

MEMBERSHIP IN INTERNAL MEDICINE

1 GENERAL INFORMATION

1.1 Rational for Programme

1.1.1 Physicians are urgently needed to man the 102 or so tertiary and secondary health care institutions in the country.

1.1.2 For satisfactory care, it is projected that 4-6 physicians may be needed at each Regional Hospital and 3 physicians at each District Hospital. With increasing sub-specialization, and to allow for teaching, research activities, the Teaching Hospitals may each require 40 physicians. Thus a total of 570 physicians will be needed to man tertiary and secondary level health institutions:

Teaching Hospitals	160
Regional Hospitals	60
District hospitals	300
Military	20
Police	10
Quasi-Government/Private Sector Hospitals	20

Total **570**

The additional Teaching Hospitals apart from The Korle-Bu Teaching Hospital and the Komfo Anokye Teaching Hospital are Tamale Teaching Hospital and the Cape Coast Teaching Hospital.

There is the need therefore to train physicians to fill these positions. This will improve the Physician Population from 1 to a million to 2.3 to a million.

1.1.3 50% of the total requirement for physicians may appear to be a realistic target to aim for. With an annual intake of 20 residents, it may take nearly 15 years to train 300 specialist physicians. It is hoped, however, that within 5 years of the commencement of the programme, the Regional Hospitals will be accredited to train physicians. This will drastically reduce the time to attain the 50% target.

1.2 Philosophy

To train sufficient numbers of physicians to the highest possible level equivalent to the West African, North American and United Kingdom standards in the shortest possible time in a structured predictable manner to take care of the health needs of the people of Ghana at all secondary and tertiary level health institutions.

1.3 Goals

- 1.3.1 Short-term – To train physician specialists to man the Regional Hospitals in Ghana (Membership program)
- 1.3.2 Medium-term – To train 50% of the total number of physicians needed in the shortest possible time to man the District Hospitals.
- 1.3.3 Long-term – To train sufficient number of senior physician specialists with sub-specialisation for optimal care of the health needs of the people of Ghana (Fellowship program) and to provide faculty for the Teaching Hospitals.

1.4 Objectives

- 1.4.1 To provide a structured 3 year programme for training of specialist physicians (Membership) who can practice without supervision.
- 1.4.2 To train physicians who would be able to identify common health problems in their areas of practice and who would be able to mount appropriate preventive and control measures for such problems
- 1.4.3 To improve the poor physician-population ratio in Ghana.
- 1.4.4 To provide for sub-specialist physicians (Fellowship)

1.5 Entry Requirements

- 1.5.1 MB. Ch.B. degree or equivalent
- 1.5.2 Full registration with the Medical and Dental Council, Ghana
- 1.5.3 12 months post registration experience inclusive of 6 months rotation in internal medicine at an accredited hospital
- 1.5.4 Pass the Primary GCPS or equivalent
- 1.5.5 Success at an interview
- 1.5.6 Recommendation from 2 referees (Consultant Physician or Physician Specialist fr whom the candidate has worked))

Comment [MSOffice1]: Should candidates be allowed to write the Primary exam at the end of the first year of house jobs? Means we will have to allow candidates with provisional registration from MDC. Re-look at entry requirements for Primary exam

1.6 Duration of Programme

Three year programme, commencing in September each year

1.7 Intake of Residents

The number of residents who fulfil the requirements for training and the vacancies available at the training centres will determine the intake

1.8 Programme Assessment

- 1.8.1 A Board of Examiners chaired by a Chief Examiner will be responsible for conducting examinations for residents.
- 1.8.2 Candidates will be admitted to examinations only after satisfactory continuous assessment by Training Institutions. Competences and knowledge will be monitored continuously by tutors via a standardized form. In addition residents will keep a Log Book of all practical procedures performed.
- 1.8.3 Continuous assessment is to be done objectively every six months (data, clinical slides, clinical examination and MCQ) to ascertain satisfactory progress of the candidate in the programme. Continuous poor performance will make a candidate ineligible for presentation at examination or may lead to withdrawal from the training post.

1.8.4 Primary Examination

- 1.8.4.1 The written aspect of the Primary Examination
- All questions in the Primary Examination will be multiple-choice. There will be a minimum of 100 questions of the “One-in-Five” type
 - Questions in applied basic science will comprise $\frac{2}{3}$ of all questions.
 - Questions in General Medicine and Medical Ethics will make up the remaining $\frac{1}{3}$.
 - There will be 5 questions in Medical Ethics making up 5% of all the examination questions.

1.8.5 Membership Examination

- 1.8.5.1 At the end of the third residency year, residents who are deemed to have completed at least 80% of the clinical sessions, teaching sessions and practical procedures, will be required to pass an exit examination (Membership Examination). The examination will comprise the following parts:
- A Written Examination (MCQs of the “One in Five Type”) There will be a minimum of 150 questions
 - A Practical Examination comprising:
 - Data Interpretation
 - Clinical Slides
 - A Clinical Examination comprising
 - A Long Case
 - Short Cases
 - An oral examination
- 1.8.5.2 Continuous Assessment
- After each 3- or 6-month rotation, each resident will have a written and clinical assessment. The result of this will be provided to the Head of the Department of Medicine in the training institution together with a written report of the resident’s overall performance. A copy of the results of Continuous Assessments for each Resident will be submitted to the Education Officer of the Ghana College of Physicians and Surgeons.

1.8.5.3 Log Books

Satisfactory review of logbooks will only be a pre-requisite for writing the Membership Examination. It will otherwise not form part of the Membership Examination score.

A minimum number of ALL procedures listed in the logbook should have been completed (performed or observed, as required) before a resident is considered eligible for registration to take the Membership Examination.

Individual procedures and observations in the logbooks are to be signed by the Consultant/Physician supervising the activity soon after completing the procedure. All procedures entered in the Log Book should be countersigned by the Training Coordinator of the Resident's Training Institution.

