

**WEST AFRICAN COLLEGE OF SURGEONS  
FACULTY OF ORTHOPAEDICS**

**TRAINING PROGRAMMES  
AND  
CURRICULA**

## INTRODUCTION

### 1. AIMS

The aim of the Faculty of Orthopaedics is to train high calibre orthopaedic surgeons to provide accessible high-quality surgical services throughout the subregion.

### 2. LEARNING OBJECTIVES

By the end of his over-all training in the Residency programme, each resident in Orthopaedic Surgery should be able to:

- i. *Obtain*, at first consultation, as complete a data base (History, Physical Examination and Laboratory data) as is compatible with the urgency and complexity of the patient's problems.
- ii. *Recognise* within the database, problems that:
  1. require further investigation or
  2. require therapeutic or supportive intervention.
- iii. *Investigate* clinical problems using relevant tests and other appropriate tools in order to clearly define the patient's problems.
- iv. *Interpret* clinical findings and the results of diagnostic investigations, and by a clear process of deductive reasoning reach appropriate decision on clinical management and therapeutic intervention.
- v. *Perform* all common operative procedures required for the restoration and/or maintenance of health for the individual patient.
- vi. *Explain* and defend the rationale of, and the technique and procedure employed in standard surgical operations.
- vii. *Effect* adequate post-operative care and full rehabilitation of his patient.
- viii. *Demonstrate* a clear, knowledge of the pathology, pathophysiology, clinical features, management options and result of therapy of common surgical diseases.
- ix. *Provide* effective supervision for his junior professional colleagues in their performance of simple surgical procedures.
- x. *Teach* surgical concepts and operating skills to junior colleagues.
- xi. *Explain* concepts of surgical diagnosis and treatment not only to his patients, but also to other members of the health team, so as to facilitate successful surgical care.
- xii. *Demonstrate* problem-solving ability by designing and implementing a simple research project relevant to the needs of his local environment.
- xiii. *Demonstrate* general management competence in the appropriate use of resources (man, materials and money) to achieve effective surgical care.
- xiv. *Provide* effective and purposeful leadership of the surgical team.

### **3. QUALIFICATIONS FOR ACCEPTANCE INTO THE PROGRAMME**

- a. Candidates must possess a basic medical degree or qualification registrable by the local medical council.
- b. Candidates must have served the pre-registration year/years in their own country or in any other country accepted by the local medical council and must have been fully registered.
- c. Candidates must have passed the Primary Examination of the College or its equivalent.

### **4. DURATION OF TRAINING**

The duration of the training programme shall be as follows:

- a. Part I/Membership: 36 months
- b. Part II/Fellowship: 36 months

A candidate may be exempted from part of the training programme and examination following an application and approval by Council, on the recommendation of the Credentials Committee through the Faculty Board.

### **5. EXAMINATIONS**

The examinations for the fellowship are held in April and October and shall be in three parts:

- a. Primary examination in the Basic Sciences: This examination can be taken only after completion of pre-registration internship and full registration by the local medical council. The examination which is in each of the three subjects (applied anatomy, Physiology and pathology) shall be multiple choice questions. (MCQs).
- b. Membership Examination This examination is on principles of Orthopaedic surgery, surgical pathology and operative surgery in general. The examination shall be conducted by a mixture of surgical specialists and Fellows relevant to the practice of Orthopaedic surgery. These specialties include General Surgery, Plastic Surgery, Urology, Anaesthesia, Trauma, Orthopaedic Surgery, Neurosurgery and Vascular Surgery.

The examination can only be taken after all the following conditions are met by a candidate;

- i. Success at or exemption from the primary examination in basic sciences.
- ii. Successful completion of a 36 months period of rotation in various aspects of surgery as described in the curriculum, in accredited institution(s).
- iii. Present a logbook of procedures participated in during the 36 -months period as prescribed in the faculty logbook for Membership.
- iv. A minimum number of operative cases stipulated in the curriculum must be met by candidates applying for the Membership examination (Appendix

1)

v. Attendance at relevant mandatory courses

c. Part II Final Examination:

The examination shall be; Written; Clinical; Oral and Dissertation defense.

The examination shall be conducted entirely by examiners in Orthopaedics. The candidate must show evidence of the following to be qualified for this examination:

- i. Evidence of success at or exemption from the Membership examination.
- ii. Evidence of successful completion of a minimum of 36 months training in accredited institution (s).
- iii. A logbook of procedures participated in during the period of specialist training, as prescribed in the logbook for orthopaedic surgery (Appendix 2)
- iv. Attendance to relevant/mandatory courses

# **CURRICULUM FOR THE PRIMARY EXAMINATION**

## **BASIC SCIENCE TRAINING**

The Faculty Board of Orthopaedics of the West African College of Surgeons (WACS) will require a Pass in the Primary Examination as entry point into the Residency programme. There is no formal period of training in Basic Sciences required.

The Primary examination will require significantly more knowledge than will be available to the average newly graduated M.B.B.S holder. Furthermore, for Orthopaedics, multiple areas have been added to the scope of study for the curriculum which would probably not have been taught in medical school.

Candidates are therefore advised to attend the Intensive Basic Medical Science Course organized by the College or equivalent bodies and seek appointment as demonstrators or tutors in the Basic Sciences departments of Colleges of Medicine for about a year before attempting the examination. This advice does not however prevent those who are willing from sitting the examination as soon as they have completed the mandatory Internship year.

It is mandatory for candidates to attend at least one Intensive Basic Medical Science course organized by the College or equivalent bodies.

## **COURSE OBJECTIVES**

### **A. Objectives:**

1. The Primary Examination in Basic Sciences seeks to establish the candidate's trainability and his/her understanding of the basic Principles of Surgery as it relates to Orthopaedics and Trauma.
2. To establish that the candidate is trainable.
3. To ensure that the candidate understands the Basic Principles of Orthopaedics.

4. To ensure that the candidate is familiar with the Scientific Basis of Orthopaedics.

B. **Format of Training**

There is no formal training in basic sciences in any training institution and candidates are expected to apply for and write the primary examinations after completing their internship.

The Faculty will prepare a Basic Science syllabus or course content for the guidance of the candidate, teachers and the examiners and this is reproduced below.

The Faculty will offer an annual Basic Sciences Revision Course preparatory to the Primary Examination and takes place at any location designated by the Faculty of Orthopaedics, WACS. The Course usually takes place in August of each year.

### **SYLLABUS FOR BASIC SCIENCES**

The subjects for the Basic Sciences are Applied anatomy, physiology and pathology. These are considered as being very essential in the foundation of Orthopaedics (Orthopaedic materials and introductory biomechanics) and elementary research.

