

NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA



FACULTY CURRICULUM

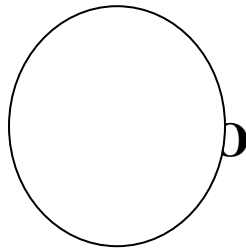
FACULTY OF ORTHOPAEDICS

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**NATIONAL POSTGRADUATE MEDICAL COLLEGE OF
NIGERIA**

Faculty of Orthopaedics



RESIDENCY TRAINING PROGRAMME

IN

ORTHOPAEDICS

Towards

**THE FELLOWSHIP OF THE MEDICAL COLLEGE IN
ORTHOPAEDICS (FMCOrtho)**

And

DOCTOR OF MEDICINE (MD)

A Curriculum for Residents and their Trainers

2022

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TABLE OF CONTENTS

CHAPTER ONE	INTRODUCTION Programme philosophy General Objectives
CHAPTER TWO	THE RESIDENCY TRAINING PROGRAMME Admission Requirements Registration of Residents
CHAPTER THREE	BASIC MEDICAL SCIENCES TRAINING Course Objectives Format of training Syllabus for basic science training Primary Examination
CHAPTER FOUR	JUNIOR RESIDENCY TRAINING PROGRAMME General Educational Objectives Format of Training Course credit unit FMCOrtho Part I Elementary Statistics and Research Scientific Basis of Orthopaedics
CHAPTER FIVE	M.D Programme
CHAPTER SIX	SENIOR RESIDENCY TRAINING PROGRAMME Entry Requirement General Educational Objectives Format of Training Course Credit unit FMCOrtho Part II
CHAPTER SEVEN	FORMAL CONTENT OF TRAINING Cognitive Skills Psychomotor Skills Research Skills Teaching Skills Communication Skills Management Skills
CHAPTER EIGHT	EVALUATION Formative evaluation Summative evaluation Part I Fellowship Examination Part II Fellowship Examination Registration for the Part II Examination The Dissertation The Examination.

CHAPTER NINE

CONTINUING EDUCATION

Update courses

CHAPTER TEN

ACCREDITATION OF TRAINING CENTERS

APPENDICES

Certificate of Training
Accreditation Guidelines

CHAPTER ONE

INTRODUCTION

The residency training programme in Orthopaedics of the National Postgraduate Medical College of Nigeria is aimed to produce Nigerian practitioners in reasonable numbers who are not only experts in the discipline of Orthopaedics but are also able to perform well within the socio-cultural and economic context of Nigeria. In 2011, the Faculty of Orthopaedics was created out of Faculty of Surgery. The first curriculum of the Faculty of Orthopaedics was in 2011.

There are three levels of training namely: level one which comprises Basic Sciences training in Anatomy, Pathology, Biochemistry, and Applied Physiology that prepares the candidate for the Primary Examinations. This is the major Prerequisite for the next level. Level two is the Junior Residency training programme of thirty (30) months leading to the Part One examination and level three is the Senior Residency programme of thirty-six (36) months leading to the part II Fellowship/Specialist examinations. During the Senior Residency component of the Training, an optional MD Degree with Thesis defence will intercalate for 6 semesters. This will be concluded before the Final Part II Fellowship examinations.

It is hoped that this revised curriculum will facilitate the teaching/learning process and the overall training of the specialist Orthopaedic Surgeon who is well adapted to the needs and peculiarities of the Nigerian society.

PROGRAMME PHILOSOPHY

The Faculty of Orthopaedics of the National Postgraduate Medical College of Nigeria seeks to train specialists in Orthopaedics and some of the sub-specialties, who are able to meet the vast majority of Orthopaedics needs of the Nigerian Society. The specialist, equipped with all the relevant competencies in “Clinical and Management Problem – Solving”, should be able to remain effective in the changing local conditions. The residency training for the Fellowship of the Medical College in Orthopaedics (FMCOrtho) should prepare him or her adequately for the

management and professional leadership roles that will be expected of him or her as a practicing Consultant Orthopaedic Surgeon. Besides, each product of the programme is exposed to the routine processes of teaching/learning and self-instruction to usher him or her into life-long continuing Orthopaedic Surgical education.

This competency-based curriculum for the Residency programme is designed to train an Orthopaedic Surgeon with definite competencies in the four areas of professional practice, clinical problem solving, research, education as well as Health Services Management.

GENERAL EDUCATIONAL OBJECTIVES

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

1. *Obtain*, at first consultation, as complete a data base (History, Physical Examination) and Laboratory data) as is compatible with the urgency and complexity of the patient's problems.
2. *Recognise* within the database, 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 decision on clinical management and therapeutic intervention.
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 of and the technique and procedure 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 Orthopaedic 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 Orthopaedic care.

12. *Demonstrate* problem-solving ability by designing and implementing a simple research project relevant to the needs of his local environment.
13. *Demonstrate* general management competence in the appropriate use of resources (man, materials and money) to achieve effective surgical care.
14. *Provide* effective and purposeful leadership of the surgical team.

CHAPTER TWO

THE RESIDENCY TRAINING PROGRAMME

The Residency Training Programme in Orthopaedics can only be conducted in centres accredited by the National Postgraduate Medical College of Nigeria (NPMCN) on the recommendation of the Faculty Board of Orthopaedics. The list of accredited training centres is published by the College from time to time and it is also posted on the College Website. These centres are re-visited at periodic intervals to ensure that training facilities and the training programmes are maintained at acceptable level.

Accredited centres are responsible for providing the resources (human, money, materials and management) to train the resident surgeons sufficiently to enable them to 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 Department of Orthopaedics at each training centre provides annual reports on the performance of each resident as well as the overall programme on prescribed *Annual Report* (evaluation) forms (downloaded from the college website). The training Institutions are expected to issue a *Certificate of Training* (downloaded from the college website) to each resident that has successfully completed the prescribed training, as required by College regulations.

ADMISSION REQUIREMENTS

To be admitted into the Residency Training Programme in Orthopaedics, a candidate must have a **Basic Medical Degree** registerable with the Medical and Dental Council of Nigeria (MDCN); a **Certificate** of the One-year National Youth Service or exemption if a Nigerian and a **Certificate of Pass** in the **Primary Fellowship examinations**.

REGISTRATION OF RESIDENTS

In compliance with College Bye-Laws all residents undergoing the **FMCOOrtho** Residency Training must be registered simultaneously with their respective training centres and with the College whose secretariat is based in Lagos, Nigeria. The Registration of each Resident with the College must be processed through and supported by the training centres. Registration with the College confers on the resident the status of Associate Fellow of the College.

Application forms for registration as Associate Fellows can be downloaded from the College website. All completed forms should be returned to the College Registrar by uploading same onto the College website not later than four months from the admission date into Residency Programme.

Candidates not registered as Associate Fellows of the College will not be allowed to sit for the Part I Fellowship Examination of the College.

CHAPTER THREE

BASIC SCIENCE TRAINING

The Faculty Board of Orthopaedics regards a Pass in the Primary Fellowship Examination as entry point into the Residency programme, and therefore there is no formal period earmarked for training in Basic Sciences.

The Primary Fellowship examination is a rather difficult examination to pass with Basic Sciences pre-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 who are willing from sitting the examination as soon as they have completed the mandatory housemanship year.

It is advised for candidates to attend an intensive Basic Medical Science course organized by the Faculty of Orthopaedics or equivalent bodies.

COURSE OBJECTIVES

A. Objectives:

1. The primary examination in Basic Sciences seeks to establish the candidate's understanding of the basic Principles of Surgery as it relates to Orthopaedics and Trauma.
2. To establish that the candidate is trainable
3. To ensure that the candidate understands the Basic Principles of Orthopaedics
4. To ensure that the candidate is familiar with the Scientific Basis of Orthopaedics.