All Log Books should be endorsed by the Head of the Department of Medicine and the Training Coordinator of the Resident's Training Institution

1.8.5.4 Distribution of Marks out of the Total Score for the Membership Examination:

- Multiple Choice Questions 20%
- Practical Examination
 - Data Interpretation 20%
 - Clinical Slides 20%
- Clinical Examination
 - Long Case 20%
 - Short Cases 20%
- Oral Examination 20%

1.8.5.5 A candidate fails the Examination if he/she scores Less than 50% of the Total Score OR Fails the Clinical Examination (Long Case Plus Short Cases)

1.8.4.6 Successful candidates will be awarded the Membership of the Ghana College of Physicians (MGCP).

Unsuccessful candidates have a further maximum of four (4) attempts at the Membership Examination.

Candidates who are successful at the Membership Examination may proceed to **Fellowship Training**.

1.9 **Job Description for Medical Residents**

This document provides a basis for a structured three-year postgraduate programme in Internal Medicine. In three years you will be trained to become a competent specialist physician who will be able practice on his or her own unsupervised. If you work hard, apply yourself, and follow the guidelines in this document you should have no problems completing the programme in three years. On successful completion of the residency you will be elected to become a member of a very select, dedicated and capable group of professionals with the highest level of discipline and integrity.

Find attached copies of the curriculum and options for the rotational programmes available for the residency.

1.10 Objectives to attain during Residency

- To develop skills in gathering and interpreting clinical and laboratory information
- To develop skills in making medical diagnoses
- To develop skills in the investigation and management of acute and chronic medical disorders
- To acquire skills in performing stipulated practical procedures
- To acquire skills in making reasonably informed independent medical decisions
- To be able to practise as a specialist internist without supervision
- To develop appropriate work ethics and behaviour

1.11 Rotations

It is hoped that residents shall rotate (every three months) through the major medical specialties during the three-year rotation (See Appendixes):

Core Rotations

- Infectious and Sexually Transmitted Diseases
- Cardiovascular Medicine
- Respiratory Medicine
- Gastroenterology
- Neurology
- Nephrology
- Diabetes and Endocrinology
- Dermatology

Additional Rotations

- Haematology/Oncology (Two Months)
- Rheumatology (One Month)
- Laboratory Medicine (One Month)
- Radiology (One Month)
- Psychiatry (One Month)

1.12 Training Conditions

1.12.1 Annual Leave

Annual leave entitlement of residents in the programme would be 36 working days per annum. Not more than 21 days of this leave may be taken during any single rotation.

1.12.2 Working Hours

Hours of work shall be 8am to 5 pm. In addition residents will be required to be on call 2-3 times a week.

1.12.3 Duties

The duties of residents will include the following:

- Running of General and Specialist Medical Clinics under supervision of Consultants
- Running of Medical and Specialist wards
- Organize ward rounds and attend daily to the medical needs of in-patients
- Perform emergency (on call) duties
- Lead the Cardiac Arrest Team in the hospital
- Attend all teaching sessions (Tutorials, Journals Club meeting, lectures, seminars, bedside teaching, case conferences, morning rounds, mortality meetings)
- Supervision and Teaching of clinical medical students, house officers, and other junior residents.
- Organization of the ward, teaching programmes (tutorials, lectures, seminars, case conferences, mortality conferences etc), duty roster, issuance of death certificates and attendances at autopsies.
- Respond to all referrals from other Departments and inform his or her Consultants of such referrals as soon as possible.
- Assist with the computer documentation and analysis of clinical data

1.12.4 Ward Work

The resident will supervise the day-to-day care of all medical patients on the ward. He or she will ensure that medical patients admitted to the ward are fully clerked and that promptly, laboratory investigations have been ordered, results retrieved and properly interpreted and treatment instituted. Subsequent to clerking by the house officer/medical officer, the resident will review the patients paying particular attention to the salient features of the case and provide a problem list. In addition, an activity list (plan of action) and instructions to junior medical staff and nursing staff will also be provided in the case notes of the client. These steps are essential for developing skills in consultation.

Patients are to be clerked by junior medical staff as soon as possible on arrival on the ward, in any case, not later than two hours on arrival. Fasting blood samples should be taken early to allow patients to have their breakfast before 8 am. Resident is to conduct daily ward rounds with the house officer and medical officers to ascertain progress or otherwise of patients. The resident is to make sure that the house officer and medical officer see their patients before the resident does his or her rounds.

Decisions taken on ward rounds should be noted down in the case notes and carried out with minimal delay. Junior staff should be encouraged to carry small notebooks in which to record activity lists etc.

Before patients are discharged, residents/medical officer should ensure that summary of patients has been written by the house officer and checked for accuracy of information and presentation. Summaries may be typed.

Resident/medical officer will supervise all post mortem examination requests for deceased patients and the issuance of death certificate. Post mortems are to be the rule unless the diagnosis is certain ante mortem.

1.12.5 **General Ward Round**

The resident/medical officer should ensure that Laboratory Results are compiled for ward rounds and summaries are written before rounds. Summaries should provide the following:

- Date of admission
- Duration of admission
- Major clinical problems identified since admission
- Supporting laboratory findings
- Management decisions taken and any changes made
- Present medication

Residents will present cases at ward rounds unless instructed otherwise by the Consultant or supervising Physician.

1.13 **Procedures to be entered in Log Book**

Residents are expected at the completion of their programme to be reasonably proficient and should have performed or observed the following numbers of procedures. Entries should be made in the Log Book within a week of performing or observing a procedure and the entries should be signed by the Consultant or supervising Physician and countersigned by the Training Coordinator of the training institution.

