

CURRICULUM

MD GERIATRICS

GOAL

Aging is an inevitable process associated with physiological and psychological changes. Increasing age often brings increasing disability and frailty. The elderly frequently have multiple problems and multiple causes for each problem. Illness often presents atypically in older patients, frequently as a change in function.

The goal of postgraduate course MD Geriatrics is to train an MBBS graduate into a competent geriatrician who:

- Has acquired the competencies pertaining to medicine that are required to be practiced in the community and assist people to achieve maximum longevity with the highest possible quality of life.
- Is aware of the changes in the organ systems due to aging process, to provide optimal care to older people.
- Is a good caretaker, decision maker, manager and has good communication skills to effectively communicate with patient, family and the community.
- Is oriented to the principles of research methodology.
- Is aware of the implications of population aging for the individual, family and community and hence take part in planning and implementation of programmes to facilitate care of elderly.

OBJECTIVES

The following objectives are laid out to fulfill the goals of the course.

At the end of the training period the candidate must be able to :

- Practice the speciality of medicine maintaining high professional standards, have knowledge of basic sciences relevant to medicine.
- Identify the age associated changes in structure and function of major body systems.
- Do a geriatric functional assessment which examines physiological, mental, emotional, socio-economic and environmental function.
- Understand the specific features of presentation of clinical problems in old age, diagnostic features peculiar to old people, problems of physical examination, common complications of illness in old age.
- Know the major aspects of pharmacology and therapeutics in older people.
- Provide care which must be focussed on restoring and maintaining function, maximising quality of life, preserving autonomy, maintaining safety and providing comfort and dignity in dying.
- Identify the risk factors in older subjects, describe the interventions to modify these risk factors and discuss the basic concepts of screening.
- Discuss the relevance of alternative systems of medicine in health care of elderly.
- Identify specific issues for health education for older people and enumerate various methods of communication in health education.

- Identify various issues of caring for the elderly, ethical aspects of care for older people, setting objectives for care, proper involvement of patient and family in clinical decisions, terminal care, emotional aspects of care for patient and family.
- Must know the structure, functions and responsibilities of health and social services used by older people, list the privileges and benefits allotted to senior citizens by government and NGOs.
- Enumerate the role of various health functionaries in medical rehabilitation, referral and monitoring system in rehabilitation and discuss the various strategies that can be promoted by various agencies in order to achieve social rehabilitation of the aged.
- Demonstrate competence in basic concept of epidemiology and research methodology.
- Maintain professional honesty and integrity.

DURATION OF THE COURSE

The course of study shall be for three years consisting of six terms and each year consisting of two terms.

COURSE CONTENT

KNOWLEDGE

BASIC SCIENCES

Applied aspects of Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology, Hematology

BASIC GERIATRICS

GERIATRIC PRINCIPLES

- Aging physiology
- Aging pathology
- How elderly are different
- History taking in elderly and barriers to obtaining proper history
- Rationale of doing investigations in elderly
- Interpretation of results
- Age related changes in Immune system and approach to older patients with an infectious disease

DEMOGRAPHY AND EPIDEMIOLOGY OF AGING

- Global demographic transition and its impact on the country, individuals and society
- Greying of nations
- Population aging in India and causes of national concern

NUTRITION

- Common sources of various nutrients
- Factors influencing nutritional status in older adults

- Rules for formulating diet for elderly individuals
- Common nutrition related health disorders and their control and management
- Social and cultural factors in nutrition and health
- Important National Nutritional Programmes
- Nutritional surveillance, education and rehabilitation

PHARMACOKINETICS AND PHARMACODYNAMICS

- Prescribing for elderly patients
- Altered drug responsiveness in elderly patients

SUCCESSFUL AGING / AGING GRACEFULLY

- Risk factor management
- Screening for disease in old age, cost benefit of screening procedures
- Health promotion in old age
- Immunization in old age

PSYCHOSOCIAL GERIATRICS

- Psychological issues in old age
- Social changes in old age
- Functional ability and dependence
- Evaluation of functional ability
- Role of family
- Planning for retired life

COPING WITH AGING

- Environmental facilitation, avoiding accidents and increasing level of independence to perform daily activities
- Complementary medicine for elderly
- Alcoholism, smoking and substance abuse by older persons
- Elder mistreatment
- Bioethical decision making and end of life care
- Planning for long term care
- Issues in caring, concerns related to caregivers
- Family counselling
- Support groups
- Specific issues for health education in older people, various approaches of health education for elderly

REHABILITATION GERIATRICS

- Impairment, Disability and Handicap
- Levels of disability prevention
- Physical, Vocational, Social and Psychosocial rehabilitation
- Rehabilitation approaches
- Rehabilitation team
- Assistive devices
- Legislative aspects of rehabilitation

