

NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA

Faculty of Surgery



RESIDENCY TRAINING PROGRAMME FOR THE FELLOWSHIP OF THE MEDICAL COLLEGE IN SURGERY AND SURGICAL SPECIALITIES (FMCS)

**A Handbook for Trainees and Trainers
Revised in 2014**

CONTENTS

Table of Contents	2-4
Introduction.....	5
Programme Philosophy.....	6-7

CHAPTER I

THE RESIDENCY TRAINING PROGRAMME 8

Admission Requirements
Registration of Residents
General Educational Objectives
Format of Training

CHAPTER II

BASIC SURGICAL SCIENCE TRAINING ... 12

Course Objectives
Primary Examination

CHAPTER III

JUNIOR RESIDENCY TRAINING PROGRAMME.15

General Educational Objectives
Credit Units

Core Postings

- a. Accident and Emergency
- b. General Surgery
- c. Urology
- d. Orthopaedics and Trauma

Elective Postings

- a. Anaesthesia
- b. Burns, Plastic and Reconstructive Surgery
- c. Cardiothoracic Surgery
- d. Neurosurgery
- e. Paediatric Surgery

Learning objectives.....	18
Course content.....	25

CHAPTER IV

SENIOR RESIDENCY TRAINING PROGRAMME..34

Entry Requirements
General Educational Objectives
Format of Training
Course credit units
Objectives of the Dissertation Project

LEARNING OBJECTIVES AND COURSE CONTENTS FOR SUB-SPECIALTIES

A. General Surgery	37
B. Urology.....	41
C. Plastic Surgery.....	54
D. Paediatric Surgery.....	59

E. Cardio-thoracic Surgery	65
F. Neurosurgery	95

CHAPTER V

FORMAL CONTENT OF TRAINING	112
Cognitive Skills	
Psychomotor Skills	
Research Skills	
Teaching Skills	
Communication Skills	
Management Skills	

CHAPTER VI

EVALUATION	115
In-Course Assessment	
Part I Fellowship Examination Part II	
Fellowship Examination	
Registration for the Part II Examination	
The Dissertation	
The Examination.	

CHAPTER VII

CONTINUING EDUCATION	122
----------------------------	-----

APPENDIX

1. List of Accredited Training Institutions and approved training posts as at June 2014.....	123
2. Accreditation guidelines	126
3. Minimum operative requirements for eligibility at various levels of examination.	
a. Part 1.....	135
b. Part 2	
General Surgery.....	137
Plastic Surgery.....	140
Paediatric Surgery.....	143
Cardio-thoracic	146
Neurosurgery	150
Urology.....	139

INTRODUCTION

The residency training programme in Surgery was born out of the need to produce Nigerian practitioners in reasonable numbers who are not only experts in the discipline of surgery but are also able to perform well within the socio-cultural context of Nigeria. This postgraduate training programme in Surgery commenced in 1968 using an initial curriculum that was revised in 1982, 1988 and 2003. With the resumption of full training in Surgical Sub-specialties, further revision has become necessary. The goals of this revision include the following:

1. Harmonization of certain aspects of training with other Surgical Colleges in the West African sub-region.
2. Adoption of new methods of both formative and summative evaluation of Residents
3. Evolution of a competency-based curriculum with clear definition of objectives for the different stages of the Residency training.
4. A detailed outline of the tasks involved and the competences to be acquired during each of the several postings that make up the residency training programme. This is partly accomplished by performance of an approved minimum number of surgical procedures for each stage of the training.
5. The inclusion of a simple but comprehensive in-course or continuous assessment package to:
 - a. Provide a basis for regular feedback to residents thus encouraging them to improve their knowledge and competencies.
 - b. Assist each training centre in diagnosing the degree of convergence of stated educational objectives and Residents' achievement.
 - c. Provide Trainers with relevant information about the quality of their teaching, its strengths and weakness.
6. The use of the "Residents 'Portfolio'" to be kept by each resident is being strengthened. This device should provide each resident at a glance, with an up-to-date record of his/her performance vis a vis the required competencies for each posting and stage of training. The portfolio is submitted with the application for the Parts I and II Examinations of the College.
7. Each Resident is required to keep a file of duplicates of operation notes of all cases performed by him/her as responsible surgeon or first assistant, and may be required to present such files at the Parts I and II examinations.
8. Inclusion of approved new curriculum for various surgical specialties. There are three levels of training, namely: the Basic medical sciences followed by the Junior Residency and Senior Residency programmes. The prescribed twenty-four months minimum period of training has been maintained for the Junior Residency (Part I), while Senior Residency training (Part II) now spans thirty-six to forty eight months.
9. Circularization of accreditation guidelines to training institutions to enable them adequately prepare for accreditations.

It is hoped that this revised curriculum will facilitate the teaching/learning process and the overall training of specialist surgeons that are well adapted to the needs and peculiarities of the Nigerian society and current world standards.

Dr. S.N.C. Anyanwu FMCS
Faculty Chairman

Dr. N.A. Ibrahim FMCS
Faculty Secretary

PROGRAMME PHILOSOPHY

The Faculty of Surgery of the National Postgraduate Medical College of Nigeria seeks to train specialists in General Surgery and the Surgical specialties, who are able to meet the vast majority of surgical needs of the Nigerian Society. Specialists equipped with relevant competences in “Clinical and Management Problem Solving and well able to remain effective in changing local conditions. The residency training for the Fellowship of the Medical College in Surgery (FMCS) should prepare the Surgeon adequately for management and professional leadership roles that will be expected of him/her as a practicing consultant surgeon. Besides, each product of the programme is exposed to the routine processes of teaching/learning, research and self-instruction to usher him/her into lifelong continuing surgical education.

In summary, this competency-based curriculum for the Residency programme is designed to train a specialist surgeon with definite competencies in the four areas of professional practice, Clinical problem solving, Research, Education as well as Health Services Management.

CHAPTER I

THE RESIDENCY TRAINING PROGRAMME

The Residency Training Programme in Surgery is conducted in centres accredited by the National Postgraduate Medical College of Nigeria (NPMCN). On the recommendation of the Faculty Board of Surgery. The list of accredited training centres (Appendix I) is published by the College from time to time. These centres are re-visited every 2 years for partial accreditations and 5 years for full accreditations, to ensure that training facilities and the training programmes are maintained at minimum acceptable levels.

Accredited centres are responsible for providing the resources (personnel, finance, materials and management) for adequate training of resident surgeons to enable them function as consultants at the end of their training. The centres are also expected to monitor the progress of each resident and provide appropriate feed-back to him. The Head of Surgery at each training centre is expected to provide annual reports on the training programme as a whole and the performance of each resident in the centre, on a prescribed Annual evaluation form obtainable from the office of the College Registrar. The Annual evaluation reports (forms) are forwarded to the Faculty Secretariat for monitoring of Residents' progress. A Certificate of Training is issued by the Training Institution to residents, on Successful completion of the prescribed training, or as required by College regulations. (Appendix II). .

ADMISSION REQUIREMENTS

Admission into the Residency Training Programme in Surgery is open to all medical practitioners with basic medical degrees registrable with the Medical and Dental Council of Nigeria. The medical practitioner shall normally have completed, or been exempted from National Youth Service Corps Scheme. (NYSC)

During the period of post-registration experience preceding admission into a residency training programme candidates are expected to pass the Primary Fellowship Examination. Only candidates with a pass in the Primary Fellowship Examination, not more than 5 years from the point of application are normally eligible for enrolment in the Residency Training Programme in Surgery.

REGISTRATION OF RESIDENTS

In compliance with College Bye-Laws all residents in the FMCS residency training must have a dual registration with the training centre and the College which has its secretariat in Lagos. Registration with the College confers on the resident, the status of Associate Fellow of the College. Registration of each Resident with the College must be processed through and supported by the training centres.

Application forms for registration as Associate Fellows are obtainable online at npmcn.edu.ng and from the Head of each accredited training centre. All completed forms should be returned to the College Registrar not later than four months from the admission date into residency programme.

Candidates not registered as Associate Fellows of the College are barred from sitting the Parts I and II Fellowship Examinations of the College.

GENERAL EDUCATIONAL OBJECTIVES

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

1. Obtain, at first consultation, a complete data base (History, Physical Examination and Laboratory data) as is compatible with the urgency and complexity of the patient's problems.
2. Recognise within the data base, problems that:
 - (a) Require further investigation or
 - (b) Require therapeutic or supportive intervention.
3. Investigate clinical problems using relevant tests and other appropriate tools in order to clearly define the patient's problems.
4. Interpret clinical findings and the results of diagnostic investigations, and by a clear process of deductive reasoning reach appropriate decisions on clinical management and therapeutic interventions.
5. Perform all common operative procedures required for the restoration and/or maintenance of health for the individual patient.
6. Explain and defend the rationale for the techniques and procedures employed in standard surgical operations.
7. Effect adequate post-operative care and full rehabilitation of his patient.
8. Demonstrate a clear, knowledge of the pathology, pathophysiology, clinical features, management options and result of therapy of common surgical diseases.
9. Provide effective supervision for his junior professional colleagues in their performance of simple surgical procedures."
10. Teach surgical concepts and operating skills to Junior colleagues.
11. 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.
12. Demonstrate problem-solving ability by designing and implementing simple research projects relevant to the needs of his local environment.
13. Demonstrate general management competence in the appropriate use of resources (personnel, finance and materials) to achieve effective surgical care.
14. Provide effective and purposeful leadership of the surgical team.

FORMAT FOR TRAINING

Training consists of two successive phases lasting a minimum of twenty-four months for Junior Residency and thirty-six to forty eight months of Senior Residency training depending on the sub-specialty

CHAPTER II

BASIC SURGICAL SCIENCE TRAINING

Because the Faculty Board regards a Pass in the Primary Fellowship Examination as entry point into the Residency programme, there is no formal period earmarked for training in the basic medical sciences. Nonetheless, experience over the years has shown that it is not easy for candidates to pass this examination with residual 2nd M.B. knowledge.

Candidates are therefore advised to 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 wishing to sit the examination, from doing so as soon as they have completed the internship year. It is also mandatory for candidates to attend an intensive basic medical science course organized by the College or equivalent bodies.

COURSE OBJECTIVES

The Primary Fellowship examination seeks to establish the Candidate's trainability in Surgery by certifying that he is able to demonstrate adequate knowledge of the basic medical sciences as applied to surgery in:

1. Human Embryology as a basis for understanding various congenital malformations of:
 - i. The Central Nervous System
 - ii. The Cardiovascular System
 - iii. The gastrointestinal tract
 - iv. The genitourinary tract
 - v. The respiratory System and
 - vi. The musculo skeletal System.
2. Human Anatomy as a basis for understanding Surgical Pathology, the complications of surgical diseases, the rationale for surgical approaches and interpretation of physical signs and symptoms of surgical diseases.
3. Human osteology as a basis for understanding the structure and functions of the human musculo-skeletal System and the reactions of the system to stress, trauma and disease.
4. Human histology and histochemistry as well as human cytology as a basis for understanding surgical pathology and the laboratory diagnosis of surgical diseases.
5. The structure and functions, including metabolism and replication, of the Living Cell.
6. Body Homeostasis including:
 - a. Water, electrolyte, and acid-base metabolism and regulation
 - b. Endocrine and nervous control of body systems
 - c. Oxygen and energy supply, transport and utilization
 - d. General principles of human nutrition
 - e. Haemodynamics, structure and functions of blood and the cardiovascular system.
 - f. The structure and functions of the respiratory system
 - g. The structure and functions of the genitourinary system
 - h. The structure and functions of the gastrointestinal system
 - i. The structure and functions of the nervous system
 - j. Metabolic and Endocrine response to trauma/surgery.

7. The basic principles of pharmacology of drugs, especially:
 - a. Drugs used in anaesthesia and the relief of pain.
 - b. Antibiotics and chemotherapeutic drugs
 - c. Drugs acting on the cardiovascular, genitourinary, respiratory and gastro intestinal systems.
 - d. Cancer chemotherapeutic and immunosuppressive drugs.

8. General pathology including:
 - a. Inflammation, Wound healing
 - b. Cellular injury, disorders of growth
 - c. Microbiology, Parasitology as applied to surgical infections and infestations
 - d. Immunology and tumor biology
 - e. Chemical pathology and
 - f. Haematology

THE PRIMARY EXAMINATION

The Primary examination features: A 3-hour MCQ paper consisting of 200 questions divided into Section A (100 questions in Anatomy including Embryology, histology and genetics) and Section B (100 questions in Physiology (including biochemistry and Pharmacology), and in Pathology (including anatomic pathology, chemical pathology, microbiology and haematology).

PERFORMANCE AT THE EXAMINATION

To pass the examination, a candidate must:

1. Obtain at least an aggregate of 50% [P] overall.
2. Normally obtain at least 50% [P] in each section of the paper of the examination provided that:
 - (a). A border line pass [P-] in section B may be Compensated for, by at least a very good pass [P+] in Section A.
 - (b). A bad failure of less than [P-1] in any section would earn a Fail in the whole examination.

CHAPTER III

JUNIOR RESIDENCY TRAINING

GENERAL EDUCATIONAL OBJECTIVES

The objectives of the Junior Residency Programme is to equip each resident with expertise for management of all simple surgical conditions. More specifically, by the end of the junior residency, each resident should be able to:

1. Successfully conduct the pre and post operative management of patients with common surgical diseases in this environment.
2. Carry out all simple elective surgical procedures including skin incision and closure, herniorrhaphies, varicocoele operations, excisional biopsies of skin tumours and simple amputations as well as perform the incision, exposure and wound closure for most major operative procedures.
3. Perform common emergency surgical procedures, e.g. closed reduction and immobilization of fractures, laparotomy, appendicectomy, scrotal exploration for testicular torsion, tube drainage of the pleural space, catheterization for the relief of urinary obstruction, burr hole for evacuation of extradural haematoma etc.
4. Manage
 - (a) The critically ill patient
 - (b) Simple head injured patient
 - (c) The multiple-injury patient

COURSE CREDIT UNITS FOR JUNIOR RESIDENCY TRAINING IN SURGERY.

CORE POSTINGS

One (1) hour of Lecture/tutorial every week for three months.=1credit unit.

Four (4) hours of Clinical exposure/Skills acquisition every week for three months =1credit unit

POSTINGS	DURATION	CONTACT LECTURES HRS/WK	CONTACT CLINICALS HRS/WK	CREDIT UNITS
ACCIDENT AND EMERGENCY	6 MONTHS	5	60	40
GENERAL SURGERY	6 MONTHS	5	60	40
UROLOGY	3 MONTHS	5	60	20
ORTHOPAEDICS AND TRAUMA	3 MONTHS	5	60	20

ELECTIVE POSTINGS

Minimum of any 2 of the following:

POSTINGS	DURATION	CONTACT LECTUR E S HRS/	CONTACT CLINICA L S HRS/	CREDIT UNITS
ANAESTHESIA	3 MONTHS	5	60	20
BURNS AND PLASTIC SURGERY	3 MONTHS	5	60	20
CARDIOTHORACIC SURGERY	3 MONTHS	5	60	20
NEUROSURGERY	3 MONTHS	5	60	20
PAEDIATRIC SURGERY	3 MONTHS	5	60	20

Minimum total number of Credit Units=120+40=160Units.

A minimum of 160 Units over a period of at least 24 months in the appropriate postings will make a candidate eligible to sit for the Part I Fellowship examinations.

FORMAT OF TRAINING

The junior residency programme which lasts a minimum of twenty-four months has four Core postings and five elective

postings as follows:

A. Core (compulsory) Postings Duration.

1. Accident and Emergency - 6 months
2. General Surgery – 6 months
3. Urology - 3months
4. Orthopaedics and Trauma - 3 months TOTAL = 18months

These core postings are mandatory for every resident in the Surgical Residency programme.

B. Elective Postings Durations

1. Anaesthesia - 3 months
2. Burns and Plastic Surgery - 3 months
3. Cardiothoracic Surgery - 3 months
4. Neurosurgery - 3 months
5. Paediatric Surgery - 3 months

Each resident is expected to rotate through any two of the five elective postings, spending three months in each posting. Therefore total time spent on electives is six months. Candidates are advised where possible to choose an elective in anaesthesia and any other that may be of interest at Senior Residency Training.

LEARNING OBJECTIVES FOR THE ROTATIONAL POSTINGS

1. ACCIDENT AND EMERGENCY (A&E)

This posting is intended to provide the resident with learning experience in receiving, managing and disposing of surgical emergencies satisfactorily. By the end of the six months posting each resident should:

1. Have a clear understanding of the day-to-day operations of a routine Accident and Emergency Unit.
2. Understand fully the roles played individually and collectively by every member of the A&E Unit.

He/She should also be able to:

1. Provide effective team leadership for the unit.
2. Describe the pathophysiology of Trauma, its haemodynamics and metabolic consequences.
3. Describe the pathology, clinical features, diagnosis and management of surgical infections.