Procedure	Minimum Number of Procedures to be Performed/Observed in 3 years
Advanced Cardiopulmonary Resuscitation	3
Central Venous line insertion	4
Long Caval line insertion	4
Endotracheal intubation	6
Arterial Blood Gas Analysis	6
Liver Biopsies (Observation)	4
Oesophagogastroscopy	4
Lower Gastrointestinal Endoscopy (Observation)	3
Sigmoidoscopy/proctoscopy and rectal biopsy	2
Paracentesis Abdominis	6
Paracentesis thoracis (Needle Aspiration)	6
Insertion of intercostal tube	4
Bronchoscopy (flexible) (Observation)	4
Lumbar Puncture	20
ECG Performance	20
ECG Interpretation	20
Holter Monitoring Interpretation	5
Stress ECG performance and Interpretation	5
Doppler Echocardiography with Colour (Observation)	10
Ambulatory blood pressure monitoring/interpretation	5
Routine peak flow meter monitoring in acute asthma	20
Pulmonary Function Test – Performance	5
Pulmonary Function Test - Interpretation	10
Joint aspiration	4
Urinalysis	20
Glucose meter for monitoring diabetes	20
Fundoscopy – hypertension, diabetes, before LP, raised intracranial pressure	20
Fine needle aspiration (Observation)	5
EEG (Observation)	5
EMG (Observation)	5
Bone Marrow Aspiration/Biopsy (Observation)	4
Autopsy (Observation)	10

1.14 Emergency Care

- Residents shall be resident in the hospital (use on call rooms) when on call.
- First year residents shall be first on call; they will see the medical patients first, clerk patients and report to their immediate superiors. In addition the resident will arrange the appropriate laboratory investigations and treatment of the client with the help of the house officer and medical officer.
- The first year resident will report to his immediate superiors (2nd year and/or 3rd year residents).

1.15 Research

During the period of training residents are expected to develop the spirit of enquiry and to participate in data gathering and analysis.

1.16 Routine for Residents

1.16.1 Daily morning admission rounds

All the previous day's admission will be presented by residents and discussed in the presence of all Consultants, residents, and senior clinical students. During these rounds laboratory results will be reviewed. Differential diagnoses and management will be discussed. After the discussion difficult/controversial cases will be presented. The most senior resident will keep a register of all these admissions: name, age, sex, hospital number, and provisional diagnosis.

1.16.2 Bedside Clinical Teaching

Interesting cases and those of educative importance will be selected for presentation and examination by residents and discussed by tutors. These sessions should prepare residents for the clinical aspects of the assessment. Competences in history taking, examination techniques, interpretation of signs and symptoms, differential diagnosis, investigation, treatment and discussion of patients will be assessed continuously through these sessions.

1.16.3 Weekly Case Presentations

Interesting cases and cases of educational value will be presented with supportive laboratory clinical staff (pathologists, haematologists, radiologists etc.) in attendance. Laboratory data (slides, x-rays etc.) will be discussed by pathologists, haematologists and radiologists etc.

1.16.4 Weekly Journal Clubs

A resident and his/her Consultant will lead the Journal Club each week. To facilitate fruitful discussion, the topics and photocopies of the articles to be presented will be circulated to doctors a few days before the presentation.

1.16.5 Bi-Weekly Radiology Conference

X-rays of special interest would be given to the Radiologist several days before the presentation. At the conference, the team responsible for the patient whose x-ray is to be discussed will present the clinical findings and the Radiologist will then discuss the case.

1.16.7 Seminars/Lectures

State of the art, consensus statements, updates and research presentations will be taken in turn by faculty and visiting lecturers.

1.16.8 **Monthly Mortality Conference**

An audit of morbidity and mortality will be presented by named Units each month. Consultants in Laboratory Medicine will be attendance to beef up these meetings.

1.16.9 **In-Patient Care**

Residents' responsibilities will include:

- Patient care
- Clinical documentation on admission of patients
- Case summaries on patients
- Responsibility to named Consultants
- Emergency (on call) duties
- Rotation to different units/wards every three months

1.16.10 **Out-patient Care**

- Residents will attend the General and Specialist clinics of Units to which the resident is attached.
- First-year residents will clerk cases and present these to their Consultants.
- Second and third-year residents will clerk/review cases and discuss these to their Consultants.
- Residents may do summaries and/or letters on patients under the supervision of the Consultant.

1.16.11 **Specialist Procedures**

Residents are to attend the specialist procedures (e.g. OGD) offered by Units to which they are attached.

Residents are to follow up cases that go for special surgical procedures and autopsies of difficult or problem cases.

1.16.12 **Research**

Although formal research undertakings are not an essential requirement of the programme, introduction of residents to data collection and analysis in course of the programme is recommended.

1.17 **Assessment of Competences and Knowledge**

There will be continual assessment of residents during the period of residency. Skills regarding information gathering, documentation, application of such data in patient management and proficiency in performing practical and diagnostic procedures and interpretation of medical data will be monitored continuously during the period of the programme.

In addition general attitude, and interaction with patients, colleagues, nurses and students will be monitored. Any deficiency in performance will be communicated to the resident and attempts will be made to correct the deficiency before completion of the program.

A half-yearly report will be forwarded to the Head of the Department of Medicine by supervising consultants.

2 PRIMARY EXAMINATION

2.1 APPLIED SCIENCE OF CLINICAL AND DIFFERENTIAL DIAGNOSES

This examination will need to be passed by the Resident prior to entering the Residency Programme.

