NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA

CURRICULUM FOR SUBSPECIALTY OF CORNEA AND ANTERIOR SEGMENT

FACULTY OF OPHTHALMOLOGY

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NATIONAL POSTGRADUATE COLLEGE OF NIGERIA

FACULTY OF OPHTHALMOLOGY

THE TRAINING CURRICULUM

FOR

CORNEA AND ANTERIOR SEGMENT SUBSPECIALTY

2022

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CHAPTER 1

PREAMBLE

Introduction & Philosophy

Fellowship training in cornea and anterior segment requires more in-depth education about the pathophysiology and management of relevant ophthalmic diseases than can usually be obtained in residency (registrar or equivalent) training in ophthalmology. The Fellowship training includes a continuous period of intense and focused training in developing and maintaining knowledge, skills, scholarship, and professionalism. The training
aims at graduating specialist ophthalmologists competent to lead the eye care team and for the effective eye health care delivery of relevant diseases in Nigeria. The training is conducted in hospitals accredited for this purpose. The training programme is structured to enable a graduated acquisition of more knowledge and advanced skills as the trainee progresses in training.
During the Subspecialty Fellowship Training, an optional MD Degree with Thesis defence will intercalate for 6 semesters. This will be concluded before the Final Part II Fellowship examinations.

1.1 Admission Requirements.

1. Bachelor of Medicine, Bachelor of Surgery (MB; BS) or its equivalent from a recognized university
2. Full registration with the Medical & Dental Council of Nigeria
3. Evidence of completion of the National Youth Service Corps programme or its exemption
4. Completion of a minimum of 24 months rotations in general ophthalmology at the Part I level of the National Postgraduate Medical College of Nigeria (NPMCN) or its equivalents
5. [b] A pass at the Part I examinations of the NPMCN in Ophthalmology or its equivalent

1.2 Training Duration:

3 years after Passing Part I Fellowship examination.
(a)General Ophthalmology rotations in the first year, followed by:
(b) 2 years dedicated rotation in the cornea and anterior segment subspecialty

1.3 Competencies to be Acquired

Subspecialty fellowship training for cornea, external disease, cataract, and refractive surgery includes:

1. Diagnosis and medical management of diseases of the eyelid, conjunctiva, cornea/sclera, and anterior ocular segment and lens;

2. Recognition and treatment of posterior segment disease that may affect the anterior segment;
3. Surgery of the conjunctiva, cornea/sclera, anterior segment, lens, and anterior vitreous, with special emphasis on corneal transplantation and related procedures;
4. Principles of contact-lens fitting and management of complications of contact-lens wear; and
5. Principles and practice of keratorefractive surgery.*

1.4 Duration and Scope of Education

Table 1: Disposition and duration of postings in Anterior segment subspecialty Training Programme

SN	Course codes	Postings	Duration	Credit Units
1a	OPH 927	Glaucoma senior posting	3 months	12
1b	OPH 929	Ophthalmic plastic surgery senior posting	3 months	12
1c	OPH 930	Paediatric ophthalmology and strabismus senior posting	3months	12
1d	OPH 931	Public and community eye health senior posting	3 months	12
2		Posting in cornea and anterior segment subspecialty	24 months	100

The total duration of subspecialty training in anterior segment is 3 years. It is expected that such persons who are admitted to the program would spend the 3rd year of residency training (and first year of the subspecialty training) rotating through relevant components of General Ophthalmology of glaucoma , public and community eye health, ophthalmic plasti surgery and paediatric ophthalmology and strabismus and minimum of 24 months of core clinical training in cornea and anterior segment, including appropriate short periods for vacation or special assignments. In special circumstances, the training does not have to be continuous as long as the aggregate training is equal to the recommended total. [S]

1.5 General Education Objectives

a. The goal of the fellowship is to produce an ophthalmologist with subspecialty skills that allow independent medical and surgical management of cornea and external disease.
b. The subspecialist should at a minimum be able to evaluate a patient with acute or chronic redness of the eye;
c. diagnose acute or chronic loss of vision due to structural changes or anomalies of the anterior segment;
d. be able to create a differential diagnosis for typical corneal findings,

e. Be aware of anterior segment effects of various systemic and ocular medications,

f. Able to make correct decision in relation to surgery of the cornea conjunctiva and the lens; and to be able to delineate the risks and benefits for surgical procedures of the anterior segment.

g. The subspecialist should be able to probe the patient's history for relevant review of systems and the social history, including the details of the onset and course of the ocular condition.

h. The subspecialist should be able to complete a detailed examination of the eyelid, orbit, conjunctiva, cornea, anterior chamber, iris, anterior chamber angle, lens, optic disc/nerve, vitreous, retina, and choroid, and perform an evaluation under anesthesia when needed.

i. The subspecialist should recognize the various tests that are available to aid in the diagnosis of external disease, including evaluation of the tear film, use of the microbiology laboratory, pathology, information available from genetic analysis, special ophthalmic examination techniques (e.g., ultrasound, specular microscopy, corneal topography/tomography, and anterior-segment optical coherence tomography [OCT]).

j. The subspecialist should be able to use all of these skills in order to diagnose and plan the management of disorders relevant to the subspecialty. The fellow should see and be responsible for approximately 2000 cornea and external disease patients to allow necessary experience.

a. Methods and opportunities for training/Mode of delivery

- Ward rounds; ward consultation and outpatient clinics
- Bedside teachings
- Didactic Lectures
- Essay writing
- **Procedure sessions including surgical exposures**: Recorded in log book
- **Seminars and tutorials** in relevant topics in the Subspecialty at least 3 seminars to be presented by each Fellow.
- Grand rounds and teaching practices
- Unit-led research, dissertation writing
- Workshops and Conferences focusing on the subspecialty
- Community outreaches including relevant declared world days.

