty. This practice should be rigidly observed.
  - (d) If a patient is critically ill, discussion about management should be done with the senior resident or consultant at any time.
  - (e) The doctor on duty should be available in the ward throughout the duty hours.
- Care of Sick Patients
  - (a) Care of sick patients in the ward should have precedence over all other routine work for the doctor on duty.
  - (b) Patients in critical condition should be meticulously monitored and records maintained.
  - (c) If patient merits ICU care then it must be discussed with the senior residents and consultants for transfer to ICU.
- Resuscitation skills: At the time of joining the residency programme, the resuscitation skills should be demonstrated to the residents and practical training provided at various work stations.
  - a) Residents should be fully competent in providing basic and advanced cardiac life support.
  - b) They should be fully aware of all advanced cardiac support algorithms and be aware of the use of common resuscitative drugs and equipment like defibrillators and external cardiac pacemakers.
  - c) The resident should be able to lead a cardiac arrest management team.
- Discharge of the Patient

- (a) Patient should be informed about his/her discharge one day in advance and discharge cards should be prepared 1 day prior to the planned discharge.
  - (b) The discharge card should include the salient points in history and examination, complete diagnosis, important management decisions, hospital course and procedures done during hospital stay and the final advice to the patient.
  - (c) Consultants and Senior Residents should check the particulars of the discharge card and counter sign it.
  - (d) Patient should be briefed regarding the date, time and location of OPD for the follow up visit.
- In Case of Death
    - (a) In case it is anticipated that a particular patient is in a serious condition, relatives should be informed about the critical condition of the patient beforehand.
    - (b) Residents should be expected to develop appropriate skills for breaking bad news and bereavements.
    - (c) Follow up death summary should be written in the file and face sheet notes must be filled up and the sister in charge should be requested to send the body to the mortuary with respect and dignity from where the patient's relatives can be handed over the body.
    - (d) In case of a medico legal case, death certificate has to be prepared in triplicate and the body handed over to the mortuary and the local police authorities should be informed.
    - (e) Autopsy should be attempted for all patients who have died in the hospital especially if the patient died of an undiagnosed illness.
- Bedside Procedures: The following guidelines should be observed strictly:
    - (a) Be aware of the indications and contraindications for the procedure and record it in the case sheet. Rule out contraindications like low platelet count, prolonged prothrombin time, etc.
    - (b) Plan the procedure during routine working hours, unless it is an emergency. Explain the procedure with its complications to the patient and his/her relative and obtain written informed consent on a proper form. Perform the procedure under strict aseptic precautions using standard techniques. Emergency tray should be ready during the procedure.
    - (c) Make a brief note on the case sheet with the date, time, nature of the procedure and immediate complications, if any.
    - (d) Monitor the patient and watch for complications(s).
- Medico-Legal Responsibilities of the Residents

- (a) All the residents are given education regarding medico-legal responsibilities at the time of admission in a short workshop.
- (b) They must be aware of the formalities and steps involved in making the correct death certificates, mortuary slips, medico-legal entries, requisition for autopsy etc.
- (c) They should be fully aware of the ethical angle of their responsibilities and should learn how to take legally valid consent for different hospital procedures & therapies.
- (d) They should ensure confidentiality at every stage.

## **10. Suggested Books and Journals**

### **10.1. Core Books**

- Hutchinson's Clinical Methods
- Harrison's Principles of Medicine
- Oxford Text Book of Medicine
- Cecil Text Book of Medicine
- API Text Book of Medicine

### **10.2. Reference Books**

- Braunwald's Heart Disease
- Hurst's The Heart
- Sheila Sherlock's Diseases of the Liver and Biliary system
- Adams and Victor's Principles of Neurology
- Crofton and Douglas Respiratory Diseases
- Brenner and Rector's The Kidney
- William's Text Book of Endocrinology
- Mandell's Principles and Practice of Infectious Diseases
- Kelley's Text Book of Rheumatology
- Devita's Principles and Practice of Oncology
- Text Book of Critical Care Medicine
- Shamroth's An Introduction to Electrocardiography

### **10.3. Core Journals**

- New England Journal of Medicine
- The Lancet
- Annals of Internal Medicine
- Journal of Association of Physicians of India
- Medical Clinics of North America

### **10.4. Reference Journals**

- Circulation
- Heart
- Indian Heart Journal
- JIMA (Journal of Indian Medical Association)

- Journal of Indian Academy of Clinical Medicine
- Quarterly Journal of Medicine
- National Medical Journal of India
- Critical Care Medicine
- Diabetes Care
- Cancer
- Gastroenterology
- Neurology India
- Chest
- American Journal of Kidney Diseases