4. Conduct initial management of the severely injured patient with special emphasis on patient resuscitation and triage.
5. Provide preoperative management of surgical emergencies including initial investigation and resuscitation.
6. Recognise and treat appropriately all infections of the hand including palmar spaces, fingers and tendon sheaths.
7. Conduct all aspects of wound care including debridement
8. Carry out simple venepuncture as well as open venous cannulation
9. Treat all types of fractures and dislocations requiring closed reduction.
10. Perform simple life-saving chest procedures.

2. GENERAL SURGERY

The purpose of this posting is to provide a learning experience for the resident so that he is able to perform simple surgical procedures on his own. His expertise is further improved and expanded during the senior residency programme. By the end of this six months posting, the resident should:

1. Understand the basic scientific principles underlying every procedure in Surgery.
2. Be conversant with the practical steps for each surgical procedure
3. Be aware of the general and specific indications for, as well as complications associated with each procedure.
4. Be conversant with surgical instruments, sutures and appliances employed in operative and postoperative care of surgical patients.

He should also be able to:

1. Investigate and gather relevant data on surgical problems.
2. Interpret the data and formulate appropriate treatment plan for each patient.
3. Implement as necessary pre and post operative management of surgical problems.
4. Discriminate between simple and potentially dangerous swellings.
5. Describe the pathology, clinical features, diagnosis and management of common surgical diseases.
6. Perform simple laparotomies and be able to make appropriate surgical Incisions for the exploration of various organs of the body.
7. Perform simple endoscopies for the investigation of surgical problems
8. Repair simple hernias especially inguinal, umbilical and epigastric types.
9. Perform appendicectomies, gastrostomies and colostomies.
10. Understand the principles of port placements in laparoscopic surgery

3. UROLOGY

The primary goal of this compulsory posting is to enable the junior resident acquire skills in the management of simple urological problems. The slightly more complicated urological cases are presented to him during the senior residency posting. By the end of this posting the resident should be able to:

1. Recognise the indications for the various modalities of investigating the urinary tract, its functions and dysfunction.
2. Interpret results of such investigations.
3. Describe the pathology, pathophysiology, clinical features, diagnosis and management of common urological diseases, e.g. Bladder neck obstruction, Prostate diseases, Urethral strictures, Testicular tumors, Renal tumors Urolithiasis etc.
4. Perform the following urological procedures:
 - a. Urethral catheterization / bouginage

- b. Supra-pubic cystostomy
 - c. Hydrocoelelectomy
 - d. Varicocoelectomy
 - e. Exploration of the scrotum for swellings
 - f. and for testicular torsion.
 - g. Urethro-Cystoscopy.
 - h. Prostate biopsy
5. Recognise the indications for haemo and peritoneal dialysis and manage surgical patients with acute or chronic renal dysfunction.

4. ORTHOPAEDIC SURGERY AND TRAUMA

By the end of the postings in Orthopaedics and Trauma, the junior resident should be able to:

1. Describe the pathology, clinical features and management of common simple orthopaedic diseases e.g. club foot, bone tumours, bursae, ganglion, backache etc.
2. Diagnose all fractures and recognize the appropriate treatment.
3. Manage simple bone and joint injuries of the long bones, including reduction and the application of splints and plaster of Paris casts, traction as well as open reduction and internal fixation.
4. Diagnose and remove orthopaedic swellings like ganglia and bursae.
5. Recognise indications for amputation.
6. Carry out simple amputations.
7. Perform successful needle aspiration of effusion of major joints.
8. Treat sporting injuries as well as supervise and teach first aiders in the appropriate care of athletic injuries.

ELECTIVE POSTINGS

1. ANAESTHESIA

Junior posting to this unit though optional is recommended for three months, by the end of the posting in anaesthesia the junior resident should be conversant with:

1. Principles of anaesthesia, routine measures and common drugs for the relief of pain.
2. Assessment of fitness for Surgery: preoperative assessment and risk scoring systems.
3. Simple drugs, instruments and equipment routinely used for intensive care of the severely ill patient, including cardio-respiratory resuscitation.

He/She should in addition be able to:

1. Utilise drugs and appropriate techniques for the relief of pain.
2. Administer local and regional anaesthesia (including simple spinal anaesthesia) as well as dissociative anaesthesia prior to surgery.
3. Perform simple intravenous induction of anaesthesia including endo tracheal intubation.
4. Be able to maintain and monitor general anaesthesia for simple surgical operations including the keeping of appropriate records, non-invasive and invasive monitoring.
5. Discuss the pharmacology of common anaesthetic agents including:
Pre-medication agents, Induction agents, Maintenance agents, Muscle relaxants and Resuscitation agents.
6. Carry out cardio-respiratory resuscitation.
7. Care for patients under Anaesthesia positioning of the patients in surgery, avoidance of nerve injuries.

2. BURNS AND PLASTIC SURGERY

The management of patients with various degrees of burn injury and expertise in the use of skin grafts are the two areas of emphasis for this posting. By the end of the period, the resident should be able to:

1. Recognize the indications for skin grafting.
2. Demonstrate adequate understanding of the principles of skin incisions, and skin covering for various sizes of skin defects, so as to achieve cosmetic results.
3. Carry out simple skin grafting.
4. Effectively manage the patient with burn injuries including appropriate and adequate fluid and electrolyte replacement, protection against infection, as well as appropriate nutritional support.
5. Carry out excisional biopsy of skin tumours.
6. Understand the basis for the various techniques of skin flaps and reconstruction of congenital anomalies.

3. CARDIO-THORACIC SURGERY / VASCULAR SURGERY

The major thrust of the training in cardiothoracic surgery for the junior resident is in the proper management of the severely ill patient with cardio-thoracic problems. By the end of his junior residency in this unit, each resident should be able to:

1. Understand the pathology, clinical features, diagnosis and management of the common diseases of lungs, oesophagus and mediastinum as well as the common congenital and acquired heart diseases.
2. Interpret radiographs of the chest including special contrast studies.
3. Provide adequate intensive care for the cardiothoracic patient.
4. Effect cardio-pulmonary resuscitation.
5. Carry out the insertion and appropriate care of chest tubes.
6. Make appropriate incision for exploration of various parts of the thoracic cavity and close such incisions as required.
7. Recognise the indications for and be able to perform a safe tracheostomy.
8. Identify and remove foreign bodies from the cardio- thoracic passages using the endoscopic techniques of oesophagoscopy and bronchoscopy.

4. NEUROSURGERY

The junior resident is here trained to investigate and manage patients with head and spinal injuries. By the end of his elective period in neurosurgery, the resident should be able to:

1. Recognise the indications for the various modalities of investigating the Central Nervous System and its skeletal casing.
2. Interpret correctly the results of these investigations and formulate appropriate treatment plans.
3. Conduct appropriate management of the head injured patient including respiratory and nutritional support as well as skin care and urinary bladder care.
4. Implement routine management of spinal injuries and spinal deformities.

5. PAEDIATRIC SURGERY

Special emphasis is placed on the ability to make prompt diagnosis, initiate resuscitative management and recognize appropriate definitive treatment of children with surgical problems. By the end of the posting in paediatric surgery the resident should be able to:

1. Discuss the embryology and pathology of the common congenital anomalies in the gastrointestinal system and the genitourinary system.

2. Take a comprehensive but relevant history from a paediatric patient and/or his parents/guardians.
3. Perform an informative physical examination both in sick and well neonates, infants and toddlers.
4. Set up intravenous infusion lines by venepuncture or open venous cannulation, and determine the calorie, fluid and electrolyte requirements for neonates and infants, pre intra and post-operatively.
5. Recognise the indications for the various modalities of investigation in Paediatric Surgery.
6. Interpret correctly results of investigations.
7. Determine a rational regimen of drug dosage in infants and children.
8. Perform simple operations on children including neonates and infants such as: Circumcision, Gastrostomy Herniotomy, Colostomy, Excision of superficial lumps, Opening and closing of operative wounds, Urethral catheterisation, Perineal anoplasty.

Note:

1. In order to enhance the overall competence in surgical practice, even when a resident has not rotated through a particular Elective, there should be opportunities for learning, through departmental didactic sessions covering ALL disciplines.
2. Residents with future interest in any of the elective postings should mandatorily have his introductory acquaintance with the specialty during the Junior Residency rotation/postings

COURSE CONTENT FOR PART I:

PRINCIPLES OF SURGERY IN GENERAL

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 investigations:
 - Biochemistry
 - Haematology & Blood transfusion, normal and abnormal haemostasis
 - Microbiology, Immunology
- Imaging:
 - X-ray, Ultrasound, CT-Scan, MRI. Diagnostic and interventional radiology
- Management of co-morbid factors in surgery
- Malaria
- Malnutrition
- Cardiovascular disease
- Respiratory Disease
- Endocrine disorders Diabetes Mellitus, Thyrotoxicosis
- Anaemia
- HIV/AIDS patient etc.

Peri operative Management:

Surgical Theatre set-up

- Surgical instruments 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 infections, surgically important micro organisms

Post operative Management

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

ETHICS IN SURGICAL PRACTICE

- Medical ethics and medico-legal aspects of Surgery
- Psychological effects of Surgery, incapacitation and bereavement

COMMUNICATION SKILLS

- Patient /doctor /other health staff
- Report writing and presentation skills

HOSPITAL MANAGEMENT

- Administrative procedures
- Financial management
- Human resources management
- Logistics management

RESEARCH METHODOLOGY /COMPUTER SKILLS

- Ethics of research
- Data collection and analysis
- Basic principles of statistics
- Computer skills (word processing, spreadsheet management and presentation skills)

CLINICAL AUDIT

- Decision making in surgery
- Patient safety guidelines

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.)

Shock:

- management of haemorrhagic shock, cardiopulmonary by pass -general principles
- Care of the multiple injury patient
- Trauma scoring systems
- Gunshot / Blast injuries
- Management of mass casualty

Principles of traumatic wound management (including compound fractures).

Head, Neck and Spinal Injuries

Applied anatomy and physiology of head, neck and the spine

Management of the head injured patient

Management of neck injuries

Management of the spinal injured patient

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

- 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

- 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 other complications

- Bone grafting

- Brachial plexus injury

Management of severely injured patients

- Systemic and metabolic response to trauma
- Mass casualty
- Rehabilitation of Trauma Patient
- Physiotherapy
- Protheses
- Occupational therapy

BURNS

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

INTENSIVE CARE

- Organisation, staffing and function
- Indications for admission
- Scoring
- Costs
- Sepsis, predisposing factors:-localised, pneumonia, lung abscess
- Vascular access
- Monitoring of the cardiovascular, respiratory and renal systems in the critically ill-patient
- Endotracheal intubation, laryngotomy, tracheostomy
- Multi-system failure
- Systemic response to trauma respiratory, cardiovascular, renal and endocrine systems

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 investigations

Molecular biology of cancers and mechanisms of invasion

Cancer screening and prevention programmes

Care of the terminal cancer patients

Rehabilitation and psychological support after surgery

SYSTEMS IN SURGERY

Abdomen

Applied anatomy of the abdominal wall: - - incisions, laparoscopic port placements

Surgical 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 peritoneum, solid and hollow abdominal viscera

Management of acute abdominal conditions: - Inflammatory conditions, obstruction of hollow viscera, perforations

Haemorrhage

Compartment syndrome, Traumatic oedema, Fat embolism, shock

Applied anatomy, physiology and pharmacology of the Pancreas - pancreatitis

Gynaecological conditions

Others:

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

Elective abdominal conditions

- Stomach and Duodenum- Peptic ulcer disease etc.

- Oesophagus

- Spleen and Portal hypertension

- Liver and biliary tree-Jaundice differential diagnosis and treatment, Hepatocellular carcinoma etc.

- Pancreas

- Common and peri-anal disorders:- haemorrhoids, anal fissure, fistula-in-ano

- Enterocutaneous fistula

- Abdominal masses

- Herniae

- Colorectal tumours management and colonic obstruction

- Irritable bowel syndrome

- Diverticular disease

Genitourinary

- Applied anatomy and physiology of the renal system

- Management of the upper urinary tract conditions:

- urinary tract infection

- haematuria

- urinary calculi

- tumours

* Management of lower urinary tract conditions

- urinary retention

- disorders of the prostate

- scrotal conditions- testicular torsion, hydroceles etc

- tumours of the prostate, bladder, testis.

Breast:

* Applied anatomy and physiology of the breast

* Investigation of breast diseases

* Inflammatory conditions of the breast

* Benign neoplastic diseases of the breast

* Malignant 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 management of complications

- * Parathyroid hyperparathyroidism, hypercalcaemia
- * Secondary hypertension
- * 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 in the newborn
- * Specific paediatric surgical disorders:
 - Ano-rectal malformations
 - Pyloric stenosis
 - Hernias
 - Intussusception
 - Undescended testis
 - Torsion
 - Neonatal intestinal obstruction
 - Abdominal wall abnormalities
 - Phimosis
 - Posterior urethral valves
 - Gastrointestinal bleeding in the paediatric age group

Lumps and Swellings

- Applied anatomy and physiology of the skin and subcutaneous tissue

Superficial tissue swellings and their management.

Plastic Surgery:

Arterial and Venous Disorders, Vascular and Lymphatic systems

- Arterial diseases
- Venous diseases
- Lymphatic disorders

Cardio-thoracic Surgery:

- The thorax
- Pleural collections and their management
- The Heart

Neurosurgery:

- Hydrocephalus
- Spine and cord defects
- Intracranial infections
- Neoplastic lesions
- Traumatic brain and spinal cord injuries

Orthopaedics:

- Acute and chronic bone infections including TB
- Poliomyelitis
- Osteoarthritis and low back pain
- Compartment syndromes
- Congenital deformities
- Bone tumours

Principles of Minimally Invasive Surgery

Introduction to Endoscopy and Laparoscopy

CHAPTER IV

SENIOR RESIDENCY TRAINING

ENTRY REQUIREMENT

A candidate is eligible to be admitted to a Senior Residency Training in Surgery only on successful completion of the Junior Residency Training and passing the Part I FMCS Examination or exempted from Part I by the Faculty Board after passing any of its recognized equivalents.

GENERAL EDUCATIONAL OBJECTIVES

The senior residency programme follows a successful completion of junior residency training. It seeks to produce specialist surgeons with significant expertise in all areas of surgery apart from Orthopaedics, Ophthalmology and Otorhinolaryngology.

During this phase of training, residents are expected to perform at a higher level of proficiency than obtains at the junior

residency stage, to assume a greater degree of responsibility for decision making in patient care as well as, cover a much wider scope of surgical techniques and procedures. By the end of the senior residency programme, each successful resident is expected to be able to function effectively as a consultant surgeon.

More opportunities are provided at this level for each senior resident to participate in teaching junior colleagues, nurses and medical students. He is also introduced to principles of resource management in addition to problem-solving skills as applied to research and surgical practice.

By the end of the training each senior resident should be able to:

1. Establish and manage a surgical practice designed to cater for the varied and changing needs of the Nigerian society.
2. Administer and supervise the day-to-day running of a surgical consultant unit, within a hospital setting.
3. Plan and perform a whole range of major surgical procedures and guide junior colleagues through simpler procedures.
4. Teach junior colleagues, and other members of the surgical team the principles and practice of surgery at both informal didactic sessions and during the course of routine patient care.
5. Plan, execute, and report on a research project in any problem area related to surgical practice.
6. Identify and design solutions for clinical problems arising in the course of surgical management of patients in order to achieve satisfactory results and an acceptable level of morbidity, mortality and quality of life.

FORMAT OF TRAINING

The senior residency training in Surgery lasts a minimum of thirty-six months for General Surgery, Paediatric Surgery, Plastic Surgery and Urology, and forty-eight months for Cardio-thoracic Surgery and Neurosurgery. It covers the curriculum of the specialty in which the candidate is desirous of specialising.

Although residents should have been exposed to these postings during their Junior Residency training, the scope at this stage (senior residency) is much wider and the level of proficiency distinctly higher.

The primary aim of the program is to produce specialists who will be employed in independent practice in their fields of specialisation viz:

- i. Burns & Plastic Surgery
- ii. Cardio-thoracic Surgery
- iii. General Surgery
- iv. Neurosurgery
- v. Paediatric Surgery
- vi. Urological Surgery.

Throughout his/her training the senior resident is responsible directly to the consultant or head of unit for the day-to-day running of the unit to which he/she is posted. He supervises junior residents and other members of the team. During the senior residency training, each resident is expected to execute a research project on a topic of choice in any aspect of clinical surgery, under the supervision of at least two Consultants (at least one supervisor should be a Fellow of the College in Surgery).

The over-all training philosophy at this stage is to perfect the process already begun at the junior residency, and to allow the resident take more responsibility for decision making in patient care, as well as learn to perform more major operative procedures under the overall supervision of the consultant.

A Log Book is essential, must be kept for all the postings, must be duly signed by the Supervising Consultants and must meet the minimum required operative exposures before the candidate is allowed to sit for the examinations.