MANDATORY COLLEGE COURSES:

Mandatory courses of the NPMCN including Research methodology, Management, Ethics in clinical practice/research and health resources management courses and any other that may be prescribed by the College from time to time.

2. Training institution eligibility criteria

a. Shall meet the requirements of the Faculty of Ophthalmology of NPMCN training requirements in Comprehensive Ophthalmology

b. Facility and equipment: in-hospital support services as in the Faculty Accreditation guidelines e.g. radiology, pharmacy, laboratory, medical records, with the requisite manpower

c. Accredited in the Subspecialty

d. Manpower: at least one Subspecialist with a minimum of 10 years post fellowship in Ophthalmology and minimum 5 years practicing in the subspecialty

e. Procedures and surgical load:

- Minimum of Subspecialty surgical load in the unit
- Clinic load of a minimum of the subspecialty diseases per week
- Minimum equipment load

3. Syllabus/Themes

a. YEAR 1

i) Perform complex refractions competently including higher order aberrations as well as post-surgical cases.

ii) Competently and confidently assess low vision patients and prescribe appropriate aids to them.

iii) Perform and interpret in more details clinical exam findings including corneal topographic map; retinal drawing for detachment and other lesions; A and B Scans; gonioscopy, etc.

iv) Supervise and guide competently junior residents in the management of ocular emergencies.

v) Hold tutorials for junior residents, medical students and other paramedical personnel in the eye care team.

vi) Identify key examination techniques and management of complex though common medical and surgical problems in the subspecialty areas of glaucoma, ophthalmic plastic surgery, medical retina, public and community eye health; and interprets plain x-rays, ultrasound, CT, MRI, OCT, etc. of the eye and orbit.

vii) Perform and treat complications of cataract and glaucoma surgeries.

viii) Acquire competencies in the efficient organization of eye care services and leadership of the eye care team. Candidates should attend the College-organized Research Methodology course, health resources management course, and Medical education course.

ix) Acquire competence in epidemiologic and clinical ophthalmic research and publication. Candidates are encouraged to co-author at least 2 journal articles.

x) Master common cornea and anterior segment surgical procedures – cataract and glaucoma surgeries as well as manage complications.

xi) Recognize microbial, hematologic and histopathologic features of ophthalmic disorders.

Subspecialty Competencies:
Candidates are to adopt the cornea and anterior subspecialty and to follow the relevant postings. The curriculum of the subspecialty has been separately designed for use of Senior Residents. A proposal for Thesis (for those interested in MD Degree) or Dissertation for the subspecialty , are expected within the 3rd year of training.

5.2.3 The minimum surgical/procedure experience expected for the subspecialty is as detailed below. The supervising consultant ophthalmologist should assess and certify these surgical procedures as at when performed. For this purpose, the candidates should maintain a Faculty-approved log- book.

Table 2: LIST OF COURSES WITH DETAIL DURATIONS AND CREDIT UNITS

S/N	Course code	Courses	Duration (months)	Contact academic time (hrs/wk = Total hrs)	Contact Clinical/ Surgical time (hrs/wk = Total hrs)	Credit units
1	OPH 927	Glaucoma senior posting	3	4(48)	35(420)	12.5
2	OPH 929	Ophthalmic Plastic surgery senior posting	3	4(48)	35(420)	12.5
3	OPH 930	Paediatric Ophthalmology and Strabismus senior posting	3	4(48)	35(420)	12.5
4	OPH 931	Public and Community eye health senior posting	3	4(48)	35(420)	12.5
5		Cornea and Anterior segment Subspecialty	24	4(384)	35(3,360)	100
		TOTAL	**36**	**576**	**5040**	**50 + 100 =150**

MANDATORY COURSES:

Table 3: College-based list of courses and their credit units courses:

Course codes	Courses	Duration	**Contact academic time (hrs/wk = Total hrs)**	**Contact Clinical/ Surgical time (hrs/wk = Total hrs)**	**Credit units**
PMC 951	Research Methodology in Medicine Course	1 week	30	-	2
PMC 952	Health Resources management Course	1 week	30	-	2
PMC 953	Ethics in Clinical Practice	1 week	30		2
PMC 901	Advanced Trauma Life Support (ATLS)	1 week	30		2
	TOTAL				8

Table 4: Faculty-based courses:

OPH 933	Clinical ophthalmology Revision course	1 week +3 days hands-on	30(45)	18 hours	2
OPH 934	Community ophthalmology course	1 week +4 days hands-on	30	24 hours	3

PMC 998 Seminars 6 credit units
PMC 999 Thesis/ Dissertation 12 credit units

All Senior Residents in Cornea and anterior segment are to rotate 3-monthly through OPH 927, 929, 930 and 931 making 50 credit units. The subspecialty core posting of 24 months account for additional 100 credit units. The mandatory College courses account for 24 credit units and Faculty ones account for additional 5 units as shown in the table above. **So, the total credit units for this senior Residency is 50 + 100 + 8+5 +18 = 181 credit units.**

CHAPTER 2

DOCTOR OF MEDICINE (MD) DEGREE IN OPHTHALMOLOGY (OPTIONAL)

Admission into this MD degree programme is only for medical doctors with MBBS or MBChB degree and are already admitted into residency training programme in Ophthalmology and registered as an associate fellow of the National Postgraduate Medical College of Nigeria and is strictly by:

i. Having passed Primary FMCOph Fellowship Examination or Exemption from Primary Examination of NPMCN

ii. Having passed Part I FMCOph Fellowship Examination of NPMCN

iii. Candidate must be registered as an Associate Fellow of NPMCN

iv. The duration of the MD is minimum of 6 semesters post Part I in an accredited training Institution.

v. Defense for MD thesis will be conducted by examiners in the Faculty of Ophthalmology as appointed by the National Postgraduate Medical College of Nigeria (NPMCN)

Philosophy

Candidates will focus on the creation of new and innovative knowledge. The MD degree is primarily for individuals with goals in ophthalmology **Research or Teaching**.