CONSTITUTIONAL PROVISIONS FOR ELDERLY

- Privileges and benefits for elderly
- Governmental and Nongovernmental agencies

CLINICAL GERITRICS

- Different face of clinical medicine in elderly

INFECTION AND IMMUNITY

Normal immune mechanisms

Age related changes in immune mechanisms

Risk factors for infection

Common infections in old age-lower respirator tract infection/pneumonia, UTI, tuberculosis, diarrhoea and gastroenteritis, skin infections, meningitis, endocarditic, septicaemia, PUO

Atypical presentations of infection

General principles of antibiotic therapy in old age

Immunization in old age

Approach to an elderly with suspected infectious disease

Community acquired infection

Hospital acquired infection

Infection control in hospital

Health education to patient, caretaker and family members

GASTROINTESTINAL DISORDERS

Normal age related changes in GI tract

Disorders of upper GI tract -

Diseases of oesophagus

GERD and its management

Peptic ulcer diseases and its management

Nausea and vomiting in elderly,

Upper GI bleed

Disorders of lower GI tract and their management -

Mal absorption disorders in elderly

Constipation

Lower GI bleed

Tuberculosis of intestine

Gastrointestinal motility disorders/IBS

Chronic diarrhoea disorders

Disorders of liver, biliary system and pancreas -

Normal physiology of liver and biliary tract, bile production and flow

Physiological and biological alterations in old age

Common liver function tests

Liver infections - viral, bacterial, parasitic, fungal

Drug induced liver disease

Cirrhosis o liver and portal hypertension

Tumours of liver

Diseases of gall bladder-acute and chronic cholecystitis, gall stones

Diseases of bile duct

Tumours of biliary tract

Diseases of pancreas-acute and chronic pancreatitis

Pancreatic malignant tumour

Alcoholism and its ill effects

RESPIRATORY SYSTEM

Normal respiratory physiology and applied aspects of respiratory system

Pulmonary function tests
Acute upper respiratory tract infections
Pneumonia
Pulmonary Tuberculosis and RNTCP
Non infective disorders- bronchial asthma, COPD, chronic cor pulmonale, interstitial lung disease
Granulomatous diseases of lung - Sarcoidosis
Pulmonary manifestations of systemic diseases
Drug induced lung diseases
Diseases of pleura, mediastinum and diaphragm
Lung cancer and other intra thoracic malignancies
Ill effects of smoking

Pathogenesis, Clinical features, Diagnostic methods, Management, Prevention, Control and Special considerations in elderly patients.

CARDIOVASCULAR DISEASES

Normal physiology of cardiovascular system
Atherosclerosis, Coronary artery disease
Hypertension and Hypotension
Congestive cardiac failure
Ischaemic heart disease
Cardiac arrhythmias-tachy and brady arrhythmias, heart blocks
Valvular Heart Diseases
Infective endocarditic
Myocardial and pericardial diseases
Diseases of aorta
DVT and pulmonary embolism
Peripheral arterial and venous diseases
Cardiac drugs and drug interactions

Pathophysiology, Clinical features, Diagnosis, Management Prevention and Control
Latest advancements in the field

ENDOCRINOLOGICAL DISORDERS

Principles of endocrinology-mechanism of action of hormones and receptors
Assessment of endocrine function
Diabetes mellitus - prevalence, aetiopathogenesis, classification, clinical presentation, investigations, non diabetic hyperglycaemia, management of Type II DM, special considerations in elderly, chronic complications-micro and macro vascular, lifestyle changes, diet, exercises, oral hypoglycaemics, insulin therapy, diabetic ketoacidosis, Hypoglycaemia, foot care
Problems of Thyroid function in elderly -
 Assessment of thyroid function
 Hyperthyroidism
 Hypothyroidism
 Thyroid malignancies
Obesity and aging -
 Causes and consequences of obesity
 Assessment of obesity
 Management of obesity
Aging and Sexuality -

Applied anatomy and physiology of male and female reproductive system
Sexuality in elderly
Effect of coexisting health problems and medications
Erectile dysfunction
Menopause, Urinary problems, Genital prolapse, Pruritus vulvae, Vaginal discharge
Clinical evaluation of the patient
Current concepts in management
Hormone Replacement Therapy

GENITOURINARY DISORDERS

Normal distribution of water and electrolytes, factors maintaining homeostasis, acidosis, alkalosis
Fluid and electrolyte imbalance in elderly - water, sodium, potassium imbalance
Changes in kidney due to aging
Evaluation of a patient with renal disease
Interpretation of lab tests
Urinary Tract Infection
Renal failure-acute, chronic-pathogenesis, clinical features, conservative management, diet
Diseases of prostate-BPH, Prostatitis, prostatic abscess, Ca prostate
Drugs and kidney
Basics of renal transplantation
Organ donation
Concept of brain death and cadaver transplantation
Immunosuppressive drugs
Renal replacement therapy