Topics to be covered are:

2.1.1 Temperature Regulation

- Control of body temperature
- Normal body temperature
- Disordered temperature regulation
- Pathogenesis of fever
- High environmental temperature syndromes (heat cramps, heat exhaustion, exertional heat injury and heat stroke)
- Malignant hyperthermia
- Neuroleptic malignant syndrome
- Hypothermia

2.1.2 Fever and Chills

- Definitions of fever (intermittent, remittent, sustained and relapsing fever)
- Causes of fever
- Associated systemic symptoms of fever
- Management of fever

2.1.3 Pyrexia of Unknown Origin (PUO)

- Definition
- Common causes
- Evaluation of patients with PUO (history, physical examination, investigation)
- Prognosis of PUO

2.1.4 Molecular diagnosis of neurologic disorders

2.1.5 Pathophysiology of Pain

- Pain pathways
- Evaluation of the patient with pain
- Management of patients with pain

2.1.6 Headache

- Pain-sensitive structures of the head
- Characteristics of major clinical headache syndromes (migraine, tension headache, brain tumour, post traumatic headache, subarachnoid haemorrhage, meningitis, temporal arteritis, cerebral abscess)
- Other causes of headache
- Headache related to medical disorders
- Evaluation of the patient with headache

- Management

2.1.7 Pain in the lower back

- Anatomy of the lower back
- Types of neck and lower back pain
- Major causes of neck and lower back pain
- Congenital abnormalities of the lumbar spine
- Trauma to the lower back (sprain, fracture, dislocation of disks)
- Arthritis (osteoarthritis, rheumatoid, ankylosing spondylitis)
- Other causes of low back pain (neoplastic, infections, metabolic, referred visceral pain)
- Evaluation of the patient with low back pain
- Management of the patient with low back pain

2.1.8 Disturbances of Vision and Ocular Movements

- Anatomy of visual pathways
- Eye movements
- Physiology of vision
- Disorders of vision
 - Lesion of retina, optic nerve, chiasma, tracts, radiation, geniculate nucleus and occipital lobe
- Disorders of eye movement
- Ocular muscle palsies
- Conjugate gaze palsies
- Mixed ocular muscle and conjugate palsies
- Nystagmus types

2.1.9 Dizziness, Vertigo, Faintness

- Definitions
- Vertigo
 - Vestibular
 - Labyrinthine (acute unilateral, recurrent)
 - Central (cerebellum, brainstem)
 - Benign positional
 - Central positional
- Evaluation of the patient with dizziness or vertigo

2.1.10 Paralysis and Movement Disorders

- Voluntary Movement
 - Anatomy and Physiology
 - Apraxic motor disorders
 - Paralytic motor disorders (Upper, lower motor lesions)
 - Upper motor lesions (monoparesis, paraparesis, quadriplegia)
 - Evaluation of the subject with Motor paralysis and apraxia
- Involuntary Movement
 - Anatomy and physiology of extrapyramidal system
 - Neuropharmacology of basal ganglia
 - Clinical syndromes of basal ganglia dysfunction

- Parkinsonism and Parkinson's disease
- Akinesia
- Rigidity
 - Chorea
 - Athetosis
 - Dystonias
 - Myoclonus
 - Asterixis
 - Hemiballismus
 - Tremor
 - Tics and habit spasms
 - Evaluation of the patient with extrapyramidal symptoms
- Gait and Equilibrium
 - Anatomy and physiology
- Gait disorders
 - Cerebellar
 - Hemiparesis
 - Paraparesis
 - Parkinsonism
 - Sensory ataxia
 - Cerebral palsy
 - Bilateral frontal lobe disease
 - Dystonia

2.1.11 Paraesthesia and Abnormalities of Sensation

- Anatomy and physiology of sensation
- Primary sensation and dermatomes
- Cortical sensation
- Localization of sensory abnormalities

2.1.12 Smell, Taste, Hearing

- Disorders of smell, taste, hearing and their clinical evaluation

2.1.13 Disorders of Consciousness and Coma

- Anatomy and physiology of consciousness (wakefulness)
- Pathophysiology of altered consciousness and coma
- Glasgow coma scale
- Evaluation of the patient with altered level of consciousness or coma
- Differential diagnosis of coma

2.1.14 Speech Disorders

- Anatomy and Physiology
- Speech Disorders
 - Aphasia/Dysphasia (major forms)
 - Dysarthria (major forms)
 - Aphonia

- Clinical approach to patient with language disorders

2.1.15 Neuropsychiatric Disorders

- Disturbances of perception
- Disturbances of thinking
- Disturbances of emotion, mood and affect
- Disturbances of memory
- Common clinical syndromes
 - Delirium (pathophysiology, clinical features)
 - Acute confusional states with altered level of consciousness (pathophysiology, clinical features)
 - Dementia (pathophysiology, differential diagnosis)
 - Amnesic syndrome
- Management of the delirious and confused patient

2.1.16 Focal Cerebral Syndromes

- Frontal lobe lesions
- Temporal lobe lesions
- Parietal lobe lesions
- Occipital lobes
- Corpus callosum and disconnection Syndromes

2.1.17 Disorders of Sleep and Circadian Rhythm

2.1.18 Disorders of the Eyes, Ears, Nose and Throat

2.1.19 Alterations in Circulatory and Respiratory System

- Physiology – Myocardial Function
- Anatomy – Coronary circulation, innervation of the heart
- Cough
 - Mechanism
 - Causes
 - Complications
 - Management
- Haemoptysis
 - Definition
 - Anatomic basis
 - Causes
 - Evaluation of patient with haemoptysis
 - Treatment
- Dyspnoea
 - Definition and severity of dyspnoea
 - Mechanism of dyspnoea
 - Differential diagnosis
 - Cardiac and pulmonary dyspnoea
- Pulmonary Oedema
 - Pathophysiology of Cardiogenic pulmonary oedema

- Clinical features and Investigation
- Clinical features and Investigation
- Non-cardiogenic pulmonary oedema
- Other forms of pulmonary oedema of unknown mechanism (high altitude, narcotic overdose, neurogenic pulmonary oedema)
- Shock
- Cardiac Arrest and Sudden Cardiac Death
- Cyanosis
 - Definition
 - Differential diagnosis of central cyanosis
 - Evaluation of the patient with central cyanosis
- Hypoxia
 - Definition
 - Differential diagnosis of hypoxia
 - Effects of hypoxia
- Polycythaemia
 - Definition
 - Clinical features
 - Differential diagnosis
- Peripheral Oedema
 - Pathogenesis
 - Differential diagnosis
 - Approach to the patient with oedema
- Blood Pressure
 - Physiology – control of arterial pressure
 - Accurate and proper procedures for measurement of blood pressure
- Acute Hypotension and Shock
 - Causes

