

NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA



POST-FELLOWSHIP IN REGIONAL ANAESTHESIA CURRICULUM

FACULTY OF ANAESTHESIA

APPROVED BY THE SENATE ON 5TH DECEMBER, 2024

A handwritten signature in blue ink, appearing to read 'F. A. Arogundade', is positioned above the name of the Registrar.

**DR F. A. AROGUNDADE, MD FMCP
COLLEGE REGISTRAR**

FACULTY OF ANAESTHESIA
NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA
(CURRICULUM FOR SPECIALIZATION IN POST-FELLOWSHIP PROGRAMME IN REGIONAL
ANAESTHESIA)

Post-Fellowship Programme: Post-Fellowship Diploma in Regional Anaesthesia.

A. INTRODUCTION

The programme is designed for candidates who wish to deepen their academic and clinical knowledge in Regional Anaesthesia and increase their capacity for higher responsibilities in the field.

B PROGRAMME PHYLOSOPHY

Regional anaesthesia is now extensively safe in experienced hands. The vast majority of upper and lower limb procedures can now be performed with either a peripheral regional block alone or in combination with general anaesthesia. Apart from providing intraoperative pain, regional anaesthesia can be extended to provide postoperative pain. The technique is also valuable in the management of chronic pain. It may be a technique of choice in surgical patients who have co-morbid conditions that make general anaesthesia unsuitable. The use of regional anaesthesia in ambulatory surgery reduces the cost of health care both to the patient and organizations funding health care in addition to other benefits of ambulatory surgery. Regional anaesthesia is associated with reduction in the stress response to surgery when compared with general anaesthesia. A further advantage of regional anaesthesia is that it can be done safely in emergency cases even when the patient has eaten as the risk of regurgitation and aspiration is less. The introduction of ultrasound has revolutionized the current practice of regional anaesthesia.

C. AIMS AND OBJECTIVES OF THE PROGRAMME

- i) To train safe competent practitioners of regional anaesthesia by combining traditional patient care experiences with learner-centred activities
- ii) To maximize each resident's ability to achieve technical and clinical proficiency with a variety of traditional and ultrasound-guided regional anaesthetic techniques
- iii) To understand the core principles and concepts of regional anaesthesia and pain medicine
- iv) To identify the roles of regional anaesthesia in the management of surgical patients.

D. ENTRY REQUIREMENTS

Fellowship of the Faculties of Anaesthesia of the National Postgraduate Medical College of Nigeria or the West African College of Surgeons.

E. DURATION OF PROGRAMME

The duration of the programme is eighteen (18) calendar months.

The candidate is advised to do 3 months rotation in a fully accredited institution within the country or in a recognized institution outside the country

F. DOMAIN OF THE PROGRAMME

The Regional Anaesthesia Programme will be domiciled in institutions that are accredited by the National Postgraduate Medical College of Nigeria on recommendation by the Faculty of Anaesthesia

G. LIST OF COURSES AND DETAILED COURSE DESCRIPTION

COURSE CODE	COURSE TITLE	DURATION (weeks)	LECTURES (hours)	PRACTICALS (hours)	CREDIT UNITS
ANE 949.1	Anatomy in relation to regional anaesthesia	3	30	90	4
ANE 949.2	Physiology in relation to regional anaesthesia	3	45	-	3
ANE 949.3	Pharmacology in relation to regional anaesthesia	3	45	-	3
ANE 949.4	Effects of diseases on regional anaesthesia	3	30	90	4
ANE 949.5	Equipment in regional anaesthesia	10	30	90	4
ANE 949.6	Head and Neck Blocks	10	30	90	4
ANE 949.7	Upper Limb including Hand and Wrist Blocks	10	30	90	4
ANE 949.8	Abdominal, Perineal and Thoracic blocks	10	30	90	4
ANE 949.9	Lower Limb including Foot and Ankle Blocks	8	30	90	4
ANE 949.10	Paediatric Regional Anaesthesia	4	30	90	4
ANE 949.11	Nerve Blocks for Ophthalmic Procedures	4	30	90	4
ANE 949.12	Complications and Side Effects of Regional Anaesthesia; Management	4	30	90	4
	TOTAL	72			46

ANE 949.1. Anatomy in relation to regional anaesthesia

4 Units

Surface anatomy (Landmarks for peripheral regional anaesthesia, Landmarks for central neuraxial blocks). Head and neck. Upper limb. Thorax and

abdomen. Pelvis and lower limbs. Spine and axial skeleton. Peripheral and central nervous system. autonomic nervous system (sympathetic and parasympathetic). Anatomy of the obstetric patient.