CNS AND NEUROPSYCHIATRIC DISORDERS

Applied aspects of anatomy-brain, spinal cord
Evaluation of CNS diseases
Clinical approach to –acute confusional state, dizziness in elderly, falls, headache, seizure, aphasia, sleep disorders, dementia
Cerebrovascular disorders – classification of strokes, ischaemic CV diseases, clinical features, prevention of stroke, management
Haemorrhagic stroke, management
Cranial nerve disorders
Depression and psychiatric disorders –
 Impact of aging on health and psychiatric illness
 Epidemiology and classification of depression
 Assessment of depressed patient, investigation and management
Other psychiatric disorders – anxiety disorder, post traumatic stress disorders, obsessive compulsive disorder, hypochondriasis, somatisation disorder, paranoid disorder
 Schizophrenia
 Suicide
 Mental Health Act
 Elder abuse
Cognitive impairment and dementia –
 Pathophysiology of brain in normal aging and dementia
 Types of dementia

- Alzheimer's disease
- Delirium
- Neurodegenerative disorders-
 - Parkinson's disease
 - Huntington's disease
 - Essential tremor
 - Dystonias
- Neuropathies in elderly – causes , treatment, management
- Myopathies in elderly – types, investigation, management
- Disorders of Neuromuscular junction in elderly
- Sleep disorders- causes of insomnia, effect of drugs
- Infections of CNS –
 - Meningitis-clinical features, investigation, treatment, prevention
 - Tubercular meningitis
 - Fungal and viral infection
 - Brain abscess
- Coma – causes, neurological assessment, management, general care of patient

MUSCULOSKELETAL DISORDERS

- Osteoporosis – epidemiology, pathophysiology, clinical features, screening, prevention, treatment, special situations-drug induced
- Diseases of joints –
 - Degenerative diseases – osteoarthritis
 - Inflammatory and metabolic disorders – Rheumatoid arthritis-immunological mechanism, SLE,crystal arthritis, chondrocalcinosis
- Nutritional osteomalacia
- Lower back pain
- Fractures and musculotendinous disorders –
 - Fracture neck of femur, trochanteric region of femur, lower end of radius and other areas
 - Frozen shoulder, painful arc syndrome, polymyalgia rheumatica, tear of supraspinatus tendon
- Bone tumours-
 - Multiple myeloma
 - Metastatic bone tumour
- Mixed connective tissue disorders –
 - Systemic sclerosis
 - Myositis

HAEMATOLOGICAL DISORDERS

- Haematopoiesis
 - Anaemias- causes, clinical features and laboratory approach and treatment
- Haematological malignancies, Leukaemias an its managements
- Autoimmune blood disorders
- Transfusion medicine
- Recognition and management of transfusion disorders
- Transfusion in patients with Haematological diseases (Component therapy)
- Coagulopathy
- Hyper coagulable state

Myelodysplastic syndromes and myeloproliferative disorders
Platelets disorders- Purpuras- Primary and secondary. Therapeutic plasmapheresis and
cytapheresis,
ABVP, CHOP Chemotherapy, Supportive therapy

SPECIAL SENSES DISORDERS

Visual impairment – causes, sociocultural implications, National Programme for
Control of Blindness, Rehabilitation

ENT disorders –

- Aging changes in the ear
- Diseases of outer and middle ear
- Hearing loss in geriatric population

Disorders of balance – dizziness, falls, management and rehabilitation

Rhinology in geriatrics – anatomic and physiologic changes in nose

- Nasal dysfunction

- Olfactory disturbance

Laryngopharyngeal disorders – swallowing disorders in elderly

- Speech related problems – hoarseness of voice

- Sleep disorders

Head and neck malignancy, neck masses in geriatrics

Visual and hearing aids

Diseases of oral cavity –

- Importance of oral health in geriatric population

- Age changes in oral tissues

- Dental caries

- Periodontal diseases

- Edentulousness

- Artificial dentures

- Oral mucosal lesions

- Oral cancers and precancers

- Salivary gland diseases

Problems in delivery of oral health care to geriatric population

MEDICAL ONCOLOGY

Basics of oncology

Incidence of cancer in elderly, biology of aging process vis-à-vis cancer

Normal cell, Cancer cell- Cell cycle and its Regulation

Molecular Biology Techniques such as Southern blot, Northern blot, western blot,

Karyotyping, FISH, PCR

Metastatic cascade

Angiogenesis

Precancerous conditions

Common malignancies in elderly males, elderly women

Cancer screening and identification of high risk patient

Staging of cancer and management policies

Treatment decisions – surgery, radiotherapy, chemotherapy

Basic principles of Chemotherapy-
Drug classification
Drug action side effects
Radiotherapy-
Structure of Atom, radio activity and its effect on cell, side effects
Clinical oncology
Hematological cancers
Hematopoiesis
Blood component therapy
Bone marrow transplant
Newer Modalities in Therapy and Supportive care
Biologic Response Modifiers
Gene therapy
Stem cell transplant
Newer antibiotics
Nutritional support
Growth factors
Treatment related toxicity and quality of life
Cancer clinical trials in elderly

PALLIATIVE CARE

Concept of palliative care
Pain management
Symptom management
Nursing care in terminally ill patients
Psychological support
Ethical issues
Practical issues and bereavement

RADIO DIAGNOSIS

General:- The importance and scope of different radiological examinations in the diagnosis, treatment and management of various diseases.