OBJECTIVES OF THE DISSERTATION PROJECT

The goal of the dissertation exercise is to enable the resident acquire skills for research and problem solving. While it is not mandatory to do so, the research project should aim to break new grounds and advance the frontiers of knowledge in the specialty. Through the dissertation, each trainee demonstrates the ability to:

1. Select and define clearly the research problem chosen for the study.
2. Delineate the scope of the study bearing in mind the resources available and duration thereby avoiding the dangers of unwarranted conclusions.
3. Define the objectives of the study in precise, clear terms leaving no doubt as to its feasibility.
4. Critically review (not merely cite as references) available literature on the subject.
5. Handle the Materials and Methods of the study in such a way as to obtain results consistent with the stated goals of study.
6. Analyze obtained results using appropriate statistical tools, and draw logical conclusions from them.
7. Discuss findings in relation to the existing body of knowledge on the subject.
8. Arrive at logical conclusions and make meaningful recommendations.

LEARNING OBJECTIVES OF THE ROTATIONAL POSTINGS FOR SENIOR RESIDENCY

1. GENERAL SURGERY SUB SPECIALTY

The senior resident is expected to be able to manage virtually all types of surgical cases both simple and complicated. He should also be able to function as the Head of a surgical team.

By the end of senior residency training in General Surgery the Resident should be able to plan and effectively and satisfactorily carry out all clinical management and operative procedures involved in various areas of surgical practice:

LEARNING REQUIREMENTS:

Every trainee is expected to be exposed to a minimum of 2 consultant units with well-defined practice interests in various aspects of General Surgery.

As much as possible residents should be encouraged and assisted to acquire extra skills in well-equipped training centres other than theirs (within and outside the country).

The trainer: trainee ratio should be 1:1

A logbook is essential and the minimum requirements for certification shall be stated and updated as appropriate. Candidate are expected to meet the minimum operative exposure indicated in the Appendix.

AREAS OF POSTING:

The following areas form bases for Senior Residency Training for the Part II examination in General Surgery

CORE POSTINGS

- a. Surgical Oncology [including Breast diseases, Surgical endocrinology and Skin/soft tissue lesions
- b. Gastroenterology [including upper GIT, Colo- proctology, Laparoscopic and Endoscopic Surgery] -12months
- c. Hepato-pancreatico-biliary surgery [may be combined with Gastroenterology but ideally should have a separate unit]- 6months

NON-CORE MANDATORY POSTINGS

- a. Urology - 3months
- b. Cardiothoracic /Vascular Surgery - 3months

ELECTIVE POSTINGS - (6 months) 3 months each in any 2 of the following:

- a. Burns & Plastic Surgery - 3months
- b. Paediatric Surgery - 3months
- c. Orthopaedics/Trauma - 3months
- d. Neurosurgery - 3months

COURSE CREDIT UNITS FOR SENIOR RESIDENCY TRAINING IN GENERAL SURGERY.

Core Postings

Postings	Duration			
Surgical Oncology	6 months	5	60	40
Gastroenterology	12 months	5	60	80
Hepatobiliary	6 months	5	60	40

Postings	Duration	Lectures Hrs/wk	Contact Hrs/wk	Clinicals	Credit Units
Urology	3 months	5	60		20
Cardiothoracic /Vascular surgery	3 months	5	60		20

Mandatory Postings

Elective Postings (minimum of any 2 of the following;)

Postings	Duration	Contact Lecture Hrs/wk	Contact Clinicals Hrs/wk	Credit Units
Burns and Plastic Surgery	3months	5	60	20
Paediatric Surgery	3months	5	60	20
Orthopaedics and Trauma	3months	5	60	20
Neurosurgery	3months	5	60	20

Minimum total number of Credit Units - $200 + 40 = 240$ Units PLUS 12 Units for Thesis.

A minimum of 252 Units over a period of at least 36 months in the appropriate postings and submission of a Dissertation qualifies a candidate to sit the Part II FINAL

Fellowship examinations.

LEARNING EXPECTATIONS AT SPECIFIC POSTINGS

1. SURGICAL ONCOLOGY

Pathology and management of skin lesions

Physiology, pathology and management of Parathyroid, Adrenal, Carcinoid syndrome, Thyroid including imaging and anaesthesia for the surgical procedures.

Breast disease: carcinoma, benign breast disease, ultrasonography, mammography, histology/cytology for breast disease. Epidemiology and Screening. Hormone and chemotherapy. Counselling and hospice care. Genomics and clinical trials. Mastectomy [partial, total, radical]. Breast reconstruction including reduction, augmentation, tissue expanders

2. GASTRO ENTEROLOGY

Colo-proctology: inflammatory bowel disease. Genetics and screening for malignancies. Anorectal physiology, constipation and incontinence. Colonic bleeding. Intestinal fistulae. Surgical procedures including diversion, incontinence and prolapse surgery. Surgery for malignancies. Upper GIT: esophago-gastric motility disorders, ulcers, malignancies. GI haemorrhage. Procedures including reflux surgery, obesity surgery, bariatric surgery, peptic-ulcer surgery, resections and bypass procedures. Endoscopies including oesophagoscopy, gastroscopy, colonoscopy, sigmoidoscopy, cystoscopy, Laryngoscopy and bronchoscopy. Laparoscopic procedures, diagnostic and therapeutic. physiology of pneumo-peritoneum, anesthesia for laparoscopy.

Diathermy and other energy sources including laser instrumentation and equipment, suturing devices. Minimal access surgery, Robotics.

Note: In centres without approved Endoscopic and Laparoscopic services, these aspects of training may be obtained at other centres approved by the Faculty Board as updated from time to time

3. HEPATO-PANCREATICO-BILIARY

Hepato-pancreatico-biliary: jaundice, pancreatitis and pancreatic malignancies. Cholecystitis and cholelithiasis. Imaging and endoluminal procedures. Chronic liver disease and liver failure. Procedures including transplantation, sphincterotomy, stenting procedures, reconstructions and shunts.

4. UROLOGY

Management of obstructive uropathy
Scrotal and testicular surgery
Urinary diversion to GIT
Renal Trauma

5. TRAUMA / ORTHOPAEDICS

Abdominal trauma
Leadership of the trauma team including triage Management of specific intra-abdominal organ injuries
Critical care including use of modern monitors, resuscitative equipment
Management of critically ill patients

6. VASCULAR SURGERY

Varicose veins
Venous access for dialysis
Basic micro-vascular techniques
Vascular graft surgery

2. UROLOGY SUB SPECIALTY:

Eligibility

- a. To be eligible for this programme, the resident must have passed the Part I exam of this Faculty
- b. Any other exam or fellowship adjudged as its equivalent, which must be approved by the Faculty Board before commencement of the training.

NATURE AND DURATION OF TRAINING

It is a 3-year supervised residency training course comprising 30 months of core urology postings and 6 months of elective postings.

CORE POSTINGS

Each resident rotates through 8 core urology postings, spending a minimum of 3 months in each while the remaining 6 months is spent in the Resident's area of interest.

ELECTIVE POSTINGS

These are done during the second year of training in 2 areas of interest, spending a period of 3 months in each. The trainer should arrange the posting so as to ensure enough activity in the unit.

COURSE CREDIT UNITS FOR SENIOR RESIDENCY TRAINING IN UROLOGY

Core Postings

Postings	Duration	Contact Lectures Hrs/wk	Contact Clinicals Hrs/wk	Credit Units
General Urology	9months	5	60	60
Andrology	3months	5	60	20
Paediatric Urology	3months	5	60	20
Reconstructive Urology	3months	5	60	20

Mandatory Postings

Elective Postings (Any 2 of the following)

Minimum total number of Credit Units = 200 + 40 = 240 Units PLUS 12 Units for Thesis

A minimum of 252 Units over a period of at least 36 months in the appropriate postings and submission of Dissertation qualifies a candidate to sit the Part II FINAL Fellowship examinations

SUGGESTED ELECTIVES

- a. Nephrology
- b. Plastic Surgery
- c. General Surgery
- d. Radiation Medicine

LEARNING REQUIREMENTS:

A Log book must be kept for all postings.

1. Cystoscopy and ureteral catheterization:
2. Lithotomies
3. Revision of bladder neck
4. Excision of posterior urethral valves
5. Urethral dilatation
6. Prostatectomies
7. Urethroplasty
8. Nephrectomy
9. Pyeloplasty
10. High orchidectomy
11. Orchidopexy
12. Cystectomies, Ureteroneocystostomies and Urinary diversion

COURSE CONTENT

General Urology

Andrology

Paediatric Urology

/reconstructive Urology

Encourology/Medical Optics

Urological Oncology

Urodynamics

Radiology and Radiopharmaceutics

THE TRAINING PROGRAMME

The training involves training in general urology, urological oncology, reconstruction and trauma, female urology, paediatric urology, andrology and male infertility, nephrology, transplantation and endourology. Others include radiology and radiotherapy, statistical methods and research methods.

Postings	Duration	Contact Lectures Hrs/wk	Contact Clinicals Hrs/wk	Credit Units
Nephrology	3months	5	60	20
Plastic Surgery	3months	5	60	20
General Surgery	3months	5	60	20
Radiation Medicine	3months	5	60	20

Postings	Duration		Contact Clinicals Hrs/wk	Credit Units
Endourology/ Medical Optics	3months	5	60	20
Urological Oncology	3months	5	60	20
Urodynamics	3months	5	60	20
Radiology and Radiopharma ceutics	3months	5	60	20

The trainee is expected to acquire detailed theoretical knowledge in the pathology, pathophysiology, evaluation and management, skills including operative surgery, in the following areas and aspects of urology.

GENERAL UROLOGY

- Physiology of the urinary tract.
- Renal physiology, pathophysiology of reno-vascular hypertension. Ischaemic nephropathy - diagnosis and treatment
- Embryology and anatomy of the anterior abdominal wall, adrenal glands, kidneys ureters, pelvis (bone, soft tissues, retroperitoneum, circulation, innervations viscera) perineum, genitalia (penis, testis, scrotum)
- Endoscopy, Laparoscopic Surgical anatomy
- Molecular genetics cellular division, abnormal growth cytokines, growth factors and carcinogenesis
- Molecular and cellular biology,
- Biological tissue engineering
- Basic principles of immunology, immune cell activation, transduction, apoptosis. –
- Lymphocyte tolerance, Tumour immunity molecular immunology and chemokines
- Principles of surgery for cancer.
- Tumour markers, Pain, Wound healing.
- Clinical decision making-Clinical evaluation, Physical examination.
- Physiology of intestines and the use of intestinal segments in the Urinary Tract
- Outcomes of research
- Access to care, costs of care, quality of care, Health related quality of life.

BASIC UROLOGIC DIAGNOSIS AND UROLOGIC SURGERY

- Basic instrumentation and Endoscopy: Urethral catheterization/urethral dilatation; Panendoscopy, urethroscopy, cystoscopy, ureteroscopy, nephroscopy rigid/flexible retrograde pyelography.
 - Urinary tract imaging Uro-radiology and radiopharmaceutics
 - Conventional radiology
 - Ultrasonography- B Mode, Doppler, colour duplex
 - CT Scan Angiology
 - MRI Angiology
 - Nuclear scintigraphy
- Urodynamics.

Basics of laparoscopic urologic surgery.
History, Preoperative patient management, operating room procedures.
Postoperative management, physiological considerations. Trouble-shooting.
Transperitoneal and extraperitoneal approaches to the flank and pelvis.

MALE GENITALIA

- Anatomy and embryology of the penis, testis and scrotum.
- Surgery of the penis and urethra
- Principles of Reconstructive Surgery
- Selected surgical conditions

- Penetrating penile trauma
- Urethral stricture disease
- Distraction injuries of the urethra
- Vesico urethral distraction defects
- Complex fistulae of posterior urethra
- Curvature of penis
- Total penile reconstruction
- Surgery of the scrotum and seminal vesicles
- Transgender surgery.

RECONSTRUCTION AND TRAUMA

- Renal and Reno vascular injuries
 - Ureteric injuries
 - General principles of substitution in urinary tract (buccal mucosa, Bowel, others)
 - Ureteric strictures
 - Urethral strictures
 - Upper urinary tract disease
 - Upper urinary tract trauma
 - Upper urinary tract obstruction
 - Pathophysiology and management of upper tract obstruction, PUJ kidney pyeloplasty Retrocaval ureter,
 - Ureteric stricture, Uretero enteric anastomotic stricture, intrinsic ureteric obstruction
 - Retroperitoneal fibrosis, xtrinsic ureteric obstruction.
 - Gynaecologic Injuries.
- Urinary tract infection, painful bladder syndrome
- Reconstruction of short and long ureteric defects: re-implantation, substitution, Boari flap, intestinal augmentation
 - Bladder surgery: cystectomy, replacement, augmentation cystoplasty.
- Use of intestinal segments in urinary tract surgery, urinary diversion- cutaneous, continent, pathophysiology urinary diversion,
- orthotopic urinary bladder
 - Penile erections and fracture
 - Scrotal elephantiasis - aetiology, pathophysiology and management
 - Lower urinary tract and genital trauma, bladder injuries urethral injuries, genital injuries

PROSTATE GLAND AND SEMINAL VESICLES

- Molecular biology, Endocrinology and Physiology
- Benign prostatic hyperplasia . aetiology, natural history, evaluation and non-surgical management.
- Minimally invasive (endoscopic) treatment TURP, TUIP, HoLeP, HIPU vaporisation
- Open prostatectomy- Suprapubic, retro public.

ONCOLOGY

- Tumour biology
 - Principles of cancer therapy radiotherapy, chemotherapy, immunotherapy, phytotherapy
- Adrenal glands: - anatomy, physiology adrenal tumours, Cushings syndrome Hyperaldosteronism, Conn's Syndrome, Phaeochromocytoma,
- Surgery of adrenal glands: open, laparoscopic, robotic, nonsurgical alternatives
 - Neoplasms of the upper urinary tract

Renal tumours: Open surgery, Radical nephrectomy, simple nephrectomy, partial nephrectomy, laparoscopic nephrectomy,

- Ablative therapy of renal tumours cryotherapy, radiofrequency microwave high intensity ultrasound radiosurgery

- Renal artery reconstruction, Aorto-renal bypass

- Urothelial tumours of renal pelvis and upper tract Open/Laparoscopic nephroureterectomy

Endoscopic treatment

- Prostate cancer and its management:

Epidemiology, prevention, pathology, Biopsy: TRUS guided/digitally guided

- Tumour markers, PSA, diagnosis, Staging, - Principles for prostate cancer screening

- Treatment of localised prostate: radical prostatectomy - open, retropubic, perineal, laparoscopic, robotic, Cryotherapy and microwave therapy

- Treatment of locally advanced metastatic disease: hormonal manipulation, ADT

- Treatment of hormone refractory prostate cancer

- Bladder cancer and its management urothelial tumours, invasive bladder cancer non- muscle invasive cancer, TURBT, Radical cystectomy, simple cystectomy, partial cystectomy, Laparoscopic cystectomy,

- Penile cancer. Surgical, micro-surgical and non surgical management - cytotoxic drugs, Laser,

- Testicular cancer: aetiology, pathology, surgery, chemotherapy

- Scrotal cancer: aetiology, epidemiology, diagnosis and surgical treatment

FEMALE UROLOGY

- Urodynamics: principles and practice

- Urinary incontinence - assessment

- Management of incontinence

- Conservative management and exercises

- Injection therapy for incontinence

- Therapies for storage-emptying failure

- Vaginal reconstructive surgery for sphincteric incontinence and prolapse

- Retropubic suspension surgery for incontinence in women

- Pubo vaginal sling

- Tension free vaginal tape procedures

- Urinary tract fistulae

- Bladder diverticulae repair

- Gynaecological ureteric encounters. Diagnosis, prevention and management of injuries,

- Female urethral trauma, tumour

- Urethral syndromes

- UTI in females

- Painful bladder syndrome

PAEDIATRIC UROLOGY

- Development of urogenital system, kidneys, ureters, Bladder, Genitalia

Renal function in the Foetus, Neonate, Infant and Child

- Anatomical and functional stages of development

Evaluation of renal function in the foetus, infant and child

- Response of developing kidneys to malformation and injury

- Perinatal urology

- Congenital obstruction, nephropathies and foetal uropathies.
- Neonatal urologic emergencies.
- Evaluation of the paediatric urology patient
- Renal diseases in childhood
- UTI and inflammations in paediatric GU tract
- Kidney anomalies. Renal Dysgenesis, Cystic diseases of kidney. Medullary sponge kidney
- Ureteric anomalies PUJ obstruction and surgery for PUJ obstruction in children. Ectopic ureteric openings
- Prune Belly Syndrome
- Paediatric Genitourinary trauma
- Reflux and Megaureters
- Exstrophy-Epispadias Complex and reconstruction
- Bladder and Cloacal Malformation
- Voiding dysfunction in children
- Neurogenic and non-neurogenic dysfunction of bladder & bladder sphincter dysfunction
- Dysfunctional elimination constipation syndrome
- Enuresis aetiology and management
- Preputial pathology and circumcision
- Posterior and anterior urethral valves and valve bladder syndrome
- Urinary tract reconstruction
- Antireflux augmentation cystoplasty
- Urinary diversion and undiversion
- Ureteroceles
- Hypospadias anatomical pathology and management
- Genitalia abnormalities in boys and girls
- Disorders of sexual development (DSD) and its management
- Anomalies of testes and scrotum. Acute scrotum, Varicoceles
- Cryptorchidism and management
- Paediatric endourology & laparoscopic surgery
- Paediatric neoplastic diseases:
- Wilm's tumour and other Renal tumours, Neuroblastoma and Testicular tumours