B. Format of Training

There is no formal training in basic sciences in any training Institution and candidates are expected to apply for and write the Primary Fellowship examinations after completing the housemanship.

The faculty offers periodic short courses in Basic Sciences preparatory to the Primary Fellowship examination.

PREPARATION FOR THE PRIMARY EXAMINATIONS

The preparation for the Primary consists of Basic Sciences in relation to Orthopaedics. The subjects for the Basic Sciences are anatomy, applied physiology and applied pathology. These are considered to be very essential in the foundation of Orthopaedics (Orthopaedic materials and introductory biomechanics) and elementary research. Preparation for the Primary examination is self-centred learning and a Faculty update course in basic sciences when available. Eligibility for the Primary examination is possession of the Bachelor of Medicine and Bachelor of Surgery degree (MB, BS) or its equivalent in a recognized University, full registration with the Medical and Dental

Council of Nigeria, completion of the one-year National Youth Service Scheme or exemption from the scheme. The Basic Sciences curriculum shall include:

ORT 901	ANATOMY (16 credit units)
ORT 902	APPLIED PHYSIOLOGY (8 credit units)
ORT 903	PATHOLOGY (8 credit units)
Total Credit Units 32	

ANATOMY: ORT 901

i. **Scope**

A sound knowledge of anatomy required for the practice of Orthopaedic Surgery must include general knowledge of regional, applied, surface, radiological and cross-sectional anatomy. The candidate is expected to know the surface projections, positions, relations, vascular supply, lymphatic drainage and innervation of individual organs of the body.

The candidate may know and can be asked about integument and skin creases, incision and surgical approaches. Other aspects will include knowledge of histology as basis of function and disease, as well as embryology for genetic principles and congenital anomalies.

Emphasis will be on functional osteology, classification and description of joints of the body, and gross anatomy and cutaneous innervation of the upper and lower extremities.

ii. **Head and Neck**

The scalp, cervical vertebrae
Topography of the anterior and lateral regions of the Neck
The root of the neck
Pharynx and larynx
Cervical fascia, carotid sheath
Brachial plexus.

iii. **Neuro anatomy**

The brain surface anatomy
The cranial nerves
The meninges
Venous sinuses, cerebral vessels
CSF formation and flow
Spinal cord and its centers
Essentials of development of the brain, spinal cord and vertebra

iv. **Thorax and Abdomen**

Anatomy of the thoracic and abdominal walls, abdominal incisions
Osteology of thoracic cage. Thoracic inlet
The thoracic vertebrae and approaches to it
Anatomy of the back and vertebral column.

v. **Pelvis and Perineum**

Development, gross anatomy and microscopic structure of the pelvic viscera and the perineum
Pelvic osteology

vi. **The Limbs**

Osteology of the limb bones
Pelvic and shoulder Girdles
Classification and description of joints
Surgical Anatomy of the Hand
Axilla, cubital fossa, popliteal fossa

APPLIED PHYSIOLOGY: ORT 902

i. Scope

This includes biochemistry, chemical pathology, pharmacology and biophysics. Candidates will be expected to have a detailed knowledge of the various aspects related to surgery.

ii. Aspects of Physiology to be covered

- a. General physiological Principles
Structure, mechanism and integration of living cell
Osmotic pressure, membrane transport, ionic equilibrium, water, electrolytes, and base balance.
Enzymes and co-enzymes
Regulation of body temperature.
- b. Mineral Metabolism
Phosphate/Vitamin D/Calcium – Parathyroid
Minerals and Trace elements.
- c. Effects of Physical agents
Radiation, Nuclear Medicine, Hypothermia, Hyperbaric Oxygen
Principles of electronics
Ultrasound and magnetic therapy in Orthopaedics.
- d. Haemopoietic system
Plasma, blood groups, immunoglobulins
Haemostasis and blood coagulation
- e. Cardiovascular system
Haemodynamics, Haemorrhage, Shock, hypertension
- f. Respiratory system
Mechanism of ventilation
Gas exchange, Gas transport
Protective mechanism of breathing and respiratory failure
- g. Renal system
Functions of nephron and tubular mechanism
Regulation of extra cellular fluid (ECF)
Endocrine functions and its relations to bone
Musculo-skeletal effects of acute and chronic renal failure.
- h. Gastrointestinal System
Deglutition, gastrointestinal motility and its functional disorders
Gastrointestinal secretions, its control in health and disease

Digestion and absorption, disorders of absorption
Endocrine function and relations to bone
Nutritional deficiency syndromes in relation to Musculoskeletal system

- i. Endocrine System
General Principles of endocrine physiology
Metabolic and Endocrine response to trauma/surgery
- j. Nervous System
Control of movement and posture
The autonomic Nervous system, general principles of sensory and motor system including muscular contractions, conduction of the nerve impulse. Reflexes, synaptic transmission control of spinal injuries maintenance of muscle tone. Consciousness and the higher integrative functions.
- k. Applied Physiology
Physiology of transplanted heart, extracorporeal pump oxygenation
Hypothermia, shock syndrome
Intensive care, Renal shutdown and dialysis
- l. Pharmacology
General principles, route of administration absorption, metabolism and excretion of drugs.
Factors modifying the effect of drugs, Drug toxicity
Cancer Chemotherapy
Anti-TB drugs
Anti-hypertensive drugs
Non-steroidal anti-inflammatory drugs
Drugs used in the treatment of diabetes mellitus

PATHOLOGY: ORT 903

- i. **Scope:**
A thorough and detailed knowledge of the basic principles of pathology including biochemistry, haematology, immunology, microbiology, histopathology and molecular biology.
- ii. **General Principles underlining disease processes:**
Inflammation, Trauma, Degeneration, Regeneration, Repair, Hypertrophy, Atrophy, Hyperplasia, Thrombosis, Embolism, Infarction Neoplasm, Circulatory disorder.
Pigments and its disorders
Heterotopic calcification and calculi Renal failure – Hepatic failure, jaundice
Amyloidosis.
Laboratory Diagnosis
- iii. **Haematology**
Anaemia, Leukaemia, Myeloproliferative disorders
Haemorrhagic disorders and the Haemoglobinopathies.
Principles underlying blood transfusion.
- iv. **Microbiology**
Acute pyogenic infection, Wound infections
Nosocomial infections

Tuberculosis, Syphilis, actinomycoses, Viruses
Principles of disinfection and sterilization.

v. **Metabolic Pathology**

Disorders of glucose metabolism – Diabetes, Glycogen storage diseases
Vit D deficiency, Osteoporosis, Osteomalacia
Fluid and electrolyte imbalance

vi. **Tumors and Oncology**

Carcinogenes
Spread of malignant tumours
The Physics and Effect of ionizing radiation
The principles of therapy:
Radiotherapy, Immunotherapy, Chemotherapy

vii. **Genetics**

Common inheritance patterns in musculoskeletal disorders, e.g. Achondroplasia, haemophilia, Osteogenesis imperfecta etc.

TABLE 1: LEVELS OF TEST ITEMS (MULTIPLE CHOICE QUESTIONS -SINGLE BEST OPTION) BASED ON BLOOM’S TAXONOMY OF LEARNING)

LEVEL	DEFINITION AND EXPLANATION
I Remembering	is the most basic, requiring the least amount of cognitive rigour. Able to recall facts and basic concepts.
II Understanding	is to do with students demonstrating an understanding of the facts remembered. Able to explain ideas and concepts.
III Applying	is concerned with how students can take their knowledge and understanding, applying it to new situations to answer questions and solve problems.
IV Analysing	able to draw connections between ideas, thinking critically, to break down information into the sum of its parts.
V Evaluating	Able to make accurate assessments or judgements about different concepts. Able to justify a stand or position.
VI Creating	is the ultimate aim of students’ learning journey. At this final level of Bloom’s taxonomy. Able to produce sometime new.

