

GHANA COLLEGE OF PHYSICIANS AND SURGEONS

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PROGRAMMES IN ANAESTHESIA

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PHILOSOPHY AND RATIONALE

The Ministry of Health (MOH), as part of its vision to provide equitable, affordable, and easily accessible healthcare delivery system, is committed to the development of a high calibre human resource base and infrastructure, including the provision of a high standard of care and safety in anaesthesia and intensive care services. The main focus of this vision is to improve the wellbeing of Ghanaians by reducing the morbidity and mortality in the generality of surgical and medical services. This will in turn translate as a healthy work force and a reduced loss of man-hours to the economy. The role of anaesthesia in this endeavour is key to the provision of first class surgical and critical care services.

The quality and scope of Surgical and Medical services have suffered over the years as a result of a chronic severe shortage of anaesthetists in Ghana. This programme is designed to address and remedy this situation within the framework of the Ghana Postgraduate College of Physicians and Surgeons. The Faculty of Anaesthetists will be within the framework of the Ghana Postgraduate College of Physicians and Surgeons.

The programme provides experience in the peri-operative anaesthetic management of all types of surgical patients in elective, emergency and in critical care situations. It also provides experience in resuscitation and the management of acute and chronic pain. The training emphasizes the importance of patient safety, standards of monitoring, both invasive and non-invasive, and patients' rights.

This is a structured programme designed to provide education in basic and clinical sciences, and encourage the acquisition of theoretical knowledge to support the technical and clinical skills required for the safe practice of Anaesthesia and Critical Care.

COURSE OBJECTIVES

General Objectives.

1. To train and graduate highly proficient and knowledgeable anaesthetists capable of functioning independently.
2. To provide an education within a well-equipped environment that will promote the delivery of a high standard of anaesthetic and intensive care services.

Specific Objectives and Competencies

At the end of their training, specialist anaesthetists should be able to:

1. Display sound knowledge of applied anatomy, physiology, pharmacology, principles of anaesthesia, pain management and intensive care.
2. Carry out thorough preoperative assessment and resuscitation of patients.
3. Request relevant investigations and interpret them correctly.
4. Provide safe and high quality preoperative anaesthetic services including management of the critically ill.
5. Display experience and knowledge in the special fields of anaesthesia.
6. Independently manage the critically ill in the field and in an intensive care setting.
7. Keep accurate and informative patient records.
8. Educate and update themselves and others in their specialty and conduct research.
9. Maintain high ethical, attitudinal and moral standards.

10. Develop communicative skills in order to communicate effectively with colleagues, patients, relatives and the public.
11. Be competent in administration and advocacy.

ADMISSION REQUIREMENTS

1. A medical degree (e.g. MB ChB or its equivalent) from a recognized medical school registrable with the Ghana Medical and Dental Council. Candidates with a DA from a recognized institution are also eligible and will be exempted from the first year of the training programme.
2. Must be fully registered with the GMDC. Must have completed 24 months rotating internship in Medicine, Paediatrics, Surgery, Obstetrics and Gynaecology or other specialties as specified by the GMDC e.g Anaesthesia
3. Pass an admission interview by the faculty.
4. Provide references from two senior physicians of good standing.
5. Normally candidates admitted to the training programme should be employed by the training institution. Candidates not employed by the training institution should provide evidence of sponsorship for the full length of the programme.
6. Sign an undertaking to abide by the rules and regulations of the College.

TRAINING

There shall be a 5 year structured post-graduate programme in anaesthesia in an accredited institution leading to the Fellowship of the Ghana College of Physicians and Surgeons. The programme is in 2 parts: Membership and Fellowship.

Membership

The candidate will spend a period of 3 years (36 months) in basic and applied sciences, clinical anaesthesia including pain management and critical care. After completion of 12 months training, the candidate will sit for the Part I membership examination in Basic and Applied Sciences. A further 24 months training qualifies the candidate to sit for the Part II examination provided he or she has passed or being exempted from the Part I examination.