ANDROLOGY, REPRODUCTIVE SEXUAL FUNCTION AND MALE INFERTILITY

- Anatomy of male genital system
- Male reproductive physiology
- Biology of spermatogenesis, genetic control
- Sexual function and dysfunction
- Ejaculation physiology and disorders
- Physiology of penile erection, erectile dysfunction, premature ejaculation
- Non surgical management of erectile dysfunction
- Surgery for erectile dysfunction, prosthetic, vascular and venous
- Priapism- pathophysiology, natural history, management
- Physiology of reproduction and its dysfunction
- Principles and multidisciplinary approach to infertile couple
- Male infertility: definition, aetiology and pathophysiology
- Assessment of male infertility
- Azoospermia, oligospermia, aspermia, hyperspermia.
- Medical management of male infertility
- Surgery for male infertility sperm production, retrieval
- Ejaculatory disorders

- Ejaculatory duct obstruction
- Management of anatomic congenital and organic causes of infertility
- Assisted Reproductive Techniques (ARTS)
- Androgen deficiency in aging men

URINE TRANSPORT, STORAGE AND EMPTYING

- Physiology and pharmacology of renal pelvis and ureter
- Physiology and pharmacology of bladder and urethra
- Anatomy and biomechanics of the bladder and urethra
- Neural control and pharmacology of the lower urinary tract.
- Pathophysiology and classification of voiding dysfunction
- Urodynamics & video urodynamics in evaluation of voiding dysfunction. Evaluation of equipment, ambulatory urodynamics, analysis, interpretation
- Lower urinary tract dysfunction in neurologic disease/injury
- Urinary incontinence: epidemiology, evaluation, management
- Overactive bladder: Mechanisms, evaluation, management, pharmacological management of storage dysfunction, urethral and pelvic devices

NEPHROLOGY/ NEUROPHYSIOLOGY

- CNS control urinary tract function, bladder and sexual function.
- Neurological dysfunction and the urinary tract
- Instrumentation and neurophysiological assessment.
- Urodynamics video urodynamics
- Imaging blood flow, measurement, nuclear medicine, MRI and electrical potentials.
- Spinal cord injury disease spina bifida
- Neurogenic bladder assessment and management.
- Renal physiology and pathophysiology
- Fluid and acid -base regulation, Evaluation of kidneys and renal function tests
- Hypertension: renovascular and secondary hypertension and surgically correctible hypertension
- Obstructive uropathy
- Extrinsic obstruction of the ureters
- UTI in females, males and female children
- Painful bladder syndromes
- Pyelonephritis

RENAL FAILURE AND TRANSPLANTATION

- Acute chronic renal failure Aetiology, Pathophysiology, epidemiology
- Management conservative dialysis
- End Stage renal disease management, dialysis.
- Renal Transplantation principles, practice, immunology of rejection
- Selection. Donor and recipient assessments
- Living donor operation. Open and laparoscopic surgical approaches
- Cadaveric donor operations. Organ preservation techniques
- Recipient operation Adult child
- Post transplant care, complications and management. Rejection - vascular ureteric etc complications of immunosuppression.

ENDOUROLOGY AND URINARY LITHIASIS

- Panendoscopy Diagnostic therapeutics, urethroscopy cystoscopic flexible rigid Urethrotomy (Direct vision blind) Ureteroscopy rigid/flexible Laparoscopic urologic surgery
- ROBOTIC Surgery, Radical prostatectomy
- Urinary lithiasis Aetiology, epidemiology, evaluation and management. Medical, ESWL, Endoscopic Lithotripsy, laparoscopic and open lithotomy.
- Upper tract calculi Staghorn calculi ureteroscopic and retrograde percutaneous renal access, percutaneous nephrostomy, nephrotomy drainage Lower urinary tract calculi. Bladder, prostatic, seminal vesicles, urethral and preputial calculi Endoscopic and open lithotomy

INFECTIONS AND INFLAMMATIONS

- Infections of urinary tract: incidence, epidemiology, pathogenesis, clinical manifestations, imaging, antimicrobial therapy.
- Antibiotic prophylaxis of urinary tract infections
- Kidney infections, bacteraemia, bacteriuria
- Infections in pregnancy, elderly, catheter associated bacteriuria
- Bladder-cystitis painful bladder syndrome, interstitial cystitis
- Prostatitis: acute, chronic, abacterial
- Orchitis/epididymo-orchitis
- Urogenital abscesses
- Sexually transmitted diseases
- HIV/AIDS Epidemiology, Urological and genital manifestations
- Warts, Genital ulcers, Herpes Simplex, Chancroid, Syphilis, Lymphogranuloma Venereum, Chlamydia trachomatis, Gonorrhoea, Trichomoniasis, Moluscum contagiosum, Scabies, Pediculosis pubis, Hepatitis A,B,C and other viral infections

- Cutaneous/dermatological diseases of external genitalia, allergic dermatitis, infections, cutaneous diseases of men
- Genito-urinary tuberculosis, Bilharziasis filariasis • Parasitic diseases of GU Tract
- Fungal & Viral disease of GU Tract

RADIATION MEDICAL PHYSICS

- Radiodiagnosis and Radiotherapy, (Teletherapy and Brachytherapy)
- Newer forms of energy laser, cryotherapy
- High Intensity Focused Ultrasonography and PET

3. BURNS AND PLASTIC SURGERY SUB-SPECIALTY

Residents wishing to specialize in Plastic Surgery MUST spend at least the last two years of the Residency Programme (after passing the Part I Examination), in a Plastic Unit/ Department and must rotate between at least 2 Consultants to learn different approaches and views.

The Resident should have had introductory acquaintance with Plastic Surgery during the Part 1 residency.

The Resident must have regular access to current Journals in Plastic Surgery, Burns and Microsurgery. Latest editions of books on plastic and reconstructive surgery must be available to the trainee in the Hospital Library. It is important to make arrangements for the trainee to spend about six months in other Hospitals offering services in plastic and reconstructive surgery and recognized by the Faculty of Surgery.

This becomes compulsory when all rotations are not available in the resident's training centre. The following areas must be covered during the rotations.

BURNS AND PLASTIC SURGERY

Mandatory Postings:

A. Burns management

- 6months = 40 UNITS

B. Management of chronic ulcers and scars

3 months = 20 Units

C. Skin cover and flaps surgery

3 months = 20 Units

Elective Postings (Any 2 of the following:)

Posting s	Duration	Contact Lectures Hrs/Wk	Contact Clinicals Hrs/Wk	Credit Units
General Surgery	3 months	5	60	20
Urology	3 months	5	60	20
Paediatric Surgery	3 months	5	60	20

Minimum total number of Credit Units = 200 +40 = 240 Units plus 12 Units for Thesis =252.

A minimum of 252 Units over a period of at least 36 months in the appropriate postings and submission of Dissertation qualifies a candidate to sit the Part II FINAL Fellowship examinations

LEARNING EXPECTATIONS:

A. BASIC PRINCIPLES OF PLASTIC SURGERY

B. SCARS

- .1. Scar Revision
- .2. Scar Elevation
- .3. Types of scars and their management

C. SKIN COVER

D. FLAPSURGERY

E. HEAD AND NECK

1. Congenital problems:
2. Eye lids:
3. Lip Injury reconstructive procedures for various lip losses
4. Loss of Ala Nasi reconstructive procedures
5. Principles of flaps used in facial reconstruction
6. Alopecia and surgical treatment of adult baldness
7. Traumatic Ear loss reconstructive procedures

8. Facial nerve damage

F. HAND

- a. Congenital Abnormalities:
- b. Trauma

G. FOOT

- 1. Congenital Abnormalities:
- 2. Trauma

H. TUMOUR SURGERY

- a. Principle of Management of Benign and Malignant Skin Tumours
- b. Management of Head and Neck Tumours
- c. Neurofibromatosis
- d. Lymphoedema and Management and post operative complications.

I. BURNS

- i. Epidemiology, Aetiology of Burns injury Pathophysiology of Burns and Principles of early management including resuscitation, fluid management
- ii. Wound Care
- iii. Management of Post Burns Complication

J. MICROSURGERY

K. CHRONIC ULCERS

L. RECONSTRUCTIVE SURGERY OF THE GENITALIA

M. COMPUTER EDUCATION

N. MINOR THEATRE SESSIONS

The trainee, under the supervision of the Consultant, does excisions and minor reconstructive e procedures.

The training programme is detailed in a booklet provided for the trainee. The first part of the training programme presents the scope to be covered. The “MASTER SHEETS” carry the details of procedures to be performed. Each procedure carries a code number to be entered on the daily working sheets. The code on the Master Sheets is entered against procedures performed and counter signed by the Supervising Consultant on a daily basis. The role played by the resident in the operation must be entered in the column provided as:

Observed - O, Assisted – A,
Lead performing surgeon – P.

It is important that the DAILY WORK SHEET is completed immediately after the procedure. The sheet must be kept confidential and out of reach of the patients and relations. The Master Sheet is completed at the end of the training programme and is used to evaluate the residents coverage and activity during the training programme. It must correlate with entries in the Daily Working Sheets.

1. Raising and appropriate utilization of various skin flaps and grafts for the coverage of skin defects.
2. Surgical correction of congenital malformations, such as cleft lip and palate
3. Release of contractures
4. Mammoplasty

COURSE CONTENT

General principles

Principles of wound healing and wound repair

Tissue transfer (free grafts, vascular pedicles, micro-anastomosis)

Use of non-autogenous grafts and implants, tissue expansions

Principles of aesthetic surgery

Patient selection

Scars (cosmesis, hypertrophic, keloids)

Management of benign skin diseases (naevi, etc)

Principles of Laser therapy

Management of acute trauma

Hand injuries (tendon, neurovascular, bones)

Hand infections

Soft tissue injuries of the face

Fractures of the nose, malars

Principles of management of maxillary and mandibular fractures

Burns

Resuscitation of major burns

Nutrition and infections

Primary treatment of burns wounds

Management of post burns scarring

Paediatric plastic surgery

General principles of cleft lip and palate management

General principles of craniofacial surgery

General principles of hypospadias management

General principles of congenital hand surgery

Malignant skin tumours

Melanoma, including surgical management of metastatic spread to regional lymph nodes

Squamous and basal cell carcinomas

Soft tissue sarcoma of skin and other tissues

Non-surgical managements of the above conditions

Head and neck tumours

Principles of management

Carcinoma of floor of mouth, palate and maxillary antrum

Functional and radical neck dissection

Functional and aesthetic reconstruction

Mandibular reconstruction

Prosthetic, parotidectomy, reconstruction of the facial nerve

Hand surgery

Contractures (Dupuytren's)
Carpal tunnel syndrome
Tendon transfers
Congenital malformations
Complex post traumatic surgical rehabilitation

Reconstructive and aesthetic plastic surgery

Reconstruction of facial defects (upper and lower lips)
Face lifts
Reconstructive rhinoplasty
Reconstructive and aesthetic surgery of the eyelid
Reconstructive and aesthetic surgery of the ear
Reconstructive and aesthetic surgery of the breast
Benign and malignant tumours
Gynaecomastia
Reconstructive and aesthetic surgery of the trunk and limbs
Reconstruction of chest and abdominal wall defects (pectus excavatum, abdominoplasty)
Treatment of lipotrophy
Surgical management of metastatic and malignant diseases of skin and soft tissues
Reconstructive surgery of the external genitalia
Hypospadias/epispadias
Vaginal reconstruction and gender reassignment
Detailed knowledge of investigation and management of relevant and syndromic diagnoses

4. PAEDIATRIC SURGERY SUBSPECIALTY

Objectives: The main objective of the training programme is to train Paediatric Surgeons equipped with requisite knowledge and skills for the management of surgical problems in children. At the end of the programme, each trained resident should have the competence and maturity to head a Paediatric Surgical unit and supervise the training of junior doctors and medical students. While emphasis is laid on common Surgical Pathologies in Nigeria, Africa and the tropical region in general, trainees in the programme are encouraged to adopt a cosmopolitan approach to the acquisition of knowledge and skills.

Entry Qualifications: Prospective Trainees must have Passed the Part I examination of the Faculty of Surgery or obtained equivalent specialist certificate from other surgical colleges acceptable to the Faculty Board.

Duration of Programme: The programme shall last 3 years but a graduate shall only be deemed to have completed the programme after passing the Part II examinations in Paediatric Surgery.

MANDATORY POSTINGS

During the programme the trainee shall rotate as follows:

1st Year:

1. General Paediatric Surgery - 3 months
2. Neonatology - 3 months
3. Urology - 3 months
4. Plastic Surgery - 3 months

Three months postings each, in neonatology, plastic surgery and urology are advised early in the training, for development of sufficient skills to cope with additional responsibilities later in the programme.

2nd Year:

1. General Paediatric Surgery - 6 months
(which may be taken as elective in another recognized centre in Nigeria or abroad).
2. General Surgery - 6 months

Final Year:

- General Paediatric Surgery - 12 months

At the end of this training, a resident should be proficient in the management of surgical conditions encountered in children.

Paediatric Surgery Postings

POSTINGS	DURATION	CONTACT LECTURES HRS/WK	CONTACT CLINICALS HRS/WK	CREDIT UNITS
General Paediatric surgery(1)	3months	5	60	20
Neonatology	3months	5	60	20
Urology	3months	5	60	20
Plastic Surgery	3months	5	60	20
General Paediatric Surgery(3)	6months	5	60	40
General Surgery	6 months	5	60	40
General Paediatric Surgery (3)	12 months	5	60	80

Minimum total number of Credit Units = 240 Units PLUS 12 Units for Thesis=252.

A minimum of 252 Units over a period of at least 36 months in the appropriate postings and submission of Dissertation qualifies a candidate to sit the Part II FINAL Fellowship examinations.

LEARNING REQUIREMENTS

1. Herniotomy (all ages)
2. Closure of Omphalocele
3. Repair of gastroschisis
4. Colostomies and colostomy closure
5. Ileostomies, caecostomy and gastrostomies
6. Ureterostomy
7. Uretero-nephrectomy for tumours.
8. Repair of congenital diaphragmatic hernia
9. Splenectomy/splenorrhaphy
10. Laparotomy for relief of intestinal obstruction including resection and anastomosis of small or large bowel; as well as correction of malrotation and volvulus.
11. Repair of hypospadias
12. Repair of ectopia vesicae and epispadias
13. Orchidopexy

14. Repair of oesophageal atresia with or without tracheoesophageal fistula.
15. Ramstedt's pyloromyotomy
16. Abdomino-perineal pull-through for Hirschsprung's Disease
17. Anoplasty for low anal agenesis
18. Sacro-abdomino-perineal pull-through for high anorectal anomaly.
19. Reconstruction of ambiguous genitalia
20. Management of multiple trauma in children
21. Management of blunt abdominal trauma.
22. Management of the head injured child
23. Management of hepato-biliary diseases.