The Subjects shall be

- i. Applied Anatomy
- ii. Applied Physiology (including Biochemistry, & Pharmacology)
- iii. General Principles of Pathology, Microbiology, Chemical Pathology, Haematology, Immunology and Parasitology as related to Orthopaedics.

- iv. Basic radiology.
- v. Biomechanics
- vi. Biomaterials and equipment.

## ***ANATOMY:***

### *Head and Neck:*

The scalp

Topography of the anterior and lateral regions of the neck the root of the neck

Pharynx, Larynx

The face and its vascularization

The orbit

Osteology Skull.

### *Neuro-Anatomy:*

The brain major divisions surface anatomy.

The cranial nerves

The meninges, venous sinuses, cerebral vessels

\Anatomy of the circulation of the cerebrospinal fluid

Essentials of development of the brain

*VERTEBRAL COLUMN Osteology*, development and approaches to the vertebral column from cervical region to coccyx. Anatomy and development of the spinal cord

*Thorax:*

Anatomy of the thoracic wall.

The thoracic cavity and its contents.

Osteology of thoracic cage

*Abdomen:*

Anatomy of the abdominal wall

Abdominal cavity and its contents

*Pelvis and Perineum:*

The development and gross anatomy the pelvic viscera and the perineum.

Pelvic osteotomy and development of the pelvic bones

*The Limbs*

Development, Osteology and gross anatomy of the limbs

The pelvic and shoulder girdles

Motor and cutaneous innervation of the upper and lower extremities emphasis on segmental innervation.

Classification and description of joints of the body.

*Skin*



Development, gross anatomy and histology of the skin.

*Embryology of the Musculoskeletal System and the Neural System*

Detailed knowledge of this is required.

*Histology and Intracellular Anatomy:*

Microscopic structure of normal tissues Intracellular anatomy

Correlative normal and pathological anatomy

Basic principles of histochemistry.

Brief introduction of electron microscopy

Genetic influences in development as applied to orthopaedics.

Radiological anatomy of the body relevant to orthopaedics.

**APPLIED PHYSIOLOGY:** (INCLUDING BIOCHEMISTRY,  
CHEMICAL PATHOLOGY AND PHARMACOLOGY)

***General Physiological Principles:***

**1. Structure of Living cells**

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- a. The living cell, functions and changes in its mechanisms
- b. Function of nucleoproteins in the integration of the cell as a unit of living matter.

**2. Energy Changes in the Living System**

- a. Thermodynamics of the living organism and its potential energy status.
- b. Oxygen-utilization of the living cell
  - Heat production and heat loss, (basal metabolism, specific
- c. dynamic action
  - regulation of body temperature).
- d. Homeostasis.

**3. General considerations in Water, Electrolytes and Acid-Base Balance**

- a. Distribution of water and electrolytes in extra and intracellular spaces of the body.
- b. Brief survey of biological transport of water and solutes.
- c. Water and Electrolyte balance.
  - i. Causes and effects of dehydration and oedema.
  - ii. Sodium and Potassium Metabolism.

**4. Acid-Base Balance**

pH Regulation:

- a. pH of the body fluids and buffer systems of the body.
- b. Respiratory acidosis and alkalosis as encountered in surgical practice
- c. Metabolic acidosis and alkalosis as encountered in surgical practice.

**5. Enzymes and Co-Enzymes**

Effects of enzymes in intermediary metabolism.

General aspects of metabolism of carbohydrates, lipids, proteins and nucleoproteins.

**6. General principles of nutrition in surgery including parenteral nutrition.**

Vitamins, Folic Acid, etc.

**7. Mineral Metabolism:**

Iron, Calcium/Phosphate, Vitamin D and Parathyroid hormone:  
Magnesium and trace elements, e.g. copper, cobalt.

**8. Effects of Physical Agents**

Radiation

Hypothermia

Hyperbaric Oxygen

Ultrasound and magnetic therapy in Orthopaedics.

Nuclear medicine

Principles of electronics

**SYSTEMIC PHYSIOLOGY**

**Cardiovascular System**

*Haemodynamics*

a) Flow:

The basic principles of the arterial circulation Poiseuille's

b) Blood Pressure:

Arterial, the normal blood pressure and factors maintaining it.  
Changes in the normal blood pressure, hypertension and  
hypertension, shock, syncope and cardiovascular regulations.

c) Venous circulation and venous pressure

d) Haemorrhage

The clotting mechanism

i. Cardiac muscle physiology: Cardiac Cycle, mechanism and electrical.

ii. Determinants of cardiac function: Cardiac Output, Regional Circulation, Coronary Circulation.

iii Cardiac failure

Acquired heart Disease: Congenital Heart Disease

iv. Correlation and clinical interpretation of the pathophysiology of cardiovascular

disease and symptoms.

## **2. Respiratory System:**

*Ventilation and Respiration:*

Tests of Pulmonary Function:

Ventilation/Perfusion relations, Control of respiration.

The pulmonary circulation and its control.

b. Protective mechanism of the lungs

Respiratory failure.

## **3 Renal System:**

a) *Tests of Secretory Function:*

Glomerular filtration rate and renal blood flow concentration and dilution tests. Re- absorption mechanism: Tm measurement.

b. Urine formation.

c. Renal handling of  $\text{Na}^+$  and  $\text{K}^+$

d. Endocrine Function: Erythropoietin, pressor and antipressor agents

e. Renal failure.

#### **4. Digestive System:**

Gastrointestinal motility, secretions, digestion, absorption and their disorders

Endocrine functions and nutritional deficiency especially as related to the musculoskeletal system

#### **5. Haemopoietic and Reticulo-Endothelial Systems:**

Haemostasis, haemolytic disorders, blood groups, immunoglobulins and disorders of clotting

#### **6. Muscles Bones, cartilage, Joints and Skin:**

Skeletal muscle and disorders of its function,

Electromyography

Osteogenesis - Endochondral and intramembranous ossification, woven bone,

circulation of long bones, distraction osteogenesis, fracture healing.

bone formation and resorption, mechanisms of bone formation and resorption, mechanisms of bone growth, matrix vesicles, modeling and remodeling, coupling, bone formation and resorption disorders

cartilage repair, nutrition, collagens, proteoglycans, nutrition, matrix hemostasis.

tendons and ligaments metabolism

Growth plate & Remodeling - Growth plate formation, maintenance, ossification,

impact of loading and remodeling, Wolff's law, clinical implications of blood

supply. Role of bisphosphonates. senescence and death of growth plate, remodeling

especially of diaphyseal vs. metaphyseal layer, periosteum implications.

Structure and functions of the skin.

## **7. Nervous System**

Consciousness and higher integrative functions sensation.

Motor System: Pyramidal and extra-pyramidal systems.

Spinal reflexes, maintenance of muscle tone.

