

# MEMBERSHIP AND FELLOWSHIP IN OTORHINOLARYNGOLOGY

## 1. GENERAL INFORMATION

### Preamble

The number of qualified E.N.T consultant/specialist surgeons for the Ghana population is inadequate. There is therefore the need to develop a well structured programme for the training of surgeons for the country. These locally trained surgeons will fill the vacancies in district, regional and tertiary institutions as appropriate.

### 1.1 Philosophy

The ENT Specialist shall be responsible for the health needs of all categories of ENT patients including children with congenital and acquired deafness (hearing impairment). He/she should train all categories of ENT personnel. He shall conduct research into ENT disorders peculiar to Ghana and spearhead the programme of prevention of deafness and hearing impairment.

She/he may conduct or direct outreach programmes in the neighbouring communities in which he services.

### 1.2 Job Description

The philosophy of the programme is congruent with values and principles from which health service policies in Ghana are derived. The fellowship programme in Otorhinolaryngology is therefore designed to train a highly qualified surgeon who shall be responsible for the health care needs of all categories of patients with ENT disorders. He should be trained to practice the latest state of the art as a competent Consultant Otorhinolaryngologist (ENT Surgeon).

### 1.3 Entry Requirements

- A medically qualified candidate with MB ChB qualification who has been registered in Ghana or in any other country accepted by the Ghana Medical and Dental Council shall be eligible for the membership training of the GCPS.
- Candidate must have at least one year of post-registration experience in general clinical duties in the rural setting and must pass the interview organised by the College on behalf of the Ministry
- Preference shall be given to Government and Agency sponsored candidates who on completion will provide service at the tertiary level, **regional and district hospitals.**
- A DLO holder who has passed the primaries of the Membership will be exempted one (1) year of the Part I of the Membership programme.

#### 1.4 Objective of the Programme

The objective of the programme is to train a highly qualified Specialist/ Consultant Otorhinolaryngologist competent to manage all ENT disorders at various levels.

The Trainee by the end of the programme will :

- Be able to, independently, manage ENT surgical problems to the highest level of competence.
- Be able to set up, organize and manage surgical services in the district/regional/tertiary hospitals.
- Provide consultancy services wherever is needed, and therefore will increase access to quality ENT surgical care,
- Teach residents, medical officers, medical students and other health care providers in ENT surgery
- Engage in research activities

#### 1.5 Course Description

This is a comprehensive surgical training in Otolaryngology, Audiology, Rhinology, Laryngology, Head and Neck Surgery and **Paediatric Otorhinolaryngology**.

#### 1.6 Training Programme

1.6.1 The programme leading to the memberships of the GCPS shall cover a minimum period of three years but not exceeding 4 years. Attachments to sister colleges in the sub region or outside Africa may be arranged by the Faculty of ORL (GCPS).

1.6.2 The training programme shall consist of the following parts

- Part I Primary (Basic Sciences) (**may be obtained before admission to the programme**)
- Part 2 (Clinical ORL) **3 years** (Operative skills **and** Audiology Inclusive)

**Part 3 ( Fellowship in General Otorhinolaryngology) -2 years**

**Post Fellowship subspecialty training in ORL (1-2 years)**

#### 1.7 Primary Course: Basic Sciences

The Emphasis will be placed on the applied aspects of basic sciences in Anatomy Physiology and General Pathology. The format of examination for primary Membership in ORL shall be:

Paper I MCQ

Anatomy

Physiology

General Principles of Pathology

### **1.8 Part II Membership Course:**

This is divided into 2 clusters of 12 months and 24 months duration respectively for the ORL I & ORL II

#### **1.8.1 ORL 1:**

12 months in Otorhinolaryngology. Candidates should acquire basic skills in examination of patients as well as perform basic operations in ENT such as:

Removal of foreign bodies in the Ear Nose and Throat

Tonsillectomy

Adenoidectomy

Drainage of mastoid abscess

Nasal operations

Para-nasal sinus operation and other head and neck operations

Drainage of abscesses in the head and neck

#### **ORL II:**

24 months of surgical training. This should consist of O.R.L. Training of 8 months

16 months of rotation in the following related specialties

- 2 months in Ophthalmology
- 2 months in Neuro surgery
- 2 months in Thoracic surgery
- 3 months s General Surgery
- Anaesthesia – 1 month
- Accident and Emergency medicine - 2 months
- Maxillofacial - 2 months
- Plastic and reconstructive surgery - 2 months

**Log book should be obtained at the inception of PartII O.R.L. from GCPS to document operative surgery and other activities.**

### **1.9 Part II Membership Examination**

This shall consist of the following:

Paper 1 Principles of General surgery (3hrs)

Paper 2 Clinical ORL

Paper 3 Operative Surgery and Surgical Pathology

Clinical examination consisting of long and short cases in ORL

Clinical examination in General Surgery (This shall consist of General Principles of Surgery with emphases on Head and Neck)

Viva-voce in ORL and principles of surgery

There shall be an External Examiner in General Surgery in addition to ORL internal examiners plus one External Examiner.

### **1.10 PART III: Fellowship in General ORL**

#### **Duration: 2 Years Post Membership**

After passing the Part II examination, the candidate must spend two years acquiring higher surgical/clinical skills in ORL in an accredited institution.. Skills must be acquired in the following surgical/Clinical procedure.