Newer imaging modalities: Different imaging modalities including the newer imaging techniques – ultrasonography, colour Doppler imaging, colour flow mapping, computed Tomography, MRI, Nuclear imaging, PET and SPECT- basic principles

Protocols to be followed while referring for various routine investigations

Barium studies

Ultrasonography

Computed tomography

MRI imaging

Nuclear medicines investigations

Various contrast investigations and contrast materials used in imaging techniques and adverse reactions

Interpretations of plain, contrast x rays, ultrasonography, CT, MRI& NM

DERMATOLOGICAL DISORDERS

Aging of skin

Inflammatory skin disorders – senile pruritus, senile xerosis, eczemas, drug reactions,

Ulcers

Auto immune blistering disorders

Infections and infestations – viral, bacterial, parasitic, candidiasis, herpes zoster

Systemic diseases with skin manifestations

Psoriasis

Vitiligo

Neoplasms-benign tumours, premalignant lesions, malignant tumours

Pressure ulcers

General care in geriatric skin patients

PRINCIPLES OF GERIATRIC SURGERY

Common surgical problems and indications for surgery

Preoperative assessment – general health status, respiratory problems, cardiac problems, fluid and electrolyte balance, nutrition

Perioperative care of elderly

Post operative care and management of post operative complications

Prevention of bedsores

EMERGENCY MEDICINE

Basic and advanced life support, Shock Syndromes, Anaphylaxis, Acid base imbalance Multi organ failure, Poisoning – OP compound, sedatives – anagement-specific therapy, supportive therapy, legal responsibilities,Hyperthermia, pothemia,

Accidents in elderly – approach to an elderly patient with trauma, Basics of mechanical ventilation, Transfusion reaction, Upper G I hemorrhage Upper, Airway obstruction tension, Pneumothorax Acute Asthma, ARDS cardiac arrest , Cardiac temponade, Hypertensive emergencies & urgencies, Status epilepticus, Coma in Diabetes Endocrinal, Emergencies Cerebral, Malaria emergencies in Cancer infections in ICU, Antibiotic usage in ICU, Parenternal Nutrition, Brain death.

PRINCIPLES OF GERIATRIC REHABILITATION

Interdisciplinary team

STATISTICS

Descriptive statistics, analytical statistics, qualitative research methodology, research design and critical review of statistical procedures

PRINCIPLES OF EVIDENCE BASED MEDICINE –

Understanding journal based literature study the value of textbook, reference book article ;the value of review articles; original articles and their assessment. Understanding the value of retrospective, prospective randomized, controlled and blinded studies – the principles including the meaning of various bio-statistical tests applied in these studies.

MEDICAL ETHICS & SOCIAL RESPONSIBILITIES OF PHYSICIANS –
Professional Ethics, Research Ethics.

USE OF COMPUTERS IN MEDICINE

COMMUNICATION SKILLS WITH PATIENTS

SKILLS TO BE ACQUIRED

List of essential competencies

Clinical Assessment skills. Laboratory diagnostic abilities. Interpretation abilities
Communication Abilities, and Therapeutic skills.

Skills of history taking

Active and positive listening with empathy.
Interpretation of non - verbal communication.

Art of history taking in elderly. Ascertaining life history and life style.
Tactful elicitation of personal and psychosocial history including the memory status.
Carry out meticulous general & systemic examination. Specific areas of examination based
on clues in the history. Make a personality assessment.

Information, evaluation skills, (interpretation).

Diagnostic formulation and differential diagnosis.
Evaluate, role of physical and psychosocial factors contributing to the patients behavior
pattern.
Formulate plan of management which includes referral to a specialist, whenever
appropriate.

Information - giving skills

Pass information to promote health.
Explain the implication of diagnosis to patient as well as the family. Inform the patient
about beneficial aspects and also potential adverse effects of treatment.
Philosophical approach to life and death.
Inclusion of immediate family members in the discussion.

Reporting skills

Report verbally or in writing or any other media of communication
To medical colleagues. To lay people.
To Non- medical agencies involved in patient care. Promote public education.
Promote skills in case reporting and publication of data.

To promote intersectoral coordination of governmental and nongovernmental agencies involved in care of elderly.