Control of spinal injuries

## **8. Endocrines:**

Glandular physiology; Dynamic physiology of the hormones

Metabolic and endocrine response to surgery

## **PHARMACOLOGY:**

### ***General Principles of Pharmacology***

1. Route of administration, Absorption Distribution, Metabolism and Excretion of

Drugs.

2. Mechanisms of Drug action
3. Dose-effect relationship, Biological assay
4. Factors modifying Drug Effects; age, Sex, Body Weight, Route of Administration, Timing, Inactivation, Excretion, Environmental and Genetic Factors. Drug interactions relevant to orthopaedics.
5. Drug Toxicity.
6. Development, Evaluation and Control of Drugs: Clinical Trial.

### ***Specific classes of drugs***

Non-steroidal analgesic agents, opioids, Anaesthetic agents; bisphosphates, drugs used to treat diabetes mellitus; antituberculous, drugs, cancer chemotherapy

Drugs acting on the autonomic nervous system: Choline and adrenergic  
Sympathetic and Adrenergic Drugs.

Drugs acting on the cardiovascular system,

## **PATHOLOGY**

*General Pathology, Chemical Pathology, Histopathology, Immunology, Microbiology and Parasitology):*

General principles underlying disease process Inflammation; Regeneration, Repair, Hypertrophy, Hyperplasia, Blood coagulation, Embolism, Infarction and Ischaemia, Neoplasia, Oedema. Orthopaedic: osteomyelitis, septic arthritis, etc. Principles underlying tissue repair

Skeletal Dysplasia Proximal focal femoral deficiency, physiodysplasia; dystrophic dysplasia, spondyloepiphyseal dysplasia, Lount's dysplasia

Grafting and repair options, role of inflammation.

Medial collateral ligament vs. anterior cruciate ligament healing

Diseases like muscular dystrophy, Marfan's, Ehler-Danlos,

Joint disorders of clinical implications (e.g. osteoarthritis, rheumatoid, PVNS, joint contractures, etc.)

Skin Trauma such as burns and disorders – malignancies, infections and autoimmune diseases of surgical importance.

## **CHEMICAL PATHOLOGY**

Metabolic Bone Diseases - Calcium homeostasis, PTH,

Vitamin D, calcitonin, renal osteodystrophy, osteomalacia, rickets, osteopetrosis, Paget's, osteoporosis, mucopolysaccharidosis

## **HAEMATOLOGY**

Anaemia, Leukaemia, Myelo-proliferative disorders, haemorrhagic disorders and the Haemoglobinopathies.

Principles underlying blood transfusion

## **MICROBIOLOGY**

Routine diagnostic methods, identification of bacteria, viruses and other organisms of surgical importance.

### ***Serological Tests:***

Principles of sterilization and disinfection.

## **IMMUNOLOGY**

Principles of immunology: Toxins, antibodies, allergy, the immune diseases. Methods of action of antibodies

## **PARASITOLOGY**

Common parasitic and fungal diseases of orthopaedic importance in the tropics.

## **RADIOLOGY**



Common Interpretive Errors Approach to radiographs, approach to trauma, fat pad sign, rarefaction, stress shielding, screw loosening, sclerosis. radiation exposure.

Musculoskeletal Ultrasonography.

FAST Focused Assessment with Sonography in Trauma.

CT Interpretation, contrast, 3D reconstruction, basic joint and spine

MRI Interpretation, gadolinium, phases, basic spine, knee and shoulder.

Nuclear Medical Imaging.

Approach to Tumors pathologic signs (e.g. onion pattern, moth-eaten pattern, etc.)

Radiology - Common Tumor Differentials.

## **BIOMECHANICS**

Freebody diagrams, definitions of pressure, elasticity, plasticity, failure, Young's modulus, forces, moments, instant center of rotation, torques, dynamics, strength, load deformation, stiffness, yield, force, failure, stress-strain curves, fatigue, loading, beam analysis, torsion

## **CURRICULUM FOR THE MEMBERSHIP EXAMINATION**

The candidate is advised to seek admission into an accredited hospital for training for this part of the examination.

The rotation for the Membership examination is for a minimum period of 36 months as follows;

1. Orthopaedics.....12 months
2. Accident & Emergency.....6 months
3. Anaesthesia.....3 months
4. Gen Surgery.....6 months
5. Rural posting.....3 months
6. Plastic surgery.....3 months
7. One Elective (Neurosurgery/CTSU/Paediatric Surgery/ Urology).....3 months

A combination of 3 months in adult general surgery and 3 months in paediatric surgery may be accepted as the 6 month compulsory general surgery posting

## **JUNIOR RESIDENCY ROTATION FOR RESIDENTS IN OTHER SURGICAL SPECIALTIES**

### **OBJECTIVE**

Upon completion of this 3-month rotation, the resident is expected to demonstrate a satisfactory level of knowledge, clinical competence and technical competence. The following specific skills should have been acquired:

1. History taking, physical examination and interpretation of laboratory investigations requested for, recognising problems that require further investigation or immediate therapeutic or supportive intervention.
2. Management of critically ill and multiply injured patients
3. Carry out minor to moderate surgical procedures including skin incision and closure, excision biopsy of tumours, split skin graft, arthrotomy, incision and drainage, amputation, manipulation and reduction of fractures, minor soft tissue releases, closed and open reduction of dislocations.
4. Understand the scientific basis of diagnostic techniques in orthopaedics (radiology, magnetic resonance imaging, electrodiagnosis and radio-isotopes)

5. Understand the scientific basis of some therapeutic measures: pain mechanisms and management, immobilisation, exercise physiology and kinesiology, principles of splints in orthopaedics, implant materials and their characteristics, therapeutic principles in metabolic bone disease, bone infections and oncology.

The resident will be supervised by a senior resident, and will be required to keep a log-book containing a list of surgical operations undertaken or assisted during the posting.

Each candidate should keep a daily and up to date record of operative procedures he/she participated in during this period of training, using the prescribed logbook published by the faculty.

#### INTEGRATED REVISION COURSE:

During the training period, the candidate is encouraged to attend the integrated revision course in orthopaedics regularly organized by the college.