Audiology - 1 month rotation recommended  
Laryngectomy and Voice rehabilitation  
Neck dissection  
Pharyngectomy  
Maxillectomy (partial and total)  
Surgery of the Salivary glands  
All types Sinus Surgery  
Plastic operations in ORL  
Mastoid Surgery and Middle & Inner Ear Surgery  
Microlaryngeal surgery and Laser Surgery  
Functional Endoscopic Sinus Surgery (FESS)  
Panendoscopy and Bronchoscopy

### **1.11 Part III: Fellowship Examination**

This shall consist of:

Submission of a thesis (Dissertation)

A clinical examination

A viva-voce examination of two parts

- General Otorhinolaryngology
- Neuro-otology, and Radiology and- Surgical instruments
- Dissertation

### **POST FELLOWSHIP SUBSPECIALTY TRAINING**

This training is aimed at capacity building of the Tertiary centres. The areas of training are:

Otology/otoneurology

Rhinology

Head and neck surgery

Paediatric ORL

Facial plastic/reconstructive surgery

The proposed period of training is minimum of 1 year and maximum of 2 years. Funding may be sourced from donors and government of Ghana to enable eligible candidates undertake this hands on training in approved and accredited overseas institutions when local resources are not available for this training.

## **Routine for Residents**

- Daily morning ward rounds by the Trainee and evening ward rounds by trainee on call
- Weekly teaching ward rounds with the Consultant
- Attendance at outpatient clinic with the Consultant available for advice and discussion
- Weekly tutorials with the Consultant
- At least twice a week operation sessions
- Monthly clinic-mortality and clinical audit meetings with the Consultant
- Monthly journal club meeting with the Consultant
- Monthly seminars in specific topics with Consultants
- Weekly head and neck oncology joint clinics
- Trainees will conduct clinical research and publish a paper with the Consultant
- The College will organize regular skills workshop for Trainees

## **2 COURSE CONTENT FOR PART I IN ORL SURGERY**

This shall consist of the following Basic Sciences subjects.

Applied Anatomy including Neuroanatomy and Histology, Applied Physiology, Principles of General pathology and Chemical Pathology, Pharmacology, Microbiology and Haematology. The CABS Course shall be used where relevant.

### **1<sup>st</sup> Year (1<sup>st</sup> Semester)**

	<b>LECTURE</b>	<b>PRACTICALS</b>	<b>CREDITS</b>
Applied Anatomy	3	4	3
Applied Physiology	2	-	2
General Pathology	2	-	2
Microbiology	2	-	2
Haematology	1	-	2
Pharmacology	2	-	1
Ethics	1	-	2
Communication skills	1	1	1
<b>Total</b>	<b>14 hrs</b>	<b>4 hrs</b>	<b>16 credits</b>

## 1<sup>st</sup> Year (2<sup>nd</sup> semester)

	LECTURE	PRACTICALS	CREDITS
Applied Anatomy	2	6	2
Applied Physiology		-	3
General Pathology	2	-	2
Microbiology	2	-	2
Haematology	1	-	2
Pharmacology	2	-	1
Ethics	1	-	2
	1	-	1
<b>Total</b>	<b>11 hrs</b>	<b>6 hrs</b>	<b>15 credits</b>

The lecture in the basic sciences is supposed to teach the follow subject areas in his field.

### 2.1 Anatomy

#### 2.1.1 Head and Neck

Osteology of the skull, jaws and cervical vertebrae

The Scalp

The Face

Topography of the Neck

The root of neck (Thoracic Inlet)

Anatomy of the vessels and nerves of the Head and Neck

The lymphatic drainage of the Head and Neck

The oral cavity and contents

Anatomy of the Pharynx, Larynx, Trachea and Oesophagus

Infratemporal and pterygopalatine fossae

Temporomandibular joint

The Orbit and its contents

The Nose and paranasal Sinuses

The Auditory apparatus

The major Salivary glands

Thyroid and Para thyroids

#### 2.1.2 Developmental Anatomy

Development of the Pharynx, Larynx, Trachea, Oesophagus, Oral Cavity, Nose and Sinuses.

Development of the Ear (External, Middle Ear Cleft, Inner ear), Face and major vessels of the Head and Neck in relation to congenital anomalies of the Ear, Nose and Throat.

#### 2.1.3 Neuro-Anatomy

The brain- surface anatomy and major divisions, cranial nerves meninges, venous sinuses and cerebral vessels. Brain stem and its centres and connections. Anatomy of circulation of the cerebrospinal fluid. Essentials of development of brain in relation to ENT

Autonomic nervous system.

#### 2.1.4 Thorax:

Anatomy of:

- Thoracic wall and diaphragm
- The Thoracic cavity – heart and lungs
- The Tracheobronchial tree and oesophagus

#### 2.1.5 Abdomen

Anatomy of the abdominal wall

Gross anatomy of abdominal viscera

#### 2.1.6 Radiologic Anatomy

— Plain and contrast radiography of the head, neck, thorax and upper gastro-intestinal tract.  
, Ultrasound scan Computerized tomography scanning and Magnetic Resonance imaging (MRI)  
, PET Scan and Interventional radiology.

