

**THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY, CHENNAI**

**CURRICULUM IN M.D.GERIATRIC MEDICINE  
BRANCH XVI**

Increasing Elderly population with large burden of disease and disability, pose a tremendous challenge for the health sector as well as for the social and economic infrastructure. The need for specialized training in the field of gerontology and geriatric medicine has been realised in recent years. There is an initiative in developing PG training program across the country in various medical institutions.

**Aim:**

The aim of this curriculum is to create a cadre of medical professionals in care of the older people who would have knowledge about the age related biological changes

- I) provide comprehensive health care and rehabilitation of the elderly
- ii) provide undergraduate and postgraduate training
- iii) carry out research in geriatrics and gerontology

**Objectives:**

After completion of post graduation in geriatric medicine, the physician should be able to fulfill the following objectives.

- i)to provide necessary care to older people in both hospital and home settings
- ii)to organize and implement different health care programs for the oldest person
- iii)to conduct research to improve health status of the older person and thereby improve quality of life, to reduce disability and arrest or delay age related problems.

**Contents of the course:**

- A) **Basic sciences:** biology of human ageing, epidemiology of human ageing, immunology of human ageing, effect of ageing on different organs, death

B) **Clinical geriatric medicine:** cardiology, pulmonary medicine, gastroenterology, endocrinology, nephrology, neurology, hematology and oncology

C) **Allied specialties:** urology/ andrology/ gynecology, ophthalmology/ ENT/ dentistry, rheumatology, psychiatry, pre and post anesthetic evaluation and management

D) Preventive geriatrics, rehabilitation, end of life, legal, ethical and economic aspects

### **Organization of contents**

Duration 3 years

1<sup>st</sup> year: 6 months- geriatrics  
6 months-internal medicine

2<sup>nd</sup> year: 3 months- geriatrics  
9 months- specialty

3<sup>rd</sup> year: 12 months- geriatrics

### **Educational strategies:**

It should be problem oriented as well as integrated with other disciplines. Apart from that the curriculum should be both hospital and community oriented

### **Teaching method:**

Teaching methods should include lectures, clinical postings, symposia, seminars, care presentation, field visits.

### **Assessment:**

Assesment should be done in the following heading:-

continous assessment : log books, assignments,

thesis : should be submitted 3 months before final examination

Final MD examination

Theory: 4 papers

Clinical: 4 cases with different problems

Practicals: X-rays, ultrasound, CT, MRI, ECG, biochemical report, psychiatric assessment, social assessment.

## **MD BRANCH XVI GERIATRIC MEDICINE**

Duration of Course – Three years

- I Year: Candidates will be posted in Geriatric medicine and General Medicine for a period of 12 months as follows:

- Geriatric Medicine : 6 months
- General Medicine : 6 months

- II Year:

Geriatric Medicine : 3 months

### ***Specialty postings***

Cardiology, Neurology, Psychiatry, department  
Rehabilitation, Nephrology

: 1 month in each

Gastroenterology  
Haematology  
Dermatology  
Intensive Medical Care Unit  
Thoracic Medicine  
Rheumatology  
Medical Oncology  
Diabetology

15 days in each department
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III Year: Geriatric Medicine : 12 months

**M.D GERIATRIC MEDICINE  
SCHEME OF EXAMINATION**

**CLINICAL EXAMINATION**

**TOTAL MARKS: 200**

	<b><u>No. of Cases</u></b>	<b><u>Marks</u></b>
1. Long Case	One	80
2. Short Case	Three (3 x 40marks)	120
Total		----- 200 -----

**VIVA VOCE EXAMINATIONS**

**TOTAL MARKS: 100**

1. OSCE		50
2. Log Book(Evaluation & Questioning		20
3. Orals on Recent Advances		30
Total		----- 100 -----

**1. OSCE (Objective Structural Clinical Examination)**

**Based on Objective Structured Exam Stations:**

S.No.	Stations	Marks
1.	Images (X-ray/CT)	05
2.	Lab Data	05
3.	Procedures	05
4.	Emergency	05
5.	Communication Skills	05
6.	Drugs	05
7.	Disability	05
8.	Nutrition	05
9.	Rehabilitation	05
10.	Geriatric Assessment Tools	05
		----- 50 -----

**Note:** Serial No. 1 to 10 should be common to all the candidates appearing on that day.

2. **Log Book (Evaluation and Questioning**
3. **Oral on Recent Advances**

**Marks: 20**

**Marks: 30**

**THESIS**

**Marks: 100**

**Note:** Thesis will be sent to two external examiners evaluating for 50 marks each, who will be different from the examiners coming for the Clinical Examination.