### **Syllabus**

**Training in all aspects of principles of surgery, clinical case management and operative surgery. The content of training should be as follows:**

#### **General principles of surgery**

- Sepsis and asepsis
- Sterilisation and disinfection
- Antibiotics and surgery
- Theatre design and management
- Surgical diathermy

#### **Trauma**

- Venous access and resuscitation
- Tracheostomy
- Wound caré, exploration, debridement and repair
- Fracture management (open and closed)
- Management of hand and foot injuries
- Amputation and tendon repairs
- Initial assessment and Management of abdominal trauma (Blunt/penetrating)
- Initial assessment and Management of chest trauma, including thoracostomy
- Management of multiply injured patient
- Management of head injury and spinal injury
- Management of paediatric trauma, including non-accidental injuries
- Management of Vascular injuries

#### **General surgery**

- Management of soft tissue infections
- Abscesses

- Cellulites
- Management of lumps
- Tissue biopsies
  - Fine needle/open/trucut
- Hernias and hydrocoeles
- Diagnosis of Oesophageal conditions (Motility disorders, Reflux, tumours)
- Diagnosis and Management of intestinal obstructionst
- Initial assessment and Management of bowel perforation
- Principles of Endoscopy
- Peptic ulcer disease and its complications
- Enteral routes for feeding
- Diagnosis of gastrointestinal neoplasms
- Stoma formation and care
- Appendicitis and its complications
- Anorectal Abscesses, Fistulae, Fissure,Prolapse
- Haemorrhoids
- Gallbladder diseases
- Obstructive jaundice
- Hepatic diseases
- Diagnosis of pancreatic diseases (neoplasms, cysts, pseudo cysts)
- Breast Abscesses and tumours
- Endocrine conditions (Thyroid, Parathyroid, Adrenal)
- Salivary gland conditions

## **Urology**

- Bladder outflow obstruction
- Prostatic conditions
- Urethral problems
- Testicular diseases
- Renal and ureteric problems (benign and malignant)

## **Orthopaedics**

- Principles of traction and immobilization
- Bone and joint infections (bacterial, tuberculous)
- Hand infections
- Bone tumours (benign/malignant)
- Metabolic and endocrine conditions (Rickets, osteomalacia, osteoporosis etc),
- Limb and spine deformities
- Congenital abnormalities (club foot, DDH, etc)
- Degenerative skeletal diseases (osteoarthritis, rheumatic diseases, gout, etc)
- Orthopaedic complications of Sickle cell
- Orthopaedic complications of Diabetes Mellitus
- Degenerative spine disease

Spinal tumours  
Tenosynovitis

### **Biomechanics**

Comparing load bearing and sharing devices, bone properties (e.g. under forces of shear, tension and compression) with clinical implications, comparing locking and non locking implants, principles of screw fixation (e.g. pitch, cut out,)

Kinematics Normal gait, gait cycle, amputee gait, crutch gait, prosthetics & orthotics, amputations effects on energy/workload, crutches, etc.

Biomechanics - Upper limb      Shoulder, elbow, hand tendons (Excursion, etc.)

Biomechanics - Foot and Ankle

Biomechanics - Hip and Knee.

### **Biomaterials and equipment.**

Tribology, ingrowth vs. ongrowth, metal-body interactions, rejection, metallurgy (immune reactions), corrosion, degradation resistance, strength of materials, failure (creep, hysteresis, relaxation, wear), metals used in orthopedics (steel, titanium, cobalt alloys), cements, ceramics. will incorporate clinical cases.

Principles of use of operating room equipment, electrocautery principles, suture types and selection (contraindications), anchor selections, tables (Principles of use of; Image Intensification, Beach chair, traction table, implications like hypotension / perineal nerve injuries, venous pooling, etc.), padding and positioning to prevent nerve injury / ulcers

### **Cardiothoracic surgery**

Respiratory function

Lung and pleural infections and collections

Lung and pleural neoplasms

### **Neurosurgery**

Principles of neuroimaging

Neurological assessment

Diagnosis of Neural tube defects (meningomyelocele)

Diagnosis of Brain tumours (Benign/malignant)

### **Paediatric surgery**

Evaluation of the paediatric surgical patient

Hernias and hydrocoeles

Congenital and acquired gastrointestinal conditions  
Stoma formation and care  
Childhood tumours (nephroblastoma, neuroblastoma, teratoma, Burkitt's lymphoma etc)

### **Plastic and Reconstructive surgery**

Principles of reconstructive surgery  
Management of burns and its complications  
Management of limb contractures  
Closure of skin defects

### **Anaesthesia**

General principles of anaesthesia (Local, Regional, General)  
Principles of critical and intensive care  
Principles of analgesia and pain management

### **Others**

Computer assisted / robotic surgery  
Surgical audit  
Surgical ethics/ Informed consent

## **Course contents for Membership**

### **1. PRINCIPLES OF SURGERY IN GENERAL**

#### **a. Preoperative Management**

- General assessment of a patient for anaesthesia and surgery
- Applied physiology, anatomy and biochemistry of Respiratory, Cardiovascular and Renal system etc.
- Principles of anaesthesia
- Principles of Fluid and Electrolyte balance
- Shock
- Laboratory investigation
  - Biochemistry
  - Haematology – Blood transfusion, normal and abnormal haemostasis
  - Microbiology
- Imaging – X-ray, Ultrasound, CT-Scan, MRI. Diagnostic and interventional radiology

- Management of co-morbid factors in surgery
  - Malaria
  - Malnutrition
  - Cardiovascular
  - Respiratory Disease
  - Endocrine disorders – Diabetes Mellitus, thyrotoxicosis
  - Anaemia
  - HIV/AIDS patient etc.

#### b. Perioperative Management

- Surgical Theatre set-up
  - Surgical instrument and equipment
  - Ventilation in the theatre-humidity, temperature
  - Theatre design and layout
  - Sutures and implants
- Infection and the Surgical patient
  - Scrubbing techniques
  - Skin preparation and draping
  - Infection control decontamination
  - Sterilisation and disinfection
  - Antibiotic prophylaxis
  - General principle of infection in the surgical patient
  - Pathophysiology of nosocomial infection, surgically important microorganism

#### c. Postoperative Management

- Nutrition in Surgery
- Pain management
- Principle of wound healing and management – wound dehiscence, and Surgical Site Infection (SSI)
- Metabolic response in injury
- Postoperative complication- deep vein thrombosis, renal failure etc.
- Basic principles of immunology
- Basic principles of transplant surgery

#### d. ETHICS OF SURGICAL PRACTICE

- Medical ethics and medico-legal aspect of surgery
- Psychological effects of surgery and bereavement

- e. **COMMUNICATION SKILLS**
  - Patient/doctor/other health staff
  - Report writing, presentation skills
- f. **HOSPITAL MANAGEMENT**
  - Administrative procedures
  - Financial management
  - Human resources management
  - Logistic management
- g. **RESEARCH METHODOLOGY/COMPUTER SKILLS**
  - Basic principles of statistics
  - Computer skills
- h. **CLINICAL AUDIT**
  - Decision making in surgery

## 2. **TRAUMA**

### **Clinical assessment**

- Prehospital Care
- Triage
- Transport of the injured patient
- Primary assessment and resuscitation
  - Assessment of the injured patient
  - ABCDE of resuscitation (CPR, BTLs, ATLS: - “Hands-on”)
  - Shock: - management of haemorrhagic shock, cardiopulmonary bypass-general principles
  - Care of the multiple injured patient
  - Trauma scoring system
  - Gunshot/Blast injuries
  - Management of mass casualty
- Principles of traumatic wound management – Open fractures