#### 2.1.7 Histology:

Microscopic structure of normal tissues

Intercellular Anatomy

Basic principles of Histochemistry

Brief introduction to Electron Microscopy

Nasal and Paranasal Sinuses

External, Middle and Inner Ear

Oral cavity – Pharynx, Larynx, Oesophagus, Tracheobronchial tree, Salivary glands,  
Thyroids and Parathyroids.

## 2.2 ***APPLIED PHYSIOLOGY: (INCLUDDING BIOCHEMISTRY, CHEMICAL PATHOLOGY AND PHARMACOLOGY)***

### 2.2.1 General Physiological Principles:

- Structure of Living Matter
  - Biological interaction
    - The living cell, functions and changes in its mechanism
    - Function of nucleoproteins in the integration of the cell as a unit of living matter
- Energy Changes in the living system:
  - Thermodynamics of the living organism and its potential energy status
  - Oxygen – utilisation of the living cell
  - Heat production and Heat loss. (Basal metabolism, specific dynamic action, regulation of body temperature)
  - Energy transformation
  - Homeostasis

- General Considerations in Water, Electrolytes and Acid-Base Balance:
  - Distribution of water and electrolytes in extra and intracellular spaces of the body.
  - Brief survey of biological transport of water and solutes
  - Water and electrolytes balance
    - Causes and effects of dehydration and oedema
    - Sodium and Potassium Metabolism
- Acid-Base Balance
  - PH Regulation:
    - pH of the body fluids and buffer systems of the body
    - Respiratory and metabolic acidosis and alkalosis as encountered in surgical practice.
- Enzymes and Co-Enzymes
  - Effects of enzymes in intermediary metabolism
  - General aspects of metabolism of carbohydrates, lipids and proteins and nucleoproteins
- General principles of nutrition in surgery including parenteral nutrition, vitamins, folic acid, vitamin deficiencies
- Mineral Metabolism
  - Iron. Calcium/Phosphate/ Magnesium, Vitamin D and Parathyroid Hormones
- Effects of Physical Agents:
  - Radiation
  - Hypothermia
  - Hyperthermia
  - Hyperbaric Oxygen
- Principles of Electronics

## **2.3 Systematic Physiology**

### 2.3.1 Haemodynamics

- Flow – Basic principles of Cardio-Vascular Physiology
- B.P. – Changes in Hypertension, Hypotension, Shock, Syncope
- Venous circulation and venous pressure
- Haemorrhage – Clotting mechanism

### 2.3.2 Auditory Apparatus:

- Functions of External, Middle and Inner Ear

### 2.3.3 Respiratory System

- Physiology of the Nose and Paranasal sinuses
- Physiology of the Larynx
- Pulmonary ventilation and control
- Protective mechanism of the lungs



#### 2.3.4 Mouth, Pharynx and Oesophagus

- Mechanism of deglutition
- Oesophageal function

#### 2.3.5 Special Senses

- Taste and smell

#### 2.3.6 Applied Physiology of Muscles

- Electromyography

#### 2.3.7 Endocrines

- Pituitary, Thyroids and Parathyroids
- Adrenals – Steroids, Corticosteroids and their actions
- Metabolic and Endocrine response to surgery

#### 2.3.8 Nervous System

- Consciousness and higher integrated functions.
- Sensation, Motor System, Pyramidal and Extra pyramidal systems, maintenance of muscle tone.

#### 2.3.9 Physiology of Pain

### **2.4 Pharmacology**

#### 2.4.1 General Principles of Pharmacology

- Route of Administration, Absorption, Distribution and Excretion of Drugs
- Mechanisms of Drug Action
- Dose – Effect relationship, Biological assay
- Factors Modifying Drug Effects:
  - o Age, Body Weight, Route of Administration, Timing, Distribution, Excretion, Environmental and Genetic Factors, Drugs interaction
- Drugs Toxicity
- Development, Evaluation and Control of Drugs: Clinical Trial

#### 2.4.2 Specific Classes of Drugs

- Anaesthetic agents, Antibiotics, Steroids, Chemotherapeutic agents
- Drugs action on the autonomic nervous system
- Choline and anti-choline drugs: Sympathetic and Adrenergic Drugs.
- Drugs acting on the cardiovascular system
- Antituberculous, Antihelminthic and Antiamoebic Drugs
- Cancer Chemotherapy
- Antiretroviral therapy

### **2.5 Pathology (Including Microbiology)**

This shall be largely concerned with general pathology, General principles underlying disease process:

Inflammation, Trauma, Degeneration, Repair, Hypertrophy, Hyperplasia, Blood coagulation, Thrombosis, Embolism, Infarction – Ischaemia, Neoplasia, Oedema, Principles underlying tissue replacement.

2.6 **Microbiology**

Routine diagnostic methods, identification of Bacteria, Viruses (HIV, HPV and EBV) and other organisms of surgical importance, Common parasitic and fungal diseases in the tropics.