COURSE CONTENT

General principles:

Surgical embryology and teratology

Principles of prenatal diagnosis and fetal therapy

Physiology of the neonatal and paediatric surgical patient

Fluids and electrolytes

Nutritional support

Infection and immunity

Haematological problems and their management

Paediatric anaesthesia

Trauma and resuscitation

Malignancy and chemotherapy

Neonatal surgery

Evaluation and handling of the surgically ill neonate

Air way obstruction

Intestinal obstruction

Stoma formation and care

Abdominal wall defects

Neural tube defects

Neonatal tumours

Head and neck

Thyroglossal duct remnants

Thyroid problems

Cystic swellings (hygromas, branchial cysts etc)

Cleft lip and palate

Tracheostomy

Choanal atresia

Thoracic surgery

General:

Foreign bodies in the aero-digestive tract

Chest infection and its complications

Pleural collections

Chest wall deformities

Pulmonary conditions of surgical importance - Pulmonary cysts,

Sequestration cysts, congenital and traumatic Diaphragmatic hernias etc

Oesophageal surgery

Atresia and TOF

Caustic and corrosive injuries of pharynx and oesophagus

Replacement and reconstruction

Gastrointestinal surgery

Stoma creation and care

Intestinal malrotation

Intestinal duplication

Vitelline duct anomalies

Pyloric stenosis

Gastro-oesophageal reflux

Anorectal malformation

Hirschsprung's disease

Appendicular diseases

Splenic diseases

Hepatobiliary surgery

Biliary atresia

Choledochal cyst

Pancreatic problems

Cysts/pseudocysts

Meconium disease

Anterior abdominal wall disease- gastroschisis, omphaloceles, urachal remnants etc

Conjoint twinning

Paediatric urology

Bladder exstrophy/epispadias

Hypospadias

Vesico-ureteric reflux

Bladder outlet obstruction

Urinary stones

Urinary diversion/undiversion

Ambiguous genitalia

Endoscopy

Renal tumours

Paediatric neurosurgery

Neural tube defects

- Spina bifida

- Hydrocephalus

- Encephaloceles

Syndromic associations etc

Head and spinal injury

Transplant surgery

Renal

Liver

Intestinal

Childhood tumours

Management of various childhood tumours (nephroblastoma, neuroblastoma, teratoma, rhabdomyosarcoma, hepatoblastoma, lymphoma etc)
 Minimally-invasion surgery: endoscopy, laparoscopic surgery, VATS

5. CARDIO-THORACIC/VASCULAR SURGERY SUBSPECIALTY

BASIC PHILOSOPHY AND OBJECTIVES IN THE TRAINING OF A CARDIO-THORACIC SURGEON FOR PART II

1. The basic philosophy and objectives of the training of the Cardiothoracic Surgeon for Part II fellowship in Cardiothoracic Surgery of the Nigerian Postgraduate Medical College is the preparation of a candidate, who after successful training should have acquired sufficient knowledge in the principles of preoperative evaluation, operative management and post operative care, with operative skills and competence in the specialty that will enable him to function as consultant Cardiothoracic Surgeon in Nigeria and anywhere else in the world.

The candidate must pass the Part I FMCS in Surgery before he starts the Part II (FMCS) Cardiothoracic Surgery training programme.

PART II (FMCS) CARDIOTHORACIC SURGERY

Candidates for the training in Part II (Cardiothoracic Surgery) must have passed the Part I (FMCS) in Surgery Before commencing the training and will have to train for at least 4years before sitting for the Part II examinations in Cardiothoracic Surgery(CTU).

During the training period the candidate must have a thorough knowledge and grounding in Anatomy, Physiology, Pathology, Pathophysiology, diagnostic and imaging procedures, operative surgery management skills of all the structures and organs in the thorax namely the chest wall, lungs and tracheo-bronchial tree, the heart and the great vessels, oesophagus, the lymph channels and the nerves as well as the peripheral vascular system including the venous system.

The candidate will also be expected to have some training during this period in Cardio-thoracic anaesthesia, Cardiology, diagnostic radiology and imaging and Intensive Care Unit.

Postings	Duration	Contact Lectures Hrs/wk	Contact Clinicals Hrs/wk	Credit Units
Cardiac and Vascular surgery	15 months	5	60	100
General Thoracic Surgery	12 months	5	60	80
General Surgery	3 months	5	60	20
Cardiology and pulmonary medicine	3 months	5	60	20

ICU & Cardiothoracic Anaesthesia	3 months	5	60	20
Elective subspecialty	3 months	5	60	20

Minimum total number of Credit Units = 240 +20 = 260 Units PLUS 12 Units for Thesis=272
A minimum of 272 Units over a period of at least 39 months in the appropriate postings and submission of Dissertation qualifies a candidate to sit the Part II FINAL Fellowship examinations

The duration and period of training in each area will be as suggested below:

1. General Thoracic Surgery 18 months
 2. Cardiac surgery..... 18 months
 3. Vascular Surgery 4 months
 4. Cardiology/Adult and Paediatric...3 months
 5. Pulmonary Medicine 1 month
 6. Radiology Department
(Cardiopulmonary Imaging)... 2 months
 7. Intensive Care Unit 1month
 8. Cardio-thoracic Anesthesia..... 1 month
- Total..... 48 months

9. Elective subspecialty.....6 months

Elective subspecialty such as video Assisted Surgery, Endovascular Surgery and Robotic surgery shall be undertaken outside the 48 months period.

Note:

- a. In most centres General Thoracic Surgery, Cardiac Surgery and Vascular surgery may be done simultaneously in the same centre or unit. In that case the candidate should still be exposed to each area of training for the period stipulated.
Also training in 4, 5, 6, 7, 8 can be interposed to each area of training for convenient periods, provided the minimum exposure time is adhered to.
- b. The total period of training shall be 4 years.
- c. Any elective sub specialty as in 9 above shall be undertaken outside the 4 years period.

No candidate will be expected to qualify to sit the Part II (FMCS) in Cardiothoracic Surgery unless he/she has done the 4 continuous years of training in the sub specialty, for Post Part I candidates.

DETAILED CURRICULUM PART II CARDIO-THORACIC SURGERY

INTRODUCTION

Although the details of the curriculum for PART II Cardiothoracic Surgery is presented in sections, it is understood that the entire programme will be integrated such that in any particular posting the candidate may be exposed to Cardiac surgery, general thoracic surgery, vascular or oesophageal surgery. In such situation it is important to ensure that the candidate performs the different procedures appropriate for the level of training and competence in that section and be signed up for the procedure. It is the aggregate of the minimum number specified in the curriculum that will qualify the candidate to sit the final Part II examination.

This curriculum is based on the general principle of cardiothoracic surgical training utilizing the mentorship system, during whereby each resident rotates through at least two faculty members for a specified period, for a sustained professional relationship.

The topics listed for each system and the headings listed in the body of the curriculum are as follows::

1. A comprehensive didactic teaching programme for all the topics listed in each section of the curriculum provides the core medical knowledge which the resident requires to cope with cardiothoracic surgery and medicine.
2. Patients care (Preoperative, Intraoperative, Postoperative)
3. Practice based learning (Hands on learning).
4. Professionalism
5. Comprehensive regular participation of residents and faculty members in regular conferences, didactic teaching, seminars and interactive learning and demonstrations.
6. At the end of each schedule of the curriculum, the resident is expected to acquire specific clinical skills
7. Regular formative assessment are carried out to achieve these set goals.

TRAINING INSTITUTIONS FOR PART11 CARDIOTHORACIC SURGERY.

Institutions training residents in the specialty of Cardiothoracic surgery are accredited by the college.

ELIGIBILITY TO SIT THE PART II FMCS IN CARDIOTHORACIC SURGERY.

A candidate becomes eligible to sit the Part II FINAL examination in Cardiothoracic Surgery after:

1. Successfully completing the training programme in Cardiothoracic Surgery, over a continuous period of not less than 48 months as specified in the curriculum
2. Successfully performing all the operative procedures in the minimum numbers specified for each procedure. Procedures so performed are entered in the training logbook and signed by the trainer as having been done by the resident either as assistant operating surgeon. The signed logbook is submitted to the Faculty of Surgery before the final examinations.
3. Successfully preparing and submitting a Dissertation based on an approved prospective clinical study of a subject area in cardiothoracic surgery in accordance with College guidelines

The dissertation project trains the resident to conceptualise a research project, design and conduct the study, collect and analyse data, interpret the results and draw meaningful conclusions with a clear message and contribution to the science of surgery.

FINAL EXAMINATION IN CARDIOTHORACIC SURGERY

The final examination in Cardiothoracic surgery will consist of:

1. A clinical examination the pattern and scope of which is determined by the Faculty Board of Surgery
2. The dissertation as specified above
3. Oral examinations as approved by the Faculty Board.

4. Written examination which scope, pattern and number will be approved by the Faculty Board of Surgery.

COURSE CONTENT

SECTION 1. GENERAL THORACIC SURGERY.

I. General principles and perioperative care of the general thoracic surgical patient.

1. History of cardiothoracic surgery
2. Anatomy of the thorax
3. Normal pulmonary function
4. Preoperative evaluation of patients undergoing thoracic surgery.
5. Peri-operative Management of the thoracic Surgical Patient.
6. Thoracic trauma. Chest wall trauma.
7. Tracheo bronchial injuries.
8. Diaphragmatic Trauma
9. Oesophageal Trauma
10. Cardiovascular trauma

II. General thoracic surgical conditions

1. Congenital abnormalities of the thoracic wall.
2. Acquired diseases of the thoracic wall.
3. Thoracic outlet syndromes
4. Tumours of the Chest Wall
5. The Pleura and Pleural space
6. The Respiratory System (Trachea, Bronchial tree, Lung, Embryology, Anatomy)
7. Congenital Diseases of the lung
8. Benign Disease of the lung
 - i) Benign tumours
 - ii) Interstitial Lung Diseases
 - iii) interstitial lung diseases
 - iv) Emphysema
 - v) Lung transplantation
9. Lung cancer
10. Diaphragm
11. Oesophagus
 - i). Congenital Diseases of the oesophagus
 - ii). Benign Disease of the Oesophagus
 - iii). Malignant disease of the oesophagus
12. The mediastinum

SECTION 2: ADULT CARDIAC SURGERY

I. General principles and perioperative care of the adult thoracic surgical patient..

1. Surgical Anatomy of the Adult Heart
2. The Physiology of the Myocardium
3. Mechanics of Ventricular Function.
4. Vascular Physiology
5. Blood transfusion, Blood conservation and blood coagulation in cardiac surgery
6. Diagnostic methods in Cardiovascular Surgery

SOME OTHER CARDIOVASCULAR DIAGNOSTIC TESTS AND THEIR CLINICAL APPLICATIONS.

- i). Coronary Angiography Indication and technique.
- ii). Cardiac haemodynamic assessment
- iii). Right heart catheterization(Swan Ganz catheter
- iii). Cardiovascular Magnetic Resonance and computed Tomography
- iv). Nuclear Cardiac Imaging and Positron Emission Tomography in cardiovascular diseases
7. Adult cardiac Anaesthesia
8. Critical Care for the adult cardiac surgery patient
9. Myocardial protection
10. Cardiopulmonary bypass (CPB)

SECTION 3: CONGENITAL HEART DISEASE

I. **Basic general principles.**

- A. Embryology and Aetiology
- B..Principles of Perioperative care in Neonates and Children

MAJOR CONGENITAL HEART DISEASES AND THEIR MANAGEMENT.

1. Congenital heart diseases with left to right intracardiac shunt
2. Congenital heart diseases with right to left Shunt (cyanotic heart defects)
3. Congenital heart diseases producing circulatory obstruction.

SECTION4: ACQUIRED HEART DISEASE.

- i. Heart Disease
- ii. Coronary artery disease
- iii. Pericardial Diseases
- iv. Hypertrophic cardiomyopathy
- v. Endomyocardial fibrosis
- vi. Cardiac arrhythmias
- vii. Diseases of the aorta
- viii. Peripheral vascular disease
- ix. Diseases of the veins

6. NEUROSURGERY SUB-SPECIALTY

ADMISSION REQUIREMENTS

- a. A pass in the Primary Fellowship examination of the NPMC in Surgery or its equivalent
- b. Elective neurosurgery Posting for 3 months before Part 1
- c. A pass in the Part 1 Fellowship Examination in Surgery

ACCRDITATION OF TRAINING INSTITUTIONS

Institutions are accredited for the entire 31/2 years of training or parts thereof depending on their facilities.

Curriculum Outline

1. Elective Posting in Neurosurgery before Part 1 FMCS (3months)

Year 1. Postings in Neurosurgery (9 months), Neurology (3 months)

Year 2. Neuropathology (3months), Neuroradiology (3 months), Neurosurgery(6 months)

Year 3. Vascular neurosurgery (3 months)

Pediatric neurosurgery (3 months), Spine (3months), Neurosurgery (3 months),
Research for Dissertation

Year4; Elective Neurosurgery posting preferably overseas, Completion of Dissertation (before or after Elective)

Following successful completion of the Part I examination, the resident wanting to train in Neurosurgery should seek admission into an accredited hospital in this specialty for training. The training spans a period of 4 years in various aspects of Neurosurgery. Each trainee shall keep a daily, up to date record of operative procedures he/she participates in during the period of training, using the prescribed logbook for Neurosurgery published by the Faculty.

During the training period, residents are encouraged to attend the revision course in Neurosurgery regularly organized by the College. In the course of training, each resident shall carry out a research project and write up a dissertation as part of his/her final assessment for the award of the Fellowship (Guidelines for dissertation Appendix I).

Core Postings

General Neurosurgery

. Neurotrauma

. Neuro-oncology

. Vascular surgery

. Spine surgery

. Pediatric neurosurgery

. Stereotactic surgery

.

Mandatory Postings

Neuroradiology

Neurology

Neuropathology

Elective Postings

Neuro-ophthalmology

Neuro-otology

Psychiatry
Neuroanatomy

POSTINGS	DURATION	CONTACT LECTURES HRS/WK	CONTACT CLINICALS HRS/WK	CREDIT UNITS
Nerosurgery 1	9 months	5	60	60
Neurology	3 months	5	60	20
Neuropathology	3 months	5	60	20
Neuroradiology	3 months	5	60	20
Neurosurgery 2	6 months	5	60	40
Vascular neurosurgery	3 months	5	60	20
Paediatric neurosurgery	3 months	5	60	20
Spine surgery	3 months	5	60	20
Neurosurgery 3	3 months	5	60	20
Elective neurosurgery posting	6 months	5	60	40

Total credit Units = 280 units PLUS . Dissertation of 12=292.A minimum of 280 units over a period of at least 42 months in the appropriate postings and submission of Dissertation qualifies a candidate to sit the Part II Fellowship examinations.

COURSE CONTENT PART II NEUROSURGERY

Syllabus

The candidate is expected to acquire detailed theoretical knowledge and skills in the pathology, pathophysiology, evaluation and management (including operative surgery) in the following areas and aspects of Neurological surgery:

II. Knowledge based skills.

General principles

Upon completion of training, the trainee is expected to demonstrate the following:

- A comprehensive general knowledge of the principles of surgery as well as specific knowledge of the anatomy of those areas outside the nervous system, that involve neurosurgical operations, e.g. The abdominal wall and the contents of the peritoneal cavity, the neck, thorax, pelvis and the limbs.
- An intimate and precise knowledge of the anatomy of the central and peripheral nervous systems, including the spine and skull,
- A working knowledge of the basic neuro-scientific disciplines such as neurophysiology including neurotransmitters, Fluid and Electrolyte balance, pathology, embryology, and neuroendocrinology.

- d). A thorough understanding of the general field of neurology and neuropsychology, with particular emphasis on those neurological entities, which have important differential diagnostic considerations with respect to neurosurgical conditions.
- e). Familiarity with an understanding of
 - clinical electrophysiology (EEG, EMG, ECG, evoked potentials, and neuro-otology),
 - cerebral vascular physiology including cerebral blood flow, and
 - functional cortical localization as derived from neuropsychological principles.
- f). The ability to interpret neuro-radiological examinations (plain xrays, CT, MRI, arteriography and ultrasonography) and radioactive nuclide imaging.
- g). A sufficient awareness of the scientific methods, including the principles of epidemiology, in order to provide the basis for critically analyzing the literature for continuing medical education and investigation.
- h). An awareness of gross and microscopic neuropathology such that the recognition of morphological features allows the formulation of a differential (morphological) diagnosis with respect to the common neurological and neurosurgical disorders.

III. Personal Development attitude and deportment

Upon completion of training, the trainee will have demonstrated:

- i. An unquestioned sense of honesty and personal integrity and the personal attributes of a professional.
- ii. The capacity to relate to, and work effectively with, other medical colleagues and health care professionals.
- iii. An exhibition of the ability to develop sincere and effective patient surgeon relationships, with patients and their relatives.
- iv. A sympathetic understanding of human dignity, weaknesses and intolerances as revealed by compassion to patients and their families, particularly in the circumstances of death and dying.
- v. A realization and understanding of the importance of bio-ethical issues in the delivery of health care.
- vi. A commitment to continuing medical education and lifelong learning.
- vii. A thorough appreciation of the necessity for quality assurance, both objectively and subjectively, in the delivery of health care.

TECHNICAL SKILLS

1. Technical skills in core neurosurgery

* At the completion of training, the trainee is expected to demonstrate a thorough understanding of the surgical anatomy, and the technical ability to satisfactorily and safely perform in patients of all ages:

- a). Burr holes and the drainage of chronic subdural hematomas, tapping of the ventricles, and the insertion of drainage catheters (for CSF shunts and CP recording).
- b). Elective and emergent craniotomies (supra-tentorial and posterior fossa) and the subsequent:-
 - * Removal of intracranial hematomata.
 - * Clipping/repair of cerebral aneurysms.
 - * Removal of arteriovenous malformations.
 - * Surgical treatment of benign and malignant intracranial tumors.
- c). Stereotactic biopsy of cerebral tumors.
- d). The transphenoidal removal of pituitary tumors.