**PASS**

<u>Minimum for Pass:</u>	Clinical Examination	VIVA	Thesis
Maximum	200	100	100
Minimum	100	50	50

Candidate must pass each component separately. Even if a candidate fails in one component, the candidate is deemed to fail in the whole examination.

**M.D GERIATRIC MEDICINE**  
**PAPER I**  
**SYLLABUS IN GENERAL MEDICINE & PSYCHO GERIATRICS**

**INTRODUCTION TO CLINICAL MEDICINE:**

- Headache
- Chest pain
- Chills and Fever
- Lassitude and Asthenia
- Cough
- Dyspnoea and palpitation
- Nausea and Vomiting
- Dysphagia
- Ascites
- Weakness, Tremor, Chorea, Athetosis
- Dizziness, Disorders of Sensation, Convulsions

**IMMUNOLOGICAL FACTORS IN DISEASE:**

- Components of immune system
- Mechanism of the immune response
- Immune deficiency and Lymphoproliferative disorders
- Types of immune reaction and their relation to disease
- Suppression of immune reactions and its effects

**INFECTIONS AND DISEASE:**

- Nature of Micro-organisms
- Epidemiology and Spread of Infections
- Defence of Human host
- Diagnosis of Infections
- Pyrexia of Unknown origin
- Streptococcal infections, Staphylococcal infections, Diphtheria, Typhoid, Tetanus, Brucellosis, Sexually transmitted infections, Hospital acquired infections, Gram negative bacterial infections, Anaerobic infections

**CHEMOTHERAPY OF INFECTIONS:**

- Antibiotics and Other Antibacterial agents
- Antivirals
- Antifungals
- Anti-retroviral therapy

## DISTURBANCES IN ELECTROLYTE, WATER AND H<sup>+</sup> ION METABOLISM:

- Hyper and Hyponatremia
- Hyper and Hypokalemia
- Calcium and Magnesium metabolism
- Disturbances in H<sup>+</sup> ion concentration

## DISEASES OF THE CARDIOVASCULAR SYSTEM:

- Cardiac Arrhythmias
- Cardiac Failure
- Valvular Heart Disease
- Ischemic Heart Disease
- Pericardial Diseases
- Cardiomyopathies
- Myocarditis
- Cor Pulmonale
- Atherosclerosis
- Hypertension
- Diseases of the Aorta
- Peripheral Vascular Disease

## DISEASES OF THE RESPIRATORY SYSTEM:

- Disease of the Upper Respiratory Tract
- Bronchial Asthma
- COPD
- Neoplasms of Lung
- Diseases of Pleura, Mediastinum and Diaphragm
- Respiratory failure

## DISEASES OF THE GASTROINTESTINAL SYSTEM:

- Diseases of the Oesophagus
- GERD
- Peptic Ulcer, Gastritis and Other diseases of the Stomach
- Malignancy of Stomach, Colon
- Diseases of the peritoneum

## DISEASES OF THE LIVER AND BILIARY TRACT:

- Diagnostic procedures in Liver Disorders
- Derangement of Hepatic / Biliary metabolism
- Acute Hepatitis
- Chronic Active hepatitis

- Cirrhosis of Liver
- Tumors of Liver
- Suppurative Diseases of Liver
- Infiltrative and Metabolic Diseases of Liver
- Disorders of Gall Bladder and Bile Duct
- Ascites

#### DISEASES OF THE PANCREAS:

Acute pancreatitis, chronic pancreatitis and pancreatic malignancy

#### DISEASES OF THE KIDNEY AND URINARY SYSTEM:

- Acute Renal Failure
- Chronic Kidney Disease
- Glomerulonephritis
- Nephrotic syndrome
- Vascular diseases of the Kidney
- Infections of the Urinary Tract
- Obstructive Uropathy
- Urinary Incontinence
- Nephrolithiasis