Treatment skills

Promote compliance with prescribed treatment. Avoid polypharmacy as much as possible. Basic prescribing skills for medical disorders commonly encountered (rational drug prescribing skills.)

Recognize earliest adverse effects of treatment and distinguish them from those of symptoms of illness given the background of elderly people's vulnerability for drug side effects.

Learning skills

Sustained self directed independent learning. Keeping abreast with advances in medical practice. Internalising the concept of life long learning.

Access to computer usage, including internet browsing.

Critical appraisal of latest and best information and data analysis. Skills of using library facilities (including electronic media)

Team work skills

Co- operative with Medical colleagues, Non medical health care workers, Patient and his family organizations, Community services. Teamwork is the key to success in clinical geriatrics.

Non Governmental Organisations & General Public. List of clinical, procedural and practical skills

Competency list

Note: Figures shown against the items indicate minimum number.

Key PI=Performs independently, PA= Performs under assistance

Description of competencies	Number
Clinical Assessment Skills	
Elicit a detailed clinical history including Dietary recall, calorie and protein estimation	50
Perform a thorough physical examination including Anthropometry	10
Optic fundi examination	20
Per rectal examination	05
ECG recording	50
Pleural tap	10
Peritoneal tap	10
Pericardio - centesis	05
Lumbar puncture	15
Resuscitation	
BLS	30

ALS	10
Central line, CVP	05
Blood and blood component (platelet, FFP, etc.) transfusions	10
Arterial puncture for ABG	20
Liver biopsy	10
Liver abscess aspiration	05
Bone marrow aspiration and biopsy	10
Peritoneal/ Pleural	2 each
Glucometer usage	30
Urine analysis	20
Urinary Catheterization	15
Ryle's, Stomach tube use	20
Sputum – Gram's / AFB staining	10 each
Respiratory management	
Nebulization	30
Inhaler therapy	30
Oxygen delivery	30
List of PA skills:	
Peritoneal dialysis	05
Haemodialysis	05
Description of competencies	Number
Critically ill person	
Monitoring a sick person	50
Endotracheal intubations	20
CPR	10
Using a defibrillator	10
Pulse oximetry	50
Feeding tube use	10
Intercostal tube placement with underwater seal	10
Sedation	10
Analgesia	20
Venesection	
CUP monitoring	
List of PA skills:	
Assessment of brain death	10
Laboratory – Diagnostic Abilities (All PI) Urine protein, sugar, microscopy	10
Peripheral blood smear	10
Malarial smear	10
Ziehl Neelsen method smear – sputum, gastric aspirate	10
Gram's stain smear – CSF, pus	10
Stool pH, occult blood , microscopy	10
KOH smear	2
Cell count – CSF, pleural, peritoneal, any serous fluid	20

Interpretation Skills

Clinical data (history and examination findings), formulating a differential diagnosis in order of priority, using principles of clinical decision – making, plan investigative workup, keeping in mind the cost – effective approach i.e.,problem solving and clinical decision making.

Blood, urine , CSF and fluid investigations – hematology, biochemistry, X-ray chest, abdomen, bone and joints

ECG

Treadmill testing

ABG analysis

CT scan chest and abdomen CT scan head and spine Barium studies IVP, VUR studies

Ultrasound abdomen Pulmonary function tests

Immunological investigations

Echocardiographic studies

Nutritional advice

Principles of rehabilitation.

Interpretation under supervision (PA)

Description of competencies	Number
Hemodynamic monitoring	10
Handling Ventilators	10
Cardiac pacing	05
GI Endoscopy – Upper	20
Lower	05
Bronchoscopy	05
Tracheostomy	05
U/S abdomen	20
U/S guided aspiration	10
ECHO	20
TMT	20
Nuclear isotope scanning	10
MRI scanning of head / chest	10

Training Programme:

To attain proficiency in the subject and to practice the post – graduate student has to be trained in an organised and structured manner. Graded responsibility is to be given to the post – graduate student on a progressive scale in an integrated manner in the three year course with the trainee being able to attain his/ her identity as a physician capable of holistic approach to the patient care. Independent self-directed problem based learning Skill acquisition oriented learning. Ambulatory and Emergency care.

I year

- ❖ Ability to obtain a clear and thorough history, physical examination and follow notes. Capability to manage routine & on call duties of the wards. Supervising and follow up of investigations. Ability to develop a rational treatment plan. Initiate carry out treatment. Identify emergency problems, seek help from seniors & initiate treatment so as to develop decision making and judgement skills.
- ❖ Supervise house – surgeon's work.
- ❖ To prepare synopsis for dissertation

II year

- ❖ Develop basic knowledge of the specialty subject in the care of the patient.
- ❖ Witness/ perform procedures in the specialty.
- ❖ Learn the indications and contraindications of the procedures.
- ❖ To learn when to refer a case to the sub- specialist.
- ❖ To know when to intervene and when not to intervene in a case
- ❖ To carry out data collection for the dissertation.