Ultrasound anatomy. Relevant sono-anatomy of the most common peripheral blocks (interscalene, supra- and infraclavicular, axillary, elbow and wrist blocks; femoral / saphenous, obturator, proximal and distal sciatic, popliteal and ankle blocks).

ANE 949.2. Physiology in relation to regional anaesthesia

3 Units

Structure and function of nerves. Nerve conduction and types of nerve. Pain pathways. Central, peripheral, sympathetic and parasympathetic nervous system. Pathophysiology of acute and chronic pain. Cardiovascular and pulmonary systems. Gastroenterological and renal systems. Coagulation and bleeding disorders. Specific characteristics of the newborn and the elderly. Physiology of the obstetric patient.

ANE 949.3. Pharmacology in relation to regional anaesthesia

3 Units

Local anaesthetic agents. Analgesics. Sedatives (including propofol and dexmedetomidine). Non-steroidal anti-inflammatory drugs (NSAIDs), gabalin. Gabapentin/pregabalin. Adjuvant analgesics e.g. opioids, ketamine/dexamethasone/clonidine. Vasoactive drugs (adrenaline, ephedrine, phenylephrine)

ANE 949.4. Effects of diseases on Regional Anaesthesia

4 Units

Influence of common diseases, such as hypertension, coronary artery disease, chronic obstructive pulmonary disease, central nervous disorders, polyneuropathy, diabetes, etc., on the practice of regional anaesthesia.

ANE 949.5. Equipment in regional anaesthesia

4 Units

Needles – design / application and limitations. Catheters – through needle / over needle / stimulating / ultrasound enhanced Peripheral nerve stimulators (mA, milliseconds, Frequency. Cathode, anode). Continuous infusion devices

Miscellaneous – needle guides / pressure monitors/ percutaneous nerve location devices / spinal safety connectors

Ultrasound machines: Physical principles behind the ultrasound image generation. Knobology, transducers and its applications. Potential pitfalls and artifacts in ultrasound imaging of nerves. Colour Doppler principle and its application. Biological effects of ultrasound. Equipment disinfection and sterilization.

ANE 949.6. Head and Neck Blocks

4 Units

Superficial cervical plexus and deep cervical plexus blocks. Greater and lesser occipital nerve blocks. Greater auricular nerve block. Zygomaticofacial and zygomaticotemporal nerve blocks. Mental nerve block. Infraorbital nerve block. Supraorbital and supratrochlear nerve blocks.

ANE 949.7. Upper Limb including Hand and Wrist Blocks

4 Units

Brachial plexus blocks (interscalene, supraclavicular, infraclavicular, axillary). Suprascapular nerve block. Ulnar nerve block (elbow). Median nerve

block (elbow). Medial cutaneous nerve of forearm block. Radial nerve block (elbow). Lateral cutaneous nerve of forearm block. Posterior cutaneous nerve of forearm block.

Ulnar nerve block (hand). Median nerve block (hand). Radial nerve block (hand). Digital nerve block (hand).

ANE 949.8. Abdominal, Perineal and Thoracic blocks

4 Units

Intercostal nerve block. Thoracic paravertebral block. Interpleural block. Pectoral nerve blocks. Spinal, thoracic and lumbar epidural blocks. Caudal block. Combined spinal epidural block. Central neural axial blocks for obstetric patients. Transversus abdominis plane block. Inguinal field block. Continuous catheter techniques. Inguinal canal block. Penile block. Obturator nerve block.