### **Head, Neck and Spinal Injury**

- Applied anatomy and physiology of head, neck and the spine



- Initial assessment and Management of the head injured patient
- Initial assessment and Management of spine injuries

### **Chest Injuries**

- Applied anatomy and physiology of the chest
- Management of chest injuries
  - Pneumothorax, Haemothorax
  - Rib fractures, Flail chest
  - Mediastinal, parenchymal and diaphragmatic injuries

### **Abdominal Injuries**

- Applied anatomy and physiology of the abdomen
- Initial assessment and Management of :
  - blunt and penetrating injuries of the abdomen
  - Solid organ injuries (liver, spleen, pancreas etc)
  - Hollow organ injuries (blood vessels, intestines, stomach, oesophagus etc)

### **Genitourinary Injuries**

- Applied anatomy and physiology of the genitourinary system
- Initial assessment and Management of genitourinary injuries  
(Kidneys, ureters, bladder, prostate, urethra, penis, testis, vagina, uterus)

### **Pelvic Injuries**

- Applied anatomy physiology of the pelvis
- Management of pelvic injuries

### **Limb Injuries**

- Applied anatomy and physiology of the limbs
- Management of hand injuries:- nerve, tendons, vessels and bones
- Management of upper limb injuries
- Management of lower limb injuries
- Fractures
  - pathophysiology of fracture healing
  - principles of fracture management

- Non-union, delayed union and complications
- Bone grafting
- Compartment syndrome, Traumatic oedema, Fat embolism
- Brachial plexus injury

#### **Management of Severely Injured Patient**

- Systemic and metabolic response to trauma
- Mass casualty

#### **Rehabilitation of Trauma Patient**

- Physiotherapy
- Prosthesis

#### **c. BURNS**

- Applied anatomy and physiology of the skin
- Pathophysiology of Burns
- First Aid at site and safety
- Immediate care – resuscitation – ABCDE and fluid therapy
- Escharotomy
- Burn wound care
  - Wound dressing
  - Excision and skin graft
- Rehabilitation – scar management – keloids, hypertrophic scars

#### **d. INTENSIVE CARE**

- Organisation, staffing and function
- Indications for admission
- Scoring
- Costs
- Sepsis, predisposing factors:-localized, pneumonia, lung abscess
- Vascular access
- Monitoring of cardiovascular, respiratory and renal system in the critically ill-patient

- Endotracheal intubation, laryngotomy, tracheostomy
- Multisystem failure
- Systemic response to trauma
- Shock management
- Applied pharmacology
- Applied anatomy, and physiology of the respiratory, cardiovascular, renal and endocrine system

**e. PRINCIPLES OF ONCOLOGY**

- Epidemiology of common neoplasms- the role of Cancer Registry
- Principles of carcinogenesis and pathogenesis of cancer
- Clinico-pathological staging of cancer
- Principles of cancer management by surgery, radiotherapy, chemotherapy, immunotherapy and hormonal therapy
- Immunology
- Special investigation
- Molecular biology of cancers and mechanism of invasion
- Cancer screening and prevention programmes
- Care of the terminal cancer patients
- Rehabilitation and psychological support after surgery

**f. SYSTEM SURGERY**

**Abdomen**

- Abdominal wall
  - the anatomy of the abdominal wall:- hernias; inguinal canal, femoral canal, etc
  - Hernias:- clinical features, complications and management
- Acute abdominal conditions
  - applied anatomy and physiology of abdominal viscera: peritoneum, solid and hollow viscera
  - Initial assessment and management of acute abdominal conditions:-

Inflammatory conditions  
Obstruction of hollow viscus

Perforations

Haemorrhage

Pancreatitis

Gynaecological conditions

Others: - e.g. non-surgical conditions – sickle cell crisis, pneumonia, ulcerative colitis, typhoid and amoebic infections

- Elective abdominal condition
  - Stomach and Duodenum - Peptic ulcer disease etc.
  - Oesophageal bleeding
  - Liver and biliary tree - Jaundice – differential diagnosis and treatment, Hepatocellular carcinoma etc.
  - Common and peri-anal disorders: -haemorrhoids, anal fissure, fistula-in-ano
  - Enterocutaneous fistula
  - Abdominal masses
  - Herniae

### **Genitourinary**

- Applied anatomy and physiology of the renal system
- Initial assessment and Management of the upper urinary tract conditions:
  - urinary tract infection
  - haematuria
  - urinary calculi
  - tumours
- Initial assessment and management of lower urinary tract conditions
  - urinary retention
  - disorders of the prostate
  - pain and swelling in the scrotum – testicular torsion
  - tumours of the prostate, bladder, testis

### **Breast**

- Applied anatomy and physiology of the breast
- Investigation of breast diseases

- Neoplastic diseases of the breast

### **Neck and Endocrine Glands**

- Applied anatomy and physiology of the endocrine glands
- Patho-physiology of the thyroid, parathyroid, pituitary, adrenal cortex, adrenal medulla; the gut as endocrine gland
- Management of common neck swellings
- Thyroid – the role of surgery in thyroid disease including hospitalization and thyroidectomy
- Parathyroid – hyperparathyroidism, hypercalcaemia
- Pancreatic conditions of surgical importance
- Adrenal conditions of surgical importance

### ***Paediatric Surgery***

- Examination of the paediatric surgical patient
- Fluid and electrolyte balance
- Neonatal physiology
- Special problems of anaesthesia and surgery I in the newborn
- Specific paediatric surgical disorders:
  - Pyloric stenosis
  - Hernias
  - Intussusception
  - Undescended test
  - Neonatal intestinal obstruction
  - Abdominal wall abnormalities

### **Lumps and Swellings**

- Applied anatomy and physiology of the skin and subcutaneous tissue
- Superficial soft tissue swellings and their management.