III year

- ❖ Able to handle case independently- diagnose and manage the cases in the unit /ward.
- ❖ Diagnose and treat cases in emergency & ICU set up.
- ❖ Problem identification of referral cases & advise suitably. Supervise I yr post – graduate students
- ❖ Teach interns
- ❖ Teach undergraduates
- ❖ Help junior residents in his responsibilities in all levels and to intervene at appropriate time when the occasions demand.
- ❖ In problem cases, to seek help from senior staff members.
- ❖ Successfully complete data collection, analysis and writing up and submission of dissertation.

ROTATION POSTINGS

General Guidelines

(a) Where all departments of sub – specialties are available:

Department	Duration of posting	Year of posting
Geriatric Medicine	24 months	I/III
Emergency	2 months	II
I.C.U.	1 month	II
Cardiology including ICCU	2 months	II
Neurology	1 month	II
Gastroenterology	1 month	II
Respiratory Diseases	1 month	II
Nephrology	1 month	II
Palliative care	1 month.	II
Endocrinology	15 days	II
Skin	15 days	II
Psychiatry	15 days	II
Rural health centre	15days	II

In addition, a minimum number of cases of the following sub – specialties must be seen and entered in the log book:

Psychiatry	-	10
Dermatology	-	10
Endocrinology	-	5

Scheme of Examination

M.D. Degree examination in Geriatric Medicine shall consist of dissertation, written papers (Theory), Practical / Clinical and Viva voce.

Dissertation: Every candidate shall submit a dissertation. Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

A. Written Papers (Theory)

There shall be four question papers, each of three hours duration. Each paper shall consist of two long essay questions, each question carrying 20 marks and 6 short essay questions each carrying 10 marks. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows*:

Paper I- Basic Sciences- Applied aspects of Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology, Genetics, Immunology, Fluid & Electrolyte balance, blood transfusion, Shock and multiorgan failure, Nutrition, Poisoning, Geriatric Medicine Topics , Toxicology, Pre anesthetic and post operative medical problems, Emergency Medicine, Radio diagnosis.

Paper II – Basic Geriatrics and clinical geriatrics including psycho geriatrics and ortho geriatrics.

Paper III – Respiratory Medicine, Central Nervous system, Rheumatology and Connective Tissue Disorders, Sexual Medicine, Metabolic Bone Disorders, Gastro Intestinal and hepatobiliary system, Disorders of Pancreas, Tropical Diseases., Cardiovascular system.

Paper IV – Nephrology, Endocrinology and Metabolism, Hematology, Medical Oncology, Psychiatry, Dermatology, STD, Occupational Diseases, Infectious diseases, HIV and AIDS, Palliative Care.

*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

B. Clinical Examination

It should aim at examining skills and competence of candidate for undertaking independent work as a specialist. Each candidate should examine:

One Long Case = 65 marks (time - 45 minutes)

Three Short Cases = 45 marks (time – 30 minutes for each case)

C. Viva Voice Examination

Marks 100

1) viva – voice Examination: (80 marks)

All examiners will conduct viva – voice conjointly on candidate's comprehension analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be also be given case reports, ECGs, charts, gross specimens, Histopathology slides, x-rays, ultrasound, CT scan images, etc., for interpretation. Questions on use of instruments will be asked. It includes discussions on dissertation.

2) Pedagogy Exercise (Teaching skills): (20 marks)

A topic be given to each candidate in advance. He/ she asked to make a presentation on the topic for 8-10 minutes and assessed.

D) Maximum marks

Theory	Practical	Viva	Grand Total
400	200	100	700

MODEL QUESTION PAPERS

Paper I

Time: 3hrs

Maximum Marks: 100

All Questions are compulsory

1. A 70 yrs old male patient is brought to emergency in a state of confusion and high fever. Discuss the differential diagnosis, investigations and management of this patient. (20)
2. A 69 yrs old diabetic and hypertensive lady on regular anti diabetic drugs but erratic with her anti hypertensive medication is brought to emergency in an unconscious state. Discuss the possible causes, investigation and management. (20)
3. Write short notes on:- (10 marks each)
 - a. Discuss the risk factors in the pathogenesis of the diseases and describe interventions to modify these risk factors.
 - b. Adverse drug reaction in geriatric population.
 - c. Physiology of balance
 - d. Causes and management of orthostatic hypotension.
 - e. Causes and management of hyponatremia in elderly population
 - f. Discuss the causes and management of aspiration pneumonia

Paper II

Time: 3hrs

Maximum Marks: 100

All Questions are compulsory

1. What is population ageing ? Describe various manifestations of the demographic transition and discuss its impact on health and socio economic aspects? (20)
2. Describe the various functional and cognitive deterioration seen in various stages of Alzheimer's diseases. (20)
3. Write short notes on:- (10 marks each)
 - a. Social problems and old age
 - b. privileges and benefits to senior citizen in India
 - c. Importance of ADL (activities of daily living) and physical rehabilitation in geriatric population.
 - d. Concept of alternative system of medicine.
 - e. Caregivers and family adjustments.
 - f. Planning for retired life.