Fellowship

Candidates with the Membership will be admitted for a minimum of 24 months further training in various sub-specialties in anaesthesia, intensive care and pain management leading to the award of Fellow of the Ghana College of Physicians and Surgeons.

General Comments

1. Training is a full-time commitment for the whole period of the programme.
2. Training shall be in institutions accredited by the Ghana College of Physicians and Surgeons.
3. Trainees will be actively involved in comprehensive patient care with gradual progression of responsibility.
4. Trainees must gain experience in diagnostic, invasive and non- invasive procedures.
5. Trainees must abide by the rules and regulations as set out by the college and the training institution.
6. An accurate LOGBOOK of the candidate's hands-on experience will be kept during every rotation throughout the programme and will be a prerequisite for the Part II Membership and the Fellowship examinations.

MEMBERSHIP (36 MONTHS)

The candidate must complete the 36 months the membership as detailed below:

A Log book to cover 600 cases over 3 years

General Surgery(80cases)	3 months
Orthopaedics and Trauma(50cases)	2 months
Urology(50cases)	3 months
ENT Ophthalmology(50cases)	3 months
Plastic and Dental(50 cases)	2 months
Paediatric,Daycare + Psychiatry(60cases)	3months
Obstetrics and neonatal care(60 cases)	4 months
Medicine (70cases)	3 months
ICU/HDU(30cases)	2 months
Gynaecology(50 cases)	2 months
Neuroanaesthesia(20cases)	1 month
Cardiothoracic anaesthesia(20Cases)	1 month

Year 1:

2 Week Introduction to Anaesthesia

Rotation in First Year should include General Surgery 3 months, Trauma& Orthopaedics, 2 monthsGynaecology 2months, Obstetrics 2 months, Paediatrics 1 month, ENT 1 month, Urology 1 month

First 2 weeks: Introduction to the Anaesthesia and Basic and Applied Sciences

2 months will be allocated for Courses and Examinations. No candidate can take more than 2 weeks of any minor rotation as annual leave.

Candidates are allowed two (2) weeks study leave per year and must attend one refresher course each year.

Research activity

The trainee shall be encouraged to participate in research, be schooled in methods of accessing information and correct use of the library during their training. This will be done under the supervision of their trainers.

METHODS OF EVALUATION

a) In-training supervision and evaluation

All trainees would be assigned supervisors at the beginning of their training.

This will be by quarterly assessments by the supervisors to expose and rectify deficiencies.

b) Examinations

Membership Part I

1. This is a written (MCQ) and an oral examination.
2. The examination will be held twice a year
3. The examination will focus on basic and applied anatomy, physiology, physics, pharmacology, clinical measurement, and anaesthetic equipment
4. Conditions for a pass: Overall pass.

c) Membership Part II

This will consist of 5 compulsory essay questions, an Objective Structured Clinical Examination (OSCE) and an oral.

Conditions for a pass: Pass overall; Pass the written paper and OSCE.

Candidates must have a certified logbook which should be completed and presented 3 months before the examination.

DETAILED CURRICULUM CONTENTS

Definition and Guidelines of the Clinical Rotations:

Basic (Core) Anaesthesia Training

During this rotation the resident will be assigned to theatre lists in the fields of

General Surgery

Urology

Orthopaedics and Trauma

Obstetrics and Gynaecology

ENT

Paediatrics

Day care Anaesthesia and Resuscitation

The level of involvement will be at all phases i.e. pre, intra and postoperative care, resuscitation and acute/chronic pain management wherever it may be required.

The first 12 months for any trainee will be in basic anaesthesia and resuscitation.

OBSTETRIC ANAESTHESIA

This rotation is specially designed to cover management of labour pain, operative obstetric cases and resuscitation of the critically ill obstetric patient and neonate. Experience with regional analgesia and anaesthesia is to be obtained during this rotation.

PAEDIATRIC ANAESTHESIA

Paediatric anaesthesia begins during the first year and continues in the subsequent 2 years to cover congenital anomalies and major procedures in the neonatal and other paediatric age groups.