#### DISEASES OF THE ENDOCRINE SYSTEM:

- Thalamus and Pituitary Gland
- Diseases of the Anterior Pituitary
- Disorders of the Neurohypophysis
- Hyper and Hypothyroidism
- Hyper and Hypoparathyroidism
- Diabetes Mellitus
- Hyperinsulinism / Glucagon and its effects
- Diseases of the Adrenal Cortex and Medulla
- Diseases of the testes and Ovaries

#### DISEASES OF BLOOD AND BLOOD FORMING ORGANS:

- Blood formation and destruction
  - Anaemia
  - Bone Marrow Failure
  - Blood Groups and Blood Transfusion
  - Myeloproliferative disorders
  - Abnormal Haemoglobins
  - Disorders of platelets
  - Haemorrhagic disorders
  - Leukaemia
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- Lymphomas



- Diseases of Spleen and Reticulo-endothelial system

#### DISEASES OF CONNECTIVE TISSUE, JOINTS AND BONES:

- Rheumatoid Arthritis, including LORA
- Ankylosing spondylitis
- Systemic Lupus Erythematosus
- Scleroderma
- Polymyalgia Rheumatica
- Gout
- Pseudogout
- Osteoarthritis
- Diseases of bone – Metabolic and Endocrine
- Tumours of Bone

#### DISEASES OF THE NERVOUS SYSTEM:

- Diagnostic methods in Neurology
- Coma
- Headache
- Epilepsy
- Sleep Disorders
- Diseases of Cranial Nerves
- Cerebrovascular Diseases
- Diseases of the Spinal Cord
- Diseases of the Peripheral Nervous System
- Pyogenic infections of the CNS
- Viral Infections
- Multiple Sclerosis and other demyelinating diseases
- Metabolic and Nutritional diseases of CNS
- Degenerative diseases

#### DISEASES OF THE SKIN:

- Cutaneous manifestation of systemic illness
- Generalised Pruritus
- Pigmentation of the Skin
- Disorders of Melanin Metabolism
- Photosensitivity and other reactions to light
- Hirsutism and Alopecia
- Cutaneous manifestations of internal malignancy
- Psoriasis
- Scabies
- Fungal infections of skin

### **SYLLABUS FOR PSYCHO GERIATRICS**

- Epidemiology of Mental Disorders in the elderly
- Definition and Classification of Psychiatric Disorders
- Delirium / Acute Confusional State
- Dementia
- Depression in Old Age
- Bipolar disorder
- Functional psychiatric disorders in old age
- Personality and Behavioural disorders
- Psychogeriatric service – Principles of treatment
- Management of Psychiatric Illness
- Alcoholism and the elderly patient
- Care-giver problems

**M.D GERIATRIC MEDICINE  
PAPER II  
SYLLABUS IN GERIATRIC MEDICINE**

**GENERAL:**

- Demography, World Trends
- Trends in India and Developing countries
- The Aged and Society – Past and Present
- The evolution of Geriatric Medicine

**GERONTOLOGY:**

- Normal and Abnormal Aging
- Theories of Aging
- Metabolic and Structural Aspects of Aging
- Biochemical changes in the Normal Aging Brain
- Aging in tissues and cells
- Atherosclerosis and Aging
- Ecology of Human Senses
- The milieu interior and Aging

**GERIATRIC MEDICINE:**

- How are elderly patients different?
- Common patterns of disease in old age
- Alteration in pain and temperature responses
- Atypical presentation
- Complications of Illness
- Non specific presentations
- Masking by known disease
- History taking in the elderly
- Physical Examination of the old patient

**INVESTIGATIONS IN THE ELDERLY:**

- Policy
- Interpretation
- Radiological, Hematological & Biochemical investigations
- ECG
- Urinalysis
- Radio isotope tests
- Bone Scan
- Imaging – Ultrasound, CT Scan, MRI
- How much to investigate?
- Concept of Normal Range

#### IMMUNOLOGY:

- Genetic aspects of Immunity and Immunological Diseases
- Mutation
- Alternative theories of Aging
- Cancer
- Immunological Surveillance