Principles of sterilization and disinfection

Principles of immunology, toxic antibodies, allergy: the immune diseases

Methods of action of antibodies

2.7 **Chemical Pathology**

Basic principles of fluid and electrolyte balance

Blood chemistry

Liver metabolism: hepatic function tests, jaundice, detoxication

Kidney:

Principles of urinalysis

Tests for secretory function

Renal handling of Na<sup>+</sup> and K<sup>+</sup>

## PART II MEMBERSHIP PROGRAMME

This part of the programme consists of two parts. ORL I and and ORL II :.  
PART II Year 1

### ORL 1:

12 months in Otorhinolaryngology. Candidates should acquire basic skills in examination of patients as well as perform basic operations in ENT such as:  
Removal of foreign bodies in the Ear Nose and Throat  
Tonsillectomy  
Adenoidectomy and the drainage of mastoid abscess  
Nasal operations  
Para-nasal sinus operation and other head and neck operations  
Drainage of abscesses in the head and neck

Log book should be obtained at the inception of PartII O.R.L. from GCPS to document operative surgery and other activities.

### 1<sup>st</sup> Semester

#### Course

	LECTURE	PRACTICALS	CREDITS
ENT Disorders	3	18	3
ENT Practicals	-	-	3
Audiology I	1	18	1
Audiology Practicals	-	-	3
Research Methodology	1		1
Hospital Management	1	18	1
ENT Theatre Practicals	1		3
<b>Total</b>	<b>6 hrs</b>	<b>54 hrs</b>	<b>15hrs</b>

### 2<sup>nd</sup> Semester

#### COURSE

	LECTURE	PRACTICALS	CREDITS
ENT Disorders	2	-	2
ENT Practicals/Clinicals	-	18	3
ENT Practicals/Theatre	-	-	3
Audiology 2	1	18	1
Audiology Practicals	-	2	1
Research Methodology	1	-	1
Hospital Management	1	18	3
ENT Ward Management	1	18	3
<b>Total</b>	<b>6 hrs</b>	<b>74 hrs</b>	<b>17hrs</b>

## **PART TWO**

### **Year 2**

#### **1.8.2 ORL II:**

24 months of surgical training. This should consist of 8 months O.R.L.. training and 16 months of rotation in following related specialties

- 2 months in Ophthalmology
- 2 months in Neuro surgery
- 2 months in Thoracic surgery
- 3 months in General Surgery
- Anaesthesia – 1 month
- Accident and Emergency medicine - 2 months
- Maxillofacial - 2 months
- Plastic and reconstructive surgery - 2 months

The following additional competencies should be acquired namely:

Examination under naesthesia of nasopharynx and biopsy

Direct rigid laryngoscopy and biopsy

Tracheostomy

Biopsies of lesions of oral cavity, nasal cavity and other head and neck lesions

Staging and approaches to management of head and neck malignancies

Microsuction of ear, Insertion of ventilation tubes

Otomicroscopy

Flexible nasolaryngoscopy

Nasoendoscopy

Caloric test

Interpretation of audiometry and tympanometry

Interpretation of radioimaging in ORL

#### **COURSES TO BE ATTENDED FOR PART II ORL TRAINING:**

Otology and Audiology course

Head and neck dissection course

Laser course

General surgical skill course

Revision course

## 1<sup>st</sup> Semester

Course	LECTURE	PRACTICALS	CREDITS
Cardiothoracic	2		2
Ophthalmology	2	-	2
Plastic Surgery/Burns I	2	-	2
Neuro-Surgery I	2	-	2
General Surgery	3	-	3
Research Methodology	1	-	1
Hospital Management	1	18	1
General Surgery Theatre Work	-		3
	1		
<b>Total</b>	<b>14 hrs</b>	<b>18 hrs</b>	<b>16hrs</b>

## 2<sup>nd</sup> Semester

Course	LECTURE	PRACTICALS	CREDITS
Cardiothoracic	1		1
Ophthalmology	1	-	1
Plastic Surgery/Burns II	1	-	1
Neuro-Surgery I	1	-	1
Mixillo-facial	1	-	2
General Surgery	2	-	3
General Surgery Theatre Management I	3	12	2
General Surgery Ward Management	1	18	3
Research Methodology	1		1
Hospital Management			1
<b>Total</b>	<b>12 hrs</b>	<b>56 hrs</b>	<b>16hrs</b>

## PART II MEMBERSHIP PROGRAMME

### 1<sup>st</sup> Semester

#### Course

	LECTURE	PRACTICALS	CREDITS
Surgical Methodology I	2	-	2
Theatre Practicals ENT Surgery	-	18	3
ENT Ward Management I	2	12	2
Outreach Programmes I	3	12	2
Research Methodology	1	-	1
Temporal Bone Dissection Practicals	1	12	2
Theses Research Methodology	-	12	2
<b>Total</b>	<b>9 hrs</b>	<b>66 hrs</b>	<b>14hrs</b>

### 2<sup>nd</sup> Semester

#### Course

	LECTURE	PRACTICALS	CREDITS
Surgical Methodology I	2	-	2
Theatre Practicals ENT Surgery	-	18	3
ENT Ward Management 2	2	12	2
Outreach Programmes I	3	12	2
Research Methodology	1	-	1
Temporal Bone Dissection Practicals	1	12	2
Theses Research Methodology	-	12	2
<b>Total</b>	<b>9 hrs</b>	<b>66 hrs</b>	<b>15hrs</b>