The following table shows the stratification of Primary Examination multiple-choice questions.

Table 2. Specifications of Questions for the Primary Fellowship Examinations in Orthopaedics

Learning Objective	Course Code	Credit Unit	SPECIFIC TOPICS	Number: Objective Questions	TAXONOMY			Percentage Course Coverage
					Level I	Level II	Level III	
ANATOMY & PHARMACOLOGY 50%	ORT 901	16	Head and neck	15	6	5	4	7.5
			Thorax	10	4	3	3	5
			Upper Limb	20	7	6	7	10
			Lower Limb	20	7	6	7	10
			Abdomen	5	2	2	1	2.5
			Pelvis and Perineum	10	4	3	3	5
			Embryology	5	1	2	2	2.5
			Histology	5	1	2	2	2.5
			Principles of Pharmacology	5	2	2	1	2.5
			Safe Medication Use	5	2	2	1	2.5
PATHOLOGY 25%	ORT 903	8	General Principles	10	4	3	3	5
			Haematology	5	2	1	2	2.5
			Chemical Pathology	5	1	2	2	2.5
			Oncology	5	1	2	2	2.5
			Histopathology	5	2	2	1	2.5
			Metabolism	4	2	1	1	2
			Microbiology	4	1	2	1	2
			Immunology	4	2	1	1	2
			Endocrine	4	2	1	1	2
Genetics	4	1	2	1	2			
PHYSIOLOGY 25%	ORT 902	8	General Principles	10	4	3	3	5
			Cardiovascular	5	2	2	1	2.5
			Respiratory	5	2	2	1	2.5
			Gastrointestinal	5	2	2	1	2.5
			Renal	5	2	2	1	2.5
			Endocrine	5	2	2	1	2.5
			Haemopoietic	5	2	1	2	2.5
			Reproductive	5	2	2	1	2.5
Central Nervous System	5	2	2	1	2.5			
TOTAL		32		200	74	68	58	100

CHAPTER FOUR

JUNIOR RESIDENCY TRAINING PROGRAMME

1. Pre-requisites

There shall be a residency programme in Orthopaedics to prepare the candidates for the Part 1 Fellowship examination.

The residency programme shall be undertaken in hospitals accredited by the College.

The candidate is expected to attend a minimum of one up-date course organized by the Faculty one year before the due date for the examination.

Other criteria for eligibility as set out by the College – Attend ATLS course.

The Part 1 Fellowship examination may be taken after completion of minimum of thirty months of approved junior residency training in Orthopaedics, Trauma and Allied subspecialties.

A logbook containing a list of operations undertaken or assisted by the candidate shall be submitted with the application along with other documents.

2. **ADMISSION REQUIREMENTS**

To be admitted into the Residency Training Programme in Orthopaedics, a candidate must have a **Basic Medical Degree** registerable with the Medical and Dental Council of Nigeria (MDCN); a **certificate** of the One-year National Youth Service or exemption if a Nigerian and a **Certificate of Pass** in the **Primary Fellowship examinations** of National Postgraduate Medical College of Nigeria.

3. Objective

Upon completion of this programme a candidate is expected to demonstrate a satisfactory level of knowledge, clinical competence and technical competence.

Specifically:

- Candidates should be able to manage critically ill and multiply injured patients.
- Candidates should be able to demonstrate the ability to perform a complete history taking and physical examination.
- Candidates should be capable of interpreting the information obtained from it to form a complete differential diagnosis.
- Candidates should be capable of conducting a meaningful investigation of the differential diagnosis by radiological and laboratory means.
- Candidates should be able to demonstrate the ability to formulate a treatment plan and prepare the patient for surgery.

- Candidates should be able to carry out minor to moderate elective surgical procedures including: skin incision and closure, excisional biopsy of tumours, split skin graft, arthrotomy, incision and drainage, manipulation and reduction of fractures, cut-down, bone grafting, open reduction and internal fixation of fractures, soft tissue releases, open reduction of dislocation. Candidates should be able to perform common emergency surgical procedures such as wound debridement, suprapubic cystostomy, tube thoracostomy, laparotomy, craniotomy, amputation, application of external fixator, tracheostomy, skull traction etc. The candidate should have an insight into Research Methodology and Elementary Statistics.

4. **Format of Training**

Due to the tremendous scope and diversity of the specialty, the Junior Residency programme shall last for a minimum of thirty months. During this period, the candidate is expected to rotate through the following units:

A.	ORTHOPAEDIC/TRAUMA RELATED MANDATORY POSTINGS		
i.	General Orthopaedics: ORT 904		9 (3+3+3) months
ii.	Orthopaedic Trauma: ORT 905		6 (3+3) months
	Sub-Total		15 months
B.	GENERAL SURGERY AND RELATED MANDATORY POSTINGS		
i.	Accident and Emergency: ORT 906		3 months
ii.	General Surgery: ORT 907		3 months
iii.	Plastic, Burns and Reconstruction: ORT 908		3 months
iv.	Anaesthesia and ICU: ANE 917		3 months
	Sub-Total		12 months
C.	ELECTIVE POSTINGS (3months in ANY one)		
i.	Neurosurgery ORT 909		3 months
ii.	Urology ORT 910		3 months
iii.	Cardiothoracic ORT 911		3 months
iv.	Paediatric Surgery ORT 912		3 months
	Sub-Total		3 months
	GRAND TOTAL		30 months

Course Credit Unit FMCortho Part 1

1. One hour of didactic lecture/tutorial/seminar presentation daily gives 5 hours/week. In a month made up of 4 weeks, that is 5 hours x 4 = 20 hours/month, and 60 hours in 3 months. Therefore, 3 months of 60 hours will give 60/15 credit units. That is 4 credit units.

2. The clinical/practice skills acquisition daily gives 37.5 hours/week. In a month made of 4 weeks, that is 37.5 hours x 4 = 150 hours/month, and 450 hours in 3 months. Therefore, 3 months of 450 hours will give 450/45 credit units. That is 10 credit units.

Table 3

A. Core Postings

Course Code	Posting	Duration	Lecture contact hours/week (Total hours)	Credit Units	Clinical/Practical Contact Hours/week (Total hours)	Credit Units	Total Credit Units
ORT 904	General Orthopaedics	9 months	5 (180)	12	37.5 (1,350)	30	42
ORT 905	Orthopaedic Trauma	6 months	5 (120)	8	37.5 (900)	20	28
ORT 906	Accident & Emergency	3 months	5 (60)	4	37.5 (450)	10	14
ORT 907	General Surgery	3 months	5 (60)	4	37.5 (450)	10	14
ORT 908	Plastic, Burns & Reconstruction	3 months	5 (60)	4	37.5 (450)	10	14
ANE 917	Anaesthesia & ICU	3 months	5 (60)	4	37.5 (450)	10	14
	TOTAL	27 months				90	126

B. Elective postings (Candidate to choose any ONE)

Course Code	Posting	Duration	Lecture contact hours/week	Credit units	Clinical/Practical contact hours/week	Credit units	Total Credit units
ORT 909	Neurosurgery	3 months	5 (60)	4	37.5 (450)	10	14
ORT 910	Urology	3 months	5 (60)	4	37.5 (450)	10	14
ORT 911	Cardiothoracic	3 months	5 (60)	4	37.5 (450)	10	14
ORT 912	Paediatric Surgery	3 months	5 (60)	4	37.5 (450)	10	14
	Total	3 months		4		10	14