- e). The treatment of simple and compound depressed skull fractures.
- f). Neck dissection appropriate to:
 - * Exposure of the carotid arteries and endarterectomy.
 - * Tracheostomy.
 - * Anterior cervical discectomy and fusion.
- g). Lumbar and cervical discectomies, including the relevant anterior and posterior approaches.
- h). The treatment of spinal injuries and other spinal disorders, including internal and external spinal stabilization.
- i). The removal of spinal tumors and arteriovenous malformations.
- j). The following treatments of peripheral nerve:
 - Decompression of the median nerve in the carpal tunnel.
 - Transposition of the ulnar nerve.
 - Primary suture of lacerated nerves.
- k). The ability to treat various pediatric neurosurgical conditions including:
 - Repair of myelomeningocele, encephalocele, craniosynostoses.
 - Insertion of various CSF diversionary shunts.
 - Neuroendoscopic management of hydrocephalus.
 - Treatment of occult dysraphic conditions including lipomyelomeningocele, tethered cord, and diastematomyelia.
 - Neoplasms peculiar to children

2. Technical skills in subspecialized neurosurgery

- The trainee is expected to show awareness of the following sub specialised areas within the specialty that are not “core” curriculum. He should show an understanding of the techniques, the relevant surgical anatomy and recognition of the principles of management. They are as follows: -

Functional Neurosurgery Pertaining to:

- The treatment of pain including dorsal column/deep brain stimulation, epidural infusion of analgesics, etc.
- The treatment of spasticity.
- Epilepsy surgery including the use of local anesthesia, functional cortical localization by electrical stimulation and the technique of subpial cortical dissection.
- Stereotaxic surgery including the treatment of basal ganglia disease (movement disorders) and the treatment of various disorders by focused radiosurgery.
- i. Complicated peripheral nerve surgery, including brachial plexus lesions.
- ii. Special neuro-oncology, e.g. Interstitial radiation.
- iii. Specialized pediatrics procedures:
 - Craniofacial disorders.
- iv. Spinal instability, including the various methods of spinal instrumentation.

LEARNING OBJECTIVES:

A. Mandatory Core Postings

1. LEARNING OBJECTIVES FOR NEUROTRAUMA

Upon completion of the Trauma posting, the neurosurgery trainee should be able to:

- i. Manage head injury, understand the mechanism and the surgical and non-surgical management options
- ii. Discuss the principles of ATLS, including primary survey, resuscitation, secondary survey and adjuncts / investigations.

- iii. Identify the clinical setting in which airway obstruction is likely to occur, and recognize the symptoms and signs of airway obstruction when it does occur.
- iv. Outline the various techniques to maintain airway in a trauma patient, including endotracheal intubation and cricothyroidotomy, and have a working knowledge of when these techniques should be applied.
- v. Define shock and have a working classification of shock.
- vi. Discuss the symptoms and signs in patients presenting with shock of various etiologies, including: hypovolemic, septic, cardiogenic and neurogenic.
- vii. Outline the treatment of hemorrhagic shock, and list the clinical indicators of response therapy.
- viii. Outline the symptoms and signs, and initiate treatment for the following injuries airway obstruction, pulmonary contusion, simple/tension/open pneumothorax, flail chest, simple/massive hemothorax, and cardiac tamponade.
- ix. Recognize signs suggestive of intraperitoneal, retroperitoneal and pelvic injury, including: guarding, rebound, flank hematoma, perineal hematoma, etc.
- x. Discuss the indications for DPL, and be able to interpret the results of a DPL.
- xi. Outline the principles of initial management of musculoskeletal trauma, including: immobilization, assess neurovascular integrity, etc.
- xii. Outline the recommendations for tetanus prophylaxis in the trauma patient.
- xiii. Perform the following skills:

1. Insertion of oropharyngeal/nasopharyngeal airway.
2. Cricothyroidotomy and tracheal puncture.
3. Vascular access, including peripheral venous access, central venous access (femoral, subclavian, internal jugular), and venous cutdown.
4. Thoracotomy.
5. Pericardiocentesis.

2. LEARNING OBJECTIVES FOR NEUROINTENSIVE CARE

Upon completion of the ICU posting, the neurosurgery trainee should be able to:

- i. Describe the physiology of pulmonary gas exchange, and describe the clinical consequences of dead space ventilation and pulmonary shunting.
- ii. Discuss working classification of respiratory failure, and list common causes for each classification (e.g. Hypoxic, hypercapnic).
- iii. Interpret arterial blood gases, including calculation of A-a gradient and identification of acid base abnormalities (e.g. Uncompensated acute metabolic acidosis).
- iv. Outline the pathogenesis of acute respiratory distress syndrome, and list its common causes.
- v. List the indications/criteria for intubation / extubation.
- vi. Discuss the various types of mechanical ventilation.
- vii. Describe positive pressure ventilation and its interaction with the management of patients with severe closed head injuries (e.g. impaired cerebral venous drainage, permissive hypcapnea causing vasodilation.)
- viii. Interpret an electrocardiogram, including identification of common dysrhythmias (eg. atrial fibrillation, ventricular tachycardia).
- ix. Identify and initiate treatment for common, acute cardiac events (e.g. myocardial infarction, defibrillation for pulseless ventricular tachycardia).
- x. Describe a working classification for shock, outline the pathophysiology and hemodynamic abnormality for each type (eg. Septic shock: PCWP, CO, SVR), and initiate treatment for each type.

- xi. Outline the commonly used inotropes, their indications for use, and their pharmacological effects.
- xii. Outline the commonly used anti-hypertensive agents, their indications for use, and their pharmacological effects.
- xiii. Discuss the indications benefits and risks of invasive hemodynamic monitoring.
- xiv. Describe a working approach to acute renal failure, including classification, history, physical examination, investigations (e.g. urinalysis, urinary electrolytes), and initial treatment.
- xv. Outline the etiology, pathophysiology, and clinical features of systemic inflammatory response syndrome and multiple organ failure.
- xvi. Outline the indications for total parenteral nutrition, and become familiar with the nutritional requirements for patients with severe, closed head injury.
- xvii. Perform the following skills:

- 1. Insertion of oropharyngeal & nasopharyngeal airway.
- 2. Endotracheal intubation.
- 3. Vascular access, including peripheral venous access, central venous access (femoral, subclavian, internal jugular) and venous cut down.
- 4. Jugular bulb placement.
- 5. Pulmonary artery catheterization to obtain capillary wedge pressure.
- 6. Arterial line (radial, femoral) placement.
- 7. Thoracotomy.
- 8. Pericardiocentesis.

3. LEARNING OBJECTIVES FOR POSTINGS IN BRAIN TUMOR PATIENTS CARE

- 1. Theories about causation of brain tumors
- 2. Classification and grading of various brain tumors
- 3. Detailed knowledge of management (medical and surgical) of various brain tumors
- 4. Knowledge and use of CUSA in brain tumor surgery
- 5. Classification and management of Meningiomas, Gliomas, Other Supratentorial tumors, Posterior fossa tumors including PNETs, Others

4. LEARNING OBJECTIVES FOR CNS INFECTIONS

- 1. Osteomyelitis, brain abscesses, subdural empyema
- 2. HIV and neurosurgery
- 3. TB Spine/Granulomas

5. LEARNING OBJECTIVES FOR REGIONAL NEUROSURGERY

A. Pituitary region

- 1. Pituitary tumours (micro/macro) presentations and management
- 2. Medical management
- 3. Surgical management including transphenoidal and transcranial approaches

B. Pineal region

C. Skull base

- Tumors
- Congenital lesions

D. Vascular

1. Aneurysms, AVMs. ICH, presentations and management (medical and surgical),
2. Carotid endarterectomy
3. Carotidocavernous fistula
4. Others

6. LEARNING OBJECTIVES FOR NEUROENDOSCOPY Ventriculostomies

7. LEARNING OBJECTIVES FOR SPINAL NEUROSURGERY

At the end of the posting in the Spine service, the trainee should be able to:

1. Basic knowledge:
 - i. Describe the anatomy of the spine including the vertebral segments, discs, joints and ligaments.
 - ii. Describe the anatomy and physiology of the spinal cord including major tracts, zones, segments, roots and vasculature.
 - iii. Describe the biomechanics of the spine in normal and pathologic states.
 2. Spinal Tumors
 3. Spinal Infections tuberculosis, discitis, subdural infections
 4. Degenerative Spinal Disease disc prolapse, canal stenosis, foraminal stenosis, listhesis
 - i. Cervical
 - ii. Lumbar
 - iii. Thoracic
 5. Spine Cord Injury:
 - i. Outline the major mechanisms of injury and the pathogenesis of spinal cord injury.
 - ii. Classify the types of bony, ligamentous and neurologic injury to the spine and neurologic tissue.
 - iii. List the general and associated.
 - iv. Effects of the spinal cord injury to the cardiovascular, respiratory, urological and other systems.
 - v. Describe all aspects of the surgical and non-surgical management of the spinal cord injuries, including general, neurologic, spinal stabilization, urologic and respiratory management.
 - vi. The delayed and chronic effects of injury to the spinal cord.
 - vii. The psychological and social and family effects of spinal cord injury.
 6. Spinal Instability
 - i. Describe the principles of spinal instability traumatic and degenerative.
 - ii. Discuss the principles of spinal stabilization external and internal fixation; including indications, risks and benefits, and approaches.
 7. Outline the acute care of the injured spinal column.
- In addition to the above knowledge objectives, the following technical objectives should be learned:
- a. External immobilization -including skull tongs, traction and orthoses.

b. Supervised placement of pedicle screws, cervical plates, and various fixative rods.

8. LEARNING OBJECTIVES FOR PEDIATRIC NEUROSURGERY

At the end of the pediatric neurosurgery posting, the trainee should be able to:

1. Discuss the embryologic principles and developments, which relate specifically to congenital malformations of the nervous system.
2. Demonstrate a knowledge and understanding of the anatomical and physiologic specifics in the neonate, infant and child, which have application to neurosurgery.
3. Discuss the management parameters of the following specific pediatric conditions:
 - a. Congenital and developmental abnormalities of the skull, meninges, brain, spine, spinal cord, and peripheral nerves.
 - b. Neoplasms tumors and tumor like conditions
 - c. Cranio-cerebral trauma.
 - d. Vascular malformations and anomalies including Pharkomatosis (Von Recklingausen's, Sturge-weber, Hippel von Lindau, Tuberosclerosis)
 - e. Hydrocephalus and increased intracranial pressure including shunt functions and malfunctions, third ventriculostomy.
 - f. Epilepsy Surgery including VNS.
4. Demonstrate knowledge of the principles of cranial reconstructive surgery and the management of craniosynostosis and related conditions.

9. LEARNING OBJECTIVES FOR FUNCTIONAL NEUROSURGERY

1. Stereotaxis and Stereotactic Surgery
Principles of stereotactic surgery,
familiarity with application of frames
Indications for application of stereotaxy
Biopsy, DBS and tissue transplant in neurosurgery
2. Pain and Spasticity management
neuralgias, lesional, MVD, cordotomy
3. Epilepsy surgery

B. Other Mandatory Postings

1. LEARNING OBJECTIVES FOR NEUROLOGY ROTATIONS.

The neurology rotation is a 3- month rotation. The objectives for this rotation are as follows:

1. Review functional and clinical neurophysiology and neuroanatomy, and to correlate patient presentations and clinica pictures into functional anatomical concepts.
2. Demonstrate proficiency in neurologic history taking and physical examination.
3. Discuss headache patterns, differential diagnosis and management.
4. Demonstrate a complete understanding of the pathophysiology, signs, symptoms, pathology, and clinical syndromes of coma.
5. Discuss all aspects of speech and language disorders.
6. Describe all aspects of seizure disorders, including pathophysiology, and the various clinical syndromes, antiepileptic medications and the principles and interpretation of EEG.
7. Demonstrate knowledge of all aspects of cerebral vascular occlusive disease, including pathogenesis, the clinical syndromes and management.

8. Demonstrate knowledge of all aspects of CNS infection, including viral, fungal, parasitic and bacterial disease.
9. Discuss eye movements and their disorders; the visual pathway and its disorders; and basic abnormalities of the optic discs and retina.
10. Discuss in brief the major demyelinating diseases and cerebral degenerative diseases.

2. LEARNING OBJECTIVES FOR POSTINGS IN NEUROPATHOLOGY

The primary purpose is an opportunity to review basic sciences, and to learn pathology applicable to the practice of neurosurgery.

The basic objectives are as follows:

1. Demonstrate a thorough knowledge of neuroanatomy.
2. Discuss the general pathophysiological processes of the major neurological diseases: including neoplasia, cerebrovascular disease, traumatic nervous injury and infections.
3. Discuss the gross anatomical pathology of neurological disease, and in particular those with surgical implications (neoplasia, vascular disease and trauma).
4. Discuss the microscopic pathology of neurologic conditions specifically related to neurosurgical practice.
5. Demonstrate a knowledge of diagnostic criteria and interpretation of smear cytology.
6. Discuss the major molecular biologic processes important for the understanding of neurosurgical diseases (eg. apoptosis, chromosomal anomalies in neoplasia, tumor markers, pathophysiology of ischemic disease, etc.)

The following technical skills should be learned.

1. Autopsy removal of brain and spinal cord.
1. Techniques of frozen section and smears.
3. Brain cutting.

3. LEARNING OBJECTIVES FOR NEURORADIOLOGY

During his years of training, on a specific rotation to neuroradiology, the trainee should meet the following objectives:

1. A basic knowledge of the physics and principles of x-rays, ultrasound, MRI, PET, and CNS related applications/techniques.
2. Demonstrate a working knowledge and correlation between sagittal, coronal, and horizontal brain anatomy and radiologic imaging, CT scan PET and MRI.
3. Discuss the evolution of extra-vascular blood as seen on MRI.
4. Thoroughly interpret skull and spine x-rays, CT scans, CT angiograms, formal angiograms, MRI and MR angiograms, myelograms and ultrasound.
5. Discuss the indications, techniques and complications of interventional neuro-radiologic procedures.
6. Discuss the concepts of functional imaging, SPECT scans, intra-cranial Doppler.

C. ELECTIVE POSTINGS

- Neuro-otology
- Neuro-Ophthalmology
- Neuropsychiatry
- Neuroanatomy

Monitoring

EXPECTATIONS FOR NEUROSURGERY TRAINING (42 MONTHS)

3 MONTH EXPECTATIONS.

1. Application of Mayfield Pins.
2. Carpal tunnel release.
3. Positioning cranial and spinal.
4. Insertion external ventricular drain and ICP monitor.
5. Burr holes.
6. Set up and balance microscopes.

6 MONTH EXPECTATIONS

Previous 3 month expectations plus:

1. Craniotomy planning.
2. Dural closure.
3. Craniotomy closure.
4. Spinal wound closure..
5. Ulnar nerve decompression, transposition.
6. Lumbar spine exposure to lamina.

12 MONTH EXPECTATIONS

Previous 6 month expectations plus:

1. Craniotomy opening supratentorial.
2. Stereotactic frame application.
3. Lumbar disc exposure to the level of the disc.
4. Craniotomy opening
 - Suboccipital
 - Parasagittal.
5. Evacuate acute subdural and epidural hematoma.
6. Nerve and muscle biopsies.
7. Lumbar discectomy.
8. Lumbar laminectomy.

15 MONTH EXPECTATIONS

Previous 12 month expectations plus:

1. Evacuate intra- cerebral hematoma.
2. Resect intra axial neoplasm partial.
3. Elevate skull fracture .
4. Insertion of ventriculo peritoneal shunt.

18 MONTH EXPECTATIONS

Previous 15 month expectations plus:

1. Resection of intra-axial neoplasm complete.
2. Expose carotid optic cistern
3. Expose carotid artery.
4. Cervical laminectomy.
5. Cervical laminoplasty

6. Expose brachial plexus
7. Expose sciatic nerve.
8. Resection of peripheral nerve tumour.
9. Primary peripheral nerve anastomosis.
10. Percutaneous trigeminal rhizolysis.

21 MONTH EXPECTATIONS Previous 18 month expectations plus:

1. Split Sylvian fissure.
2. Expose/dissect intra-cranial nerves.
3. Remove convexity meningioma.
4. Decompression of Chiari malformation.
5. Trans sphenoidal tumour removal.
6. Cervical plate application (anterior).

24 MONTH EXPECTATIONS

Previous 21 month expectations plus:

1. Suture repair of carotid artery.
2. Microvascular decompression of V and VII nerves.
3. Temporal lobectomy for trauma or neoplasia.
4. Drill/resect anterior clinoid.
5. Decompress syrinx.

27 MONTH EXPECTATIONS

Previous 24 month expectations plus:

1. Remove carotid plaque
2. Dissect intra-cranial aneurysm.
3. Expose and partially resect skull base tumour
4. Resection of intra-dural, extra-medullary tumour.
5. Release tethered cord.
6. Resection of vestibular schwannoma.
7. Lateral mass plate application.

30 MONTH EXPECTATION

Previous 27 month expectations plus:

1. Corpus Callostomy.
2. Resection of intra-dural, intra-medullary tumour.
3. Clip intra-cerebral aneurysm.
4. Resection of "low grade" AVM.