**PART III FINAL FELLOWSHIP IN GENERAL ORL Year 4**

This training programme spans over a 24 month period during which clinical and higher surgical skills are acquired

The areas of surgical skills to be acquired in addition to clinical work include:

- Practical Audiology - 1 month rotation recommended
- Laryngectomy and Voice rehabilitation
- Neck dissection
- Pharyngectomy
- Maxillectomy (partial and total)
- Surgery of the Salivary glands
- All types Sinus Surgery
- Plastic operations in ORL
- Mastoid Surgery and Middle & Inner Ear Surgery
- Microlaryngeal surgery and Laser Surgery
- Functional Endoscopic Sinus Surgery (FESS)
- Panendoscopy and Bronchoscopy

**Recommended courses for the Part III training includes:**

- Functional endoscopic sinus surgery (FESS)
- Temporal bone dissection
- Head and neck Dissection course
- Advance Trauma Operative Management (ATOM) course

**1<sup>st</sup> Semester**

**Course**

	<b>LECTURE</b>	<b>PRACTICALS</b>	<b>CREDITS</b>
	2	-	2
ENT Radiology I	2	-	2
ENT Cancer Chemotherapy I	2	-	2
ENT Cancer Radiotherapy 1	2	18	2
Tutorials on Theses 1		-	3
Instrumentation Practicals 1	-	-	1
Research Management	1	18	3
Theatre Practicals			
<b>Total</b>	<b>9 hrs</b>	<b>36 hrs</b>	<b>15hrs</b>

## 2<sup>nd</sup> Semester

### Course

	<b>LECTURE</b>	<b>PRACTICALS</b>	<b>CREDITS</b>
ENT Radiology 2	2	-	2
ENT Cancer Chemotherapy 2	2	-	2
ENT Cancer Radiotherapy 2	2	-	2
Tutorials on Theses 2	2	18	2
Instrumentation Practicals 2		-	3
Theatre Practicals	-	-	1
ENT Revision	2	18	2
Research Management	1	-	1
<b>Total</b>	<b>11 hrs</b>	<b>36 hrs</b>	<b>15</b>

## POST FELLOWSHIP SUBSPECIALTY TRAINING IN OTORHINOLARYNGOLGY

This training is aimed at capacity building of the Tertiary centres. The areas of training are :

Otology/otoneurology

Rhinology

Head and neck surgery

Paediatric ORL

Facial plastic/reconstructive surgery

The proposed period of training is minimum of 1 year and maximum of 2 years. Funding may be sourced from donors and government of Ghana to enable eligible candidates undertake this hands on training in approved and accredited overseas institutions when local resources are not available for this training.

### 3 REGULATION FOR THE FELLOWSHIP PROGRAMME (OTORHINOLARYNGOLOGY)

#### 3.1 Education Committee

- To prepare the curriculum for , Membership and Fellowship of the Ghana National Postgraduate Medical College.
- To organise postgraduate courses and symposia on behalf of the College
- To report to the Board regularly on all its deliberations
- To make recommendations to the Faculty Board for the development of the manpower of the paramedical staff appropriate to the Faculty.
- To assist with placement of trainees in Sister Colleges for clinical attachment.



### **3.2 Training Programmes in the Faculty**

- The training programme shall cover a period of at least three years; but not exceeding six years.
- Exemptions from part of the training programme may be approved by the Faculty Board on the recommendation of the credentials Committee
- Trainees may have to spend specified periods outside Ghana for exposure to techniques not readily available.

## **APPENDIX 1**

# **GHANA COLLEGE OF PHYSICIANS AND SURGEONS DIVISION OF OTORHINOLARYNGOLOGY GUIDELINES FOR WRITING OF DISSERTATION**

The dissertation shall cover all surgical specialties

### **A. Eligibility**

The candidate must possess the Membership Part II of the Ghana College of Physicians and Surgeons and must have been enrolled into the Fellowship programme of any of the surgical specialties of the Faculty of Surgery.

### **B. The dissertation**

The title of the dissertation and a protocol shall be submitted to the Chairman of the Faculty Board within 3 months of starting the Fellowship Programme. The protocol should have the following sections as indicated in 1 – 7 and 12 below. The expected outcome of the research should be stated.

#### **Format of the dissertation**

The dissertation must have the following parts:

1. Title Page
  - a. Title of dissertation
  - b. Name and address of Resident and his Department
2. Structured Abstract
  - a. Brief background
  - b. General aim
  - c. Brief methodology
  - d. Main findings/Results
  - e. Conclusion

#### **Main body of the dissertation**

3. Background
  - a. Introduction
  - b. Literature Review
  - c. Hypothesis (If any)
4. Aims/ Objectives of the study

5. Methodology
  - a. Study design
  - b. Study sites
  - c. Subjects and Methods
  - d. Inclusion/ exclusion criteria
6. Ethics Committee Approval and Consent form (If applicable)
7. Statistical Methods
8. Results
9. Discussion
10. Conclusions
11. Appendices
12. References – These should be numbered consecutively as they occur in the text using Arabic numerals. References should be based on the Vancouver style and should be as current as possible but old landmark works may be referenced.