The NPMCN Senate oversees the MD degree programmes and its requirements, which entail coursework and independent research. Generally, the programme is for resident doctors undergoing residency training in the Faculty of Ophthalmology, NPMCN and other sister Colleges as approved by the Senate of NPMCN. It consists of course work during residency training in accredited residency training institutions during junior residency training period and first 2 years of senior residency training period in ophthalmology and independent research during the senior residency training period in ophthalmology.

The NPMCN MD degree programme ensures that Residents have a breadth and depth of knowledge in a particular discipline or area and candidate's ability to conduct research is assessed by the preparation of a written thesis.

CHAPTER 3

DETAILS OF THE CURRICULUM OF THE FELLOWSHIP IN CORNEA AND ANTERIOR SEGMENT SUBSPECIALTY

Table 5: Cornea and Anterior Segment List of Core Courses and Their Credit Units:

S/N	Course code	Courses	Duration (months)	Contact academic time (hrs/wk = Total hrs)	Contact Clinical/ Surgical time (hrs/wk = Total hrs)	Credit units
	OPH 935	Cornea and anterior segment subspecialty Fundamentals	2	4(32)	35(280)	8
	OPH 936	Cornea and anterior segment genetics and immunology	2	4(32)	35(280)	8
	OPH 937	Cornea and anterior segment pharmacology	2	4(32)	35(280)	8
	OPH 938	Cornea and anterior segment examination techniques	3	4(48)	35(420)	12
	OPH 939	Anterior segment diseases: developmental, lid, conjunctival and ocular surface abnormalities	2	4(32)	35(280)	8
	OPH 940	Cornea and anterior segment tumours	2	4(32)	35(280)	8
	OPH 946	Infectious Diseases of the cornea	2	4(32)	35(280)	8
	OPH 947	Non Infectious conditions of the cornea and anterior segment	2	4(32)	35(280)	8
	OPH 948	Refractive and cornea reconstruction surgery	8	4(128)	35(1,120)	32
		TOTAL				**100**

EDUCATIONAL PROGRAM

The fellowship director is responsible for the structure and content of the educational program and should provide objectives, methods of implementation, and procedures for assessment of the program. The educational experience should be designed and supervised by the fellowship director.

Fellowship preceptors must emphasize the principles of ethical and humane treatment of patients in accordance with the code of ethics of the supervising bodies. Preceptors and faculty should communicate these principles in both didactic and clinical aspects of the fellowship training. [M]

The program requirements for cornea/external disease fellowships are an in-depth continuation of the general ophthalmology residency program but extend beyond the normal requirements of a general program. A wider variety of diseases and more patients in each disease category may be encountered. Fellowships may be offered in Cornea and External Disease alone or Cornea, External Disease, and Refractive Surgery. *Programs wishing to include refractive surgery in their fellowship need to follow the refractive surgery guidelines, which are listed with an asterisk [*]*.

A. CLINICAL COMPONENTS [M]

The fellowship program should focus on the following specific areas / courses:

1. OPH 935 -Anterior segment subspecialty Fundamentals (8 credit units).

Fundamentals of anterior segment anatomy, chemistry, physiology microbiology and wound healing with focus on the ocular surface, including eyelid function, tear formation and function, corneal topography/tomography, endothelial cell function, and maintenance of corneal clarity. [M]

2. OPH 936 -Anterior segment subspecialty genetics and immunology, 8 units.

Basic principles of genetics and immunology, including autoimmunity and pathologic responses of the anterior segment. [S]

3. OPH 937- Anterior segment subspecialty pharmacology, 8 units.

Principles of anterior segment pharmacology (e.g., antimicrobial, anti-inflammatory, ocular hypotensive, anesthetics, viscoprotective, immunosuppressive agents, chemotherapeutic, and growth factors), with emphasis on bioavailability, mechanism of actions, relative efficacy, safety, and potential complications. The fellow should be able to formulate fortified antibiotics and antifungal medications. [M]

4. OPH 938- Anterior segment subspecialty examination techniques, 12 units.

Mastering examination techniques, including biomicroscopy, vital stains of the ocular surface, and special diagnostic testing (e.g., specular microscopy, corneal topography/tomography, high-resolution ultrasonography, anterior-segment OCT, confocal microscopy, and corneal pachymetry). In addition, fellows should be familiar with impression cytology, corneal-scraping interpretation of microbiology results, and corneal-biopsy techniques and interpretation. [M]

KNOWLEDGE

5. OPH 939- Anterior segment diseases: developmental, lid, conjunctival and ocular surface abnormalities, 8units.

a) Developmental anomalies of anterior segment, impact on visual developments, and management (e.g., eyelid, conjunctiva, cornea, lens, anterior chamber, and iris). [M]

b) Acute and chronic blepharitis to include both infectious and noninfectious etiologies, with emphasis on microbial blepharitis, Meibomian gland dysfunction, and rosacea. [M]

c) Disorders of tear production and the lacrimal system, including dry eye disorders both primary and secondary. [M]

d) Acute and chronic infective conjunctivitis (including bacterial, viral, fungal, and parasitic), neonatal conjunctivitis, and chlamydial disease [M]

e) Allergic and toxic conjunctivitis, including vernal, atopic, and seasonal conjunctivitis, giant papillary conjunctivitis, Stevens-Johnson syndrome, toxic conjunctivitis, and conjunctivitis associated with various cutaneous and systemic diseases. [M]