### **Plastic Surgery**

- Management of chronic ulcers – skin grafting
- Lymphoedema
- Limb contractures
- Flaps
- Congenital malformations – Cleft lip and palate, haemangiomas

### **Arterial and Venous Disorders**

- Vascular and Lymphatic systems
  - Arterial diseases
  - Venous diseases
  - Lymphatic disorders

### **Cardiothoracic Surgery**

- Tube thoracostomy

### **Neurosurgery**

- Hydrocephalus
- Spine and cord defects
- Intracranial infections
- Neoplastic lesions

### **Orthopaedics**

- Acute and chronic bone infections including TB
- Poliomyelitis
- Osteoarthritis and low back pain
- Compartment syndromes
- Congenital deformities
- Bone tumours
- Limb deformity correction
- External fixation of fractures
- Basic open reduction and internal fixation of fractures
- Wound debridement
- Non-operative management of fractures
- Clubfoot deformity correction using the Ponseti method

### **Principles of Minimally Invasive Surgery**

### **Day Care Surgery**

#### **LOG BOOK FOR MEMBERSHIP:**

**KEY: Performed(P) Assisted(A) Observed(O)**

ROTATION	PROCEDURE	O	A	P
ACCIDENT/EMERGENCY	Arthrocentesis	4	2	2
	Arthrotomy	2	2	-

	Endotracheal intubation	5	3	2
	Tube thoracostomy	2	-	-
	Incision & Drainage	5	2	2
	Venous Cut downs	2	2	1
	Central line insertion	5	2	-
	tracheostomy	2	-	-
	Spinal immobilization/skull traction	10	4	-
	Wound debridement	5	5	3
	Digital amputations	2	1	-
	Closed reduction of dislocations	5	3	2
	Manipulation and splintage of fractures	10	5	5
	Suprapubic cystostomy	2	1	-
<b>ORTHOPAEDICS</b>				
	Skeletal and skin traction for fractures	10	5	5
	Open reduction of dislocation	1	1	-
	Biopsy – incisional/excisional/needle	3	2	1
	Soft tissue releases (trigger/de Quervain)	2	2	-
	Tenolysis	2	-	-
	Bracing for scoliosis	2	-	-
	Tenotomy	5	3	2
	Major amputations	5	3	2
	Elongation of tendons	2	2	1
	corrective osteotomy	2	2	1
	Tendon transfer	2	-	-
	open reduction & internal fixation of fractures	10	5	2
	Fasciotomy	2	1	-
	Sequestrectomy	5	2	-
	Ganglion excision	2	2	1
	Diagnostic arthroscopy	2	-	-
	Nerve repair	2	-	-
	Application of halovest	1	-	-
	Ligament repair	2	-	-
	External musculoskeletal fixation	5	3	1
	Arthrotomy	3	2	1
<b>BURNS AND PLASTIC SURGERY</b>				
	Split skin graft	5	3	2
	Tendon repairs	2	2	1
	Reconstructive surgery eg. Syndactyly	2	-	-
	Flap surgery	2	1	-
	Cleft lip & palate repair	2	-	-
	Soft tissue release for contractures	2	1	-

GENERAL/PAEDIATRIC SURGERY				
	Herniorrhaphy	5	5	5
	Appendicectomy	5	5	5
	Laparotomy	5	3	-
	Intestinal resection & anastomosis	2	2	-
	Excision of soft tissue masses	5	5	2
	Splenectomy	5	2	-
	Herniotomy	5	5	5
	Meningomyelocele repair	1	-	-



## CURRICULUM FOR THE PART II FINAL EXAMINATION IN ORTHOPAEDICS

### COURSE STRUCTURE

Following successful completion of the Membership examination, the candidate wanting to train in ORTHOPAEDICS should seek admission into an accredited hospital for training in the specialty. The training is for a period of 36 months in various aspects of Orthopaedic surgery.

During this period, the candidate is encouraged to attend the revision course in Orthopaedic surgery regularly organized by the colleges. Other courses include those on Research Methodology and Management. Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed logbook for Orthopaedic surgery published by the Faculty.

Each candidate shall carry out a research project and write a dissertation which shall form part of his/her final assessment for the award of the Fellowship.

The training period shall be 36 months made up of 30 months of core postings and 6 months of elective posting as illustrated.

Postings	Duration (Months)	Contact Lectures (Hours/week)	Contact Clinical (Hours/week)	Credit units
Core Postings				
Trauma	6	5	60	40
Paediatric Orthopaedics	6	5	60	40
Spine	6	5	60	40
Arthroplasty	6	5	60	40
Arthroscopy & Sports medicine/General Orthopaedics	6	5	60	40
Elective Postings				
Orthopaedic Oncology	6	5	60	40
Burns/Plastics(Elective)	6	5	60	40

### COURSE CONTENT

The resident is expected to cover the following areas:

#### 1. GENERAL PRINCIPLES ;

## **1. Management of Trauma Patient**

While in the Accident and Emergency department the candidate will be expected to participate in and demonstrate knowledge of emergency care for the trauma patient. The candidates should be familiar with the principles of pre-hospital care including triage at the scene of accident and on arrival in the hospital. Generally the candidates should be involved in providing adequate, prompt emergency care to the injured patient.

Specifically the candidates must:

Be able to identify and treat life threatening or potentially life-threatening injuries.

Be conversant with the principles of primary and secondary patient assessment.

Be able to assess and manage the patient in respiratory distress and shock, including the use of crystalloids, cross-matched blood, types specific and type O blood and Orotracheal intubation.

Recognize the indications for the complications of and demonstrate the ability to perform the following:

Peripheral and central vascular access, Urethral catheterization, Thoracic needle decompression, Chest tube insertion, Pericardiocentesis, Diagnostic paracentesis, Celiotomy

Know when to request for the following investigations: C Spine X-ray, Chest X-ray, Pelvic X-ray, Abdominal Ultrasonography, CT Scan.

Recognise the significance of the following monitoring procedures: ECG, Arterial blood gas analysis, Pulse oximetry/NIBP monitor, CVP.

Know the principles of management of chest, abdominal, pelvic, head, spine and burn injuries.

Know the principles of initial management of musculoskeletal injuries including treatment of acute fractures, compartment syndrome, crush injury, open fractures, and joint injuries, and tetanus prophylaxis.

Be conversant with trauma scores as triage tools.

## **2. Management of Orthopaedic emergencies**

Candidates must be able to recognize Orthopaedic emergencies such as Septic arthritis, pyomyositis, hand infection, acute osteomyelitis and institute appropriate initial care.

## **3. Imaging techniques and other Diagnostic Procedures**

Candidates are expected to be familiar with all relevant radiological investigations that assist in the management of the Orthopaedic Patient.

These include:

- a. Principles of general radiological interpretation. (e.g. fractures, dislocation).
- b. Principles of radiological investigations of trauma, indications and interpretation of specialized techniques (e.g. Angiography, computerized tomography, Arthrography etc).
- c. Interpretation and Pathophysiological correlation or radiography of arthritic disorders, infection, tumours, metabolic and reactive disorders.
- d. Paediatric musculoskeletal radiology
- e. Techniques and interpretation of radiological investigation of spine injuries and disorders including myelography, computerized tomography and MRI
- f. Principles of isotope scanning and ultrasonography
- g. Histopathology of tissue specimens
- h. Serum and urinary biochemistry etc.

## **4. Instrumentation and Implants in Orthopaedic and Trauma Surgery**

Because of the scope of diversity of Orthopaedics and Trauma, there is emergence of sophisticated and high-tech procedures. This has given birth to sub-specialisation. The candidates should be familiar with these subspecialties including their instrumentation, implants, suture materials, orthoses etc.