2.1.20 Alteration of Gastrointestinal Function

- Nausea, vomiting and indigestion
- Dysphagia
- Gain and loss in weight
- Abdominal pain – acute and chronic abdominal pain
- Change of bowel habit
 - Diarrhoea
 - Constipation
- Malabsorption syndrome
- Haematemesis and melaena
- Jaundice
- Abdominal swelling and ascites

2.1.21 Alterations in Urinary Function and Electrolytes

- Cardinal features of renal disease
- Voiding dysfunction, incontinence and bladder pain
- Fluid and electrolyte disorders
- Acid base disturbances

2.1.22 Alteration in the Urogenital Tract Function

- Impotence
- Disturbance of menstruation
- Hirsutism in women

2.1.23 Dermatology

- Correlation of cutaneous macro/micro-anatomy and functional dermatology
- Dermatological pathology, photobiology, immunology and genetics
- Symptomatology and physical signs of skin diseases
- Laboratory and special diagnostic methods in dermatology
- Cutaneous manifestations of systemic diseases (including auto-immune multisystem/collagen diseases, and systemic effects of skin diseases)
- Cutaneous clinical pharmacology

2.1.24 Haematologic Alterations

- Haematopoiesis
- Disorders of haemoglobin
- Anaemia
- Bleeding and thrombosis
- Lymphadenopathy and splenomegaly
- Disorders of granulocytes and monocytes
- Transfusion biology

2.1.25 Physiology and Biochemistry of Immunology

- Genetics and disease
- Molecular basis of gene expression
- Categories of genetic disorders
- Complex disease traits
- Cytogenetics of human disease

2.1.26 Clinical Pharmacology

- Basic principles of clinical pharmacokinetics
- Mechanisms of action of commonly used drugs and clinical correlates
- Resumé of autonomic pharmacology
- Clinically relevant drug interactions – principal mechanisms and applications
- Adverse drug reactions including pharmacovigilance
- The basis for individualisation of drug therapy – age and genetics
- Environmental influences, compliance and drug responses
- Disease states and their influence on drug handling and response
- Use and misuse of antimicrobials – principles of good practice
- Clinical trials – risks and benefits of drug therapy

2.1.27 Nutrition and Nutrition Requirements

- Assessment of nutritional status
- Obesity

- Anorexia nervosa, bulimia nervosa
- Enteral and parenteral nutrition
- Vitamin deficiency
- Calcium, phosphorus and bone metabolism
- Calcium regulating hormones
- Trace element disorders
- Lipid and lipoprotein disorders

2.1.28 **Neuroendocrine Regulation and Diseases of the Anterior Pituitary and Hypothalamus**

2.1.29 **Immune System and Connective Tissue Alterations**

- Disorders of the immune system
- Primary immune deficiency syndromes
- Human immune deficiency virus (HIV) Disease
- AIDS and related disorders
- Immediate hypersensitivity disorders
- Immune mediated skin diseases

2.1.30 **Cell Biology of Cancer**

- Cancer genetics
- Presentations of the patient with cancer
- Approach to the patient with cancer
- Prevention and early detection of cancer

2.2 **MEDICAL ETHICS**

Formal lectures are to be given on Medical Ethics to Residents during the first year.

2.2.1 **The Control of Medical Practice**

- The role of the Medical and Dental Council/Determination of competence to practice or not to practice.
- The role of Medical Associations.
- The law and medical practice.
- Relationship with professional colleagues and other health workers

2.2.2 **Ethical Issues In Modern Medical Practice**

- Doctor patient relationship
- Professional secrecy/confidentiality
- Informing the patient responsibly
- Release of medical bulletins
- Immorality of some diagnostic and therapeutic procedures

2.2.3 **Experimentation on Human Beings**

- Medical codes and experimentation of humans
- The patient as an experimental subject: case
- Histories from Nazi Germany and USA in early 20th century on informed consent
- Therapeutic and non-therapeutic experimentation

- The responsibilities of the experimenter

2.2.4 Ethical Issues on The “Beginning Of Life”

- The beginning of life: embryology
- Contraception and sterilisation
- Artificial insemination and test tube babies
- Cloning experiments
- Abortion, eugenics

2.2.5 Ethical Issues on The “End Of Life”

- Prevention of suffering
- Care of the terminally ill and the dying
- Right to die in dignity
- Hospice practice and euthanasia
- Death certification and police reports

2.2.6 Ethical Issues on Human Behaviour And Psychiatry

- Concepts of health and disease (physical and mental)
- Care of the vulnerable and disadvantaged
- Compulsory custodial care of the mentally challenged

3 MEMBERSHIP EXAMINATION

3.1 NEUROLOGY

- Neuro-anatomical localization and syndromes
- Cranial nerve disorders – Bell’s palsy, CN III and VI palsies
- Peripheral nerve disorders – neuropathies, demyelination, compressive/entrapment
- Investigation of the nervous system – neuroimaging, electrophysiology, neuropsychological testing
- Chromosomal abnormalities and neurocutaneous disorders – neurofibromatosis, adenoma sebaceum etc. (with Paediatrics)
- Developmental structured lesions (with Paediatrics)
- Storage diseases (with Paediatrics)
- Mitochondrial enzyme defects and metabolic disorders (with Paediatrics)
- Dementia
- Movement disorders
- Disorders of balance – ataxia, vertigo
- Disorders of the muscle and neuromuscular junction – motor neuron disease, myasthenia gravis, muscular dystrophy
- Nutritional deficiencies, toxins and alcohol related syndromes
- Infections of the nervous system – meningitis, encephalitis, HIV/AIDS, protozoal