6. OPH 940- Cornea and anterior segment tumours, 8units.

a) Tumors of the ocular surface, such as sebaceous carcinoma, pigmented lesions, dermoid and choristomas, lymphomas, conjunctival intraepithelial neoplasia, squamous cell carcinoma, vascular and lymphatic tumors. [M]

7. OPH 946- Infectious Diseases of the cornea, 8units.

a) Acute and chronic infectious keratitis, including bacterial, viral, fungal, and parasitic, with emphasis on herpes simplex, herpes zoster, adenovirus, acanthamoeba, and contact lens-associated problems. [M]

8. OPH 947- Non Infectious conditions of the cornea and anterior segment, 8units.

a) Noninfectious inflammatory diseases of the cornea, including marginal keratitis, interstitial keratitis, keratitis associated with various collagen vascular diseases, Mooren ulcer, epitheliopathies (i.e., superficial punctate, filamentary, recurrent erosions, neurotropic), and endotheliopathies. [M]

b) Cornea and Anterior segment anomalies, including various anomalies associated with specific genetic abnormalities, corneal dystrophies, and corneal degenerations. [M]

c) Autoimmune and immunologic diseases of the anterior segment, including allergy, corneal graft rejection, and cicatrizing conjunctivitis; and familiarity with oral and topical immunosuppression and anti-allergy medications. [M]

d) Pathophysiology and management of allograft rejection, including limbal stem cell rejection, corneal graft rejection, and graft-versus-host disease. [M]

e) Diseases of the sclera, including episcleritis, various forms of immune-mediated scleritis, and infective scleritis. [M]

f) Assessment and emergency management of anterior segment trauma, including chemical, thermal, and mechanical injuries. [M]

g) Fundamentals of preventative, nutritional, and community acquired eye care (e.g., vitamin A prophylaxis, trachoma prevention, onchocerciasis). [M]

9. OPH 948- Refractive and cornea reconstruction surgery (32 credit units).

a) Fundamentals of refractive surgery and its complications, with special emphasis on forms of keratorefractive surgery, including laser vision correction procedures (e.g., laser-assisted stromal in situ keratomileusis [LASIK] and surface ablation), with an understanding of the different ablation profiles and an understanding of the preoperative evaluations, including topography/tomography and aberrometry.* Additionally there should be either experience or lectures on incisional surgery, thermal keratoplasty, alloplastic inserts, and phakic IOL's. [S for non-refractive fellowship programs; M for programs including refractive surgery]

b) Skill in anterior-segment surgery, including eyelid, conjunctival, scleral, and corneal procedures, with emphasis on corneal protective procedures (e.g., tarsorrhaphy), conjunctival or amniotic membrane grafts, reconstruction of the ocular surface, surgical management of corneal erosions, and phototherapeutic keratectomy. [M]

c) Skill in penetrating and lamellar keratoplasty, including full thickness transplant and selective transplantation, including endothelial keratoplasty and anterior lamellar keratoplasty, with emphasis on patient selection, surgical technique, and postoperative care. This should include recognition and management of graft rejection and endophthalmitis. The fellow should have knowledge of different techniques of keratoprosthesis surgery. [M]

d) Fundamental knowledge of contact lens physiology, design, and materials; and complications for both cosmetic and therapeutic use. [S]

e) Medical and surgical management of corneal thinning and perforation, including techniques of pharmacological manipulation; and office procedures such as application of tissue glue and therapeutic contact lenses. [M]

f) Medical and surgical management of complications of intraocular lenses (IOLs), including but not exclusive to, dislocated IOLs, suturing IOLs, iris suturing, and visual aberrations; and complications related to single vision and multifocal IOLs. Specialized phacoemulcification and manual small incision surgical techniques. [M]

g) Eye-banking, including a review of specific eye-banking functions (e.g., recovery, processing, storage, evaluation, distribution of tissue, and donor eligibility). [S]

h) Skills in use of reference material, including electronic searching and retrieval of relevant articles, monographs, and abstracts. [M]

B. DIDATIC COMPONENTS:

- **OPH 998 Seminars 6 credit units**
- **OPH 999 Thesis/ Dissertation 12 credit units**

1. The fellow should exhibit scholarly activity by participating in research and clinical conferences, or their equivalent, for at least the minimum number of hours needed per year to demonstrate competence in the subject. Scholarly activity should consist of:
2. Active engagement in at least 1 research project during the fellowship year or be lead author of 1 peer-reviewed publication or presentation at a nationally recognized meeting in corneal and external disease within 1 year of fellowship completion. [S]

3. Cornea and anterior segment fellows should participate in the teaching programs of the service, if the fellowship is affiliated with a teaching institution.
4. Attendance at weekly grand rounds or similar venue. The fellow is to actively participate in case presentations and discussions of patients with corneal and external disease. [S]
5. Attendance at monthly morbidity, pathology, and complications conferences. [S]
6. Attendance at lectures on corneal topics given by the faculty during the resident teaching program. These should include at least 6 lecture hours per year. The fellow must prepare and present at least 1 of these lectures. [S]
7. Attendance and participation in courses on anterior segment surgery, corneal transplantation, external disease, and refractive surgery. [S]
8. The fellow should actively participate, along with the cornea faculty, in a journal club at least quarterly. The fellow and faculty should present and critically discuss selections from the current literature. [S]
9. The fellow should attend local and regional conferences relevant to corneal and external disease surgery. [S]

C. SUPERVISION

1. Faculty should be available to supervise fellows as they examine and treat outpatients and inpatients. They should be available for consultation, assistance, and review of the patients. The supervision should be direct for the majority of encounters. Direct faculty supervision occurs when the faculty reviews the findings with the fellow prior to the patient leaving the clinic or being discharged from the hospital. [M]

2. The faculty should participate as primary surgeon or assistant surgeon to the fellow in a sufficient number of surgical procedures to confirm the fellow's surgical judgment and skill.