Candidates must know the characteristics, indications and complications of these implants. They must know how to handle and use these instruments.

5. Principles of Plaster techniques

Candidates must be familiar with the various casting materials used in the conservative management of fractures (scotch cast, POP etc) and the principles of application.

Candidates must also be familiar with the indications and complications of using these materials.

6. Anaesthesia and ICU

The candidates must be familiar with the following:

Local and regional anaesthetic techniques including Biers block, axillary block and spinal. and General Anaesthesia. Electrolyte disturbances and acid base imbalance.

Basic metabolic and nutritional requirements including Parenteral nutrition

Conduct of advanced cardiopulmonary resuscitation and techniques of monitoring.

7. Drugs

Pharmacology and Principles of use of these drugs: Analgesics, Antibiotics, Anti-TB, Non-Steroidal Anti-Inflammatory drugs, Anti-Cancer therapy.

8. Surgical procedures

The candidates are expected to participate in the pre-op, intra-op and post-op management of patients going for surgical operations.

Principles of pre and post op management – specifically the preop investigations, the preop management and comorbid medical conditions, grouping and crossmatching, bowel preparation, prophylactic antibiotics postop analgesia, management of drain.

Principles underlying every procedure in Orthopaedic Surgery.

Realignment osteotomy

Synovectomy

Arthrodesis

amputation

Epiphyseodesis

tendon transfer

Arthroplasty

Nerve tendon repair.

Open reduction and Internal fixation (ORIF)

Should be able to perform certain procedures in the emergency or elective situations either as the main surgeon or being assisted by the consultant or as first assistant.

Should be familiar with the indications for various surgical approaches, patient positioning, various types of tourniquet its indications and complications.

Able to recognize and treat postop complications such as: wound infection, wound dehiscence, haemorrhage, atelectasis, etc.

2. GENERAL ORTHOPAEDICS

a. Congenital anomalies

of the hip, the limbs, the hand, the feet, and the spine.

b. Tumours (Benign & Malignant)

General principles of diagnoses and management of tumours of Bone, Cartilage, and Soft tissue

c. Metabolic and Endocrine Disease

- i. Rickets
- ii. Osteomalacia
- iii. Pagets
- iv. Osteoporosis
- v. Hyperparathyroidism
- vi. Hypoparathyroidism
- vii. Hyperpituitarism
- viii. Hypopituitarism

d. Infections of Bones and Joints

- ☐ Osteomyelitis (Subacute, Acute & Chronic)
- ☐ Suppurative arthritis (acute)
- ☐ Tuberculous osteomyelitis and arthritis
- ☐ Syphilis
- ☐ Leprosy

e. Degenerative Diseases

- i. Rheumatic disorders – rheumatoid arthritis
- ii. Ankylosing spondylitis
- iii. Psoriatic arthritis
- iv. Juvenile chronic arthritis
- v. Crystal deposition – gout
- vi. Osteoarthritis
- vii. Osteonecroses & osteochondritis
- viii. Heterotropic ossification

f. Skeletal Dysplasias

Achondroplasia, Spondyloepiphyseal dysplasia and Multiple exostosis

g. Connective Tissue Disorders

Marfans Syndrome, Ehler Danlos syndrome, Osteogenesis imperfecta

h. Neuromuscular Disorders

Cerebral palsy, Stroke, Spina bifida, Poliomyelitis, Arthrogryphoses multiplex congenital, Reflex sympathetic dystrophy, Muscle dystrophy.

i. Haematological Diseases

Sickle cell disease, Multiple myeloma, Leukaemia, Haemophilia, Histiocytosis

j. Others

Limb length discrepancies: congenital, acquired

Delayed union and non-union fractures including pseudoarthroses

**C. REGIONAL ORTHOPAEDICS**

- a. The Neck – Prolapsed cervical disc, cervical spondylosis, rheumatoid arthritis, thoracic outlet syndrome

- b. The shoulder – rotator cuff syndrome, bicipital tendonitis and rupture, frozen shoulder, chronic shoulder instability, rheumatoid arthritis, osteoarthritis.
- c. The Elbow – Osteochondritis diseases, loose bodies, rheumatoid arthritis, osteoarthritis, stiffness at elbow.
- d. The Wrist – radial club hand, ulnar club hand, madelung deformity, kienbocks disease, tuberculoses, rheumatoid arthritis, osteoarthritis, carpal tunnel syndrome, De Quervains disease, ganglion
- e. The Hand – tendon lesions – mallet finger, boutonniere – Dupuytrens contractures, Rheumatoid arthritis, Acute hand infections.and injuries.
  - f. The Spine –
    - i. Scoliosis
    - ii. Kyphosis
    - iii. Tuberculosis of the spine
    - iv. Pyogenic spondylitis
    - v. Disc degeneration and prolapse
    - vi. Lumbar spondylosis
    - vii. Spinal stenosis
    - viii. Spondylolisthesis
    - g. The Hip –
      - i. Congenital dislocations of the Hip and hip dysplasia
      - ii. Femoral anteversion
      - iii. Irritable hip
      - iv. Coxa vara/coax valgus
      - v. Perthes disease
      - vi. Slipped capital femoral epiphysis
      - vii. Pyogenic arthritis of the hip
      - viii. Tuberculosis of the hip
      - xi. Osteoarthritis of the hip
      - x. Rheumatoid arthritis of the hip
  - h. The Knee
    - i. Angular deformities of knees
    - ii. Meniscal lesions
    - iii Dislocation of the patella
    - iv. Chondromalacia patella
    - v. Osteochondritis dissecans
    - vi. Tuberculosis of the knee
    - vii. Osteoarthritis of the knee
    - viii. Osgood Schlatters disease
    - ix. Popliteal (Bakers) Cyst

x. Blount's disease

i. The ankle & Foot

I Talipes equinovarus

ii. Flat foot

iii. Pes canvus

iv. Hallux valgus

v. Hammer toes

vi. Rheumatoid arthritis

vii. Osteoarthritis of the ankle

viii. Tarsal tunnel syndrome

ix. Ingrown toenail

**D. REHABILITATION IN ORTHOPAEDICS**

The trainee should be familiar with the various modalities employed in the rehabilitation programme of an acutely injured, burned and /or Orthopaedic patient. He should be aware of the sub-specialization in Orthopaedic Rehabilitation., Viz Physiotherapy, Occupational therapy, Social work, Prosthetic and Orthotics etc.

The trainee must be familiar with the various Orthoses and Prostheses; must understand the characteristics and properties of the materials in use: and should have sufficient exposure to prescribe these Orthoses and prostheses in the treatment of relevant conditions.