ANE 949.9. Lower Limb including Foot and Ankle Blocks

4 Units

Lumbar plexus block. Femoral nerve block. Obturator nerve block. Saphenous nerve block. Sciatic nerve block. popliteal and tibial nerve blocks. Lateral cutaneous nerve of thigh block. Three-in-one block. Digital nerve block (foot). Sural nerve block. Saphenous nerve block (foot). Peroneal nerve block. Tibial nerve block. Ankle block.

ANE 949.10. Paediatric Regional Anaesthesia.

4 Units

Caudal. Penile. Epidural. Spinal. Field block for herniotomy. TAP block. Rectus sheath block. Upper and lower limb blocks.

ANE 949.11 Nerve Blocks for Ophthalmic Procedures

4 Units

Topical anaesthesia. Peribulbar block. Sub-Tenon block. Facial nerve block.

ANE 949.12 Complications and Side Effects of Regional Anaesthesia; Management

4 Units

Early recognition and management of (local anaesthetic toxicity, intravascular injection and haemorrhage). Total and high spinal anaesthesia. Management of seizure and cardiac arrest. Pneumothorax and lung injury. Nerve damage (central and peripheral). Epidural abscess/haematoma/cord injury or compression. Failed or incomplete block. Rescue blocks. Nausea and vomiting. Post-operative pain. Regional anaesthesia and acute compartment syndrome. Breakthrough pain. Tourniquet pain.

H. SKILLS AND COMPETENCIES

At the end of twelve months, the resident or post-fellowship specialist should be able to:

- i. Perform a detailed patient history, physical examination including neurologic history and optimization of clinical status.
- ii. Assess and prepare patients scheduled for procedures under regional anaesthesia, including discussion of anaesthetic options (i.e., regional versus general).
- iii. Understand appropriate analgesic choices including regional anesthesia techniques and multimodal techniques for various clinical situations

- iv. Formulate a regional and multi-modal anesthesia plan for inpatient and outpatient surgical procedures
- v. Demonstrate selection of regional versus general anesthesia for various procedures and patients regarding patient recovery, patient outcome, operating room efficiency, and cost of care
- vi. Identify patients who can undergo a regional or neuraxial technique as the primary anaesthetic
- vii. Demonstrate competence in performing blocks of the brachial plexus including interscalene, supraclavicular, infraclavicular, axillary, and forearm blocks
- viii. Demonstrate competence in performing blocks of the lower extremity including femoral, saphenous, sciatic and ankle blocks
- ix. Demonstrate competence in performing truncal blocks including TAP, erector spinae, and paravertebral blocks
- x. Demonstrate competence in performing neuraxial blocks including spinal, epidural, and combined spinal-epidurals
- xi. Demonstrate competence in providing anesthesia and peri-operative pain management for patients undergoing orthopedic surgery
- xii. Demonstrate competence in providing anesthesia and peri-operative pain management for patients undergoing non-orthopedic surgery that is amenable to regional anesthesiology.
- xiii. Demonstrate competence in bedside point of care ultrasound for the use in placement and management of neuraxial and peripheral blocks
- xiv. Demonstrate the knowledge of the management of an incomplete, failed, or failing block.
- xv. Demonstrate the knowledge of the treatment of complications in an expedient and appropriate manner, including the use of intralipid in local anaesthetic toxicity.
- xvi. Knowledge of current guidelines of resuscitation when the need arises.
- xvii. Understand the benefits, practical application, and maintenance of peripheral nerve / plexus catheters

I. Regional and Peripheral Nerve blocks to be performed

REGIONAL/PERIPHERAL NERVE BLOCKS	REQUIRED
Spinal Procedures	100
Epidural Procedures	50
Combined spinal epidural	50
Brachial plexus -interscalene	20
Brachial plexus- infraclavicular	15
Brachial plexus- axillary	20
Others (radial, ulnar, median, digital- hand)	10
Interpleural	10
Thoracic paravertebral	10
Intercostal	10
TAP block	20
Inguinal field block	20

Penile block	20
Lumbar plexus	5
Sciatic	10
Femoral	10
Popliteal fossa block	5
Ankle block	20
Digital (foot)	10
Others (obturator, iliac crest block etc)	5
Retrobulbar	10
Peribulbar	10
Sub-Tenon	10
Deep and Superficial Cervical Plexus Block	5
Other Head and neck blocks	5
Acute Pain Management	30
Chronic Pain Management	30
TOTAL	520

J. ASSESSMENT

i) Formative Assessment

- Knowledge and skills
- Non-Technical Skills - cognitive, social and personal (effective communication, team working, leadership, decision making, situation awareness and stress management)

Summative Assessment.