- Neurovascular disorders – cerebrovascular disease, arteriovenous malformations, subarachnoid haemorrhage
- Neurological tumours – primary (co-ordinate with Neurosurgery) metastatic & paraneoplastic syndromes
- Demyelination – multiple sclerosis, Guillain Barré syndrome, transverse myelitis etc.
- Traumatic disorders – (co-ordinate with neurosurgeons)
- Epilepsy
- Syncope
- Headache, migraine and facial pain
- Sleep disorders
- Drug induced and iatrogenic neurological disorders
- Neuro-rehabilitation

3.2 **PSYCHIATRY**

- Classification of psychiatric disorders
- Anxiety disorders
- Mood disorders
- Schizophrenic disorders
- Somatoform disorders
- Personality disorders
- Dissociative disorders
- Organic mental syndromes & disorders
- Alcohol & other psychoactive substance use disorders

3.3 **CARDIOVASCULAR DISORDERS**

3.3.1 **Symptoms and signs**

- Symptoms and signs of heart disease
- Symptoms and signs of arterial disease
- Symptoms and signs of venous disease
- Symptoms and signs of capillary disease

3.3.2 **Cardiac disease**

- Heart failure
- Acute circulatory failure
- Rheumatic fever and its complications
- Rheumatic heart disease
- Other valvular heart disease
- Infective endocarditis
- Coronary artery disease*/ ischaemic heart disease
- Cardiomyopathy
- Congenital heart disease
- Diseases of the myocardium
- Diseases of the pericardium

- Diseases of the endocardium
- Cardiac arrhythmia and heart block
- Heart and systemic disorders
- Heart and pregnancy
- Cor pulmonale, chronic & acute pulmonary thromboembolism
- Cardiac/pericardial tumours
- Wolff-Parkinson-White syndrome & other pre-excitation syndromes
- Heart and genetics
- Heart and thyroid & adrenal glands, carcinoid tumours
- Heart and diabetes mellitus, anaemia, surgery

3.3.3 Disorders of the vascular system

- Atherosclerosis
- Hypertension
- Diseases of the aorta including dissecting aneurysm of the aorta
- Vascular diseases of the extremities
- Varicose veins, deep vein thrombosis
- Pulmonary hypertension
- Arteriovenous fistula

3.3.4 Physiology & investigation of cardiovascular diseases

- Cardiac function
- Cardiac cycle
- Coronary circulation
- Cardiac output, cardiac index, ejection fraction
- Clinical tests: tilt test, Valsalva manoeuvre, stress tests, carotid massage...
- Exploration of arterial, venous, capillary and coronary circulations
- Electrocardiography
 - General electrophysiology including cellular electrophysiology, cardiac activation and spread of the impulse
 - Normal electrocardiogram (ECG)
 - His bundle electrocardiogram & electrophysiologic studies
 - Exercise ECG, 24-Hour Ambulatory ECG (Holter) electrogenesis and identification of abnormal ECG, including various arrhythmias
- Cardiac catheterisation: technique, indications, contraindications, complications
- Cardioangiography: technique, indications, contraindications, complications
- Pulmonary circulation and blood gases: hepatic and renal circulation
- 24-Hour Ambulatory Blood Pressure Monitoring
- Physiology of coagulation

3.3.5 Cardiovascular imaging

- Radiology of heart and vessels without and with contrast
- Echocardiography/ Doppler, Transoesophageal echocardiography
- Radionuclide imaging
- CAT scanning
- Magnetic Resonance Imaging

3.3.6 Management of cardiovascular diseases

- Cardiovascular drugs
- Physical methods: cardio version, cardiac pacing, catheter ablation etc

3.3.7 Cardiovascular emergencies

- Hypertensive crisis
- Acute pulmonary oedema
- Acute myocardial infarction
- Cardiac tamponade
- Cardiopulmonary resuscitation
- Pulmonary embolism

3.3.8 Social cardiology

- Heart disease and occupation & legislation: driving
- Heart disease and sports

3.3.9 Progress in cardiovascular diseases

3.4 INFECTIONS AND TROPICAL DISEASES

- Basic considerations in infectious diseases
- Clinical syndromes of community acquired infectious diseases
- Clinical syndromes of nosocomial infections
- Bacterial diseases
- Rickettsial, mycoplasmal, chlamydial diseases
- Viral diseases
- Fungal infections
- Protozoal infections
- Helminthic infestations
- Infections with ectoparasites
- Immunology of infectious diseases
- Tropical pharmacology

3.5 RESPIRATORY DISORDERS

- Approach to the patient with disease of the respiratory system
- Structure of the respiratory tract
- Lung defences and immunology
- Diseases of the respiratory system
 - Acute infections of the respiratory tract: pneumonia, lung abscess
 - Tuberculosis
 - Other granulomatous diseases
 - Asthma

- Bronchiectasis
- Interstitial/Diffuse lung disease
- Occupational lung disease
- Lung disease in the immunocompromised patient
- Cancer of the lung
- Respiratory function disturbances
- Respiratory failure
- Acute respiratory distress syndrome
- Disorders of ventilation
- Mechanical ventilatory support
- Disorders of the pleura, mediastinum and diaphragm
- Sleep apnoea
- Hypersensitivity pneumonitis and eosinophilic pneumonias
- Diagnostic procedures in respiratory disease

3.6 DISEASES OF THE KIDNEY AND URINARY TRACT

- Approach to the patient with diseases of the kidney and urinary tract
- Disturbances of renal function
- Assessment of Renal function
- Investigations of renal disease
- Acute renal failure
- Chronic renal disease
- Peritoneal and haemodialysis
- Transplantation
- Pathogenetic mechanisms of glomerular damage
- Glomerulopathies
- Multisystem disorders and glomerulopathies
- Tubulointestinal renal disorders
- Vascular injury to the kidneys
- Hereditary tubular disorders
- Urinary tract disorders

3.7 DISORDERS OF GASTROINTESTINAL SYSTEM AND LIVER

3.7.1 Gastrointestinal Disease

- Approach to the patient with gastrointestinal illness
- Gastrointestinal investigations
- Diseases of the oesophagus
- Peptic ulcer disease
- Malabsorption disorders: pathophysiology, specific disorders
- Gastrointestinal amoebiasis and intestinal parasites
- Inflammatory bowel disease
- Irritable bowel syndrome