An introduction to the following subspecialties will be done during the 3 year rotation:

CARDIOTHORACIC ANAESTHESIA

NEUROSURGICAL ANAESTHESIA

INTENSIVE CARE

PAIN MANAGEMENT

SKILLS AND PROCEDURES:

During residency training all trainees are expected to become proficient in the following skills and procedures:

- Administration of general and local anaesthesia
 - Administration of inhalational anaesthesia
 - Administration of intravenous anaesthesia including total intravenous anaesthesia(TIVA)
 - Simple infiltration and nerve blocks
- Airway management
 - Oropharyngeal and naso-pharyngeal airways
 - Laryngeal mask airways
 - Endotracheal intubation
 - Fibre optic intubation
- Ventilation modes and techniques
- Vascular Access
 - Peripheral intravenous cannulation
 - Central venous cannulation
 - Arterial cannulation
 - Insertion of pulmonary arterial floatation catheter (Swan-Ganz)
- Measurement of cardiac output
- Insertion of chest drains
- Regional Anaesthesia and analgesia
 - Subarachnoid anaesthesia
 - Epidural analgesia and anaesthesia and analgesia
 - Intravenous regional anaesthesia (Biers' block)
 - Brachial Plexus Block
 - Stellate ganglion block
 - Major nerve blocks and field blocks
- Monitoring
 - Basic e.g. clinical evaluation
 - Standard e.g. NIBP, ECG, Pulse oximetry,PNS, Temperature, ETCO2
 - Advanced e.g. ICP, SSEP, BIS
- CPR including cardio-version
- Interpretation of arterial blood gas analysis

- Reading 12 lead ECG for arrhythmias and ischaemia
- Reading and interpreting Chest-X-ray, and other imaging techniques.
- Reading and interpreting basic laboratory data on FBC, electrolytes, renal and liver functions.
- Management of acute pain, PCA, PECA, NCA, and chronic pain e.g. cancer pain.

Six hundred (600) cases and procedures are expected to be completed and detailed in the logbook.

The logbook provided will be inspected for variety and countersigned by the supervisors/coordinator at the end of each assigned period.

List of cases required (membership)

Cases	Number
General surgery	80
Orthopaedics & Trauma	50
Urology	50
Gynaecology	50
ENT & Ophthalmology	50
Plastics & Dental	50
Paediatrics & Day care surgery	60
Obstetrics & neonatal care	60
Neuro anaesthesia	20
Medicine	70
ICU & HDU	30
Cardio thoracic anaesthesia	20
Total	600

ADDITIONAL REQUIREMENTS

Proficiency in the procedures below

- a) Basic Cardiac Life Support (BCLS)
- b) Advanced Cardiac Life Support (ACLS)
- c) Advanced Trauma Life Support (ATLS)
- d) Neonatal Resuscitation.

PARTICIPATION IN ACADEMIC ACTIVITIES

In addition to attending the regular didactic lectures offered by the programme, all residents are expected to attend and participate in the departmental meetings within their hospitals. Attendance of clinical meetings of other departments and the college is to be encouraged.

DIDACTIC LECTURES

The trainees are expected to attend all lectures during the period.

The lectures are designed to cover the following fields

BASIC AND APPLIED ANATOMY

- Upper airway- nose, pharynx, larynx, trachea
- Lower airway- bronchus, alveoli, diaphragm
- Cardiovascular system
- CNS and vertebral column and canal
- Autonomic nervous system
- Foetal circulation
- Major nerves of the upper and lower extremities
- Major nerve plexuses (brachial, lumbar, and sacral)
- Surface anatomy for the major nerves, veins, arteries (upper and lower limbs)