#### NUTRITION:

- Nutritional requirement
- Changes in total body mass and body composition
- Nutritional Assessment
- Nutritional deficiency in old age
- Osteoporosis
- Osteomalacia and Vitamin D
- Iron and Vitamins
- Recommended intake of nutrients
- Prevention of Nutritional Deficiency

#### CARDIOVASCULAR SYSTEM:

- Physiology and Pathology of Cardiovascular system in old age
- Investigation of Heart Diseases in Old age
- Cardiac Arrhythmias
- Coronary Artery Disease and Acute Myocardial Infarction
- Hypertension and Hypertensive Heart Disease
- Postural Hypotension
- Valvular Heart Disease
- Cor Pulmonale
- Chronic Congestive Heart Failure
- Aortic aneurysm
- Bacterial Endocarditis
- Peripheral Vascular Disease
- Deep Venous Thrombosis and Pulmonary Embolism

#### ENDOCRINE AND METABOLIC DISORDERS:

- Changes with Aging
- Diabetes Mellitus
- Diseases of the Pituitary, Parathyroid and Thyroid
- Obesity
- Sexual dysfunction
- Disorders of Sodium, Potassium, Calcium, Magnesium and Zinc
- Disturbances of Fluid Metabolism
- Hyperpyrexia / Heat Stroke

#### CENTRAL NERVOUS SYSTEM:

- The Aging Brain
- Vascular lesions of the Central Nervous System
- Dementia
- Degenerative disorders including Parkinsonism
- Head Trauma
- Infections of the Nervous System
- Epilepsy
- Peripheral Neuropathy
- Disorders of Spinal cord & Nerve Roots
- Neoplasia

#### GENITOURINARY SYSTEM:

- Structural changes with aging
- Acute and Chronic Renal Failure
- Infections of the Genito Urinary Tract
- Diseases of the Bladder and Prostate
- Urinary Incontinence
- Aging changes in the Genital Tract
- Post Menopausal Bleeding
- Gynaecological disorders in the Elderly

#### DISORDERS OF THE SPECIAL SENSES:

- Disorders of the Eye
- Hearing Disturbances
- Disturbance of Taste and Smell
- Dental Problems

#### INFECTIONS IN THE ELDERLY:

- Host Defences – Natural Barriers
- White Cell response, Immune mechanism
- Diagnosis of Fevers
- Urinary Infection – Diagnosis and Treatment
- Pneumonias – Cause, Diagnosis and Treatment
- Septicemia
- Bacterial Endocarditis
- Antibiotic Treatment
- Rational Use of Antibiotics

#### GASTRO INTESTINAL SYSTEM:

- Changes with Age
- Investigations of the Gastro intestinal Tract
- Disorders of the Mouth
- GERD / Hiatus Hernia
- Acid Peptic Disease
- Disease of the Pancreas
- Diseases of the small Intestine
- Diseases of the Large Intestine
- Fecal Incontinence
- GI Malignancy
- Disease of the liver and Biliary System
- Constipation – Prevention and Management

#### RESPIRATORY SYSTEM:

- Changes with Age
- Infections of the Respiratory System
- Chronic Obstructive Airway Disease
- Bronchial Asthma
- Bronchogenic carcinoma
- Respiratory Abnormalities in Extra-pulmonary conditions
- Respiratory Failure

#### MUSCULOSKELETAL SYSTEM:

- The aging joints
- Degenerative Joint Disease
- Gout, Pseudogout
- Rheumatoid Arthritis
- Infective Arthritis
- Myopathy, Myositis, Polymyalgia Rheumatica
- Temporal arthritis
- Osteoporosis
- Osteomalacia

#### HEMATOPOIETIC SYSTEM:

- Changes with Aging
- Anaemia in the elderly
- The Leukaemias and Lymphomas
- Paraproteinaemia
- Myelodysplastic syndromes
- Disorders of Haemostasis

#### DERMATOLOGY:

- The Aging Skin
- Pruritus
- Cancers / Benign Lesions
- Pemphigus & Pemphigoid
- Senile Purpura
- Herpes Zoster
- Intertrigo
- Leg Ulcer
- Hansen's Disease

#### MALIGNANCY IN THE ELDERLY:

- Incidence, Clinical Significance
- Presentation
- Investigation and Management
- Counselling