3. It is recommended that fellows perform a sufficient number of procedures to achieve competence. Individual programs utilizing these guidelines should determine what the minimum numbers should be, based on local need and resources available.

a. To gain further competency, the fellow should be the assistant surgeon for at least the minimum number of surgeries needed to demonstrate competence. Procedures should include:

i. Endothelial replacement corneal transplants; and

ii. Anterior lamellar transplants.

b. The fellow should be the primary surgeon for at least the minimum number of surgeries needed to demonstrate competence. Procedures should include:

i. Endothelial replacement corneal transplants (e.g., penetrating or endothelial keratoplasty); and

ii. Anterior lamellar transplants (e.g., deep anterior lamellar keratoplasty).

In addition, the fellow should:

c. Receive instruction and develop surgical proficiency in both full thickness penetrating keratoplasty and selective endothelial keratoplasty;

d. Actively participate in the postoperative management in the majority of grafts where he/she is part of the surgical team;

e. Have sufficient experience with other surgical procedures, including pterygium excision with graft, corneal and conjunctival biopsies, astigmatic keratotomies, and phototherapeutic keratectomy;

f. Participate in the surgery of more complex conditions, including extensive conjunctival reconstruction, amniotic membrane transplantation, lamellar keratoplasties, and limbal stem cell transplantation; and

g. Maintain a surgical log book of the type of cases and clearly differentiate between being primary surgeon or assisting surgeon (O/A/P). For wet lab suturing a minimum of 200 sutures in foam are required or a successful attendance of a Simulation SICS/PHACO course; cataract surgery (ECCE, SICS/ Phaco= 50 cases personally performed; CORNEAL PATHOLOGIES: Microbial Keratitis (10) Non-microbial Keratitis (15) e.g. Chemical injuries , Mooren's ulcer , Ectatic corneal disorders, Corneal Dystrophies , Severe Vernal keratoconjuctivitis; CORNEA Wetlab-LASIK, LASEK, PKP, DMEK, DSEK, (50 cases Each); CORNEA SURGERY: PKP, DMEK, DSEK, KERATOREFRACTIVE SURGERY=2 each personally performed; Pterygium surgey=20 cases; [M]

4. The faculty should make a determination that the fellow uses sound clinical judgment in making recommendations for surgery that is in patients' best interests. The faculty is responsible in determining that the fellow has sufficient surgical skill to practice independently. [M]

5. In programs offering training in refractive surgery, the fellow should assist and/or observe in at least 50 cases (i.e., LASIK, photo refractive keratectomy [PRK], laser-assisted subepithelial keratectomy [LASEK]) and receive wet lab and certification in those procedures 50 cases. When possible, hands-on surgical experience is preferable minimum of 2 cases personally performed. The fellow should be certified (i.e., approved to use at least 1 refractive laser in their home locale) for PRK and LASIK for programs listing refractive surgery.* [S for nonrefractive fellowship programs; M for programs including refractive surgery]

D. SCHOLARLY ACTIVITY

The fellowship should take place in a scholarly atmosphere where resources are available that allow the fellow to participate in scholarly activities. Fellows should participate in the development of new knowledge and evaluate research findings. The responsibility for establishing and maintaining an environment of inquiry and scholarship rests with the faculty. While not all members of the faculty must be involved in research, the staff as a whole should demonstrate broad involvement in scholarly activity. This activity should include:

1. Active participation of the faculty in clinical discussions, rounds, and conferences in a manner that promotes a spirit of inquiry and scholarship. Scholarship implies an in-depth understanding of basic mechanisms of normal and abnormal states and the application of current knowledge to practice. [M]

2. Active participation in regional or national professional and scientific societies, particularly through presentations at their meetings and publications in peer-reviewed journals. [S]

3. Participation in research leading to peer-review publications or presentations at regional and national scientific meetings. [S]

4. Adherence by faculty and fellows who participate in research to the Declaration of Helsinki on Rights of Research Human Subjects and to the Association for Research in Vision and Ophthalmology's Guidelines for Use of Research Animals. [M]

E. FELLOW RESEARCH AND SOFT SKILL ACTIVITIES

The fellow should be exposed to opportunities to develop research skills. A specific block of time may be set aside for clinical or laboratory research. When the research component exceeds 20% of the total time it may be necessary that the fellowship be extended. [S]

i. Research Training

Residents are encouraged to learn the wholesome habit of systematic clinical problem solving, featuring observation, interpretation, deductive reasoning, decision-making, and intervention followed by further observation. This habit which resident doctors are encouraged to acquire during training is itself the basic requirement for competence in research.
Besides, training institutions are obliged to institute a research committee and an ethical committee part of the function of which is to screen research proposals within the department for appropriateness and scientific content as well as for compliance with ethical requirements.

A monthly departmental research seminar is expected to be the forum in which young researchers present their projects for discussion and receive the criticism and guidance of their teachers and peers.

ii. Teaching Skills

True to the hierarchical organization in medicine, resident doctors have the opportunity of acquiring teaching skills during training through the practice whereby every doctor teaches those junior to him, other members of the health team, as well as counsel his patients and relatives in order to achieve an effective therapeutic alliance and good clinical practice.
In addition, resident doctors have the opportunity to attend educational methodology workshops and management and computer courses conducted by the college. Training institutions are encouraged to avail their residents of this opportunity.

iii. Management Training

The secretariat of the College conducts management courses twice a year, which is mandatory for senior residents. Also, second/third year senior residents should be appointed as chief residents and given the opportunity to serve in a managerial post.

iv. Communication Skills

It is important that ophthalmologists should be effective communicators, not only in the ordinary running of clinical practice involving medical record documentation, case presentation, case

referral and discharge summary writing, but also in the context of scientific journal publication, conference presentations and answering examination questions.
Therefore, the training programme must provide opportunities for the acquisition and evaluation of various levels of communication skills. (Appendix III)

v. Continuing Education (courses, workshops, conferences, etc.)