Standard setting with the Modified Angoff method will be used for summative assessment of the candidates.

Post-Fellowship Programme Examination: The examination consists of:

- Theory Paper: 2 hours. MCQ (SBA). 100. Regional Anaesthesia- Applied Basic Sciences (20), Head and neck blocks (5), Upper limb blocks (15), Abdominal, Perineal and Thoracic blocks (15), Lower Limb blocks (10), Ophthalmic blocks (3), Central neural axial blocks (10), Effects of diseases on regional anaesthesia (10), Paediatric Regional Anaesthesia (5), Complications and side effects (5), Equipment in Regional Anaesthesia (2)
- **OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE): SIX STATIONS:** Duration of 1 hour comprising: (a) HISTORY TAKING/COMMUNICATION- 10 marks. (b) PHYSICAL EXAMINATION- 15 marks. (c) SKILLS-. 20 marks. (d) SKILLS. - 20 marks

(e) INVESTIGATIONS (XRAYs, CT, HAEMATOLOGY, ECHO. ECG, ABG. CLINICAL CHEMISTRY)- 15 marks. (f) PATIENT MANAGEMENT- 20 marks (TOTAL 100 marks)

- Structured Oral examination. Subspecialty (100%). Duration is 1 hour

GRADING OF MARKS

GRADE	PERCENTAGE %
A (excellent)	$\geq 70\%$
B (very good)	60-69%.
C (good)	55-59%
D (pass)	50-54%
E (borderline)	45-49%
F (fail)	$< 45\%$

K. CONDITION FOR A PASS

- Candidate must pass all sections of the examination to be awarded a Pass
- Candidate who fails any section(s) of the examination will be required to repeat the failed section(s) in a subsequent examination.

L. ACCREDITATION REQUIREMENTS

a) General Requirements for Residency Training: The anaesthesia training programme is aimed at producing specialists in anaesthesia of a high degree of competence, comparable in the extent and depth of the training of anaesthesia Fellows in other parts of the world. The anaesthesia specialist should have a firm grasp of the scientific basis of anaesthesia, be skilled in the performance of anaesthetic duties and be conversant with research methodology and the interpretation of research data. The provision of facilities for this level of training must be based on the objectives of the training and should cover the main areas of modern anaesthetic practice.

The institution must have accreditation for general fellowship training in addition to accreditation for training in anaesthesia.

Number of Trainers, related surgical specialties, minimum case load and variety cases, and, training facilities specific for the neuro-anaesthesia

- Clinical Anaesthesia: Pre-Operative Care. Intra-Operative Care. Post-Operative Care
- Resuscitation
- Intensive Care
- Pain Medicine

As much as possible, adequate facilities should be available in all these areas to give the candidate enough practice both in quantity, quality and variety.

Related disciplines and ancillary facilities for investigation must also be available. These include the core departments of Internal Medicine, Paediatrics, Surgery, Obstetrics & Gynaecology, Pathology, Radiology, and Medical Records. Details of their equipment in all areas are given below:

- (i) An Institution for Postgraduate Training in neuroanaesthesia must have a Department of Anaesthesia run by specialists in general and other subspecialties of anaesthesia, pain medicine and intensive care medicine, who are themselves Fellows of the National Postgraduate Medical College of Nigeria or are Fellows of other recognized Colleges or have equivalent qualifications. A minimum of two Fellows supported by residents in training would be required as a basic teaching unit.
- (ii) As many branches of surgery as possible should be available in the hospital. These include General Surgery, Obstetrics & Gynaecology, Urology, Ophthalmology, E.N.T. Surgery, Orthopaedic and Trauma Surgery, Dental Surgery, Paediatrics and Plastic Surgery. While it is desirable to have a neurosurgical unit and a cardio-thoracic unit, it is not mandatory for basic specialist training. Residents in institutions without neurosurgical and cardio-thoracic units must do senior and junior residency rotations in fully accredited institutions as specified by the Faculty.
- (iii) There must be an out-patient complex with Emergency Rooms and facilities for resuscitation, as well as out-patient theatre(s) for minor surgery and casualty.
- (iv) Laboratories – The hospital must also have facilities for investigation in: (a) Chemical Pathology
(b) Microbiology for routine and special investigations, and emergency. (c) Haematology and Blood Bank.
- (v) There should be an Intensive Care Unit for the management of critically ill or traumatised patients.
- (vi) There should be a Departmental laboratory for research.
- (vii) There must be a suitable number of operating theatres to give the various specialties of surgery adequate operating time. Each theatre should have an anaesthetic room attached to it and should be fully equipped with anaesthetic, monitoring and resuscitation equipment. It is vital that there should be a recovery room equipped with monitors, resuscitation equipment to take a minimum, of two to four beds depending on the number of theatres.
- (viii) The Radiology Department must be capable to doing routine – X-rays and other sophisticated investigations (CT, MRI, contrast studies, Ultrasound, Doppler) which may be required by existing specialties and such facilities should extend to theatre and ICU.

- (ix) There must be a good library with current anaesthesia journals and books in anaesthesia and related subjects. Internet connectivity and subscription to data bases should be available.
- (x) Other departments viz: Medicine, Paediatrics, Surgery, Obstetrics & Gynaecology and Psychiatry must be suitably well developed to give the residents in training some experience in these disciplines.
- (xi) There must be a suitable number of Anaesthetic and Monitoring equipment in all areas of Anaesthetic service. In addition to service equipment, there should also be equipment and simulation devices for teaching and research including teaching aids, models, audio-tapes, computers, CD Rom, etc.

a) Additional Specific Accreditation Requirements for Regional Anaesthesia

The number of beds in the hospital as well as the total volume of work and the number of consultants will determine the maximum number of postgraduate trainees which can be handled by the department at any one time. The object of the training is to ensure that each resident does a minimum of 520 regional anaesthesia cases as specified in this curriculum. Other requirements are as follows:

- i. At least two consultants in the specialty of Regional Anaesthesia, one of whom must be a Fellow of the College are required for accreditation.
- ii. The institution must have full accreditation for training in anaesthesia
- iii. Peripheral nerve stimulators. Needles. Catheters.
- iv. Blue Phantom ultrasound training blocks.
- v. Ultrasound machines for nerve localization.
- vi. Wet lab for training.
- vii. Preparation and sterilization kits.
- viii. Local anaesthetics.
- ix. Resuscitation equipment (oxygen supply. Nasal airways. Face masks. Laryngoscopes. Tracheal tubes. Bag-mask ventilation device. Suction. IV cannulas. Defibrillator.
- x. Resuscitation drugs. Atropine. Epinephrine. Ephedrine. Suxamethonium. Phenylephrine. Glycopyrrolate. Intralipid.
- xi. Sedatives (midazolam, propofol, ketamine)
- xii. Adjuvants to local anaesthetics (fentanyl, clonidine etc.)
- xiii. Anticonvulsants- diazepam
- xiv. Antiarrhythmic agents

Structured Programme

The programme must be structured to include skills acquisitions, lectures, tutorials and journal club which should be supervised by a regional Anaesthetist.

Regular feedback should be provided to the candidate and vice versa.

There should be ample accessibility to new information by provision of appropriate regional anaesthesia journals as well as access to the internet and on-line information.

Seminar Room

Seminars, journal reviews, tutorials, case presentations, morbidity and mortality reviews

Simulation Room

All simulation equipment for regional anaesthesia- ultrasound, peripheral stimulators, needles, blue phantom,

Library

Regional anaesthesia textbooks and journals, e-library with computers and internet facility.