Total credit units over 30 months: A+B: 126+14=140 credit units

NOTE: Figures in parentheses indicate total contact hours
 Academic contact hours: 15 hours = 1 credit unit
 Clinical Hours: 45 hours = 1 credit unit

Summary of credit units for part 1

140 (30 months) + 2 (ATLS) + 2 (Faculty based course) = 144 credit units

COURSE CONTENT

BASIC STATISTICS AND RESEARCH

The trainee should have a basic knowledge of:

- Data collection
- Discrete and continuous variables
- Normal distribution and confidence intervals
- Parametric and Non-Parametric tests
- Hypothesis testing and statistical inference

SCIENTIFIC BASIS OF ORTHOPAEDICS

- a. Morphology, Biochemistry and Material Properties of the musculoskeletal system – bone, cartilage, synovium and the synovial fluid.
- b. Design of the locomotor system
 - Design of bone, muscles, tendon, tendon sheaths, synovial joints
 - Design of spinal column, intervertebral disc.
 - Blood supply of limb bones and spinal cord
 - Gait analysis.
- c. Development, growth maintenance, breakdown and repair
 - Dynamics of skeletal growth and remodelling in Orthopaedics surgery
 - Friction, Lubrication and wear of joints
 - Mechanism of fracture. Healing of fracture
 - Bone and Cartilage grafting.
- d. Scientific basis of diagnostic techniques
 - Orthopaedic radiology
 - Electrodiagnosis and radioisotopes in Orthopaedic Surgery
 - Pre-natal investigations and diagnosis
- e. Scientific basis of some therapeutic measures

Pain - its mechanism and treatment

Orthopaedic effects of immobilization

The physiology of Exercise – Kinesiology – Kinematics

Principles of splints in Orthopaedics

Implant Materials and their characteristics

Therapeutic Principles in metabolic bone diseases and musculoskeletal

Oncology.

Table 4

Specifications of Questions for the Part I Fellowship Examinations in Orthopaedics

LEARNING OBJECTIVE	CREDIT UNITS	SPECIALTY TOPICS	NUMBER OBJ QUESTION	TAXONOMY			PERCENTAGE COURSE COVERAGE
				LEVEL 1	LEVEL II	LEVEL III	
General Principles of Surgery 20%	40	Haemostasis	5	2	2	1	2.5
		Fluid & Electrolyte	6	2	3	1	3
		Wound healing	5	2	2	1	2.5
		Shock	6	2	2	2	3
		Metabolic response to trauma	5	2	2	1	2.5
		Metabolic bone disease	4	2	1	1	2
		Orthopaedic Oncology	5	2	1	2	2.5
		Basic Statistics	4	2	1	1	4
Orthopaedic 50%	100	General Orthopaedics	20	8	8	4	10
		Upper limb trauma	20	8	8	4	10
		Lower limb trauma	20	8	8	4	10
		Pelvic trauma	10	4	4	2	5
		Surgical approaches	10	4	4	2	5
		Fracture healing	10	4	4	2	5
		Bone and Joint infection	10	4	4	2	5
Surgery & Specialties 30%	60	Burns and Plastics	10	4	4	2	5
		General Surgery	10	4	4	2	5
		Accident & Emergency	10	4	4	2	5
		Anaesthesia	10	4	4	2	5
		Neurosurgery	5	2	2	1	2.5
		Urology	5	2	2	1	2.5
		Cardiothoracic	5	2	2	1	2.5
		Paediatric Surgery	5	2	2	1	2.5
Total			200	80	78	42	100

Level 1: Recall of Facts Level II: Application and Comprehension Level III: Analysis & Evaluation

TABLE 5 BLUE PRINTING FOR PART I OSLAC MANNED STATIONS

STATION	COMPETENCY	REMARKS
1	History	Core Specialty
2	History	Core Specialty
3	History	Core Specialty
4	Case Presentation	
5	Physical Examination	Core Specialty
6	Physical Examination	Core Specialty
7	Physical Examination	Core Specialty
8	Post Encounter Probe	
9	Investigation	Lab results + structured question written
10	Investigation	Lab results + structured question by the examiner.
11	Treatment	Structured treatment questions written
12	Treatment	Structured treatment questions oral by examiner

TABLE 6

BLUE PRINTING FOR PART 1 OSCE MANNED (5) AND UNMANNED (15) STATIONS

STATION	COMPETENCY	REMARKS
1	Instruments, uses and complications	Core and surgery specialties
2	Focused History	Core specialties
3	Follow-up to station 2	Core specialties
4	Data interpretation	Core specialties
5	Joint examination	Core specialties
6	Follow-up to station 5	Core specialties
7	clinical picture interpretation	Core specialties
8	clinical picture interpretation	Core specialties
9	focused history	Core specialties
10	Follow-up to station 9	Core specialties
11	Clinical picture interpretation	Core specialties
12	Operative instruments arrangement	Core specialties
13	Clinical picture interpretation	Core specialties
14	Communication and ethics	Core specialties
15	Clinical picture interpretation	Core specialties
16	Instrumentation and it is used	Core specialties
17	Physical Examination & Radiograph interpretation	Core specialties
18	Follow-up station to station 17	Core specialties
19	Clinical picture interpretation	Core specialties
20	Radiograph interpretation	Core specialties

CHAPTER FIVE

THE M.D PROGRAMME.

1. PREAMBLE

The M.D (Doctor of Medicine) of the National Postgraduate Medical College of Nigeria is a postgraduate academic degree that is equivalent to the Ph.D

During the Senior Residency component of the Training, an optional MD Degree with Thesis defence will intercalate for 6 semesters. This will be concluded before the Final Part II Fellowship examinations.

Philosophy

The philosophy of the MD program is to develop highly knowledgeable and skilled manpower for teaching and research for the public, private and international organizations in the field of medicine and related sciences

Aims and Objectives

- a) Providing interested individuals with the necessary knowledge, skills and competencies to function effectively as teachers, researchers and professionals in the health and medically related industry.
- b) Acquisition of teaching, research and professional skills for imparting knowledge in Nigeria and internationally
- c) Producing graduates who are capable of applying scientific knowledge and principles to solve human and environmental problems
- d) To produce scientists who are socially responsible and mindful of accepted norms and ethics

General Requirements and Regulations

General requirements and regulations governing higher degrees are similar to those in the draft NUC BMAS GUIDELINES released for postgraduate medical education.

Admission Requirements

- (i) Associate Fellows of the College who have registered in the residency programme in the Faculty they intend to pursue the Postgraduate M.D.
- (ii) Fellows of the College who intend to obtain the Postgraduate M.D
- (iii) Any other qualification acceptable to the Senate of National Postgraduate Medical College.

Associate Fellows

i. MD by Course Work and Thesis

Registration

- (i) A candidate must have been admitted into the Residency programme in one of the institutions with full accreditation for the M.D.
- (ii) The candidate must apply to the National Postgraduate Medical College of Nigeria and must have appropriately filled a form specifying the Faculty of interest.
- (iii) Any training institution with **FULL ACCREDITATION FOR PART 2 FELLOWSHIP** programme should be allowed to participate in MD training provided they have at least 2 supervisors who are Professors or MD holders in relevant Faculty. Fellows with Ph.D. should be qualified to supervise the MD thesis.
- (iv) Residents should be able to seek for supervisors from anywhere in the world if none is available in their training centres, provided such supervisors have the **requisite qualifications approved by the College**. Similarly, residents should be able to go to anywhere for laboratory work if facilities in their centres are inadequate provided such other places can sustain the methodology of the approved proposals.
- (v) The application should be accompanied by: 1) Letters from two (2) approved supervisors as stated above. 2) A proposal signed by the supervisors. 3) Approved Ethical clearance.