PHYSICS AND CLINICAL MEASUREMENT

- S.I. units
- Work and Energy
- Electricity
- Ultrasonic waves(Electromagnetic spectrum)
- Gas laws
- Fluid and gas dynamics
- Vaporization and vapour pressure
- Medical gases production, storage and delivery
- Recording of biological potentials
- Pressure
- Temperature
- PH
- Measurements from the catheter to display
- Gas analysis
- Monitoring of neuromuscular function
- Cardiac output
- Respiratory function tests
- Humidity, Nebulizers and humidifiers
- The anaesthetic machine and its safety features
- Anaesthetic circuits
- Mechanical ventilators
- The basic anaesthetic equipment: Laryngoscopes, Masks, laryngeal mask airway, spinal and epidural needles
- Medical gases and gas cylinders

BASIC APPLIED PHYSIOLOGY AND BIOCHEMISTRY

- Physiology of nerve and muscle
- Respiratory system and blood gases, oxygen transport and delivery
- Cardiovascular system (heart as a pump)
- Cardiac conduction (rhythm generation and conduction)
- CNS and Autonomic nervous system
- Renal system
- Acid base system
- Electrolyte and body fluids and homeostasis

- Hepatic function
- Haematology, basic haematology functions
- Physiological changes during pregnancy
- Nutrition including TPN
- Immunology introduction
- GIT
- Fat, Protein and Carbohydrate metabolism
- Temperature
- Endocrinology

BASIC AND APPLIED PHARMACOLOGY

- Pharmacokinetics and pharmacodynamics
- Inhalation anaesthesia, mechanisms and agents
- Local anaesthetics, mechanism and agents
- Intravenous anaesthesia drugs
- Analgesics, narcotics and their antagonists
- Muscle relaxants
- Anticholinergic and anticholinesterases
- Antiemetic and antihistamines
- Inotropic and pressor drugs
- Antihypertensive drugs
- Antiarrhythmics
- Antimicrobials and cytotoxics
- Bronchodilators
- Clinical trials
- Pharmacogenetics
- CNS drugs
- Renal drugs

STATISTICS AND RESEARCH METHODOLOGY

- Basic statistics
- How to read medical journals
- How to critique medical journals
- How to write articles
- Library studies

MEDICAL CONDITIONS INCLUDING PATHOLOGY

- Pain pathways, acute, chronic and cancer pain
- Head injury and conditions with increased intracranial pressure
- Ischaemic heart disease
- Valvular heart disease
- Hypertension, essential and other causes
- Cardiac arrhythmias
- Malignant hyperpyrexia
- Hypothermia
- Anaemia, sickle cell and other haemoglobinopathies
- Diabetes mellitus

- Acute and chronic renal failure
- Patients with liver disease
- Endocrine diseases and morbid obesity syndromes
- The patient with respiratory disease (obstructive and restrictive)
- Congenital diseases in neonatal and paediatric patients
- Arthritis and other orthopaedic problems
- Shock syndromes (hypovolemic, cardiogenic, septic, and anaphylactic)
- The psychiatric and mentally challenged
- Genetic and congenital diseases relevant to anaesthesia.
- Pregnancy related diseases
- Infections and infestations
- Connective tissue and degenerative diseases
- Neuromuscular diseases

Resuscitation and critical care management of all the above cases and their perioperative management.

CLINICAL ANAESTHESIA

- Preoperative assessment, patient preparation for surgery
- Principles of obstetric anaesthesia
- Principles of paediatric anaesthesia
- Principles of geriatric anaesthesia
- Principles of neuro-anaesthesia
- Principles of cardiac anaesthesia
- Principles of thoracic anaesthesia
- Dental and day care anaesthesia
- Principles of mechanical ventilation (IPPV)
- The use of blood components and massive blood transfusion
- Anaesthesia for bronchoscopy and airway laser surgery
- General anaesthesia techniques and principles
- Regional anaesthesia techniques and principles
- Airway management (the normal and the difficult airway)
- Post-operative care (Recovery Room) including pain control
- Anaesthetic complications and mishaps and their prevention

SUGGESTED READING MATERIAL **JOURNALS**

There are many journals in the field. It is advisable that the candidate should read and scan most of the journals. It is, however impossible for any candidate to all the articles in all the journals read. Therefore, we recommend that the candidate should read at least 3 of the core journals each month to be informed about the current research, editorials and review articles.