Furthermore, a trainee should be familiar with the equipment (infrared lamps, short-wave machine, TENS, Heat wax bath, Paraffin wax bath, Walking stick, Callipers etc.) used in physiotherapy and their indication in treating conditions like low Back-ache, Poliomyelitis, Cerebral palsy, Nerve palsy etc.

He should know and appreciate the role of the physiotherapist in the pre, post-operative care of the surgical patient.

## 1. COURSE ASSESSMENT

### EVALUATION

Two types of evaluation are instituted by the Faculty of Orthopaedics for its Fellowship programme. These are *formative evaluation* (in-course assessment) and *Summative evaluation*.

#### A. IN-COURSE ASSESSMENT

Constant evaluation is expected to be carried out during the course of Training by each institution. Procedures which are mandatory for each clinical posting are assessed and graded as the resident carries them out. Once adjudged satisfactory, such procedures are credited for the resident concerned, at which point the Residents port-folio is signed by the supervising consultant. To be signed off for each posting the resident must have been judged to have satisfactorily performed all the mandatory procedures for that posting, failing which a remedial period may be recommended. It is not mandatory to have an end-of-posting test, although this is highly recommended. It is part of good training that residents should have frequent written tests under examination conditions, so as to acquire appropriate examination techniques (for both Essays and MCQs) during training. Each year an annual report on the progress of each resident is required to be sent by the training Institution to the College Secretariat for their records.

The objectives of the formative evaluation are as follows:

1. To diagnose the degree of convergence of educational goals and students achievement.
2. To provide a basis for feedback to students in order to help them improve their knowledge and competence.
3. To furnish teachers and clinical supervisors with relevant information about the quality of their teaching – its strengths and weakness.
4. To serve as an effective tool for ensuring the maintenance of high quality health care for patients.
5. To certify students for admission to the Part II/ Fellowship Examinations.

## **PART II/FELLOWSHIP EXAMINATION**

### The Examination

The Part II Fellowship Examination shall consist of

1. Theory papers which shall consist of MCQ and essay papers
2. The Clinicals shall be of long and short case varieties
3. Dissertation. A comprehensive oral examination on the candidate's dissertation
4. 2 other orals on Principles and practice of Orthopedic surgery which shall focus respectively on (a) Principles of surgery and (b) Operative surgery and pathology

### EXAMINATION RESULTS

In order to pass the examination, a candidate must

- (a) Pass his dissertation
- (b) Pass all other sections of the examination at the same sitting
- (c) A Pass in the clinical is mandatory
- (d) However a candidate may be referred in either the Dissertation or the other sections of the examination taken as a unit.

### **2. LEARNING METHODS**

These shall be in the form of

- (a) Self direct learning
- (b) Attendance at courses
- (c) Apprenticeship.

### **3. CERTIFICATION**

After successful completion of the course the candidate shall be awarded the Fellowship certificate of the College ( FWACS.(Orth)

### **4. ACCREDITATION CRITERIA**

These include the following

- (a) Adequate number and mix of consultants relevant to the specialty being accredited
- (b) Adequate facilities and services
  - (1) Accident and emergency unit



- (2) Adequate operating theatre and facilities
- (3) Adequate numbers and mix of cases to enable residents to meet the minimum requirement for the training programme.
- (4) Intensive care services
- (5) Adequate anaesthetic cover
- (6) Adequate surgical bed capacity
- (7) Conducive surgical out-patient facilities
- (8) Well-equipped and functional CSSD
- (9) Adequate laboratory and pathology services
- (10) Adequate radiological services
- (11) Adequate medical records system
- (12) Adequate Physiotherapy and occupational therapy
- (13) Nutrition and Dietetics
- (14) Medical social work
- (15) Laundry
- (16) Pharmacy

(c) TEACHING AND TRAINING FACILITIES

- (1) Surgical audit
  - (2) Seminars
  - (3) Journal Club meetings
  - (4) Sub-specialty programme
  - (5) Tutorials
  - (6) Grand rounds
  - (7) Surgical radiology
  - (8) Surgical pathology including autopsies
  - (9) Library and internet facilities
- (d) Residents' welfare
- (e) Consultants' welfare
- (f) Support services

## 12. LOG BOOK

### 1. TRAUMA

PROCEDURE	M	A	S	P
Debridement and closure of major wounds	20	5	5	10
Skin Traction	10	2	2	6
Skeletal Traction	10	2	2	6
Cast Application	20	5	5	10
Dislocation reduction	20	5	5	10
Skin grafts/flaps	20	2	3	15
Tendon repair	5	2	1	-
External fixator application	10	2	3	5
Fasciotomy	6	2	2	2
Soft tissue injections	10	2	3	5
Open reduction/internal fixation of fractures	30	10	10	10
Open reduction of dislocations	5	2	2	1

### 2. ORTHOPAEDICS:

#### MINOR OPERATIONS

PROCEDURE	M	A	S	P
EXCISION BIOPSY	15	2	3	10
BIOPSY FOR TUMOURS	5	2	2	1
COMPRESSION RELEASE (CARPAL TUNNEL, TRIGGER, de QUERVAIN)	15	2	3	10
ARTHROTOMY	10	2	3	5

#### 2.2 MAJOR OPERATIONS

PROCEDURE	M	A	S	P
Amputation	15	2	3	10
Bone grafting	20	5	5	10
Sequestrectomy	20	5	5	10
Synovectomy	3	2	1	-
Meniscectomy	3	2	-	-
Muscle and tendon transfers	2	2	-	-
Nerve transposition and repair	-	2	2	-

### 2.3 JOINT SURGERY

PROCEDURE	M	A	S	P
Excision Arthroplasty	10	5	3	2
Hemiarthroplasty	10	5	3	2
Total Hip Replacement	5	5	-	-
Arthroscopy	5	3	2	-
Adult Osteotomies	5	3	2	-
Arthrodesis	10	5	3	2
Shoulder recurrent dislocation	5	2	2	1
Anterior cruciate ligament (ACL) repair	2	2	-	-

### 2.4 SPINE

PROCEDURE	M	A	S	P
Discectomy	5	3	2	-
Spine decompression	5	3	2	-
Scoliosis surgery/spinal fusion	2	2	-	-
Costo-transversectomy	3	2	1	-

### 2.5 PAEDIATRIC ORTHOPAEDICS

PROCEDURE	M	A	S	P
Corrective Osteotomy	10	2	3	5
Clubfoot correction	10	5	3	2
Correction of other limb deformities	3	3	-	-
SCFE pinning	3	2	1	-
Limb lengthening (Ilisarov method)	2	2	-	-

OTHERS (any group not included above)

	PROCEDURE	M	A	S	P

KEY:

- M - Minimum requirement
- A - Assisted
- S - Performed under supervision
- P - As Surgeon in charge.