(vi) The duration of the programme shall be a minimum of six semesters of fifteen weeks each after registration. At the beginning of each semester subsequent to initial registration, each M.D. candidate shall be required to submit a satisfactory 100-word progress report duly endorsed by the supervisory committee as a condition for renewal of registration.

(vii) Final assessment: The course is for Six (6) continuous semesters. The examination is scheduled during regular College examinations with Examiners appointed by the College. The supervisors among others may be invited to witness the examination.

Fellows

Fellows who opt to do the M.D programme must apply to the National Postgraduate Medical College of Nigeria and must have appropriately filled a form specifying the Faculty of interest.

A prospective candidate who desires to undertake Doctor of Medicine (M.D) programme can adopt any of the two routes available, either by research or publication with the requirements and regulations provided below:

ii. By Research - MD by Thesis

- A thesis for the degree of M.D shall embody either clinical observations and laboratory findings or experimental research work with clinical applications. A thesis shall also take due account of relevant work in the basic medical, laboratory medicine and public health sciences.

- It shall be the original work of the candidate making a significant contribution to knowledge in or understanding of the field of study; contain materials worthy of publication, and a declaration that the thesis is original.

- The scope of the thesis shall be what might reasonably be expected after three or at most four years of full-time study

· Where the candidate is a member of a research team and the thesis incorporates the result of the team's work, the nature and extent of the candidate's contribution to the work and those of his/her colleagues must be fully indicated in the form of a declaration which will accompany the thesis when submitted for examination. The Postgraduate Medical College reserves the right to seek confirmation from any appropriate sources regarding any claims made in pursuant to this regulation.

· A candidate shall not apply for examination until the thesis has been registered for the degree for at least 4 semesters.

· **Final Assessment**

The final assessment shall be during College examinations by Assessors appointed by the College for that purpose.

iii. **MD by Publication**

· This option is available to senior Fellows of the National Postgraduate Medical College or our Sister Colleges. Prospective candidates would have contributed maximally to postgraduate medical education primarily in the area of Part 2 Resident Dissertation supervision for any of the listed Colleges or for University Ph.D programs, evidenced by 5 successfully defended dissertations. In addition the candidates would be accomplished medical researchers who have authored a minimum of 5 original research articles available in Pubmed in a focused narrow area as lead or corresponding author. Fellows of the West African College of Physicians and the West African College of Surgeons with 15 years Post Fellowship who meet the above can also apply.

2. METHOD OF APPLICATION

Interested residents should indicate their intention by obtaining appropriate application form from the College in the first year of the Senior Residency Training. The completed application form must be accompanied by a RESEARCH PROPOSAL at the time of submission.

3. RESEARCH PROPOSAL

A research proposal submitted by the candidate should exhibit all the features enumerated in Chapter 9, pages 43 - 45 of this Curriculum. The submitted proposal shall be subjected to formative assessment within 8 weeks and the resident shall be informed of its acceptability, modification or rejection.

4. EXAMINATION OF THE DISSERTATION

4.1 The average duration of the dissertation shall be one year

4.2 No candidate is eligible to sit for the examination before passing the Part I Fellowship examination

4.3 The examination shall take place at least 6 months before the resident is due for the FINAL Fellowship examinations.

4.4 Each candidate shall be examined by three examiners; at least one of whom must be an assessor of the proposal.

4.5 The examination shall take place during the May or November examinations and shall last for a minimum of one hour.

5. COURSE WORK

5.1 The candidate can do a detailed study in any of the specialties of Orthopaedics.

Each candidate is expected to choose one of these subjects and lead the discussion on different aspects in three separate seminars organized by his/her department.

The seminar shall be moderated by the Head of Department or the most senior lecturer in the area of study.

6.0 MD PROGRAMME COLLEGE COURSE CODES ACROSS FACULTIES

6.1. 30 credit units are deemed to have been obtained in Faculty based pre-Part1 courses in line with NUC BMAS

6.2. College Based Courses

6.2.1. Pre- part 1 Courses

- **PMC 901 Advanced Trauma Life Support 2 Credit Units**

6.2.2. Post Part 1 Courses

- **PMC 951 Research Methodology 2 credit Units**
- **PMC 952 Health Resources Management 2 credit Units**
- **PMC 953 Ethics in Clinical Practice 2 credit units**

6.2.3. MD Courses

- **PMC 994 Medical Education 2 credit units**
- **PMC 995 Advanced Research Methodology 2 credit units**
- **PMC 996 Advanced Health Resources Management 2 credit units**
- **PMC 997 Assessments and Examination Methods 2 credit units**

SYNOPSIS OF COLLEGE BASED M.D. COURSES

MEDICAL EDUCATION

PMC 994

This course is designed for medical and dental resident doctors. The need for doctors, involved with teaching in the medical school and postgraduate medical training to have training in teaching is widely recognised. The skills in Medical Education course has been designed to meet this need. The course is aimed at resident doctors who are new to teaching and at Fellows with years of experience who would like an update on current best practice and a greater understanding of the basic principles. The course recognises that, with appropriate help, all teachers, even those with considerable experience, can improve their skills in teaching.

The topics to be taught are, standard setting in educational assessment; assessment of clinical skills; threshold concepts in medical statistics and evidence-based practice; numeracy issues in learning about research; mapping and revising the learning and teaching of research; e-learning and blended in medical education; problem based learning; programme development; educational; computer communication networks; community-institutional relations; reproducibility of result; patient simulation; databases, factual; clinical decision making; selection of medical students.

OBJECTIVE

To facilitate acquisition of basic knowledge and necessary skills for research in Medicine and Proposal/Dissertation writing.

COURSE CONTENT

Definition, Spectrum and Types of Health Research Design; defining Research problems; Setting Objectives; Statistics and Research; Methods; writing Research Proposals; (Planning, Protocol Development and Report Writing); Good Clinical Practices and Clinical Trials; Role of Computer in Medical Research (EPI Info and SPSS)

Literature review; Use of Physical and Virtual Library; Use of Internet; Search Engines;

Systematic Reviews and Meta-analysis; Ethical considerations in medical research.

Clinical Governance; Writing –Up; presentation and Defense of Dissertation

Faculty Based Group Discussion on Research Proposal (Practical Group Session);

Evidence Based Health Care; Statistical Methods (Summary, Inferences and Interpretation);

Basic Principles and Method of Writing Papers for Publications

Practical Sessions on Processing of Proposal and Presentation to the College.

ADVANCED HEALTH RESOURCES MANAGEMNT**PMC 996****OBJECTIVE**

To facilitate acquisition of knowledge and necessary skills required for management of health resources in institutions and for programme

COURSE CONTENT

Principles and application of Management; Strategic Management; Health Care Planning; Health Policy formulation and evaluation; Health Resources mobilization; Health Resources allocation; Human Resources Management; Organization; Monitoring and Evaluation of Health Services; Performance Management; Sustainable Development; Problem Solving and Decision Making skills; Emotional Intelligence; Leadership; Management of Change; Risk Management

Legal Aspect of Medical Practice; Financial Management; Material Resources Management; Quality assurance in health and equity in health; Public/Private Partnership; Case studies/Scenarios.