36 MONTH EXPECTATIONS

Previous 30 month expectations plus:

1. AV dural fistula, spinal and cranial, exposure and resection.
2. Resection of skull base tumour complete.
3. Posterior circulation aneurysm clipping.
4. Temporal lobectomy Exposure to the technique and an understanding of the anatomy would be a reasonable expectation.
5. Insertion of pedicle screws.

42 MONTH EXPECTATIONS- Previous 36 month expectations plus

1. Broader experience in all aspects of neurosurgery
2. Dissertation preparation
3. Possible overseas posting for more exposure.

CHAPTER V

FORMAL CONTENT OF TRAINING

I. COGNITIVE SKILLS

Throughout the duration of the Residency training programme, the Programme Director or Head of Department has the responsibility to expose the residents to a systematic schedule of didactic teaching covering the core knowledge pertinent to the rational practice of surgery.

This should be presented in form of:

- a. Seminars, group discussions and lectures
- b. Clinical, clinico-radiological and clinico-pathological case conferences
- c. Clinical Discussions on the management of clinical problems during teaching ward rounds.
- d. Systematic Review of contemporary surgical literature in journal club sessions.
- e. Research Seminars.

The planned schedule should be such as to seek to cover the identified scope of core knowledge in cycles of 2 years, so that an average resident has at least 2 opportunities (one as a Junior Resident, one as a Senior Resident) to cover the same ground.

Each training institution may rightly identify what it regards as the pertinent core knowledge and may draw up its own schedule for covering it in 2 years. This provision allows enough flexibility to enable each institution to develop its own programme character and reputation within the overall national guidelines.

Training institutions should have the units system and each unit must have distinct activities apart from departmental ones.

II. PSYCHOMOTOR SKILLS

Each training institution is also expected to design and execute a systematic approach to the teaching/learning of operative skills, so

that from the first to the fifth year of the programme, residents are able to master specific psychomotor skills of hierarchically increasing degree of complexity. For example:

- a. The handling and care of surgical instruments and equipment.
- b. The organization, washing packing and sterilization of surgical sets appropriate to particular operations.
- c. The preparation and positioning of patients for particular operations.
- d. Non-operative manipulations
- e. Surgical incisions and exposures
- f. Surgical haemostasis
- g. Wound closure
- h. Gastro intestinal resections and anastomoses
- i. Abdominal solid visceral surgery
- j. Thoracic incision and exposure

k. Tendon and nerve repair

l. Vascular anastomoses

m. Exposure, internal fixation or prosthetic reinforcement or replacement of bone and joint structures.

II. RESEARCH SKILLS

The wholesome habit of systematic clinical problem solving, encompassing observation, interpretation, deductive reasoning and decision making /intervention followed by further observation, which resident doctors are encouraged to acquire during training is in itself, the basic requirement for competence in research. Besides this, residents should be encouraged to plan and execute research projects at levels compatible with their level of seniority, responsibility and skills.

Furthermore, each training institution is obliged to institute a research committee as well as an ethics committee whose functions are to screen research proposals from Residents and other staff within the institution for appropriateness, scientific content and compliance with ethical requirements (in case of projects using human subjects and animals).

A monthly departmental research seminar is expected as a forum for researchers to present their projects for discussion, critiques and guidance from their teachers and peers.

III. TEACHING SKILLS

True to the hierarchical organization in medicine, Resident doctors have the opportunity of acquiring teaching skills throughout the training period through the practice of each doctor having to teach those junior to him, other members of the health team, as well as patients in order to achieve an effective therapeutic alliance.

Besides, resident doctors have the opportunity to attend the educational methodology workshop mounted once a year at the College. Training institutions are encouraged to avail their residents the opportunity to benefit from these courses.

IV. COMMUNICATION SKILLS

It is important for Surgeons to be effective communicators not only in the course of routine clinical practice, medical record keeping, documentation, case presentations, referrals and writing of discharge summaries. They should also communicate effectively in the context of scientific presentations at conferences, court presentations, scientific journal publications, and indeed, examination materials writing.

Therefore, surgical training programmes must provide opportunities for acquisition and testing of communication skills at various levels.

V. MANAGEMENT SKILLS

The Secretariat of the College also conducts Management courses twice a year, which senior resident doctors are encouraged to attend.

Besides, the need for managerial expertise in surgical practice is so great, that training institutions are expected to also make deliberate efforts to give each resident the opportunity to attend two of these or other available formal courses in management during the course of training

It is ideal to appoint each 2nd or 3rd year Senior Resident into the administrative management position of “Chief Resident” for at least for six months for them to acquire some skills in human resource and materials management

Finally, residents are themselves encouraged to take personal interest in management matters because there is no denying that resource allocation and resource utilization, both at the institutional level, and indeed at the national level impinge directly on the effectiveness of their surgical skills, especially in a nation with limited and diminishing resources. It is an asset to have learnt to tailor surgical decisions to available resources, for optimal results and minimum frustration for both surgeon and patients.

CHAPTER VI

EVALUATION

Two types of evaluation are instituted by the Faculty of Surgery for its Fellowship programme. These are formative evaluation (in-course assessment) and Summative evaluation (Parts I and II Fellowship Examinations)

A. IN-COURSE ASSESSMENT

Constant evaluation is expected to be carried out during the course of Training by each institution. Procedures that are mandatory for each clinical posting are assessed and graded as the resident carries them out. Once adjudged satisfactory, such procedures are credited to 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 satisfactorily performed all the mandatory procedures for that posting, failing which a remedial period may be recommended. It is not mandatory to have end-of-posting tests, although it is highly recommended. It is part of good training for residents to be given frequent written tests under examination conditions to help them develop appropriate examination techniques (for both Essays and MCQs). 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:

1. To diagnose the degree of convergence of educational goals and trainee’s achievement.
2. To provide a basis for feedback to trainees in order to help them improve their knowledge and competence.
3. To furnish trainers and clinical supervisors with relevant information on the quality of their teaching, its strengths and weaknesses.
4. To serve as an effective tool for ensuring the maintenance of high quality health care for patients.
5. To certify residents for admission to the Part I and Part II FMCS Fellowship Examinations

B. APPLICATION FOR COLLEGE CERTIFICATION EXAMINATIONS

The Fellowship Examinations are held twice a year, in March/May and September/November. A call for application is published in at least one of the National Dailies during the first week of June

(for the November Examinations) and the first week of December (for subsequent May examinations). Candidates are advised to watch out for, and comply with the requirements of these advertisements.

B1. PART I FELLOWSHIP EXAMINATIONS

To be eligible to sit the Part I Fellowship Examination, Candidates should have completed at least 24 months of training and should have satisfactorily performed all the prescribed surgical procedures relevant to each clinical posting, and should have been duly signed up in the Certificate of Training, to that effect.

Candidates must therefore submit their Residents Portfolio at the time of submission of their applications for the examination.

The Part I Fellowship Examination which consists of:

1. 1st part screening examination

Comprising two MCQ papers in Principles of Surgery and Pathology/Operative Surgery respectively. Candidates are expected to obtain at least, a

borderline pass in the two papers before proceeding to the next stage of the examination

2. Two theory papers consisting of both the long essay and short essay questions

2. Clinical Long and Short case examinations/OSCE (objective structured clinical examination).

3. Orals (Viva Voce)

2. Clinicals

A. **Long Case:** Each candidate is presented with one “long case”.

Candidates are assessed for the quality and thoroughness of:

a. History taking and Clinical Examination

b. Case presentation

c. Interpretation of findings

d. Patient management

Special attention is paid to candidate's ability to foresee and prevent complications associated with his management strategy.

B. **OSCE** (objective structured clinical examination) has replaced the short cases. The OSCE circuits comprise focused History taking stations, focused Clinical examination stations, Clinical problem solving stations, Communication skills stations and Clinical performance stations. Live patients, standardized ‘patients’ and/or manikins are used for this part of the examination

3. Orals (Viva Voce)

The purpose of this aspect of examination is to cover as wide a field as possible with the candidate. Each candidate is subjected to one oral examination lasting 20 minutes, first 10 minutes deals with principles of surgery, as well as pre and postoperative management, while the second deals with Surgical pathology, diagnostic modalities, and operative surgery.

A component of the Orals is the computer-assisted projection of clinical pictures, radiology materials, pathology materials and instrumentation which ensures that all candidates are exposed to the same test items

4. Scoring

A Very Good/Excellent Pass	-	P+1
A Good Pass	-	P+
An Ordinary Pass	-	P
Borderline Pass	-	P-
An Outright Fail	-	P-1

The close marking system is used for scoring candidates.

5. Examination Results

In order to pass the Examination, a candidate must:

1. Pass at least one of the two written Parts and obtain a borderline pass in the other;
2. Obtain a Pass (P) in the Clinical Examinations;
3. Obtain an aggregate Pass (P) overall;
4. Normally obtain a Pass (P) in each section of the Examination, i.e. Written Paper, Orals and Clinicals provided that:
 - (a) A candidate who has passed at least 4 of the questions in the written paper may compensate with at least a Good Pass (P+) in the oral or clinical examination.
 - (b) A borderline Pass (P-) in the Orals may be compensated by Good Pass (P+) in the Clinicals;
 - (c) There can be no compensation at all, for a Borderline Pass (P-) in two sections or for Fail (P-1) in any one section of the examination.
 - (d) There can be no compensation at all for a Borderline Pass (P-) in the Clinical Examination.

Note: Candidates must retrieve their Residents' Port-folio at the end of the examination before they return to base.

B2. PART II FELLOWSHIP EXAMINATIONS

1. The Part II examination is designed to complete the assessment and certification of professional competence in Surgery for the award of the Fellowship in Surgery.

2. Registration for Part II FMCS Examination.

Not later than 12 months to the date of the examinations in which the candidate proposes to appear and in order to be eligible to appear

in the Part II FMCS Examinations, a candidate must:

- a. Register the names of 2 supervisors nominated by his/her training centre, at least one of which must be a Fellow of the College in Surgery with at least 5 years post-qualification experience in practice.
- b. Submit written attestations by the Supervisors indicating their willingness to supervise the project, not merely serving as proof readers of the dissertation, i.e. they will provide guidance from planning the project, collection of data, analysis of data to the general writing up of the work.
- c. Submit a certificate of clearance by his institution's Ethics committee in case of research projects involving use of human subjects and animals.
- d. In addition to the above, the candidate must submit a detailed proposal, clearly defining the subject chosen for study, the scope of the study, and its objective(s). The proposal must also contain a critical review of the literature as well as the materials and methods for the study. The Faculty Secretariat provides a feedback to the candidate on the suitability or otherwise of the proposal within 3 months of submission.

Note: It is in the Resident's own interest to time the submission of research proposal such that it is possible to receive the feedback during the first 12 months of the Senior Residency training.

3. The Dissertation

The objective of the Dissertation is, among others, to give the candidate a chance to demonstrate ability to come up with a research topic, define the research objectives, design a methodology for the study that is capable of leading to realization of the objectives, analyze and discuss the results scientifically and objectively.

The final dissertation submitted should follow the approved format, namely:

3.1. A Title page showing

The title of the work

“submitted by”

The name of the Author to

“The National Postgraduate Medical College of Nigeria” in part fulfillment of the requirements for the award of the Final

Fellowship of the Medical College in Surgery FMCS “May 1988”

3.2. The Declaration page. In which the candidate declares that the work presented was done by him under the appropriate supervision, and that it has not been submitted in part or in full for any other examination.

3.3. A Dedication page which is optional, may be included here.

3.4. The Attestation page

In which the Supervisor(s) himself (themselves) attest(s) to the fact that the work was done and the dissertation written under his (their) close supervision.

3.5. The Acknowledgement Page

In which the candidate specifically acknowledges all the assistance he has received in the course of the work, including copyright permissions.

3.6. The Summary or Abstract

The main work begins with a summary of the dissertation featuring the key points, in about 200 - 300 words. Nothing should feature in the summary that has not been presented in greater detail in the main body of the work.

The abstract should be in a 'Structured format'

3.7. Introduction

The introductory chapter should contain a

clear definition of the problem to be studied, including a justification for the study, a delimitation of the scope of the study.

3.8. Review of the Literature

3.9. Statement of objectives of the study.

3.10. A description of the study design, otherwise titled “Materials and Method” of study, including a description of the statistical analysis intended for use in processing the results.

3.11. The Results

3.12. The Discussion

3.13. Conclusions and Recommendations and finally

3.14. References, using the system proposed

by the International Committee of medical Journal Editors, “Uniform Requirements for manuscripts submitted to biomedical Journals” Br. Med. J. 1988, 296. 401 5 which is also reproduced in the College's Research Methodology Handbook.

Candidates are advised not only to acquire a copy of this handbook, but also to endeavour to attend at least one of the yearly intensive courses in Research Methodology mounted by the College. When a candidate is appearing for the oral examination on his/her dissertation, he/she is

required to bring a copy of the dissertation paged in the same way as the 3 copies previously submitted for the examination.

4. The Examination

The Part II Fellowship Examination shall consist of

- A. Written papers of the MCQ, long or short essay types as may be determined by the Faculty Board
- B. Clinical Examination which will be in the Long case/Short cases, and/or variety of OSCE as may be determined by the Faculty Board
- C. A comprehensive oral examination on the candidate's dissertation. This "Dissertation Orals" shall focus on the candidate's accomplishment of those objectives of the dissertation as stated in this handbook.
- D Two other Orals on the candidates sub-specialty which shall focus on
 - a. General principles of Surgery in the subspecialty
 - b. Surgical Pathology and Operative Surgery in the subspecialty.

Note: Candidates for the Part II Fellowship are expected to have met the minimum operative exposure as determined for their respective sub-specialties and must submit a copy of their Residents Port-folio along with the dissertations at the time they submit their applications for the examination. They should bring their file of operation notes with them to the venue of the Oral examination.

It is also their responsibility to retrieve both their portfolio and their dissertations at the end of the examination.

5. Examination Results

In order to pass the Examination, a candidate must:

- (a) Have his Dissertation accepted and
- (b) Pass the clinical section of the examination
- (c) Pass the other sections provided that a borderline pass in written papers or the Viva Voce may be compensated for by a good pass in the Clinicals or the written papers and viva vice respectively. However, a candidate who has his/her Dissertation accepted at P or P+ level but fails in the other aspects of the examination, shall repeat the examination but will not be required to appear for another Dissertation defence.

A candidate who has minor editorial corrections may be awarded a **P** and directed to make the corrections while submitting the bound copies

to the College. A candidate, having passed the other aspects of the examination but whose Dissertation needs major restructuring i.e. **P-1** level shall be referred in the Dissertation.

A candidate who has passed the other aspects of the examination, but has minor corrections in the Dissertation i.e **P-**, may be awarded a Provisional pass, in which case he is expected to submit the corrected work to a nominated assessor within three months of the examination following which he may be awarded a full pass.

No candidate may earn a Reference in the other aspects of the examination, and a Provisional Pass in the Dissertation.

CHAPTER VII

CONTINUING EDUCATION

The need for continuing medical education especially in the field of Surgery is just as vital as the period of Fellowship training if not more. Fellows of the Faculty of Surgery are actively encouraged to continue their surgical training throughout their active practice life. Among other means to achieve this, Fellows are encouraged to take active interest in the activities of the Faculty and the College.

Fellows are encouraged to subscribe to two or three reputable journals including at least one foreign one.

Fellows are also encouraged to attend National Workshops and Learned Conferences at least once a year in an effort to keep abreast with developments in the discipline. Fellows are reminded that the idea of periodic recertification as a means of quality assurance in the practice of Surgery is not only desirable, but may soon be required by Law.

Appendix 1

List of Accredited Training Institutions and Approved Training Posts(See NPMCN website)

APPENDIX 2

Minimum requirements for a centre applying for accreditation

Part 1

1. Provision of a conducive environment by the management of the institution or effective residency training.
2. Presence of at least 2 fellows of NPMCN in the Faculty of Surgery with at least 5 years post certification
3. Adequate numbers and variety of clinical cases to provide the residents enough exposure to meet with the learning goals
4. Well-structured training programmes for Residency training with the following components
 - Surgical grand rounds or clinical meetings on a weekly basis
 - Morbidity/mortality and audit programs on a regular basis
 - Journal clubs
 - Surgical pathology conferences
 - Surgical radiology conferences
 - Facilities for autopsy

Part 2

In addition to the above, each centre seeking accreditation will have

1. A fellow of NPMCN in the Faculty of Surgery of 5 years post-certification in each specialty for which accreditation is being sought.
2. Unit activities suitable for the sub-specialties involved
3. Arrangements for exposure of residents in other centres where such facilities are not available.

ACCREDITATION VISITATION SCORE SHEET

Date of accreditation visit:

Institution and accreditation required:

Visitation Panel members:

Profile of the Hospital

Bed component:

Bed occupancy

Department of Surgery:

Components of the department:

Tour of facilities and Scoring:

NB:

xi. Scoring should be based on availability and functioning of services and facilities at the time of accreditation.

- Any service/facility that has not functioned or been in use in the last one(10 month should be assumed to be non-functional/unavailable
- Accreditation panels should confirm above at the time of their tour of facilities. This form should be completed and submitted along with the detailed report.