### **C. Supervisor(s)**

Every candidate shall normally have an approved supervisor(s). The supervisor's role is purely advisory. The candidate must obtain a letter of consent from his/her supervisor(s) indicating the supervisor's willingness to serve as a supervisor. The supervisor(s) must also submit his Curriculum Vitae to the College.

### **D. Contribution to knowledge**

The dissertation shall be written in English and should make some contribution to surgical knowledge and show originality. It must consist of the candidate's own account of his/her research. Any already published work of the candidate may be included in the dissertation if such published work is relevant to the subject matter of the dissertation.

### **E. Submission of Dissertation**

Every candidate shall present a short abstract of his/her dissertation of not more than 300 words which shall be bound with each copy of the dissertation submitted to the College. **Two typed and bound copies of the dissertation** shall be submitted to the Rector of Ghana College of Physicians and Surgeons **not later than 3 months to the start of the Final Fellowship examinations of the College.** The size of the dissertation shall be standard A4 paper and should be typed on both sides of the paper with double spacing

A candidate shall not be permitted to submit as his/her dissertation a dissertation which has already been submitted to another College.

### **F. Examination of the Dissertation**

Two Examiners shall be appointed by the Faculty Board to examine the dissertation separately but they must submit a joint report to the Court of Examiners at the Examiners' meeting. There shall be an oral examination of the dissertation by the two Examiners appointed by the Faculty Board. For this examination, **the candidate shall**

**bring along a copy of his/her dissertation.** None of the Examiners shall be the candidate's supervisors.

**Determination of the results of the dissertation shall be as follows:**

- The candidate has passed this section of the examination and the dissertation is acceptable for the award of the Fellowship.
- The candidate has satisfied the examiners in the defence of the dissertation and it is acceptable subject to correction indicated by the examiners. The corrected dissertation must be re-submitted within three months. If the examiners are satisfied with the corrections the dissertation is passed.
- The candidate has been referred in this section of the examination and must attend for re-examination after submitting a dissertation which has been revised. The revised dissertation must be re-submitted within three months.
- The candidate has failed this section and shall submit a fresh dissertation within nine months and attend for re-examination.

**Passing the Fellowship Examination**

- In addition to passing the dissertation, the candidate must pass the clinical part of the examination and obtain an overall score of 50% or more.
- A candidate who passes the clinical part of the examination and obtains an overall score of 50% or more but is referred in the dissertation shall be examined in the dissertation only at the next examination.
- A candidate who passes the dissertation but fails the clinical part of the examination or fails to obtain an overall score 50% (even if he passes the clinical examination) shall present himself/herself again for the examination but she shall be credited with the dissertation he/she has already passed.
- A candidate who has failed the examination as well as the dissertation shall submit a fresh dissertation within 9 months and present himself/herself for the whole examination.

**Distribution of copies of the Dissertation**

A copy of the dissertation that has been passed shall be deposited in the College Library. A copy shall be given back to the candidate.

## Rotation Educational Objectives

### General Surgery

It is recognized that the resident may not be exposed to all elements of these objectives; However at the conclusion of the rotation the resident should demonstrate knowledge or Competency in the following:

#### Perioperative Management of the Surgical Patient:

1. A pre-operative assessment of medical suitability for the given operation
2. Ability to optimize health of patients prior to operation, and consult appropriate services
3. Diagnose and manage common post-operative complications in patients

#### Nutrition, fluid and electrolytes:

1. Surgical nutrition as applied to wound healing, caloric requirements, enteral and parenteral feeding
2. Awareness and appropriate route of providing nutrition (enteral and parenteral feeding) in post-operative patients
3. Resuscitation of the critically ill patient: assessment, diagnosis, and treatment
4. Ability to manage the acid/base balance in surgical patients

#### Trauma:

1. Assessment of the trauma patient, ATLS protocols
2. Ability to diagnose a trauma patient in need of resuscitation
3. Technique of chest tube, central line placement
4. Assessment of the C-spine in trauma

#### Surgical Sepsis

1. Management of wound infections, indications for prophylactic antibiotics
2. Necrotizing soft tissue infections: risk factors, bacteriology, diagnosis, medical & surgical therapy
3. Diagnosis & treatment of shock including septic shock

#### Basic Surgical Techniques

1. Awareness and appropriate use of various hemostatic techniques
2. Awareness and appropriate use of various suture materials
3. Effective assistance at surgery: knowledge of procedure, anticipation of steps
4. Use of basic operating room instruments (scalpel, needle driver, suture, cautery etc.)
5. Basic surgical skills (knot tying, soft tissue handling)
6. Various techniques to open/close wounds
7. Preparation of the operating room for a surgical procedure & understanding of aseptic techniques

#### Abdominal Surgery:

1. Technique of abdominal opening and closure
2. Anatomy of the abdominal wall
3. Knowledge of combined abdomino-perineal approaches & reconstructive requirements

### Endocrine Surgery:

1. Ability to diagnose disorders of thyroid/parathyroid including fine needle aspiration
2. Competent management of endocrine disorders including surgical and non-surgical options for thyroid/parathyroid disorders
3. Basic techniques for thyroidectomy and parathyroidectomy