The need for continuing medical education especially in the field of ophthalmology and other medical specialties is just as vital as the period of fellowship training. Fellows of the Faculty of Ophthalmology are actively encouraged to continue their ophthalmological training throughout their active practice life. Among other means to achieve this, Fellows and Associate Fellows are encouraged to take active interest in activities of the Faculty and the College. They should be encouraged to take advantage of modern information technology (internet) facilities as well as attend both local and international conferences, association meetings where they communicate freely with colleagues, other groups or schools of thought. A resident (Associate Fellow) should attend at least a conference (local or international) each year.

A resident should show evidence of having attended at least one Ophthalmological Society of Nigeria (OSN) conference to qualify to sit for the Part I examination and one additional OSN national conference to qualify to sit for the Part II examination.

Credit Units: The Senior Residency phase is therefore 179 CREDIT UNITS as indicated in the rotation of postings above.

Assessments And Examinations

i. **Formative Assessment:** In order to effectively prepare the resident for the various parts of the FMCOph examinations, it is advisable for the trainers to assess their residents by regular formative assessment exercises. There is also need for program and trainer evaluation to ensure quality control.

A. Program and Faculty Evaluation

The educational effectiveness of a program should be evaluated in a systematic manner. In particular, the quality of the curriculum, and the extent to which the educational goals have been met by fellows, should be assessed. Teaching faculty should be evaluated on a regular basis. Faculty evaluation should include teaching ability and commitment, clinical knowledge, and academic activity, including publications and participation in national and/or international meetings. There should be a formal mechanism by which fellows participate in this evaluation. Written evaluations by fellows through mechanisms that promote candor and maintain confidentiality, as much as possible, should be utilized in the evaluation of both the program and faculty. [S]

B. Fellow Evaluation

There should be regular formative evaluation of the fellow's knowledge, skills, and overall performance, including the development of professional attitudes consistent with being a physician every 6 months with appropriate feed-back.

The program director, with the participation of members of the faculty, shall:
1. At least quarterly review the surgical log and evaluate the knowledge, skills, and professional growth of the fellow. [S]

2. Communicate each evaluation to the fellow in a timely manner. [S]

3. Advance each fellow to positions of higher responsibility on the basis of evidence of their progressive development of knowledge, skills, and professionalism. [S]

4. Maintain a permanent record of evaluation for each fellow. [S]

C. The program director should maintain a written, final evaluation for each fellow who completes the program. The evaluation should include a review of the fellow's performance during the period of training and should verify that the fellow has demonstrated sufficient professional ability to practice competently and independently. This final evaluation should be part of the fellow's permanent record maintained by the fellowship director. [S]

Assessment shall be driven by blue printing, and the final evaluation at the end of the training shall be in the form of oral examination, and assessment of the dissertation.

Borderline group method shall be used in the orals.

5. Examination and formative Assessment format

a. Mode of formative assessment:

- Continuous assessment activities recorded and scored in the purposive specialty log books.
- One essay on a relevant subspecialty topic every month (minimum of 15)

b. Eligibility for final examination

- Training for the stipulated minimum duration
- A logbook indicating that the needed training has taken place
- Submission of a dissertation in basic, epidemiologic, or clinical aspect of the subspecialty.

The proposal must have been approved at least 12 months before the Fellowship examinations. One of the supervisors must be in an accredited centre.

- An attestation from a trainer in the subspecialty that the trainee has met all the training requirements approved by the Faculty

Methods of assessment:

a. **Log book:** Procedures which are mandatory for each clinical posting are addressed in the resident's log book. Once adjudged satisfactory, such procedures are credited to the resident. To be signed off at the end of each posting, the resident must be judged to have satisfactorily performed all the mandatory procedures for that posting.

b. An **end of posting** test is highly recommended.

c. **Annual Report:** Each year an annual report on the progress of each resident is required to be sent to the Faculty Secretariat.

CHAPTER 4

CERTIFYING EXAMINATION OF THE COLLEGE

4.1 Application for College Certifying Examinations

The Fellowship Examinations are held twice a year in March/April/May and September/October/November. A call for application is published in at least one of the National Daily newspapers and College website in December and June for the March/May and September/November examinations respectively.

Candidates are advised to watch out for and comply with the examination application requirements as outlined in these advertisements.

4.2 Examination and formative Assessment format

Mode of formative assessment:

4.2.1 Continuous assessment activities recorded and scored in the purposive specialty logbooks.

4.2.2 One essay on a relevant subspecialty topic every month (minimum of 15)

4.3 Eligibility for final examination

4.3.1 Training for the stipulated minimum duration

4.3.2 A logbook indicating that the needed training has taken place

4.3.3 Submission of a dissertation in basic, epidemiologic, or clinical aspect of the subspecialty.

The proposal must have been approved at least 12 months before the Fellowship examinations.

One of the supervisors must be in an accredited centre.

4.3.4 An attestation from a trainer in the subspecialty that the trainee has met all the training requirements approved by the Faculty

4.4 Assessment methods for MD Degree

These will include practical exercises, assignments and tests, Formative assessment, Summative assessment, Thesis presentation and thesis defence examination will be administered at the end of the course.

This thesis defence will take place at least 6 months before the Part II Final for FMCOph.

4.5 Teaching Methods: This will include didactic lectures, seminars, case studies, assignments and practical sessions.

4.6 Resources: Computers and internet access, Journal articles, Research materials from the ICO and American Academy of Ophthalmology.