Core journals

1. Anaesthesiology
2. British Journal of Anaesthesia
3. Anaesthesia and Analgesia

4. Canadian Journal of Anaesthesia
5. North America Clinics in Anaesthesiology
6. Balliere's Clinical Anaesthesiology
7. Current Opinion in Anaesthesiology
8. Anaesthesia and Intensive Care
9. Acta Anaesthesia Scandinavia

Other journals

1. Current opinion in Critical Care
2. Regional Anaesthesia
3. Journal of Clinical Anaesthesia
4. Pain
5. Critical Care Medicine
6. Resuscitation
7. Journal of Trauma
8. Journal of Neurosurgical Anaesthesia
9. Journal of Clinical Monitoring
10. Survey in Anaesthesia

RECOMMENDED TEXTBOOKS

Anaesthesia and Intensive care

1. Miller RD, Anaesthesia. 5th ed. Churchill Livingstone
2. Aitkenhead, Anaesthesia
3. Yentis A-Z of anaesthesia
4. Allman KG. Wilson IH. Oxford handbook of anaesthesia. Oxford University Press
5. Regional anaesthesia
6. Oh, Intensive care
7. King M, Primary Anaesthesia for the district hospitals, WHO publications

Basic Science

7. Wood M, Wood AJJ, Drugs in Anaesthesia: Pharmacology for Anaesthesiologists..Baltimore, Md. Williams & Wilkins,
8. Stoelting, RK. Pharmacology and physiology in anesthetic practice, Philadelphia. Lippincott-Raven
9. Neal, medical Pharmacology at a glance. Oxford. Blackwell Science
10. Bovill JG, HowieMB, Cilical pharmacology for anaesthetists. London. WB Saunders
11. Calvey TN, Williams NE, Principles and practice of pharmacology for anaesthetists, Oxford. Blackwell Science
12. Guyton AC, Hall JE, Textbook of medical physiology. London. WB Saunders,
13. Ganong WF. Review of medical Physiology. Stamford, Conn. Appleton& Lange, London, Prentice Hall International

14. West JB. Respiratory physiology-the essentials Philadelphia. Lippincott Williams & Wilkins

15. Lumb AB. Nunn's applied respiratory physiology Oxford. Butterworth-Heinemann,

Physics

16. Davis PD. Kenny GNC. Basic physics and measurement in anaesthesia

17. Dorsch JA. Dorsch SE. Understanding anaesthesia equipment. Baltimore. William & Wilkins,

18. Sykes MK, Vickers MD. Principles of measurement and monitoring in anaesthesia and intensive care. Blackwell

19. Medical Statistics

Biochemistry

20. Murray RK, Harper's illustrated biochemistry. 26th Ed. New York, London. McGraw-Hill. Chemical pathology

21. Walmsley RN, White GH, A guide to diagnostic clinical chemistry. Oxford. Blackwell Scientific Publications.

22. Anatomy for Anaesthetists

OTHER PUBLICATIONS INCLUDING ELECTRONIC

Annual ASA refresher course lecture notes

World Anaesthesia Updates in anaesthesia

Local GCPS and WACS refresher course updates

BNF, WHO and Local Drug formularies

APPENDIX

1. Anaesthetic machines and accessories.
2. Capnograph
3. Pulse oximeters
4. Mechanical ventilators
5. Pressure transducers
6. ECG monitors
7. Automatic Blood Pressure Monitors
8. Suction machines
9. Scavenging systems
10. Different breathing systems
11. Nerve stimulators and stimulating needles
12. Spinal/epidural needles and catheters
13. Various types of endotracheal tubes

14. fibre optic bronchoscopes
15. Current Anaesthetic agents
16. Logbooks
17. Temperature measuring thermisters – oesophageal, nasopharyngeal, tympanic membrane
18. Patient controlled analgesia pumps
19. Blood gas + PH machines
20. Defibrillators
21. Manikins/Dummies
22. Drug and fluid administration pumps
23. Lap-top computers
24. Desk-top computers
25. Overhead projectors
26. Projectors