## Rotation Educational Objectives

### Adult Emergency Medicine

It is recognized that the resident may not be exposed to all elements of these objectives; however at the conclusion of the rotation the resident should demonstrate knowledge or competency in the following:

#### General Knowledge and Clinical Skills:

1. Ability to safely and effectively triage the severity of illness
2. Assessment of patients with major traumatic injuries
3. Using appropriate investigations, resuscitate trauma patient utilizing ATLS protocols
4. Perform effective history and physical exam, and radiological assessment related to injuries associated with facial trauma (C-spine, ocular)
5. Assessment & management of the comatose patient
6. Ability to diagnose and manage patients with acute cardiac compromise (MI, arrhythmia etc.)
7. ACLS protocols, management of cardiac arrest & pre-arrest
8. Techniques, pharmacology, & monitoring for conscious sedation
9. Outpatient management of soft tissue infections
10. Other

#### Head and Neck Emergencies:

1. Management of airway emergencies
2. Acute management of facial fractures
3. Diagnosis and management of acute upper digestive tract compromise
4. Diagnosis and management of acute external/middle ear pathology (OE/OM/trauma)
5. Management acute intranasal pathology (e.g. epistaxis)
6. Diagnosis and management of acute intra-oral pathology (lacerations, infections, abscess)
7. Ability to effectively diagnose and manage acute neck injury (penetrating trauma/laceration)

#### Emergency Procedures:

1. Endotracheal intubation
2. Resuscitation of critically ill patient incorporating ATLS/ACLS protocols
3. Repair of soft tissue wounds
4. Chest tube insertion
5. Central line insertion
6. Nasal Packing
7. Drainage of peritonsillar abscess
8. Tracheotomy/cricothyroidotomy

## Rotation Educational Objectives

### Critical Care Medicine

It is recognized that the resident may not be exposed to all elements of these objectives; however at the conclusion of the rotation the resident should demonstrate knowledge or competency in the following:

#### Knowledge:

1. Diagnosis of a critically ill patient in need of intensive care
2. Safe, competent management of critically ill patients
3. Expertise in the monitoring and management of cardiorespiratory status in critically ill patients
4. Competent management of fluid, electrolyte and nutrition in critically ill patients
5. Active management of ventilators and ventilated patients
6. Appropriate and effective use of pharmacotherapy in a critical care setting (vasoactive, sedative, paralytic, analgesic etc.)
7. Attention and management of End of Life measures, compassionate care

#### Procedures:

1. Resuscitation of the critically ill patient
2. Endotracheal intubation
3. Central line insertion and exchange
4. Arterial line insertion
5. Chest tube insertion
6. Percutaneous tracheotomy
7. Bronchoscopy

## Rotation Educational Objectives

### Neurosurgery

It is recognized that the resident may not be exposed to all elements of these objectives; however at the conclusion of the rotation the resident should demonstrate knowledge or competency in the following:

#### Perioperative Management of the Surgical Patient:

1. A pre-operative assessment of medical suitability for the given operation
2. Ability to optimize health of patients prior to operation, and consult appropriate services
3. Diagnose and manage common post-operative complications in patients
4. Effectively manage patients with significant physiologic derangements related to cardiopulmonary status

#### Neurological Surgery Knowledge:

1. Accurate diagnosis and management of skull base pathology
2. Safe management of patients with decreased level of consciousness
3. Diagnosis and effective management of intracranial haemorrhage
4. Diagnosis and management of cervical spine injury
5. Appropriate management of carotid atherosclerosis
6. Various pathologies affecting cranial nerves

#### Basic Surgical Techniques

1. Awareness and appropriate use of various hemostatic techniques
2. Awareness and appropriate use of various suture materials
3. Effective assistance at surgery: knowledge of procedure, anticipation of steps
4. Use of basic operating room instruments (scalpel, needle driver, suture, cautery etc.)
5. Basic surgical skills (knot tying, soft tissue handling)
6. Various techniques to open/close wounds
7. Preparation of the operating room for a surgical procedure & understanding of aseptic techniques

#### Neurological Surgery Procedures:

1. Thorough performance of a neurological exam
2. Achieving appropriate intracranial exposure (burr hole, craniotomy etc.)
3. Proper handling of operative microscope
4. Cervical exposure of carotid artery and spine

## Rotation Educational Objectives

### Anesthesia

It is recognized that the resident may not be exposed to all elements of these objectives; however at the conclusion of the rotation the resident should demonstrate knowledge or competency in the following:

#### Knowledge:

1. Clinical preoperative assessment, including risk assessment, and comprehensive anaesthetic planning.
2. Physical principles relating to anaesthesia equipment, as well as the safety aspects pertaining to this equipment, including equipment checking.
3. Application of the physical principles of monitoring systems to the clinical practice of anaesthesia (e.g. EKG, pulse oximetry, non invasive and invasive blood pressure monitoring, blood gas analysis, temperature monitoring, peripheral nerve stimulation)
4. Basic components of anaesthesia (Analgesia, Amnesia, Areflexia, Unconsciousness and Muscle Relaxation / Immobility) and the appropriate clinical application of these modalities
5. Ability to assess, and manage with appropriate intervention, the respiratory and hemodynamic status of the patient during the perioperative period.
6. Basic concepts of spinal anaesthesia and epidural techniques

(including equipment, indications, limitations, and contraindications for regional anaesthesia)

7. Pharmacology of commonly used drugs in the perioperative period, as well as drugs used during resuscitation

8. Awareness of common drug interactions and the management of patients with common co morbidities.

Procedures:

1. Proficient airway management, demonstrating competence with mask ventilation, airway insertion, direct laryngoscopy, and the use of lighted stylet and Laryngeal Mask Airway devices.