10.0 Meeting with Residents:

11.0 Meeting with Consultants:

12.0 Meeting with management:

13.0 SUMMARY OF FINDINGS:

14.0 ACCREDITATION RECOMMENDATION

15.0 ACKNOWLEDGEMENT

APPENDIX 3:

PART I LOG-BOOK

MINIMUM OPERATIVE PROCEDURES BEFORE THE PART I EXAMINATION

	OPERATION	OBSERVE	ASSIST	PERFORM
1	Groin hernia Inguinal Femoral	3 1	5 1	10 0
2.	Trauma laparotomy Splenic surgery Liver surgery Intestinal surgery		2 1 2	0 0 0
3	Laparotomy for sepsis DU/GU perforation Typhoid perforation		2 2	2 4
4	Appendicectomy		4	10
5	Intestinal obstruction Strangulated hernia Adhesive obstruction management Tumour Volvulus	5 2 2	4 5 1 1	2 0 0 0
6	Gastric and duodenal surgery Gastrectomy Gastric outlet obstruction Upper GI haemorrhage	2 2	2 2 2	0 0 0
7	Anorectal Tumours Haemorrhoids	2 2	1 2	0 0
8	Hepato-biliary Cholecystectomy Obstructive jaundice Liver surgery	5 2 1	1 1 0	0 0 0
9	Breast surgery Lump excision Mastectomy/ WLE	5 5	5 3	5 0
10	Endocrine/ Exocrine Thyroidectomy Submandibular Parotid	5 1 1	1 0 0	0 0 0
11	GI endoscopy Upper Lower	5 5	2 2	0 0
12	Paediatric surgery Congenital anomaly Intussusception Hernia	1 1 2	0 0 1	0 0 0
13	Chest tube insertion	4	2	0

14	Plastic surgery Skin graft	5	1	0
15	Urology Prostatectomy Suprapubic cystostomy Urethral surgery	5 3 5	1 2 2	0 2 0
16	Orthopaedics Internal fixation External fixation Immobilization and splinting	5 5 5	1 2 2	0 2 2
17	Diagnostic procedures Corecut tissue biopsies Fine needle aspiration and cytology	5 5	5 5	5 5
18	Lump excisions (excl. breast)	10	5	5

APPENDIX 4:

GENERAL SURGERY PART 2

Minimum procedure list for General Surgery Part 2

Procedure	1st Surgeon in	Participate as first assistant
Breast		
Mastectomy	5	15
Axillary clearance	5	15
Wide local excision		15
Endocrine		
Thyroid	5	15
Parathyroid	-	-
Adrenalectomy	-	-
GI Endoscopy		
Upper GI	5	20
Flexible pan Colonoscopy	3	10
Sigmoidoscopy	10	20
Gastroduodenal surgeries	2	10
Colonic surgery		
Stoma	5	10

Rt hemicolectomy	5	10
Lt hemicolectomy	2	5
Anterior resection	-	3
APR	-	2
Rectal		
Hemorrhoid	5	10
Fistula in ano	2	5
Fissure in ano	2	5
Hepatobiliary		
Open cholecystectomy	2	5
Lap. Cholecystectomy	-	2
Cholecystojejunostomy	1	3
Miscellaneous		
Laparotomy for trauma	10	20
Salivary gland surgery	-	3
Volvulus	2	5
Varicose veins	1	3
Vascular access (shunts)	-	2
Obstructed hernias	5	10
Small bowel resection	5	10
Hernia repair with mesh	2	5
Laparotomy for sepsis	10	20

APPENDIX 5:

UROLOGY

THE LOG-BOOK: MINIMUM REQUIREMENTS

1. CORE SKILLS

A) CORE SKILLS OPEN PROCEDURES

Operation	Performed	Assisted
Prostatectomy	5	10
Urethrosplasty	5	10

Urethrostomy	2	5
Nephrectomy	2	5
Pyelolithomy	2	5
Bladder Repair	5	10
Orchidopexy	5	10
Ureteric Reimplantation/Ileal conduit	2	5
A-V fistula/shunts/ Vascular anastomosis		
Radical prostatectomy, carvernostomies/Shunts	3	5
	3	5
ENDOSCOPIC PROCEDURES:		
i. cystoscopy	20	
ii. ureteric catheterization	10	
iii. Ureterscopy (Percutaneous)	10	
iv. Cystostomy (closed)	10	
v. nephrostomy (Percutaneous)	10	
vi. ureterostomy (Percutaneous)	10	
vii. TURP-Assisted	3	
OTHERS		
a. Neurophysiological procedures		
i. Uroflowmetry	15	
ii. Cystometry	10	
b. Radiological/Interventional procedures (TRUS/Biopsy)	20	

APPENDIX 6:

BURNS AND PLASTIC

Minimum Plastic Surgery Procedure for Part 2 Exams Qualification

Head and Neck	Observed	Assisted	Supervised	Surgeon
Cleft lip		2	2	1
Cleft palate		4	2	1
Craniofacial surg	1			
Soft tissue inj of the face		2	2	10

Facial fractures		2	2	2
Scalp, calvarium and forehead reconstruction		1	2	3
Reconstruction of eyelid, eyebrow and correction of ptosis		1	2	3
Reconstruction of the ear		1	2	2
Nasal reconstruction		2	2	1
Intraoral tumours and radical neck dissection		1	2	1
Primary tumors of salivary gland and neck		1	2	2
Jaw tumors		3	2	1
Neck contractures		3	2	1
Skin and adnexae				
Burn management (not Burn injury)		3	5	20
Skin cancer		3	3	5
Benign growth and generalized skin disorder		2	2	5
Hypertrophic scar and keloid		3	3	5
Upper extremity and hand				
Skin and soft tissue replacement in the hand		2	2	5
Fractures of finger and thumb		2	2	5
Tendon injuries in the hand and forearm		2	2	5
Nerve injuries		2	3	2
Upper extremity contractures		2	2	5

Breast				
Reduction mammoplasty and mastopexy		2	2	0
Augmentation mammoplasty	1	1		
Breast reconstruction following mastectomy		2	1	0
Gynaecomastia		2	1	0
Trunk and lower extremity				
Reconstruction procedure for low extremity soft tissue		3	2	5
Pressure Sore		3	2	2
Lymphedema		2	2	1
Leg and foot ulcers		3	3	15
Genitalia				
Hypospadias, epispadias, bladder exstrophy		3	2	0
Injury to the external genitalia		1	1	1
VVF	1			
Gynaetresia and vaginal agenesis		1	1	0
Aesthetic Surgery				
Aesthetic Rhinoplasty	1			
Treatment of baldness with the use of flaps	1			
Scar revision		3	3	10
Aesthetic surgery of the ageing face	1			
Microvascular Surgery	All procedur			

APPENDIX 7:

MINIMUM PROCEDURE LIST FOR PAEDIATRIC SURGERY PART 2

a. GENERAL PAEDIATRIC SURGERY

Procedure	Observed	Assisted	Done
Venous Cutdown			20
Circumcision			10
Lymph node biopsy		2	10
Tumor Biopsy		2	5
Rectal Biopsy for Hirschsprung's			10
Lumpectomy		2	10
Sistrunk's Operation		1	2
Excision of Branchial Remnant		2	2
Inguinal Herniotomy		2	15
Repair of umbilical Hernia		2	5
Operation or cystic hygroma		1	2

b. NEONATAL PROCEDURES

Procedure	Observed	Assisted	Done
Operation for small bowel atresia		2	2
Operation for malrotation/volvulus		1	2
Neonatal colostomy/ileostomy		2	4
Anoplasty		1	2
Gastrostomy		1	1
Operation for Esophageal Atresia	1	2	
Operation for Diaphragmatic Hernia	1	1	
Non-operative management of Omphalocele		3	
Operative treatment of omphalocele/gastroschisis	2	5* minors are commonly	

c. GASTROINTESTINAL/HEPATOBIILIARY PROCEDURES

Procedure	Observed	Assisted	Done
------------------	-----------------	-----------------	-------------

Laparotomy for trauma/adhesion/perforation		1	4
Operative treatment of Intussusception		1	5
Intestinal resection and anastomosis		1	5
Colostomy/ileostomy (excluding neonates)		1	4
Colostomy/ileostomy closure		1	2
Operative correction of malrotation (excluding neonates)		1	2
PSARP		1	2
Full through for Hirschsprung's disease		2	1
Pyloromyotomy		1	2
Appendicectomy		1	4
Splenectomy		1	1
Operation for Biliary atesia	1	2	
Operation for Choledochal cyst	1	1	
Cholecystectomy	1	1	

d. UROLOGIC PROCEDURES

Procedure	Observed	Assisted	Done
Operation for testicular torsion		1	2
Orchidopexy for undescended testis		2	4
Correction of Posterior Urethral Valves		1	3
Hypospadias repair	2	3	1
Epispadias repair	2	2	
Surgery for urolithiasis	1	1	1
Ureterostomy/cystostomy	1	2	1
Pyeloplasty	1	1	
Undiversion	1	1	
Vesicostomy	1	1	
Nephrectomy (for benign conditions)	1	1	1
Operation for Bladder exstrophy	1	1	
Operation for gender assignment	1	1	
Genital repair for ambiguous genitalia	1	1	1
Urethrocystoscopy	1	2	10
Hydrocelectomy			

e. ONCOLOGY

Procedure	Observed	Assisted	Done
Nephroureterectomy	1	2	1

Operation or sacrococcygeal teratoma	1	2	
Operation for Rhabdomyosarcoma	1	1	
Operation for abdominal Lymphoma	1	1	
Operation for Neuroblastoma	1	1	

APPENDIX 8:

CARDIO-THORACIC SURGERY PART II CARDIOTHORACIC SURGERY LOG BOOK

PROCEDURE	SURGEON	ASSISTANT	TOTAL
CHEST WALL	5	5	10
RIB RESECTION	2	2	4
THORACOPLASTY	2	2	4
RESECTION AND RECONSTRUCTION	2	2	4
4. OTHERS			
LUNGS AND PLEURAL	48	27	75
CLOSED CHEST TUBE INTUBATION	25	15	40
OPEN LUNG BIOPSY	5	5	10
PLEURECTOMY	-	-	-
DECORTICATION	2	2	4
5. WEDGE RESECTION OF THE LUNGS	3	3	6
6. NON ANATOMIC LUNG RESECTION	10	5	15
7. LOBECTOMY	3	2	5
8. PNEUMONECTOMY	2	2	4
9. EXPLORATORY THORACOTOMY	5	3	8
10. OTHER OPERATIONS ON THE LUNG	-	-	-
11. OTHER OPERATIONS ON THE PLEURA			
a. PLEURODESIS,	5	5	10
b. OPEN PLEURAL BIOPSY	3	3	5
MEDIASTINUM	5	5	10
EXPLORATION OF THE MEDIASTINUM	2	2	4
EXCISION OF MEDIASTINAL TUMOUR AND CYSTS	2	2	4
OTHERS	-	-	-
DIAPHRAGM	6	4	10
REPAIR PF CONGENITAL DIAPHRAMATIC HERNIA	3	2	5
OTHERS			
OESOPHAGUS	25	20	45
ENDOLUMINAL INTUBATION-STENTS	6	6	12

OESOPHAGECTOMY WITH OESOPHAGO-GASTRECTOMY	4	3	7
COLON NYMPASS OF THE OESOPHAGUS	3	2	5
MODIFIED HELLERS PROCEDURE	3	2	5
5. REPAIR OF TRACHEO-OESOPHAGEAL FISTULA	2	3	5
6. RESECTION OF DIVERTICULUM	2	2	4
7. OESOPHAGOSTOMY FOR BENIGN TUMOURS AND FOREIGN BODIES	10	5	15
8. OTHERS	-	-	-
PERICARDIUM	13	12	25
1. PERICARDIOSTOMY	10	5	15
2. PERICARDIECTOMY	6	3	8
3. OTHERS	-	-	-
VASCULAR	15	10	25
REPAIR OF COARCTATION OF THE AORTA	2	2	4
REPAIR OF COGENITAL VASCULAR ANOMALIES	2	1	3
REPAIR OF THORACIC AORTIC ANEURYSMS	2	2	4
REPAIR OF ABDOMINAL AORTIC ANEURYSMS	2	2	4
REPAIR OF PERIPHERAL ARTERIAL ANEURYSMS	2	2	4
RECONSTRUCTION OF PERIPHERAL VASCULAR DISEASE	5	2	7
TRAUMATIC ARTERIAL SURGERIES	4	2	6
OTHERS	-	-	-
CARDIAC	30	20	50
1. LIGATION OF PERSISTENT DUCTUS ARTERIOSUS	4	4	8
2. PALLIATIVE SHUNT FOR COGENITAL HEART DISEASE	2	2	4
BLALOCK-TAUSIG SHUNT	2	2	4
OTHERS	-	-	-
CLOSED MITRAL COMMISSUROTOMY	2	2	4
4. CORRECTIVE CONGENITAL CARDIAC SURGERY			
CLOSURE OF ASD	2	1	3
CLOSURE OF VSD	2	1	3
TOTAL CORRECTION OF INTRACARDIAC DEFECT	2	1	3
5. CORRECTIVE ACQUIRED CARDIAC SURGERY			
OPEN VALVULOTOMY OR VALVE REPAIR	2	1	3
MITRAL VALVE REPLACEMENT	3	2	5

AORTIC VALVE REPLACEMENT	2	1	3
MULTIPLE VALVE REPLACEMENT	2	1	3
OTHER OPEN HEART PROCEDURES	2	1	3
PROCEDURES	AS SURGEON	AS ASSISTANT	TOTAL
PACEMAKER IMPLANTATION	13	12	25
PRIMARY PERMANENT IMPLANTATION	5	5	10
2. REPLACEMENT OF PULSE GENERATOR	5	2	7
3. OTHERS	3	5	8
MISCELLANEOUS	12	18	30
MEDIASTINOTOMY (CHAMBERLAIN PROCEDURE)	3	5	8
THORACOSCOPY VATS	3	3	6
SCALENE NODE BIOPSY	3	5	8
TRACHEOSTOMY	5	5	10
TOTAL OPERATIVE PROCEDURES	172	133	305
ENDOSCOPY	30	25	55
1. BRONCHOSCOPY	15	10	25
2. MEDIASTINOSCOPY	5	5	10
3. OESOPHAGOSCOPY	10	10	20
GRAND TOTAL			366

APPENDIX 9:

NEUROSURGERY

CONSOLIDATED NEUROSURGERY LOG BOOK:

Minimum Operative Requirement

PROCEDURES				
PROCEDURE	PERFORMED	ASSISTED	OBSERVED	TOTAL
Head Injuries	50	20	50	120
ICP bolt for pressure monitoring				
B.Hole for CSDH/Hygroma				
Craniotomy for extradural				
Craniotomy for acute subdural				
Craniotomy for intracerebral				
Decompressive Craniectomy				

Depressed fracture				
Dural repair				
Combined craniofacial repair				
Cranioplasty				
Supratentorial Tumours	10	15	20	45
Biopsy				
Stereotactic biopsy				
Craniotomy for intrinsic Tumour				
Meningioma				
Other benign				
Midline transsphenoidal				
Skull Base				
Posterior Fossa Tumours	2	13	15	30
Malignant				
Acoustic				
Other Benign				
Hydrocephalus/congenital anomalies	30	50	20	100
EVD				
Shunt insertion				
Shunt revision				
Arnold Chiari				
Encephalocoele				
Craniosynostosis				
Dysraphism, Myelomeningocele, Tethereing				
Vascular	5	5	10	20
Aneurysm Clipping				
AVM Excision				
Craniotomy spontaneous ICH				
Posterior fossa haematoma				
Craniectomy				
Carotid enarterectomy/Stenting				
By-pass surgeries				
Endovascular				
Infections	5	5	10	20
Intracranial abscess				
Subdural empyema				
Spinal abscess				
Spine	10	20	20	50
Cervical disc disease/spondylosis				
ACDF				
Laminectomy				
Foraminotomy				
Thoracic disc disease				
Lumbar disc disease/spondylosis				
Transoral				
Syrinx				

Tumour extradural				
Tumour ID EM				
Tumour ID IM				
Spinal fixation				
Pain			3	3
Trigeminal neuralgia lesion				
Trigeminal neuralgia MVD/rhizotomy				
Spinal implants				
Functional			3	3
Stereotaxy lesion/ implant				
Surgery for epilepsy				
DBS				
Other	1	2	2	5
Cranio-Cervical decompression				
Repair of CSF Fistulae				
Carpal Tunnel decompression				
Ulnar nerve decompression				
Sural nerve biopsy				
Muscle biopsy				
Temporal artery biopsy				
Neuroendoscopy	5	5	10	20
Hands-on-Courses Must attend at least 1 each year of training				4
Endoscopy Course				
Spine Course				
Skull Base course				
Vascular Course				
Neuronavigation Course				
Neuroanatomy Course				
Grand Total 420				