4.7 Part II Fellowship Examination

The Part II Examinations is designed to complete the assessment of professional competence in ophthalmology before the award of the Fellowship in Ophthalmology (FMCOph). Candidates are eligible to write the examination at least by the 36th month of senior residency training.

4.7.1 Dissertation Proposal Preparation and approval: The dissertation proposal should have at least 2 supervisors one of whom must be a Fellow of the Faculty and agree to critically supervise the design, collection of data, analysis of data and general write up of the dissertation. Submit written attestations by the supervisors indicating their willingness to supervise the project for the dissertation

The criteria to qualify as a supervisor is as the prevailing approval by the Faculty and the College. The proposal should be considered in a departmental seminar and approved by the department before sending to the ethical review board.

Approval from the relevant institutional review board or ethical approval for the study should be obtained before registration of the dissertation proposal with the College.

Exams shall be done not earlier than 12 months after proposal for dissertation has been approved by the College

The format for the Proposal and the Dissertation book is as in the main Faculty Curriculum and as approved by the College.

4.7.2 Components of the Part II Fellowship Examinations

The Part II Fellowship Examinations shall consist of:

a) A comprehensive oral examination on the candidate's dissertation. The "Dissertation orals" shall focus on the candidate's accomplishment of those objectives of the dissertation earlier stated in this handbook.

b) An oral examination (VIVA VOCE) consisting of two sections:

i) General Ophthalmology where the candidate is expected to meet a set of at least two examiners to answer THREE questions in general ophthalmology over a 30-minute period

ii) Cornea and anterior segment: where the candidate is expected to meet a set of at least two sub-specialists to answer SIX questions in the sub specialty over a 60-minute period

The ORALS (VIVA VOCE) will cover the following components:

Principles of Ophthalmology- 10

Medical, Tropical and Surgical Ophthalmology including pathology in candidates Subspecialty area (cornea and anterior segment) -70

Community Ophthalmology -10

Management and other soft Skills- 10

Oral (Viva Voce)

The purpose of Viva Voce is to cover as wide a field as possible with the candidate. Each candidate is subjected to fourty-five minutes oral examinations dealing with principles of surgery, pre-and post-operative management, surgical pathology, diagnostic modalities and operative surgery mostly directed at the subspecialty of interest.

The Standard setting method for Orals - Borderline group method should be used to obtain the pass score.

4.7.3 Classification of Examination Results

To pass the examination, a candidate must:

a) Have his/her dissertation accepted at *P* or *P+* level. **OR Passed MD Thesis defense at least 6 months earlier.**

b) Pass the Orals which is the Viva Voce

c) Conditions for Provisional Pass, Referral in Orals, Referral in Dissertation and Fail

i. A candidate whose dissertation needs some significant corrections, i.e. *P-* level pass, but who had passed Orals shall have a Provisional Pass.

ii. The corrections of the dissertation shall be made within three months and must be satisfactorily vetted by one of the examiners before it can be accepted. Once accepted, the provisional pass is converted to a full pass by the College.

iii. A candidate who has his/her dissertation accepted as *P* or *P+* level but fails in Orals shall be referred in the Orals only.

iv. A candidate who scores a P-level pass in the Dissertation and fails the Orals shall be deemed referred in Orals with Provisional Pass in Dissertation.

v. The candidate would be required to make the corrections in the book within 3 months after the exams and if satisfactory to the examiners, will be expected to repeat only the Orals. However, if the dissertation remains unacceptable to the examiners, the candidate would be required to sit both the dissertation and the Orals.

vi. A candidate, having passed the Orals but whose dissertation needs major restructuring, i.e. *P-1* level, shall be referred in the Dissertation only.

vii. A candidate whose dissertation needs major restructuring, i.e. *P-1* level and also failed the Orals is deemed to have failed the entire exam.

Pass: means a pass or provisional pass in dissertation and a pass in Oral examinations

4.7.4 Publication of the Results

The results of the Fellowship examinations in Ophthalmology are published by the College Registrar on approval by the Senate

4.7.5 Correspondence

The National Postgraduate Medical College of Nigeria or the Faculty of Ophthalmology does not normally enter into correspondence or discussion in respect of the details of a candidate's performance in the examination.

4.7.6 Designation of Fellowship in the Subspecialty

The designation of a fellowship in the subspecialty of the College shall be: **FMCOph (*Cornea and Anterior segment*).**

CHAPTER 5

ACCREDITATION OF TRAINING INSTITUTIONS GUIDELINES

5.1 Training Institution eligibility criteria

Shall meet the requirements of the Faculty of Ophthalmology of NPMCN training requirements in Comprehensive ophthalmology

Facility and equipment: inclusive of in-hospital radiology, community medicine, basic biochemistry, haematology, microbiology and ophthalmic histology services with the requisite manpower

Accredited comprehensive ophthalmology services

Manpower: at least one Cornea and Anterior segment specialist with a minimum of 5 years post fellowship OR minimum 10 years running the service.

Case load:

Minimum number of procedures

Clinic load of a minimum number of cases per week/month per trainee

5.2 UNIFORM CRITERIA/GUIDE FOR ACCREDITATION

The Senate of National Postgraduate Medical College of Nigeria at its meeting of 3rd December 2015 approved Uniform Criteria /Guidelines for Accreditation of Training Institutions as follows:

BASIS

The College recognizes that the training of specialist requires

1. Qualified and experienced personnel
2. Appropriate infrastructure
3. A well-structured training programme that recognizes modern trends of training and assessments
4. Opportunities and evidence of acquisition of skills
5. Access to up-to-date information
6. Regular feedback and evaluation from trainers and trainees

PHILOSOPHY: The process must be:-

- Fair

Done when the institution is ready

- Transparent

What is being assessed and persons assessing is known to all

- Objective

Minimal bias in the choice of the accreditors – usually not from the institution of affiliates

- Instructive

Feedback given to heads of Institutions

- Monitored

Reaccreditation done after a clearly defined period – 5 years (Full), 2 years (Partial)

DEFINITIONS AND WEIGHTING

MANDATORY REQUIREMENT.