ASSESSMENT AND EXAMINATION METHODS

PMC997

Multiple Choice Questions and Objective Tests; Oral Examinations; Patient Management Problems; The long clinical case; the objective structured long examination record' (OSLER), the short clinical case; objective structured clinical examination (OSCE); objective structured practical examination (OSPE); objective structured picture examination (OSPicE); workplace-based assessment; mini-CEX (mini-Clinical Evaluation Exercise); direct observation of procedural skill (DoPS) and Multi-source feedback (MSF); Simulated Patients; Observed Clinical Situations; Ensuring safe and effective patient care through training; Establishing and maintaining an environment for learning; Teaching and facilitating learning; Enhancing learning through assessment; Supporting and monitoring educational progress; Guiding personal and professional development; Continuing professional development as an educator; use of standardized patient (SP) encounters; Data gathering technique (history and physical examination); Interpersonal communication; Clinical management (diagnostic strategy and treatment plan); Professional documentation (post encounter note or PEN); Checklists; Patient Simulators.

7.1. FACULTY OF ORTHOPAEDICS MD PROGRAMME COURSE CODES

Any of the following:

- **ORT 941 - Advanced Principles in General Orthopaedics 2 credit Units**
- **ORT 942 - Advanced Paediatric Orthopaedics 2 credit Units**
- **ORT 943 - Advanced Principles in Orthopaedic Spine Surgery 2 credit Units**
- **ORT 944 - Advanced Surgical Principles in Arthroplasty 2 credit Units**
- **ORT 945 - Advanced Orthopaedic Trauma Management 2 credit Units**
- **ORT 998 – Seminars 6 Credit units**

- **ORT 999 – Thesis / Dissertation 12 Credit units**

COURSE SYNOPSES

ORT 941: ADVANCED PRINCIPLES IN GENERAL ORTHOPAEDICS

This course encompasses key management principles in orthopaedic emergencies, instrumentation, implants in orthopaedics and trauma surgery, congenital anomalies, tumours, metabolic and endocrine disease, infections of bone and joints and degenerative disorders and dysplasias.

ORT 942: ADVANCED PAEDIATRIC ORTHOPAEDICS

This covers critical orthopaedic conditions in children including dysplasias, congenital and developmental deformities of the limbs and spine and infective conditions.

The course also covers metabolic and haematological conditions in paediatric age group.

ORT 943: ADVANCED PRINCIPLES IN ORTHOPAEDIC SPINE SURGERY

This course covers critical issues in the management of trauma to the spine, infections in the spine, degenerative conditions and tumours of the spine.

Deformities of the spine and correction shall also be covered.

ORT 944: ADVANCED SURGICAL PRINCIPLES IN ARTHROPLASTY

This course centres on clinical conditions affecting the major joints of the limbs.

It equally deals with the procedures for repair or replacement in the joints of the limbs.

ORT 945: ADVANCED ORTHOPAEDIC TRAUMA MANAGEMENT

This course covers the spectrum of: identification of life threatening and potentially life threatening injuries and in-depth knowledge of principles of primary and secondary patient assessment; critical assessment and management of respiratory distress, shock, their complications and appropriate investigative tools; advanced principles of management of chest, abdominal, pelvic, head, spine and burn injury and advanced principles of management of musculoskeletal injuries inclusive of complications

7.2. LIST OF ACCREDITED TRAINING INSTITUTIONS:

The list of accredited training institutions for Faculty of Orthopaedics MD programme is published by the College from time to time and it is also posted on the College Website. The list will be updated from time to time as more institutions qualify to train candidate for the MD programme.

CHAPTER SIX

SENIOR RESIDENCY TRAINING PROGRAM

1. **Pre-requisites**

This is a residency programme that prepares the candidate for the Part II Fellowship examination in the Faculty of Orthopaedics.

Candidate must have passed the Part 1 Fellowship examination of the faculty. The postings must be undertaken in hospitals/departments with established relevant subspecialty units.

The candidate is expected to attend a minimum of one review course organized by the faculty within one year to the due date for the examination and also one Research Methodology Course and one Health Resource Management course organized by the college.

The Part II examination may be taken after completion of minimum of thirty (36) months of approved senior residency training and upon completion of all the relevant rotations.

A logbook containing a list of operations undertaken by the candidate shall be submitted with the application.

Candidates shall submit a research proposal that must be approved by the college.

Candidate shall also be required to submit a Dissertation at the time of application for Part II Fellowship examinations.

2. **Objectives:**

The senior residency training will

1. Afford the candidate unlimited exposure to the subspecialties in Orthopaedic & Trauma

- Give the candidate the opportunity to have a greater degree of responsibility in the pre-operative, intra-operative and post-operative management of patients thereby increasing the candidates level of clinical and technical competence (proficiency).
2. Enable the candidate to play a prominent role in the teaching of junior residents, and medical students.
 3. Expose the candidate to the principles of resource management and hence make him a successful team leader.
 4. Enable him plan and execute a research project.

The acquisition of these skills will make a senior resident, at the end of these postings, capable of running on a day-to-day basis a consultant unit within a hospital setting.

3. **Format of Training**

The Senior Residency-training programme shall last for a minimum period of thirty (30) months. During this period, the candidate is expected to rotate through the four (4) major postings of six months each and any two electives posting of at least three months each (6) months duration.

A. Major Postings:

i. General Orthopaedics	ORT 913	6 months
ii. Orthopaedic Trauma	ORT 914	6 months
iii. Arthroplasty	ORT 915	6 months
iv. Paediatric Orthopaedics	ORT 916	6 months
v. Spine.	ORT 917	6 months
Total		30 months

B. Elective Postings: (Choose any 2 of 3 months posting)

i. Orthopaedic Oncology	ORT 918	3 months
ii. Arthroscopy and Sports Medicine	ORT 919	3 months
iii. Burns and Plastic Surgery	ORT 920	3 months

iv. Foot and Ankle	ORT 921	3 months
v. Hand Surgery	ORT 922	3 months
vi. Limb Deformity Corrections	ORT 923	3 months
Sub-Total		6 months
GRAND TOTAL		36 months

Course Credit Unit FMCOrtho Part II

1. One hour of didactic lecture/tutorial/seminar presentation daily gives 5 hours/week. In a month made up of 4 weeks, that is 5 hours x 4 = 20 hours/month, and 60 hours in 3 months.

Therefore, 3 months of 60 hours will give 60/15 credit units. That is 4 credit units.

2. The clinical/practice skills acquisition daily gives 37.5 hours/week. In a month made of 4 weeks, that is 37.5 hours x 4 = 150 hours/month, and 450 hours in 3 months.

Therefore, 3 months of 450 hours will give 450/45 credit units. That is 10 credit units.

Table 7

A. Core Postings

Course Code	Posting	Duration	Lecture contact hours/week	Credit Units	Clinical/Practical Contact Hours/week	Credit Units	Total Credit Units
ORT 913	General Orthopaedics	6 months	5 (120)	8	37.5 (900)	20	28
ORT 914	Orthopaedic Trauma	6 months	5 (120)	8	37.5 (900)	20	28
ORT 915	Arthroplasty	6 months	5 (120)	8	37.5 (900)	20	28
ORT 916	Paediatric Orthopaedics	6 months	5 (120)	8	37.5 (900)	20	28
ORT 917	Spine	6 months	5 (120)	8	37.5 (900)	20	28
	TOTAL	30 months		40		100	140

B. Elective postings

Candidate to choose any TWO for 3 months each.

Course Code	Posting	Duration	Lecture contact hours/week	Credit units	Clinical/Practical contact hours/week	Credit units	Total Credit units
ORT 918	Orthopaedic Oncology	3 months	5 (60)	4	37.5 (450)	10	14
ORT 919	Arthroscopy & Sports Medicine	3 months	5 (60)	4	37.5 (450)	10	14
ORT 920	Burns and Plastic Surgery	3 months	5 (60)	4	37.5 (450)	10	14
ORT 921	Foot & Ankle	3 months	5 (60)	4	37.5 (450)	10	14
ORT 922	Hand Surgery	3 months	5 (60)	4	37.5 (450)	10	14
ORT 923	Limb Deformity Correction	3 months	5 (60)	4	37.5 (450)	10	14
	TOTAL	6 months					28

C. Dissertation: ORT 999

This is allotted a total of **12 credit units**.