2. Proficient securing of peripheral intravenous access, and be familiar with techniques of arterial and central venous cannulation.

3. Provision of anaesthesia for ASA 1 and 2 patients undergoing uncomplicated surgery with some supervision

## Rotation Educational Objectives

### Plastic Surgery

It is recognized that the resident may not be exposed to all elements of these objectives; however at the conclusion of the rotation the resident should demonstrate knowledge or competency in the following:

Perioperative Management of the Surgical Patient:

1. A pre-operative assessment of medical suitability for the given operation

2. Ability to optimize health of patients prior to operation, and consult appropriate services

3. Diagnose and manage common post-operative complications in patients

Nutrition, fluid and electrolytes:

1. Surgical nutrition as applied to wound healing, caloric requirements, enteral and parenteral feeding

2. Awareness and appropriate route of providing nutrition (enteral and parenteral feeding) in post-operative patients

3. Resuscitation of the critically ill patient: assessment, diagnosis, and treatment

4. Ability to manage the acid/base balance in surgical patients

Trauma:

1. Assessment of the trauma patient, ATLS protocols

2. Ability to diagnose a trauma patient in need of resuscitation

3. Assessment of the C-spine in trauma

4. Diagnosis and resuscitation of a burn patient

5. Diagnosis and management of inhalation injuries in a burn patient

6. Competent diagnosis and management of pan-facial trauma, incorporating ATLS protocols

Surgical Sepsis



1. Management of wound infections, indications for prophylactic antibiotics

2. Necrotizing soft tissue infections: risk factors, bacteriology, diagnosis, medical & surgical therapy

3. Diagnosis & treatment of shock including septic shock

Plastic Surgery Knowledge:

1. Understand various reconstructive modalities (graft/flap) and their applications/ contraindications

2. Effectively diagnose and understand management principles for paediatric craniofacial anomalies (e.g., cleft palate, craniosynostosis)

3. Effectively diagnose and understand management principles for cutaneous malignancies

4. Demonstrate in-depth understanding of craniofacial anatomy, facial buttresses and zones pertaining to craniofacial trauma

5. Accurately evaluate a craniofacial CT scan

Basic Surgical Techniques

1. Awareness and appropriate use of various haemostatic techniques

2. Awareness and appropriate use of various suture materials

3. Effective assistance at surgery: knowledge of procedure, anticipation of steps

4. Use of basic operating room instruments (scalpel, needle driver, suture, cautery etc.)

5. Basic surgical skills (knot tying, soft tissue handling)

6. Various techniques to open/close wounds

7. Preparation of the operating room for a surgical procedure & understanding of aseptic techniques

Plastic Surgery Procedures:

1. Competent handling of basic plastic surgery instruments

2. Administration of local anaesthesia, including techniques for locoregional blocks

3. Design and application of various reconstructive modalities (skin grafts, local/regional/free flaps)

4. Effective use of a variety of techniques for soft tissue wound closure (simple/running closure, horizontal/vertical mattress, etc.)

5. Competent handling of various craniofacial plating systems

6. Application of maxillo-mandibular fixation systems

7. Intra-operative management of soft tissue wound complications (irrigation, debridement, staged closures)

## **EDUCATIONAL OBJECTIVES IN OPHTHALMOLOGY ROTATION**

1. .Technique of evaluation and examination of the Eye disorders
2. Technique of assessment of vision
3. Accurate diagnosis and management of common eye disorders
4. Recognition of eye disorders which are primarily due to E.N.T.disorders and vice versa
5. Surgical techniques to acquire include:

Tarsorrhaphy, canthotomies, Incision and drainage of eye lid abscesses

## **EDUCATIONAL OBJECTIVES IN MAXILLOFACIAL ROTATION**

1. Acquisition of knowledge of maxillofacial disorders
2. Techniques of intraoral examinations
3. Assessment and management of maxillofacial trauma
4. Surgical management of common maxillofacial disorders and suturing of lacerations, Intermaxillary fixation, mandibulotomy /mandibulectomy , maxillectomy

## **EDUCATIONAL OBJECTIVES IN CARDIOTHORACIC SURGERY**

1. Knowledge of cardiothoracic disorders
2. Technique of assessment of patient with cardiothoracic diseases such as
  - Pneumothorax
  - Haemothorax
  - Emphysema
  - Lung collapse
3. Techniques of evaluation and management of patients with oesophageal disorders (Benign and malignant disorders)
4. Surgical approaches to management of common cardiothoracic disorders such as :
  - Insertionof chest tubes
  - Thoracotomy
  - Bronchotomy
  - Lobectomies
  - Pharyngotomies
  - Oesophagectomy and gastric pull ups
  - Bronchoscopy
  - Central line insertion
  - Feeding gastrostomy