1. **Qualified personnel**

The College approved that the basic qualification for training is the Fellowship of College (by examination or election but not honorary). The individual must have had at least 5 years'

experience working in a training institution and must be financially up-to-date. It is also expedient that departments in Institutions should have a good mix of the College training in the country so that trainees will have the maximum benefits of current rules and regulations governing their training. Weighting should be 15%of total accreditation score

2. **Appropriate Infrastructure**

This is a major pillar without which training cannot take place. What is appropriate will be defined by faculties. But facilities must be well constructed and maintained with the basic amenities

a. light
b. water
c. waste disposal

Available and with adequate backup. These includes

a. wards
b. out patients clinic
c. laboratories
d. theaters
e. radiological suites, etc

The weighting shall be a minimum of 10% of total accreditation scores. This can be sub-divided into core infrastructure (5%) and support infrastructure (5%)

3. Equipment

The College noted that equipment is an essential component in the acquisition of skills and competence. The minimum equipment needs will be determined by faculties and the procedure/log book will be necessary in assessing this component. The weighting shall be a minimum of 20% of total accreditation score.

4. **Structured training programme**:

The College has approved curricula and required competencies that trainees are expected to acquire. It is expected that institutions have a well-publicized (every trainee should have it in writing) structured programme which faithfully implemented and evaluated by a departmental residency committee. This programme must be seen by the accreditation team. Weighting should be 15% of total accreditation score.

5. **Opportunities/ Evidence of skill acquisition**

In recognition that our profession is an apprenticeship, all trainees must be provided with the opportunities of acquiring the necessary skills to be competent as a specialist. Records of such must be seen. This includes a procedure registrar, theater list and log book. Weighting should be 15% of total accreditation score.

DESIRABLE REQUIREMENT

6. **Access to new information**

This is a crucial element in making our trainees lifelong learners. It is therefore expected that there should be institutional support for trainees to attended updates, revisions, conference and seminars. It is also expedient that trainees acquire the skills at making presentation at departmental meetings and other scientific of professional. The library and the internet are veritable sources of information and it is expected that training institutions have such facilities accessible to the trainees. Evidence of all these must be seen. Weighting should be 15% of total accreditation score

7. **Regular feedback and evaluation**:

Evaluation is an important aspect of training. It is recognize that assessment can be formative /continues or summative. The College traditionally have carried out summative examinations at

the end of each part. However, training requires regular feedback from trainers to trainees and vice versa. Mentorship builds on the concept of regular evaluation, feedback, appropriate guidance and counseling of trainees. A good training programme must have these inbuilt and faithfully carried out. Weighting should be 10% of total accreditation score.
Total score is 100% or 100 points.

TABLE 7: ACCREDITATION TABLE OF REQUIREMENTS AND GRADING

No	**Requirement**	**Inadequate 0**	**Partially Adequate 7.5**	**Full Adequate 15**
1.	Qualified and experienced personnel a. Prescribed number (full time/Part time b. prescribed trainers: trainees ratio c. support personnel **(15 Points)**			
2.	Appropriate infrastructure a. basic: water, light, sewage etc b. core departments presents c. support departments presents **(10 Points)**			
3	Equipment a. core equipment b. support equipment **(20 Points)**			
4	Well-structured training programme a. seen by all b. content (lectures, tutorial , bedside sessions) **(15 Points)**			
5	Opportunities/ Evidence of skill acquisition a. Procedure Register b. Theater List c. Log Book **(15 Points)**			
6	Access to new information(15 point) a. library b. Internet **(15 Points)**			
7	Regular feedback and evaluation **(10 Point)**			
8	**TOTAL**			

< 0=49 (Scores less than 50%) -

Accreditation Denied

≥50-74 (Scores equals to 50% and Less than 75% - Partial Accreditation for 2 years

>75-100 (Scores equals or greater than 75% and above) - Full Accreditation for 5 years

2. **Effectiveness/function/role of visiting Consultants**

i. A visiting Consultant should have a minimum of 5 years post Fellowship experience.
ii. No training should take place in any institution without permanent consultants on ground.
iii. There must be documented evidence of activities of a visiting Consultant that residents are being supervised by him/her.
iv. For the purpose of accreditation the full time equivalent should be as follows:
2 visiting Consultants to 1 Full time Consultant.

3**. Period of Accreditation**

i. Partial accreditation should last for 2 years. Within the period of the Partial accreditation, one monitoring visit should be made to the institution.

ii. Full accreditation should last for 5 years. Within the period of the Full accreditation, two monitoring visits should be made to the institution.

4. **Effective Date of Accreditation**

The effective date for existing accreditation should be with effect from the date of visitation, irrespective of the time the Senate approves the report.
The effective date for new accreditation should be from the date of Senate approval.

5**. Trainers/trainee ratio**

The ratio of Residents to consultants should be minimum of 3:1 or Maximum 4:1. That is, One (1) Senior Registrar and Two (2) Registrars OR Two (2) Senior Registrars and Two (2) Registrars to one Consultant.

6. The number of Consultants is not the sole determinant for accreditation status, either as partial or full.

Every other criteria are taken into account to arrive at the verdict of either Partial or Full accreditation.

1. For any re-accreditation visit, the report of the previous accreditation visit should be made available to the current nominated panel member, to enable them to compare notes and ensure that progress is being made.

5.3 SUMMARY OF ACCREDITATION VISIT:

Should accompany the accreditation report and in formats approved by the College and the Faculty and contained in the main Faculty Curriculum