Total credit units over 36 months: A+B+C: 140+28+12=180 credit units

Summary of credit units for Part 2

180 (36 months) + 2 (research methods) + 2 (health management) + 12 (dissertation)

Total = 196 credit units (for non-MD candidates)

180 (36 months) + 2 (research methods) + 2 (health management) + 12 (Thesis) + 8

(college-based courses) + 6 (Faculty based courses

Total = 210 credit units (for MD candidates)

Grand Summary of Credit Units for the programme.

32 (primary) + 144 (Part 1) + 196 (part 2) = 372 credit units for non-MD candidates

32 (primary) + 144 (Part 1) + 210 (part 2) = 386 credit units for MD candidates

CHAPTER SEVEN

FORMAL CONTENT OF TRAINING

COGNITIVE SKILLS

The Residency Training 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 rational practice of Orthopaedics.

This should be presented in form of:

- a. Seminars, Group Discussions and Lectures
- b. Clinical, Clinico-pathological and Clinico-radiological 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 thirty months.

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 thirty-six months. This provision allows enough flexibility to enable each institution to develop its own programme character and reputation within the overall National guidelines.

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 third year of the programme,

residents at each level are expected to master specific psychomotor skills of hierarchically increasing degree of complexity, such as:

- 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. Tendon and nerve repair
- i. Vascular anastomoses
- j. Exposure, internal fixation or prosthetic reinforcement or replacement of bone and joint structures.

MANAGEMENT SKILLS

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

Besides, the need for management expertise in Surgical practice is so great, that training institutions are expected to also make deliberate effort to give each resident specific opportunity during training to attend one of these formal courses in Management.

It is ideal to appoint each 2nd or 3rd year Senior Resident into the management post of “Administrative Chief Resident” at least for six months each so as to give each of them an opportunity to acquire some management skills.

Finally, residents are themselves asked 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 skill, especially in a nation with limited and diminishing resources. It is an asset to have learnt to tailor surgical decisions to the available resources and so obtain optimal results with minimal frustration both of self and patients.

CHAPTER EIGHT

EVALUATION

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

A. FORMATIVE EVALUATION (IN-COURSE ASSESSMENT)

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

The objectives of the formative evaluation are as follows:

1. To diagnose the degree of convergence of educational goals and student's achievement.
2. To provide a basis for feedback to students in order to help them improve their knowledge and competence.

3. To furnish teachers and clinical supervisors with relevant information about the quality of their teaching – its strengths and weakness.
4. To serve as an effective tool for ensuring the maintenance of high-quality health care for patients.
5. To certify students for admission to the Part I and Part II FMCOrtho. Fellowship Examinations.

B. SUMMATIVE EVALUATION

APPLICATION FOR COLLEGE CERTIFYING EXAMINATIONS

The Fellowship Examinations are held twice a year, in May and 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 THE PRIMARY EXAMINATIONS:

It shall be a three-hour (3-hour) computer-based test (CBT) examination of two hundred questions. It will be made of two papers.

Paper 1 consists of 100 best of four - answer MCQ in Applied Anatomy and Pharmacology.

Paper 2 consists of 100 best of four -answer MCQ in Applied Physiology and Pathology.

The Pass Mark P in the MCQ will be determined by the Modified Angoff Standard Setting Method.

B2. PART I FELLOWSHIP EXAMINATIONS

To be eligible so sit the Part I Fellowship Examination, candidates should have completed at least 30 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 same time as they submit their applications for the examination.

The Part I Fellowship Examination which consists of:

1 Paper 1(3hr): Screening MCQ: 200 questions overall. It is made up of 100 questions of Core Orthopaedics and 100 questions of General Surgery and Surgical Specialties. Successful candidates at this examination will proceed to the next stages of the examinations.

2 Paper 2: Long Essay questions.

a) Paper 1 Question 1-2 (2 hours) General Principles as related to Surgery and Orthopaedics

b) Paper 2 Question 1-2 (2 hours) Orthopaedic Surgical Pathology and Operative Surgery

3. Clinical Examinations: Objective Standardized Long Case (OSLAC): 2hr

4. Objective Structured Clinical Examination (OSCE) & Picture test: 2hr

4. Objective Structured VIVA (OSVE) 2hr

1. Theory Papers: These shall consist of:

a. Paper One: TWO (2) hour written paper of two questions in General Principles of Surgery including Applied Basic Medical Sciences and General Surgery.

b. Paper Two: TWO (2) hour written paper of two questions in Orthopaedic Pathology and Operative Orthopaedics.

2. Clinicals

Clinical examinations will be conducted both in Orthopaedics and general Surgery. Each candidate is presented with “long case” as Objective Standardized Long Case (OSLAC) and objective structured clinical examination (OSCE) which will cover various surgical specialties of the approved postings. For 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

3. Orals (Viva Voce) – (30 minutes)

The purpose of this aspect of examination is to cover as wide a field as possible with the candidate. Each candidate is subjected to Objective Structured VIVA (OSVE), one dealing with principles of surgery, as well as pre-operative and post-operative management, while the other deals with Surgical Pathology, diagnostic modalities, and operative surgery.

4. EXAMINATION RESULTS

The Pass Mark P in the written, orals and clinicals will be determined by the Modified Angoff Standard Setting Method.

In order to pass the Examination, a candidate must:

1. Obtain a Pass in the Clinical Examinations;
2. Obtain an aggregate Pass overall;

B32. PART II FELLOWSHIP EXAMINATIONS

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

1. To be eligible for registration and appear for the Part II FMCOrtho. the following are required:

- a) Registration as an Associate fellow of the college must be maintained.
- b) The candidate must have the Research Proposal approved not later than 12 months to the date of the examination in which the candidate wishes to appear.
- c) In addition to the above, the candidate's proposal must be detailed and clearly define the subject chosen for study, the scope of the study, and its aim and objectives. The proposal must also contain a critical review of

the literature as well as the materials and methods of the study. The Faculty Secretariat would provide a feed-back to the candidate on the suitability or otherwise of his proposal within 3 months of this submission.

d) In the Research Proposal the candidate should:

i) Register the names of two (2) supervisors nominated by candidate's training centre, one of who should be a Fellow of the Medical College in Orthopaedics (FMCOrtho)

ii) Submit written attestations by the supervisors indicating their willingness to supervise the project, i.e. planning the project, collection of data, analysis of data and the general write up of the dissertation, not merely serving as proof readers of the dissertation.

iii) Submit a certificate of clearance by candidate institution's Ethical committee.

NOTE: It is in the Resident's own interest to plan the submission of his proposal to receive the feedback during the first 12 months of his Senior Residency training.

Research Proposal

Candidate must first obtain an approval of his or her research proposal.

The Dissertation

The objective of the Dissertation is to give the candidate a chance to demonstrate that the candidate is able to clearly define a research topic, define the research objective, design a study methodology that is capable of leading to the objectives, analyze and discuss results scientifically and objectively.

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

- 3.1. A title page featuring
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 of the award of the Final
Fellowship
of the Medical College in Orthopaedics FMCOOrtho
“May 2022” (State appropriate date).
- 3.2. The Declaration page. In which the candidate declares that the work
presented has been 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 Supervisors themselves attests to the fact that the work has
been done and the dissertation written under their close supervision. The
supervisors should state their names, fellowship obtained, and year of
fellowship.
- 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 words. Nothing should feature in the summary
that has not been presented in greater detail in the main body of the
work.