FELLOWSHIP TRAINING IN ANAESTHESIA **GHANA COLLEGE OF PHYSICIANS AND SURGEONS.**

- Entry requirements:**
1. Membership (Anaesthesia) of Ghana College of Physicians and Surgeons.
 2. Registered with the Ghana Medical and Dental Council

Practitioners with the Membership in Anaesthesia will be admitted for further training in various sub specialties in Anaesthesia leading to the award of Fellowship of the Ghana College of Physicians and Surgeons.

Duration of training.

The total duration of training will be a minimum of 24 months from the month the resident starts training.

Location of training.

The training will be in Institutions accredited for Fellowship Training but up to 12 of the 24 months of the fellowship training can be done in other approved institutions in or outside Ghana

Structure of training.

- 12 months will be for general training in Anaesthesia where Teaching/Training will cover a wide spectrum of Anaesthesia.
- Candidates will be encouraged to attend courses in Health management/Administration and Research Methodology in the first 12 months of training.

- For the second 12 month period the trainee with no specific sub speciality interest will do 4-6 week rotation in at least 4 of the sub specialties listed below. The remaining period will be used for further general training.
- For the second 12 month period the trainee with specific sub speciality interests will concentrate on one 12 month or two 6 months specific areas of interest of (sub speciality training) such as listed below.

List of Subspecialties.

1. Paediatric anaesthesia (especially neonatology)
2. Intensive Care
3. Obstetrics Anaesthesia
4. Cardiothoracic anaesthesia
5. Neuro anaesthesia
6. Regional anaesthesia and Pain management.

*The Faculty will not insist on a particular sequence of training; the trainee could commence the 12 month general training in anaesthesia and then move to the sub specialties and vice versa.

*Sponsorship of subspecialty training will largely be dictated by the needs of the country at that time.

*Sub specialty training may be based partially in an institution outside Ghana.

*Candidates will be required to submit a research proposal within 3 months of starting the Fellowship training and carry out the research a long their rotations.

Examination requirements.

- Successful completion of a research project and presentation of an acceptable dissertation at least 3 months before the end of the fellowship program.
- Successful completion of LOG books as follows:
 - a. General training in anaesthesia: within the training period of 12 months, trainee will be required to do a minimum of 450 cases spread over 12 months.
 - b. Sub specialty training: the trainee will do a minimum of 100 cases in their chosen sub specialty
 - c. In addition there must be a report of satisfactory performance from the trainee's supervisor/coordinator.

List of Cases required

Cases	Number
General surgery	50
Urology	50
Orthopaedics & Trauma	50
Obstetrics & Gynaecology	100
ENT, Ophthalmology, Maxillo facial	50
Paediatrics	50
Day Care surgery	50

Critical care	50
Total	450

Evaluation.

At the end of the 24 months training period, trainees will be evaluated. There will be no written paper. The examination will consist of 2 Oral examinations, each lasting one hour.

Oral 1. Examination will be on general areas of anaesthesia.

Oral 2. Will be on sub specialty/ general and also defence of a dissertation

Certification.

Successful candidates will awarded the Fellowship of the Ghana College of Physicians and surgeons.

CONTINUING ASSESSMENT FORM FOR THE FACULTY OF ANAESTHESIA. GHANA COLLEGE OF PHYSICIANS AND SURGEONS.

		G.ANAES (1-5)	R.ANAES (1-5)	ICU (1-5)	TOTAL
KNOWLEDGE	Continuous Professional Education				
	Research Activity				
	Academic discussions				
	Ability to pass on knowledge				
SKILLS	Patient management				
	Correct use of equipment				
	Correct use of drugs				
	Communication skills				
ATTITUDE	Punctuality to work				
	Attitude towards patients				
	Attitude towards other staff				
	Organisational ability				