Paper III

Time : 3hrs

Maximum Marks: 100

All Questions are compulsory

- 1) A 68 yr old male patient is admitted in emergency ward with severe left sided chest pain. Discuss the differential diagnosis. Describe the management and complications of a patient with acute myocardial infarction. (20)
- 2) A 65 yr old male patient complains of progressive loss of weight, anorexia and pain in the right upper abdomen. On examination, he was deeply jaundiced with a palpable lump in the epigastrium. Discuss the differential diagnosis, investigation and management of such a case. (20)
- 3) Write short notes on:- (10 marks each)
 - a) Management of community acquired pneumonia in elderly.
 - b) Diagnosis and management of senile osteoporosis in a female patient.

- c) Causes and evaluation of a patient presenting with dizziness.
- d) Erectile dysfunction.
- e) Discuss the diagnosis, clinical features, and management of Parkinson's disease.
- f) Rheumatoid arthritis in elderly.

Paper IV

Time: 3hrs

Maximum Marks: 100

All Questions are compulsory

- 1) Discuss the clinical features and complications of Type-2 Diabetes mellitus. Outline the management of a 65 yr old obese type 2 diabetic with BP 170/106 mm of Hg and creatinine 1.9 mmol/litre. (20)
- 2) A 66 year old anemic and oedematous male patient presented in OP with a history of moderate colicky abdominal pain associated with large volume watery diarrhea of six months duration. What are the possible differential diagnoses and how will you approach to manage this patient? (20)
- 3) Write short notes on:- (10 marks each)
 - a) Diagnosis and treatment of thyrotoxicosis.
 - b) Pemphigus Vulgaris.
 - c) Depression in elderly.
 - d) Palliative care in advanced cancers.
 - e) Non steroidal anti inflammatory drugs and acute renal failure in Elderly.
 - f) Vaccinations in the elderly.

RECOMMENDED BOOKS & JOURNALS:

BOOKS

Primer on GERIATRIC CARE.

GERIATRIC CARE. By O.P.Sharma. Publication: Viva books private Ltd.

Physiological basis of Ageing and Geriatrics. Timiras 3rd ed 2002

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2. Heart (Formerly British Heart Journal)
3. Indian Journal of Tuberculosis Chest diseases
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5. Indian Practitioner
6. Journal of Association of Physicians of Indians
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8. Post Graduate Medicine
9. American Journal of Medicine
10. Medicine Clinics of North America
11. British Medical Journal
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14. Annals of Neurology
15. Indian Journal of Nephrology
16. Lancet

Monitoring Learning Progress

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

The learning out comes to be assessed should included: (i) Personal Attitudes, (ii) Acquisition of knowledge, (iii) Clinical and operative skills, and (iv) Teaching skills.

i) *Personal Attitudes.* The essential items are:

Caring attitudes, Initiative, Organisational ability, Potential to cope with stressful situations and undertake responsibility, Trust worthiness and reliability, to understand and communicate intelligibly with patients and others, to behave in a manner which establishes professional relationships with patients and colleagues, Ability to work in team, A critical enquiring approach to the acquisition of knowledge,

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

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

Journal Review Meeting (Journal Club): The ability to do literature search, in dept. study, presentation skills, and use of audio – visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist (see Model Checklist – I, Chapter IV)

Seminars / Symposia: The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study presentation skills and use of audio visual aids are to be assessed using a checklist (see Model Checklist II, Chapter IV)

Clinico- pathological conferences: This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a checklist similar to that used for seminar.

Medical Audit: Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in the assessment.

iii) Clinical Skills

Day to Day work : Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see Model Checklist III, Chapter IV)

Clinical Meetings: Candidates should periodically present cases to his peers and faculty members. This should be assessed using a checklist (see Model Checklist IV, Chapter IV)

Clinical and Procedural Skills : The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student log book. (Table No. 3, Chapter IV)

iv) Teaching Skills

Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students. (see Model Checklist V, Chapter IV)

v) Periodic Tests

Three tests will be conducted, two of them will be annual test, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practicals / clinicals and viva voce.

vii) Work diary / Log book- Every candidate shall maintain work diary and record his / her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

viii) *Records*: Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or MCI.

Log Book

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

Format for the log book for the different activities is given in Tables 1, 2 and 3 of Chapter IV.