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 to be used for 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 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) A written examination in two parts:

- i) Paper I Principles of surgery including applied Basic Medical Sciences
 - ii) Paper II Orthopaedic Pathology and Operative Orthopaedics.
- b. Clinical Examination including: Objective Standardized Long Case (OSLAC): 2hr and Clinical Examination (OSCE) & Picture test: 2hr.
- c. A comprehensive oral defense examination of the candidate's dissertation. This "Dissertation Orals Defense" shall focus on candidate's accomplishment of those objectives of the dissertation earlier stated in this handbook.
- Dissertation defense (M.D candidates are exempted)
- c. Two other Orals as Objective Structured VIVA (OSVE) 2hr on the General Principles and Practice of Orthopaedics Surgery which shall focus respectively on
- i. Principles of Surgery
 - ii. Surgical Pathology and Operative Surgery

NOTE: Candidates for the Part II Fellowship must submit their Training Certificates (including courses), Residents Portfolio along with the dissertations at the time they submit their applications for the examination. They should, however, 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

- (1) The Pass mark P in the written, orals and the dissertation will be determined by the use of appropriate standard setting method.

- (2) A written examination in two parts. The aggregate of all the parts shall be considered together.
- (3) The Viva Voce section shall have two parts as determined by the Faculty Board or Court of Examiners. The aggregate of all the parts shall be considered together.
- (4) The Dissertation and Defense may be regarded as:
 - Accepted
 - Accepted with minor editorial corrections
 - Provisionally accepted with errors to be vetted by a nominated assessor after corrections or
 - Rejected, to be rewritten, represented and defended at a subsequent examination.

To pass the overall Examination, a candidate must

1. Pass the dissertation and Accepted
 2. Pass the clinical Examination
 3. Pass the overall examination
- (a) However, a candidate who has his dissertation accepted but fails in the Viva Voce, shall be referred in viva voce only against the next Examination.
 - (b) Candidates whose dissertation needs some errors that will require vetting but who has passed the Viva Voce and Clinicals shall earn a provisional pass. Minor editorial/typographical errors shall not affect a candidate's full pass rating.
 - (c) A candidate having passed the Viva Voce and clinicals but whose dissertation: is rejected needs a major restructuring shall be referred in the dissertation only against the next examination.

The following considerations shall however subsist for a candidate to pass:

- (a) A candidate must pass overall
- (b) A candidate must pass Clinicals.

CHAPTER NINE

CONTINUING EDUCATION

The need for continuing medical education and continuing professional development especially in the field of Orthopaedics is just as vital as the period of Fellowship training if not more. Fellows of the Faculty of Orthopaedics are actively encouraged to continue their surgical training throughout their active practice life.

The Faculty is to organise yearly CME. The essence of this is to ensure that current developments in Orthopaedics and Trauma are fully discussed.

Among other means to achieve this, Fellows are encouraged to take active interest in the activities of the Faculty and the College and to be of good financial standing.

Fellows are encouraged to subscribe to two or three reputable journals including at least one foreign. Fellows are also encouraged to attend National and International 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 Orthopaedics is not only desirable, but may soon be required by Law.

UPDATE COURSES

The Faculty is to organize update courses for residents every year. The coordinators are tenured with the faculty executives.

CHAPTER TEN

ACCREDITATION OF TRAINING CENTERS FOR ORTHOPAEDICS TRAINING PROGRAM.

INTRODUCTION:

Training program in Orthopaedics must meet the basic standard and the standard for quality development for postgraduate medical education. These standard criteria expose the trainees to integrated practical, clinical and theoretical instructions in patients' care. Apart from this, the training program must be recognized by the National Postgraduate Medical College which has the responsibility and authority for coordinating and assessing the individual training center.

ACCREDITATION CRITERIA:

Therefore, any institution that will be accredited for training in Orthopaedics must satisfy certain conditions.

An accredited Training Center should:

1. possess the financial and infrastructural capacity to run a training program in which the trainee will have sufficient exposure to clinical, theoretical and practical instructions and acquire the core competences described in the main curriculum.
- 2 offer services in the relevant Core and Allied specialties of Orthopaedics.
4. parade a sufficient number of qualified and competent trainers who must be Fellows of the National Postgraduate Medical College with a minimum of 5 years post-qualification experience in the Core areas of Orthopaedics.
5. have an avenue for systemic audit of clinical performance in support of provision of Orthopaedic care.

6. provide both space and opportunity for practical and theoretical study as well as for research activities including libraries, internet access and venues for seminars and lectures.

7. have laboratory and diagnostic imaging departments in support of provision of Orthopaedic care

Accreditation of training institutions is to evaluate them for their preparedness to train specialist for the Faculty of Orthopaedics NPMCN at both the Part I and/or Part II levels. The under listed are given due consideration.

1. Appropriate infrastructure
2. Qualified and experienced personnel
3. A well-structured training program that recognizes modern trends and assessments methods
4. Opportunities and evidence of acquisition of skills for trainees
5. Access to up-to-date educational information

A. VISIT SCHEDULE

1. Prepare a site visit schedule: This should show all the places the panel members will visit and it should have a definite flow to allow for smooth tour of hospital facilities.
2. It should start with a visit to the Chief Medical Director's office and ends with a visit to the Chief Medical Director's office
3. It should include visit to all the relevant Wards (both orthopaedic and surgical), Clinics, theatres, plaster room, departments such as pharmacy, physiotherapy, occupational therapy, CSSD, laundry, library, radiology, laboratories (Haematology, chemical pathology, morbid anatomy etc), Accident and Emergency, ICU etc.
4. Meeting with the resident doctors
5. Meeting with the consultant doctors

6. Meeting with the Chief Medical Director and hospital management for debriefing.

B. A WRITE-UP LOOSELY BOUND – TO BE GIVEN TO EACH PANEL MEMBER ON ARRIVAL

1. The write-up should contain at least the following.
2. It should start with a brief history of the department and the hospital
3. It should contain your prayer ie Full accreditation for Parts I &/or II as may be applicable
4. Description of all hospital facilities to be visited that are relevant to resident doctors training in orthopaedics for NPMCN
5. Number of hospital bed compliments in the various relevant wards
6. These should include the various clinics days, Theatre days, ward round days etc
7. Bed occupancy rate, typical theatre list, and clinic attendance
8. List of surgical operations done within a period of at least the last 2 years
9. Evidence of Structured Academic programs towards residents training
10. Various inter departmental meetings such as ground rounds, clinico – pathological meeting, radiology conference, journal club, research activities if any, etc
11. Comprehensive list of all the doctors both consultants and residents in Orthopaedics
12. Comprehensive list of all the consultants in surgery department.
13. It should show all their qualifications National or West Africa or both and year acquired
14. It should show the residents training level either registrar or senior registrar. The numbers that have passed primary and part I NPMCN

15. Other staff: simply show their numbers: nurses , pharmacist, etc
16. It should show the various Firms or Units as the case might be and doctors within them
17. The units may include: Accident & Emergency, General Surgery, Burns and Plastics, Neuro Surgery, General Orthopaedics, Urology, Paediatric Orthopaedics, Arthroplasty, Arthroscopy (including sports medicine), Spine, Orthopaedic Oncology, etc.
18. This is only a guide and by no means exhaustive

C. OTHER IMPORTANT INFORMATIONS

1. Orthopaedic Department or unit should be organized into Firms that reflects the following sub-specialties.
2. Trauma/General Orthopaedics, Arthroplasty, Arthroscopy (including sports medicine), Spine and Orthopaedic Oncology.
3. At least four of the sub-specialties must be active in your hospital
4. Each of the sub-specialties must have at least two qualified consultants
5. At least two of the consultants in Orthopaedics must be Fellows of the NPMCN