- Acute appendicitis
- Acute intestinal obstruction
- Diverticular disorders
- Gastric tumours
- HIV/AIDS and the gastrointestinal tract
- Gut hormones

3.7.2 **Hepatobiliary Disease**

- Approach to the patient with liver disease
- Evaluation of liver function
- Investigation of hepato-biliary disease
- Bilirubin metabolism
- Jaundice
- Acute viral hepatitis
- Non-viral infections of the liver
- Toxic and drug-induced liver disease
- Chronic hepatitis
- Cirrhosis of the liver and complications
- Alcoholic liver disease
- Infiltrative and metabolic disorders of the liver
- Tumours of the liver and biliary system
- Liver transplantation
- Diseases of the gall bladder and bile ducts
- Diseases of the pancreas (acute/chronic pancreatitis)

3.8 **DISEASES OF THE SKIN**

3.8.1 **Papulo-Squamous Diseases**

- Psoriasis
- Pityriasis rosea
- Lichen planus
- Pityriasis rubra pilaris

3.8.2 **Disorders of Keratinization**

- Ichthyosis
- Keratoderma
- Keratosis pilaris

3.8.3 **Acute Immunologic/Toxic Inflammatory Reactions/Diseases**

- Urticaria
- Toxic erythemas
- Toxic epidermal necrolysis
- Erythema multiforme/Stevens-Johnsons syndrome
- Erythema nodosum

- Vasculitis/purpura

3.8.4 **Disorders of Skin Appendages (hair follicles, sebaceous glands, sweat glands, nails)**

- Hypertrichosis
- Alopecia
- Acne
- Rosacea, perioral dermatitis
- Miliaria
- Hyperhidrosis

3.8.5 **Pigmentation Disorders and Abnormal Reactions To Sunlight**

- Hypo pigmentation, albinism, vitiligo
- Hyper pigmentation
- Cutaneous photosensitivity
- Photodermatoses

3.8.6 **Dermatitis/Eczema**

- Atopic dermatitis
- Contact dermatitis
- Seborrhoeic dermatitis
- Nummular dermatitis
- Dermatitis of hands and feet
- Stasis dermatitis
- Lichen simplex chronicus
- Generalized exfoliative dermatitis

3.8.7 **Bullous Disorders**

- Congenital: epidermolysis bullosa, benign familial pemphigus
- Bullous pemphigoid
- Dermatitis herpetiformis

3.8.8 **Viral Infections**

- Papilloma virus – common wart
- Pox virus - molluscum contagiosum
- Herpes viruses – herpes simplex and herpes zoster
- Human Immunodeficiency Virus (HIV) - AIDS

3.8.9 **Acute Bacterial Infections**

- Impetigo, erysipelas, pyoderma, staphylococcal scald syndrome, cellulitis
- Folliculitis, furunculosis, hydradenitis suppurativa, paronychia, erythrasma

3.8.10 **Chronic Bacterial Infections/Cutaneous Granulomas**

- Infective Granulomas
 - Mycobacterial dermatosis – tuberculosis, leprosy, buruli ulcer
 - Treponematoses - yaws

- Non-Infective Granulomas
 - Foreign body,
 - Cutaneous sarcoidosis

3.8.11 Fungal Skin Infections

- Dermatophytes – tinea capitis, corporis, cruris, pedis etc.
- Yeasts – cutaneous candidiasis
- Tinea versicolor
- Subcutaneous phycomycoses & sporotrichoses

3.8.12 Parasitic Infections

- Protozoal – cutaneous amoebiasis, leishmaniasis
- Helminthic – cutaneous larva migrans, onchocerciasis, loa loa, schistosomiasis
- Arthropods – scabies, lice

3.8.13 Ulcers

- Decubitus (pressure sores)
- Stasis
- Ischaemic/vasculitic ulcers and gangrene
- Neurogenic

3.8.14 Sexually Transmitted Diseases

- Urethritis/urethral discharge – gonorrhoea, non-specific urethritis, trichomoniasis
- Genito-inguino-perineal ulcerations and regional lymphadenitis, syphilis, lymphogranuloma venerum, granuloma inguinale, chancroid.

3.8.15 Benign Tumours

- Moles
- Dysplastic naevi
- Skin tags
- Seborrhoeic keratosis
- Pyogenic granuloma
- Dermatofibroma
- Keratoacanthoma
- Keloids

3.8.16 Malignant Tumours

- Basal cell carcinoma
- Squamous cell carcinoma
- Bowen's disease
- Paget's disease of nipple
- Kaposi sarcoma
- Malignant melanoma
- Cutaneous lymphomas

3.9 IMMUNE SYSTEM AND CONNECTIVE TISSUE DISORDERS

3.9.1 Connective Tissue Disorders

- Systemic lupus erythematosus
- Rheumatoid Arthritis and Sjogren's syndrome
- Systemic sclerosis and mixed connective Disease
- Dermatomyositis and polymyositis
- Ankylosing spondylitis and psoriatic arthritis
- Reactive arthritis, colitic arthritis and Reiter's syndrome
- Vasculitic syndromes and Behcet's syndrome
- Sarcoidosis

3.9.2 Disorders of Joints

- Osteoarthritis, relapsing chondritis
- Gout and pseudogout
- Infective arthritis

3.10 ENDOCRINE AND METABOLIC DISORDERS

3.10.1 Endocrine disorders

- Approach to the patient with endocrine and metabolic disorders
- Diabetes mellitus and hypoglycaemia
- Disorders of the anterior pituitary gland
- Disorders of growth
- Disorders of the posterior pituitary gland
- Disorders of the thyroid gland
- Diseases of the adrenal gland
- Pheochromocytoma
- Disorders of the testis
- Disorders of the ovary and female reproductive tract
- Endocrine disorders of the breast
- Disorders of sexual differentiation
- Multiple endocrine neoplasia