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

CHECK LIST – IV

EVALUATION FORM FOR CLINICAL PRESENTATION

Name of the student:

Name of the faculty / Observer:

Date:

Sl No.	Items of observation during Presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Completeness of history					
2	Whether all relevant points elicited					
3	Clarity of presentation					
4	Logical order					
5	Mention all positive and negative points of importance					
6	Accuracy of general physical examinations					
7	Whether all physical signs elicited correctly					
8	Whether any major signs missed or misinterpreted					
9	Whether it follows logically from history and findings					
10	Investigations required <ul style="list-style-type: none"> • Complete test • Relevant order • Interpretation of investigations 					
11	Ability to react to questioning whether it follows logically from history and findings					
12	Ability to defend diagnosis					
13	Ability to justify differential diagnosis					
14	Others					
	Grand Total					

CHAPTER IV (contd)
Format of Model Check Lists
Check list – 1, MODEL CHECK-LIST FOR EVALUATION OF
JOURNAL REVIEW PRESENTATIONS

Name of the student:

Name of the faculty / Observer:

Date:

Sl No.	Items of observation during Presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Article chosen was					
2	Extent of understanding of scope & Objectives of the paper of the candidate					
3	Whether cross reference has been consulted					
4	Whether other relevant publications consulted					
5	Ability to respond to questions on the paper / subject					
6	Audio – Visual aids used					
7	Ability to defend the paper					
8	Clarity of presentation					
9	Any other observation					
	Total Score					

CHAPTER IV(contd.)
Format of model check lists
Check list – II MODEL CHECK-LIST FOR EVALUATION OF
SEMINAR PRESENTATIONS

Name of the student:

Name of the faculty / Observer:

Date

Sl No.	Items of observation during Presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Whether other revelant publications Consulted					
2	Whether cross references Have been consulted					
3	Completeness of the Preparation					
4	C larity of Presentaion					
5	Understanding the subject					
6	Ability to answer the questions					
7	Time Scheduling					
8	Appropriate use of Audio – Visual aids					
9	Over all Performance					
10	Any other Observation					
	Total Score					

**CHAPTER IV (contd.)
Format of model check lists**

**Check list –III , MODEL CHECK-LIST FOR EVALUATION OF
CLINICAL WORK IN WARD/OPD**

Name of the student:

Name of the faculty / Observer:

date

Sl No.	Items of observation during Presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Regularity of attendance					
2	Punctuality					
3	Interaction with Colleagues And Supporting staff					
4	Maintainence of case records					
5	Presentation of cases during rounds					
6	Investigations work up					
7	Bedside Manners					
8	Rapport with patients					
9	Counseling Patient's relatives for blood donation or Postmortem andCase follow up.					
10	Over all quality of clinical work					
	Total Score					

CHECK LIST – V

MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

Name of faculty / Observer:

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

CHECK LIST – VI

MODEL CHECK LIST FOR DISERTATION PRESENTATION

Name:

Faculty / Observer:

Date:

Sl No.	Items of observation during Presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Interest shown in selecting topic					
2	Appropriate review of literature					
3	Discussion with Guide and faculty					
4	Quality of protocol					
5	Preparation of Proforma					
	Total Score					

CHECK LIST – VII

MODEL CHECK LIST FOR DISERTATION PRESENTATION

Name:

Faculty / Observer:

Date:

Sl No.	Items of observation during Presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Periodic consultation with Guide/ Co-Guide					
2	Regular collection of case material					
3	Depth of analysis/Discussion					
4	Department Presentations findings					
5	Quality of final output					
6	Others					
	Total Score					

LOG BOOK

Table 1: Academic activities attended

Name:

Admission year:

College:

Date	Type of activity Specify Seminar, Journal club, Presentation, UG teaching	Particulars

LOG BOOK

Table 2: Academic Presentations made by the students

Name:

Admission year:

College:

Date	Topic	Type of activity Specify Seminar, Journal club, Presentation, UG teaching

LOG BOOK

Table 3: Diagnostic and Operative procedures performed

Name:

Admission year:

College:

Date	Name	I D No.	Procedure	Category O, A, PA, PI*

Key:

- O – Washed up and observed
- A – Assisted a more senior physician
- PA – Performed procedure under the direct supervision of a senior physician
- PI - Performed independently

Model Overall Assessment sheet

Name of the college:

Academic Year:

Sl No.	Particulars	Name of the student and Mean score									
		A*	B*	C*	D*	E*	F*	G*	H*	I*	J*
1	Journal Review Presentations										
2	Seminars										
3	Clinical work in wards										
4	Clinical presentation										
5	Teaching skill practice										
	Total Score										

Note: Use separate sheet for each year.

Signature of the HOD:

Signature of the Principal:

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

KEY:

Mean Score: Is the sum of all the score of checklists 1 to 7.

A,B,.... : Name of the trainees.