#### PHARMACOLOGICAL ASPECTS OF AGING:

- Pharmacokinetics in the elderly
- Pharmacodynamics
- Drug Selection and Dosage
- Drug Interactions
- Adverse Drug Reactions
- Drug Compliance
- Drug Misuse

#### SURGERY IN THE ELDERLY:

- Pre-operative Assessment
- Priorities for surgery
- Surgical Emergencies
- Fractures
- Pathological fractures
- Benign lesions
- Gangrene – Amputation
- Elective Surgery
- Post operative problems and Management
- Anaesthesia in old age

#### SPECIAL PROBLEMS:

- Pressure Sore
- Care of the Chronically ill
- Care of patients with terminal illness
- Religion and Illness
- Falls

- Nursing home placement
- Syncope
- Frailty
- Palliative care

**M.D GERIATRIC MEDICINE  
PART II, PAPER III  
SOCIAL AND PREVENTIVE GERIATRICS  
INCLUDING REHABILITATION & ADVANCES IN GERIATRICS**

**SOCIAL GERIATRICS:**

- Types of Family – Joint family system- promotion of Joint Family System – Role of Elders and the younger generation
- Isolation, loneliness and dependency – Dependency ratio – Generational equality
- Social changes due to urbanisation and industrialisation with respect to Elders
- Financial aspects – sources of Income, Old age pension
- Role of Govt and NGOs in Socio-Economic status of the Elderly
- Geriatric Service for the Elderly in Western Countries and in India – Structure of geriatric Service – Family as basic Unit – Models of Geriatric Service
- Day Hospital, Day Care Centre, Long Stay Care Institution, Home for the Aged, Functions of the Day Hospital – Staff and patients of day Hospital
- Nursing Home in Western Countries – Goals of Geriatric Care – Need for similar services in India
- Psychogeriatric services – structure and facility – Domiciliary Assessment and community Care
- Terminal Care Services – social and Spiritual problems in Terminally ill
- Ethical Issues in Geriatric Medicine – Self determination an decision making in treatment options – Informed Consent – Quality of life – Age limits on health care
- Life sustaining measures



- Euthanasia – Acts of Omission and Commission

#### PREVENTIVE GERIATRICS:

- Preventing Diseases and promoting health in old age – Types of preventive activities – Risk factor management in elderly – screening
- Health belief model – General Health practices in elderly
- Exercise in the elderly – Physical and Mental domain – Benefits of Exercise
- Development of Anticipatory Care and its Rationale – methods of Anticipatory Care
- Health promotion and Health Education in the Elderly
- Anti-Aging interventions

#### REHABILITATION:

- The concepts and History of Rehabilitation
- The goals of Rehabilitation
- Principles of Rehabilitation – Assessment, Goals, Priorities and Monitoring Progress
- Rehabilitation in Old age – Special features in relating to aging, multiple pathology, Policies, Expectation, Carers, Acute Illness, Social and Financial Support
- Clinical Evaluation of Rehabilitation – Impairment, Disability and Handicap
- Prevalence of Disability, Types of disability
- Rehabilitation as Team work – Team leadership, Therapist, Physiotherapy, Occupational Therapy, Social Worker, Physician

and Nursing personnel.

- Self care evaluation and management of Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) – Self Care Assessment Tools
- Aids and application – tools for living
- Role of Physiotherapy in the elderly
- Contractures and other deleterious effects of immobility
- Pressure Ulcer – Factors, Prevention and management
- Rehabilitation of Stroke in the Elderly
- Rehabilitation of specific Diseases – Parkinsonism, Paraplegia, Fracture Neck of Femur, Acute and chronic Arthritis, Lower limb amputation, low back pain
- Organisation and Effectiveness of Rehabilitation services – Community Services
- Geriatric Unit, Day hospital, Day Care Centre, Long Stay Care Institution – role of rehabilitation in the above services

#### **ADVANCES IN GERIATRIC MEDICINE:**

- Alzheimers Disease
- Parkinsonism
- Osteoporosis
- Urinary Incontinence
- Falls / Prevention of Fractures
- Parenteral Nutrition
- Stroke Clinic
- Memory Clinic
- Anti Aging research
- Frailty
- Inflammatory markers