3.10.2 Metabolic disorders

- Disorders of lipoprotein metabolism
- Haemochromatosis
- Porphyrias
- Gout
- Wilson's disease
- Lysosomal storage disorders
- Glycogen storage disorders
- Inherited conditions of connective tissue
- Inherited disorders of amino acid metabolism
- Galactosaemia

3.11 BONE AND MINERAL DISORDERS

- Diseases of the parathyroid gland
- Metabolic bone disease and disorders of calcium, magnesium and phosphate metabolism
- Paget's disease of bone, hyperostosis, fibrous dysplasia

3.12 REPTILE BITES

3.12.1 Snake Bites

- Epidemiology of snake bites: seasonal variation, people at risk and geographic distribution
- Composition of snake venom
- Classification and characteristics of venomous snakes
- Clinical features of snake bites
- Management of snake bites
 - First aid
 - Hospital care
 - Laboratory investigations and tests
 - Anti-venom treatment
 - Indications for anti-venom treatment

3.12.2 Other Reptile Bites

3.13 POISONING

- General approach to the patient with poisoning
- Elimination of poisons
 - Emptying the stomach
 - Induction of vomiting
 - Gastric lavage
 - Absorbents
 - Activated charcoal
- General management of the patient with poisoning
- Management of specific common poisons
 - Organophosphorous poisoning
 - Salicylate poisoning
 - Paracetamol poisoning
 - Rat poisoning
 - Alcohol

3.14 DROWNING

- Epidemiology
- Pathophysiology of drowning
- Clinical features

- Principles of management
 - At the scene
 - In Hospital

3.15 WORKSHOPS

- Communication Skills
- Stress and Time Management
- Management and Administration
- Ethics

Postgraduate Coordinators are expected to draw up a 3-year programme to cover these topics. Provision should also be made for a 6-week revision by candidates preparing for the Membership Examination.

APPENDIX

Structured Vocational Postgraduate Programme In Internal Medicine

OPTION 1

Residency Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year 1	General Medicine + Neurology	Diabetes	General Medicine + Gastroenterology	Cardiology + General Medicine
Year 2	District Hospital Rotation		Infectious Diseases + Dermatology	General Medicine + Nephrology
Year 3	General Medicine + Rheumatology	Diabetes (2 months) + Endocrinology (1month)	Diagnostic Cardiology + Coronary Care Intensive Care NCTC	Haematology Oncology

OPTION 2

Residency Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year 1	Diabetes (2 months) + Endocrinology (1 month)	General Medicine + Gastroenterology	Diagnostic Cardiology + Coronary Care Intensive Care NCTC	General Medicine + Dermatology
Year 2	General Medicine + Respiratory	General Medicine + Infectious Diseases	General Medicine + Rheumatology	General Medicine + Nephrology
Year 3	General Medicine + Endocrinology	Cardiology + General Medicine	Haematology + Oncology	General Medicine + Neurology

OPTION 3

Residency Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year 1	General Medicine + Nephrology	General Medicine + Respiratory	General Medicine + Infectious Diseases	Diagnostic Cardiology + Coronary Care Intensive Care NCTC
Year 2	General Medicine + Cardiology	Diabetes (2 months) + Endocrinology (1 month)	General Medicine + Dermatology	General Medicine + Rheumatology
Year 3	General Medicine + Gastroenterology	General Medicine + Endocrinology	General Medicine + Neurology	Haematology + Oncology

OPTION 4

Residency Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year 1	General Medicine + Respiratory	Diagnostic Cardiology + Coronary Care Intensive Care NCTC	General Medicine + Infectious Diseases	General Medicine + Nephrology
Year 2	Diabetes (2 months) + Endocrinology (1 month)	General Medicine + Dermatology	General Medicine + Rheumatology	Haematology + Oncology
Year 3	General Medicine + Endocrinology	General Medicine + Neurology	General Medicine + Cardiology	General Medicine + Gastroenterology

OPTION 5

Residency Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year 1	Diagnostic Cardiology + Coronary Care Intensive Care NCTC	General Medicine + Nephrology	Haematology Oncology	General Medicine + Rheumatology
Year 2	General Medicine + Dermatology	General Medicine + Diabetes Centre	General Medicine + Neurology	General Medicine + Cardiology
Year 3	General Medicine + Gastroenterology	General Medicine + Respiratory	General Medicine + Infectious Diseases	Nephrology

OPTION 6

Residency Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year 1	General Medicine + Nephrology	General Medicine + Haematology	General Medicine + Cardiology	General Medicine + Dermatology
Year 2	Endocrinology (1month) + Diabetes (2 months)	General Medicine + Neurology	General Medicine + Rheumatology	General Medicine + Respiratory
Year 3	Diagnostic Cardiology + Coronary Care Intensive Care NCTC	General Medicine + Infectious Diseases	General Medicine + Nephrology	General Medicine + Endoscopy

OPTION 7

Residency Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year 1	General Medicine + Dermatology	Endocrinology (1month) + Diabetes (2months)	General Medicine + Cardiology	Haematology + Oncology
Year 2	General Medicine + Nephrology	Diagnostic Cardiology + Coronary Care Intensive Care NCTC	General Medicine + Neurology	General Medicine + Rheumatology
Year 3	General Medicine + Gastroenterology	General Medicine + Respiratory	General Medicine + Infectious Diseases	Nephrology + General Medicine

OPTION 8

Residency Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year 1	Endocrinology (1month) + Diabetes (2months)	General Medicine + Cardiology	Haematology/ Oncology (2months) + Psychiatry (1month)	General Medicine + Respiratory
Year 2	General Medicine + Dermatology	General Medicine + Neurology	General Medicine + Rheumatology	General Medicine + Psychiatry
Year 3	Diagnostic Cardiology + Coronary Care Intensive Care NCTC	General Medicine + Infectious Diseases	Nephrology + General Medicine	General Medicine + Gastroenterology